Waterway Traffic Forecasts for the Upper Mississippi River Basin

Volume II: Grain

Contract No. DACW72-90-D-003

Final Report

April 18, 1997

Submitted to:
Institute for Water Resources
U.S. Army Corps of Engineers

Submitted by:
Jack Faucett Associates

In Cooperation with:
Sparks Companies, Inc.

JACK FAUCETT ASSOCIATES

4550 MONTGOMERY AVENUE • SUITE 300 NORTH

BETHESDA, MARYLAND 20814

(301) 961-8800

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

In terms of tonnage, grain and oilseeds are by far the most important commodity group transported on the Upper Mississippi River (including the Illinois River). In 1992, these commodities constituted 40% to 50% of the Upper Mississippi River freight tonnage. Corn alone accounted for approximately 30% of the tonnage. Table 1-1 below shows grain's share of tonnage for the different segments of the Upper Mississippi River.

Table 1-1
1992 Upper Mississippi River Grain and Oilseed Tonnage
(Percent of Total Upper Mississippi River Freight Tonnage)

Commodity	River Segment: Minneapolis to St. Louis	St. Louis to Cairo	Chicago to St. Louis
Total Grain and Oilseeds	49.97%	45.97%	40.02%
Wheat	2.02%	5.10%	0.90%
Corn	34.82%	28.53%	28.97%
Rice	0.01%	0.01%	0.01%
Barley and Rye	0.17%	0.20%	0.00%
Oats	0.22%	0.19%	0.08%
Sorghum	0.21%	1.06%	0.04%
Oilseeds	12.53%	10.87%	10.01%

Source: *Waterborne Commerce of the United States*, 1992.

This report presents a comprehensive analysis of the factors that give rise to such large volumes of grain traffic on the Upper Mississippi River. Section 2 examines supply factors. Production areas are identified and historical regional shifts in these areas are noted. Long-term forecasts of production are also presented for the five state Study Area. Section 3 evaluates the factors which influence the demand for grain. The different markets which consume grain are located and long-term consumption forecasts are presented for the most important among these. Section 4 consists of a modal split analysis. In this section, we assessed the reasons why barge or rail is used to transport grain between the supply areas and demand regions (identified in Section 2 and Section 3, respectively). Section 5 completes the report with long-term projections of grain traffic on the Upper Mississippi River. Corn, soybeans and wheat are emphasized in the report since the other grains account for less than 1% of the tonnage on the Upper Mississippi River.

2.0 PRODUCTION

This section defines the different grain producing areas in the US and introduces forecasts of grain production for each of the five states that border the Upper Mississippi River. In Section 2.1, historical regional production trends are noted. Section 2.2 presents the state level grain projections out to the year 2050.

2.1 Regional Production Trends

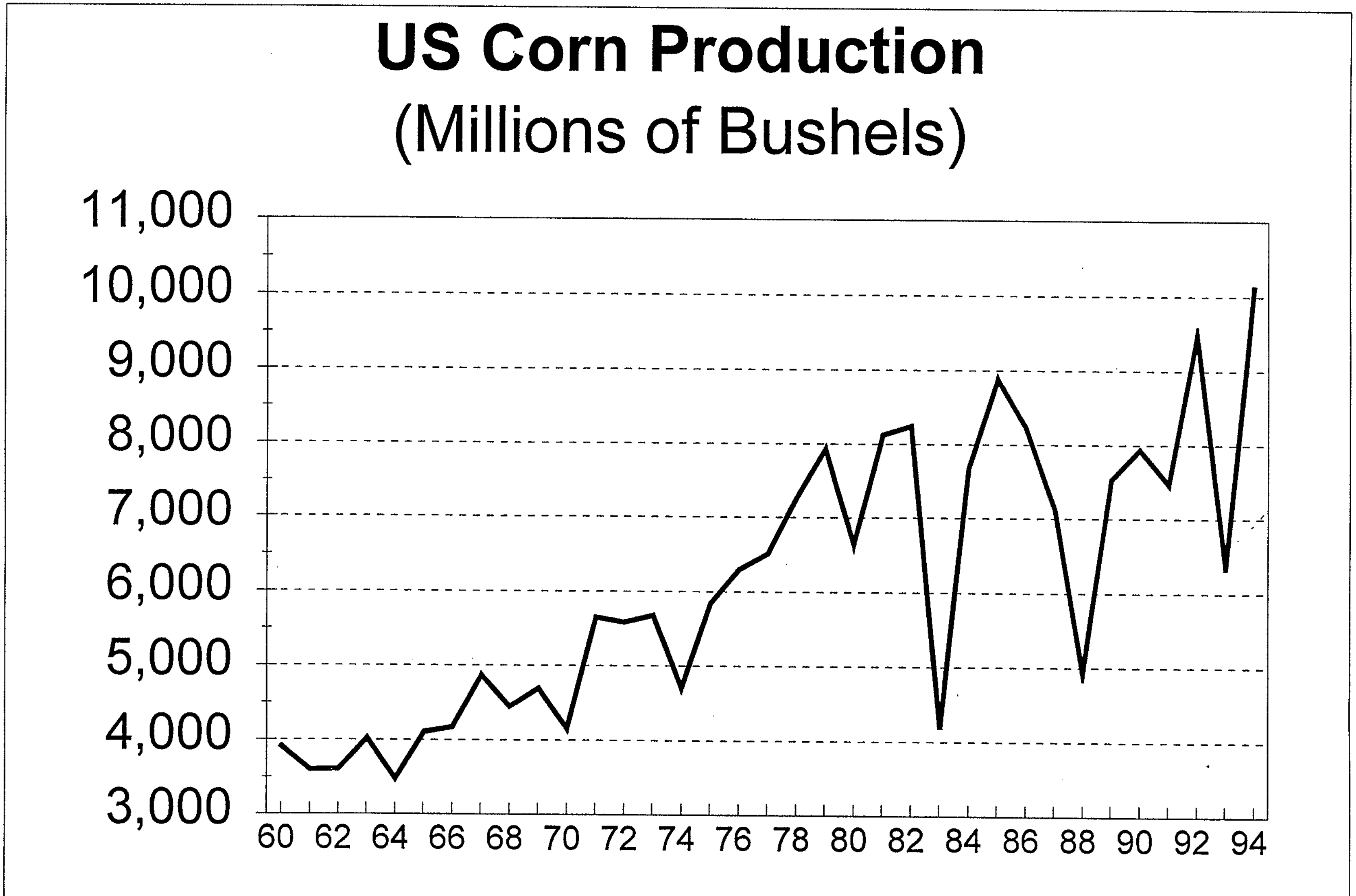
Corn

As shown in Figure 2-1, US corn production increased steadily from just over six billion bushels in 1976 to approximately nine billion bushels in 1985. Production eased off between 1986 and 1991 with the implementation of US government programs, which were designed to reduce planted acreage and support relatively high grain prices and farm incomes. In 1992, production began to expand again as increasing world demand has driven up prices and reduced the amount of land in the acreage reduction program (ARP).

Notable regional shifts in US corn production include losses in share in the Southeast and in the Great Lakes area (Indiana, Ohio, and Michigan) and share increases in the Plains states (Colorado, Kansas, Nebraska, North Dakota, and South Dakota). The Plains has been able to increase its share as technological advances have made corn a more viable crop in relatively dryer climates. The strong growth in western livestock operations has further spurred the demand for corn grown in the western edge of the cornbelt. The loss in share seen in the Southeast is due primarily to the CRP program; i.e., in Southeast there is more erodible land per unit of arable land than there is in other areas.

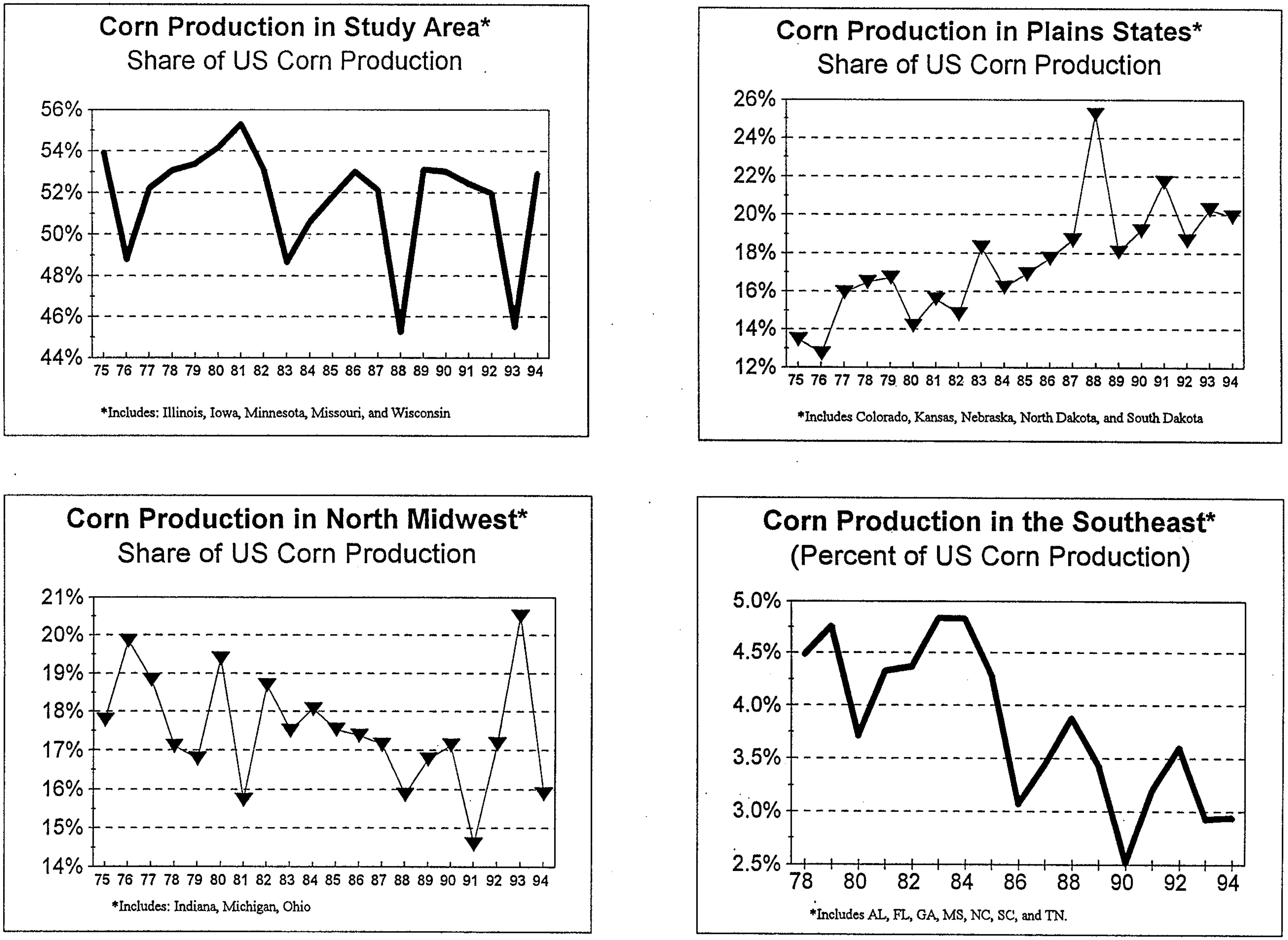
In 1994, the five state study area accounted for 52.89% of the total US corn production, less than a percentage point higher than its 1977 share. These trends are shown graphically in Figure 2-2. Within the study area, Iowa, Illinois, and Minnesota have maintained fairly constant shares of US production since the early 80s: Iowa at 19%, Illinois at 17%, and Minnesota at just under 9%. Missouri has fallen almost a percentage point to just over 3% and Wisconsin has lost almost a percentage point and now accounts for about 4.5% of US production. Within the Plains states, Nebraska now produces approximately 12% of the corn grown in the US, having gained almost four percentage points since 1975. South Dakota's share has increased by almost a percentage point since the early 80s but appears to be flattening out at 3%. Since 1984 Kansas has doubled its share from 1.5% to 3%.

Figure 2-1



Source: US Department of Agriculture

Figure 2-2



Source: US Department of Agriculture

Soybeans

Figure 2-3 shows a 200 million bushel decrease in US soybean production from the late 70s through the late 80s. The decrease can be attributed primarily to acreage reductions as farmers pulled land out of production in response to government incentives and shifted their crops to corn due to relatively higher prices. The upward trend beginning in the early 90s is a result of increasing yields due to genetics, changes in planting practices, and reductions in the amount of land in the ARP. Soybean yields typically exhibit more variance on the downside of the yield trend as genetics and planting practices have made yields more susceptible to poor weather conditions even though they have resulted in higher yields during the average year. Recent technological innovations, however, are making yields more responsive to above average weather conditions, increasing the variance on the upside of the yield trend. This can be seen in 1994, which produced record yields due to the combination of excellent weather and the new technological innovations.

Several regional shifts in US soybean production have been taking place since the mid 1970s. As shown in Figure 2-4, the Plains states share of US soybean production increased by almost eight percentage points while the Lower Mississippi Region experienced a corresponding loss of share. The loss in share seen in the Lower Mississippi Region is due primarily to the relatively higher percentage of program crops in the area compared to the rest of the country. The Plains has been able to increase its share due to technological advances that have allowed soybeans to be grown further west in the relatively dryer climates. The strong growth in western livestock operations has contributed to the demand for soybeans grown in the Plains. As a percentage of the US soybean production, declines in the Eastern Seaboard have been offset by increases in the North Midwest. Since the mid 80s, the Study Area increased its share of US soybean production by two percentage points and now produces approximately 50% of all the soybeans grown in the US. The states within the Study Area each exhibit a considerable amount of variation in terms of their share of US soybean production. The most obvious trends are found with Minnesota and Wisconsin, which have both shown steady increases.

Figure 2-3

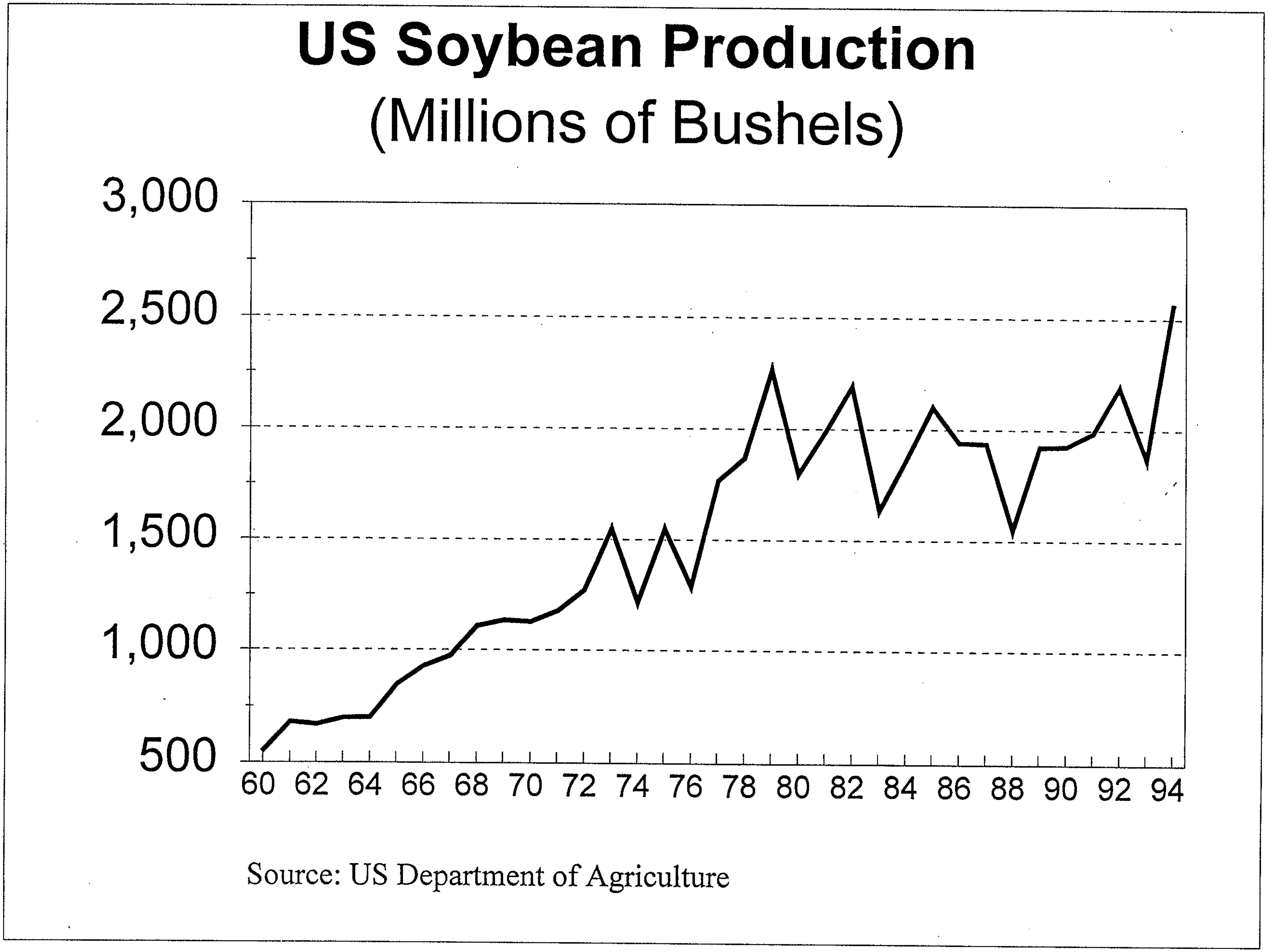
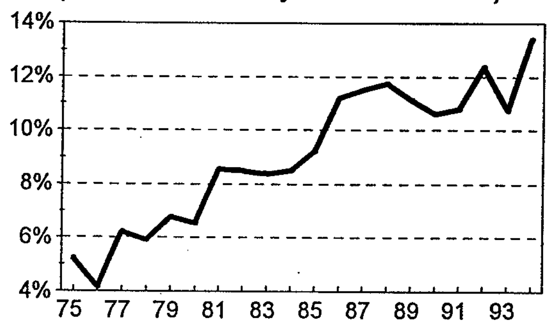

US Soybean Production
(Millions of Bushels)
3,000
2,500
2,000
1,500
1,000
500
60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94
Source: US Department of Agriculture

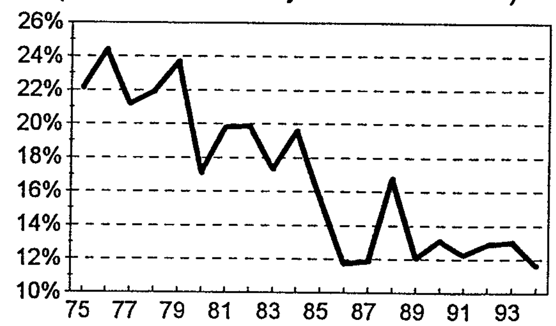
Figure 2-4

Soybean Production in Plains*
(Percent of US Soybean Production)



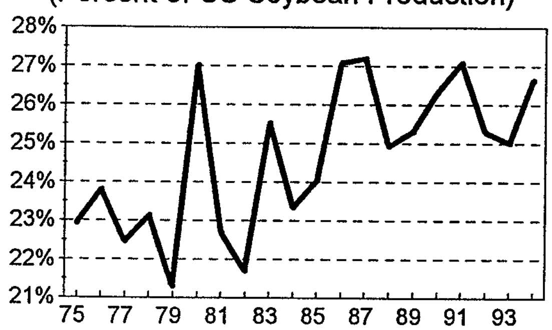
*Includes ND, SD, NE, KS, OK, and TX
Source: US Department of Agriculture

Soybean Production: Lower Mississippi*
(Percent of US Soybean Production)



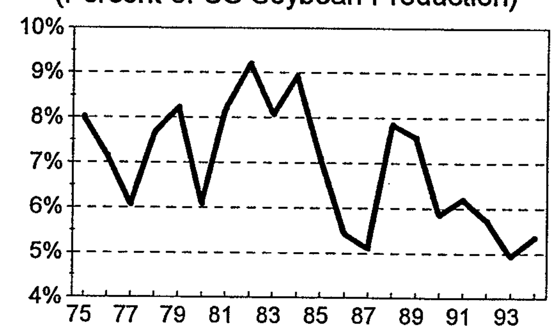
*Includes Arkansas, Louisiana, Kentucky, Tennessee, Mississippi, and Alabama
Source: US Department of Agriculture

Soybean Production in North Midwest*
(Percent of US Soybean Production)



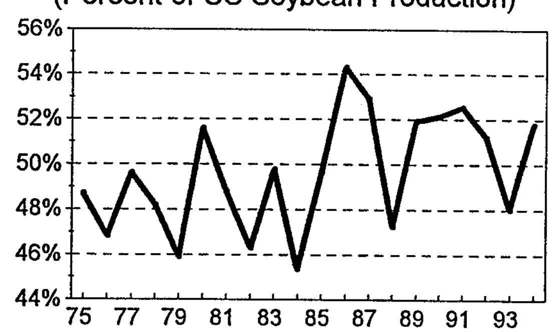
*Includes Michigan, Indiana, and Ohio
Source: US Department of Agriculture

Soybean Production: Eastern Seaboard*
(Percent of US Soybean Production)



*Includes PA, NJ, MD, DE, VA, NC, SC, and GA
Source: US Department of Agriculture

Soybean Production in Study Area*
(Percent of US Soybean Production)



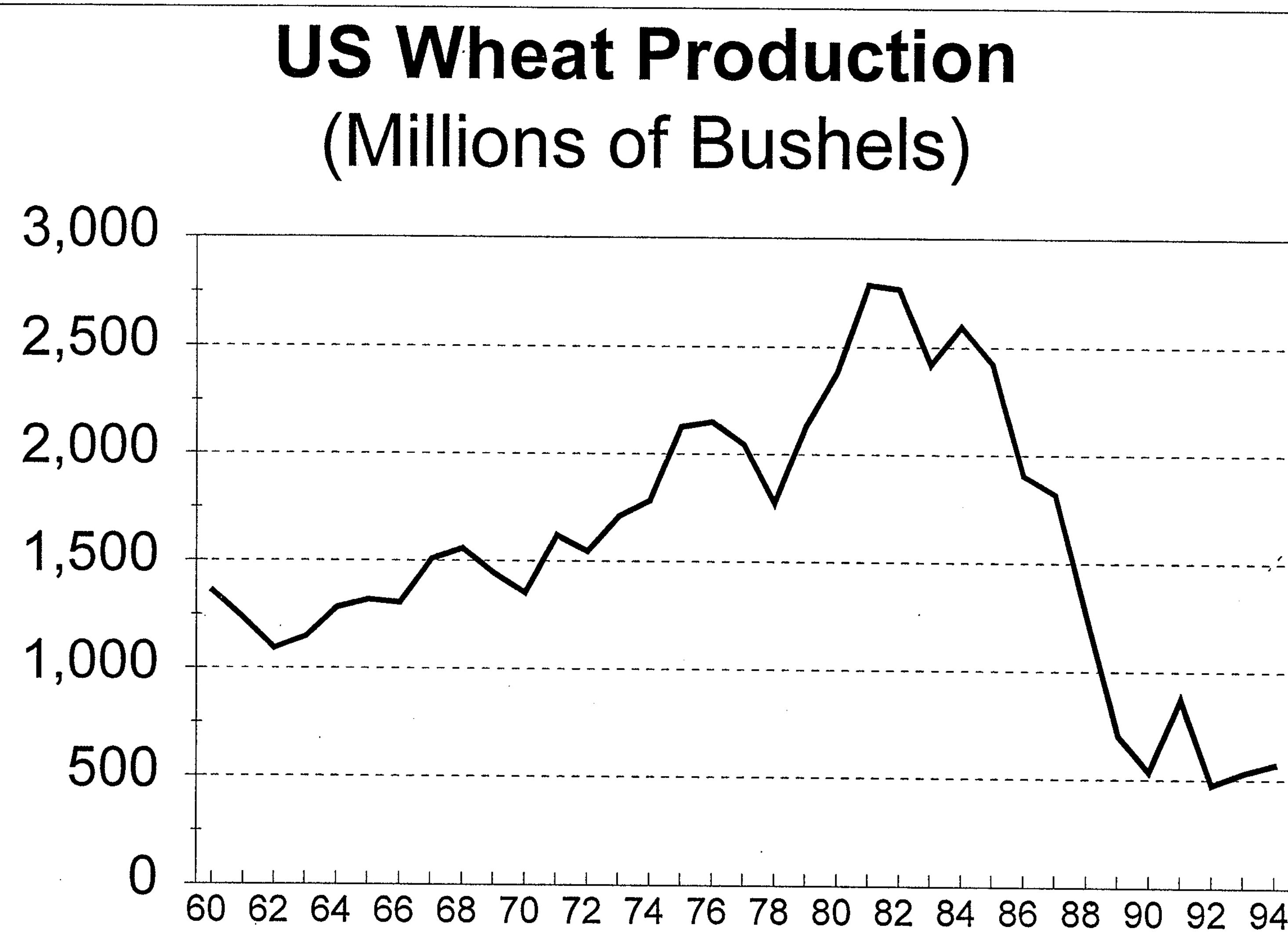
*Includes Illinois, Iowa, Minnesota, Missouri, and Wisconsin
Source: US Department of Agriculture

Wheat

Figure 2-5 shows that US wheat production peaked in the early 80s at nearly 2.8 billion bushels. The decline in production during the 80s reflects the influence of US government programs designed to idle acreage and thereby support farm incomes. Production has started to increase during the 90s as the ARP program has been relaxed due to higher grain prices caused by increasing world demand.

The most obvious regional trend signals a trade-off between the Northern Plains States and the Southern Plains States. Since the late 70s, it appears that the Northern Plains have gained about eight percentage points at the expense of the Southern Plains. This shift is due primarily to more hardy varieties of winter wheat which can be grown further north. The Study Area has lost a little over two percentage since 1975 and now produces approximately 9% of the wheat grown in the US. Other shifts in US wheat production have been less noticeable and exhibit more variance than the regional shares of other grain crops.

Figure 2-5



Source: US Department of Agriculture

2.2 Forecasts of Grain Production

2.2.1 Fundamental Environment

World grain and oilseed production in the foreseeable future will occur within an economic environment that is unlike that which has previously existed. Price will play a greater role in this environment, due to reduced trade barriers and diminished government supply control. Individually and in combination, these altered economic forces serve to favor production within those geographic locations that possess a comparative economic advantage regarding that crop's production. Price will direct both production and consumption and freer market access will allow the flow of production from surplus to deficit areas.

The US has a notable comparative advantage as a grain producer because of its low per unit cost of production, its efficient marketing system, and its highly developed transportation network. Additionally, the US internal consumption base is well below its ability to produce given its natural resource inventory. This surplus production capability has for years made world trade an important factor for US agriculture and the evolution of freer trade due to enhanced market access in the international arena will serve to continue this into the next century.

Concurrent with world economic environment changes is a dramatic shift in domestic US commodity policy. The US Department of Agriculture has orchestrated US production with a variety of production limiting programs for the past 60 years. These production limiting programs have taken various forms but in general have idled land from active cultivation. The USDA will lose its authority to idle land as part of annual commodity programs if proposed policy that is part of Budget Reconciliation legislation currently in the process of becoming law is enacted.

2.2.2 General Assumptions

In deriving the estimates presented in this report, the following conditions were assumed to prevail through 2010. Due to the time span included, these assumptions are somewhat general. Forecasts for the 2010-2050 period presume a continuation of general trends in preceding years and have the general character of continuation rather than deviation:

- The world political situation will remain generally stable with conflicts between countries settled without significant military conflict.

- The favorable view toward trade inherent in the GATT agreement will persist with the newly created World Trade Organization (WTO) successful in settling trade disputes that arise.

- The US storage and transportation infrastructure that supports agricultural production will respond to growing demands and not act as a restraining factor to its growth.

2.2.3 Methodology

Forecasts of harvested acreage and yield-per-acre for each crop were to generate the forecasts of production for each type of grain. Crops involved in the forecast were corn, soybeans, wheat, barley, oats, and sorghum.

Acreage Forecasts

The acreage forecasts for each crop were made using a two-step process. First, estimates of total harvested acreage for all crops were developed based upon historical area trends and assumptions concerning world demand, foreign supply, US government programs (e.g., possible changes in the ARP and conservation reserve program (CRP)), comparative crop economics, and available crop land.

World Demand

The forecasts for world demand were made on a region by region basis for the major producers and consumers. SCI considered historical trends in population and food consumption as well as livestock numbers and feed consumption in determination of the projections. Where possible, changes in consumer tastes and preferences were also given consideration. Implicit in the forecast was the assumption of continued strong economic growth in major consuming areas of the world. This expected economic growth will be reflected in expanded consumer incomes. Per capita use rates for both food and feed consumption of grains and oilseeds have also been observed to follow distinct patterns. Analysis of these various consumption patterns formed the basis for projected use rates that were considered reasonable and present an accurate picture of expected use of grains and oilseeds. Commodity price levels are assumed to rise over the time period.

The strong growth forecast in world food demand implies the U.S. will increase production in the attempt to fill this demand.

GATT and Freedom to Farm Legislation

Assumptions regarding U.S. crop area take into account the 1995 Freedom to Farm Act and expected variations of this legislation that are likely to impact U.S. farm production during the next 50 to 55 years. This change in policy that allows the U.S. to produce for the export market is a key assumption for the long-term forecast. However, there are some restrictions on acreage that are not sensitive to prices. The outlook assumes that some form of land retirement will prevail during the length of the for and that a certain percentage of the CRP land will be held out of production on a permanent basis as it represents wetlands and other highly erodible land that is not suitable for crop production.

SCI believes that the advent of the GATT agreement, the 1995 U.S. Freedom to Farm Act, and the ongoing CAP reforms of the EU mark a new era of significantly reduced government involvement in agriculture. The forecast incorporates the GATT regulations governing subsidized exports that were agreed upon by most major exporters. These regulations will impact trade until 2001 and are likely to extend well beyond as the global evolution toward "free trade" is expected to be sustained. The forecast also considers the impact on trade of the various import tariffs reductions for grain and oilseeds and the minimum access provisions that will be implemented over the next 5 to 6 years as a direct result of the GATT agreement. The reduction and/or elimination of trade barriers are assumed to increase the global volume of trade. This increase is reflected by the steady upward growth in global grain and oilseed consumption and trade over the forecast period.

An additional factor is the continued reduction of political influence of the agricultural sector. Many countries are being forced to reduce support for agricultural programs due to budgetary constraints that are currently dictated by law. While there may be instances of increased intervention on a limited basis from time to time, SCI does not anticipate that either the U.S. or other countries will return to the level of intervention and regulation witnessed during the mid to late 1980's. For most countries, it will not be economically or politically feasible to return to similar high levels of monetary support.

Foreign Supply

The forecasts of foreign supply are based on several factors including, historical production experience in the country/region, current available crop area and potential for expansion, current and expected agricultural policies in the respective country/region, and their expected rate of adaptation of technology. In most cases, the forecasts assumes a continued expansion of world crop area for the next 5 to 10 years. It is likely at some point that many countries will be approaching the upper boundaries of their potential crop areas. One cannot assume that high prices will automatically stimulate increased crop production. With respect to corn, there are few other areas outside the U.S. that are suited to increase area significantly. Those that can will show an offset by reducing area of competing crops. At present, Brazil appears to have significant potential to expand soybean area. The forecast assumes the return of the majority of land now idled by the set-aside program in the EU, thus the potential for additional expansion beyond the forecast levels do not appear likely. There is also a significant area of land out of production or producing below potential in the Former Soviet Union that could eventually boost supplies of wheat and barley in that region.

It might be argued that several foreign producers could experience production increases larger than currently forecast. This might happen if several major producers were to incorporate technology at a faster pace that is currently assumed to happen in the forecast.

The foreign production forecasts were also made with the assumption that historical trends in adoption of technology would continue in the future.

Availability of Land

Both the U.S. and the state acreage forecasts were made with the use of an area matrix that considers the total land available for crop production. There is a finite number of acres that can be utilized for crops, thus there is an upper limit on area. The high area levels of the late 1970s and early 1980's were used to represent an upper extreme or limit for total crop area. During this time period the level of land in withheld from production was negligible and cultivated area represents a full production scenario. In all cases, the forecasts crop areas approach or exceed those 1970's-80's boundaries by the year 2000 and remain at or near the limit for the duration of the forecast. As stated above, consideration was also given to the available amount of land currently idled under government programs and to the amount of land in the CRP that may be returned to crops.

Comparative Crop Economics

The total acreage forecasts were allocated to individual crops based upon historical shares and evaluations about possible changes in those shares. Relative grain and oilseed price levels can be assumed to cause shifts between crops from time to time.

Yield Forecasts

Yields were forecast on the basis of linear long-term trends with a 25 year period (1970-1994) as the base. During that time period there were numerous significant advances in technology which were applied by U.S. farmers. Significant changes in the yield trends, which occurred in the early 1970s, precluded the use of a longer base period. The introduction of hybridization lead to the steep acceleration in yields observed between 1950-1970. By 1970 yields were starting to approach the maximum potential that could be reached through hybrid varieties. As a result, the acceleration in yield growth slowed. Moreover, as yield increases began to be more difficult to achieve, the use of highly specialized varieties started to be emphasized. This emphasis resulted in breeding out some of the natural resistance to disease and substantially increased the variability in yields. These two related events, the decline in the growth rate and the increase in variation, signify important differences between the past twenty five years and the twenty years prior to 1970. It is believed that the adoption of new technology (cultivation practices, machinery, genetics and biotechnology) in the future will follow a pattern similar to the one witnessed during the latter period[1].

[1] We do not believe that there will be significant technological advances in fertilizer application that will accelerate yields inreases. As shown in Volume III: Agricultural Chemicals, fertilizer application rates have been fairly constant since 1980. These rates were held constant throughout the forecast horizon and were used to estimate future demand for agricultural chemicals. As a result, projected yield increases are

Use of non-linear trends were considered to allow for potential technological advances, as there has been some speculation that we are on the brink of a new revolution in biotechnology that will accelerate yield growth. It is difficult to gage the probability of these speculations as some experts are skeptical of the assertions. For example, new seeds being developed for soybeans and corn will make the plants resistant to Round-Up, a herbicide that typically kills all plants it contacts. Such seeds should give farmers better control over weeds, which could result in improved yields. However, farmers already use herbicides to control weeds, just not as effectively. The increase in yields will occur as a result of the marginal improvements in weed control. It is difficult to say whether the increase will be greater than increases in yields observed during the past twenty-five years. Some experts point out that the real benefits of this new technology may not be in terms of yield improvements but in terms of lower production costs for farmers.

Analytical review indicated that the non-linear alternatives were not statistically superior to the linear application in past years. Therefore, linear functions for estimation were deemed preferable for the yield projections. If the forecast errs, it likely will be on the low side. Projections based on non-linear trends resulted in yield levels 15 to 40 percent above linear trend results. Nonetheless, the crop yield forecasts contained in this study represent an accurate and best assessment of yield trends and technology incorporation that will prevail during the coming fifty year time period.

Uncertainty Bands

A simple Monte Carlo simulation was employed to develop uncertainty bands around the production forecasts. For each crop and forecast year, distributions were specified for total acreage, crop share of total acreage, and yield per acre. The distributions were assumed to be normal and independent of each other. The means of the distributions were defined by the point estimates. It took two steps to define the standard deviations. For each variable we divided the standard deviation of the base period by the mean of the base period. We then multiplied these ratios by each corresponding forecast to estimate

---

assumed to result from technological advances in other areas such as cultivation practices and biotechnology.

The price spread between the price of fertilizer and the price of grain is a major determinant of how much fertilizer farmers are willing to apply. Not using enough fertilizer can result in low yields while using too much fertilizer can cost more than the value of the extra grain that is produced. The price of grain is expected to rise over the forecast horizon and it is likely that fertilizer prices will also rise. World demand for fertilizer is rising as a result of expanding foreign acreage and increasing application rates in countries that currently do not use much fertilizer. Unless there is a significant drop in the cost of fertilizer production, we probably will not see substantial increases in the price spread that will lead to higher application rates. Such a possibility is further offset by two factors. First, there is an upper limit on application rates as using too much fertilizer can reduce yields. In addition, the introduction of GPS technology has allowed farmers to become much more efficient in their use of fertilizer, allowing them to use it less frequently and more selectively. Future innovations in fertilizer application are assumed to follow the same course: i.e., aimed at reducing production costs rather than increasing yields.

the standard deviations for each future distribution. Standard forecast errors that can be estimated using regression analysis were not used because they do not take into consideration potential changes in the trend which are likely to occur over a long period of time. For the total acreage distributions, it was also necessary to subjectively define truncation points on the high side of the mean to take into account limits on total available acreage. Once these three distributions had been defined (for a particular forecast year and crop), 5000 random deviates were generated from each distribution and multiplied by each other to produce a distribution of production. The variation in this distribution (in terms of its percentage of the mean) was used to define the bands around the production forecasts that had previously been made.

2.2.4 Grain Production Forecasts

<u>United States</u>

Since the early 1970's US harvested acreage for major grain and oilseed crops has ranged between 208 and 227 million acres. Production economics of the various crops, government program provisions and weather have all played a role in the year-to-year swings. In the mid-1980's government policies were aimed at supporting farm incomes and reducing grain surpluses by taking land out of production. By the early 1990's annual acreage reduction programs (ARP) and long term retirement programs (CRP) were holding 50 to 55 million acres of crop land out of production.

The forecast points to US crop area expanding to 226 million acres by 2010 from the current 208 million acre level. Area is forecast to further expand to nearly 230 million by 2050. This area increase assumes no annual program idling throughout the forecast period and a reduction of CRP acreage from its current 36.5 million acres to 20 million by 2010 and thereafter. By crop, corn area is expected to expand by almost 12 million acres with the bulk of the increase taking place in the next five years. Few areas in the world are as climatically suited to corn production as the midwestern US. In contrast soybean area at the US level is only expected to gain 2 million acres as growth in South America continues to offer competition. Wheat area is forecast to expand 4.5 million acres underpinned by global demand growth. The reduction of subsidized exports will counter some of the gains for wheat. Similar to corn, the bulk of the increase in wheat area is expected to be accomplished in the next five years. Area of other grains (barley, oats, sorghum) is forecast to expand by 3.5 million acres due to reduced program acreage idling and expected growth in global demand for feed grains. Gains for barley and sorghum are expected to more than offset a decline in oats. The level of oat acreage is important relative to crop area as it competes for area and is important in many rotation programs. However, oats do not play a significant role in grain exports and an inconsequential amount was assumed to be exported. Forecasts of harvested acreage and underlying ARP and CRP assumptions are presented in Table 2-1.

At the US level, corn yields were forecast to increase to 224 bushels per acre by 2050. Soybean yields were forecast to rise to 62 bushels per acre while wheat yields were set at 66 bushels per acre. Commensurate increases were projected for other grains.

Production estimates resulting from the acreage and yield forecasts are shown graphically in Figure 2-6. Historical data and forecasts for acreage, yields and production are presented in tabular form in Appendix A.

Table 2-1: US Production Forecasts

	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	65.1	66.2	66.9	76.2	76.7	77.4	78.7
Soybeans	53.5	63.4	60.1	61.0	61.4	61.6	62.0
Wheat	63.0	64.3	61.8	66.1	66.1	66.2	66.3
Other Grains[1]	37.1	33.3	19.2	21.6	21.6	21.9	22.7
Total	218.7	227.2	208.0	224.9	225.8	227.1	229.7
Annual (ARP)	5.6	45.1	16.8	0.0	0.0	0.0	0.0
Long Term (CRP)	2.6	0.0	36.5	26.0	20.0	20.0	20.0
Grand Total	226.9	272.3	261.3	250.9	245.8	247.1	249.7
Yields (Bushels Per Acre)							
Corn	83.2	101.9	121.6	135.0	152.8	179.5	224.1
Soybeans	26.8	29.5	37.0	38.5	43.4	50.6	62.6
Wheat	29.8	38.6	37.5	41.0	46.0	53.5	66.0
Production (Mil Bushels)							
Corn	5404	6909	8190	10287	11712	13898	17633
Soybeans	1437	1865	2224	2347	2661	3116	3883
Wheat	1873	2480	2315	2710	3042	3542	4376

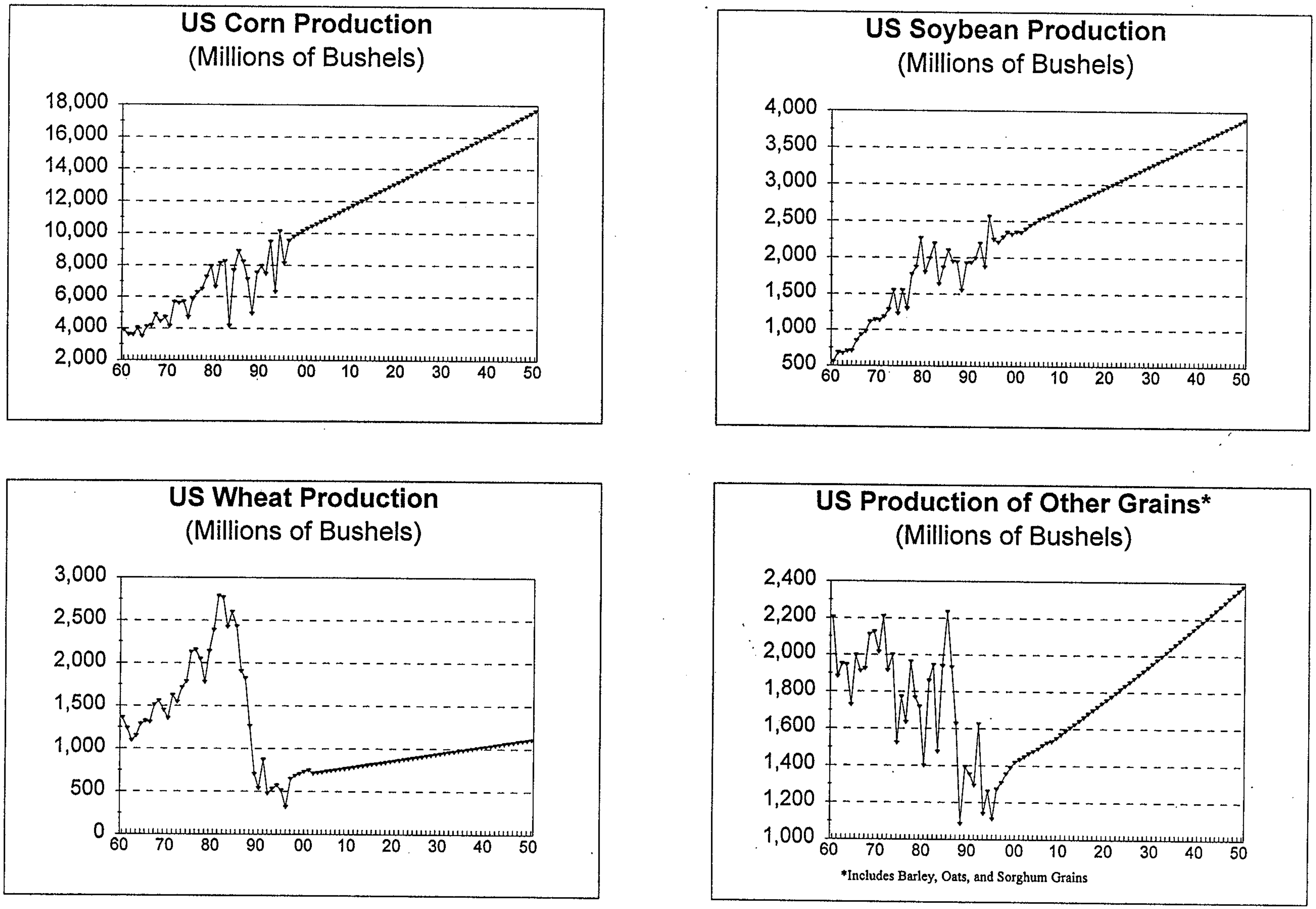
*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Study Area

Grain and oilseed production were forecast for the five key states which most directly supply the upper Mississippi River transportation system: Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Projections for both harvested area and yield were derived independently for each state. Projected production levels by crop for each state were determined by taking the product of area and yield. The US forecast for harvested area and yield for these crops over a similar time period was used as a benchmark.

For each state, a brief description of the area forecast, pertinent ARP/CRP assumptions and expected crop yields follows. Individual state area forecasts, yield estimates, and production projections are located in Appendix B. Appendix C provides the results of the regressions used to make the yield forecasts.

Figure 2-6
US Grain Production: 1960 - 2050



Source: Historical data is from USDA's Agriculturural Statistics, various issues. Sparks Companies, Inc. developed the forecasts.

Illinois

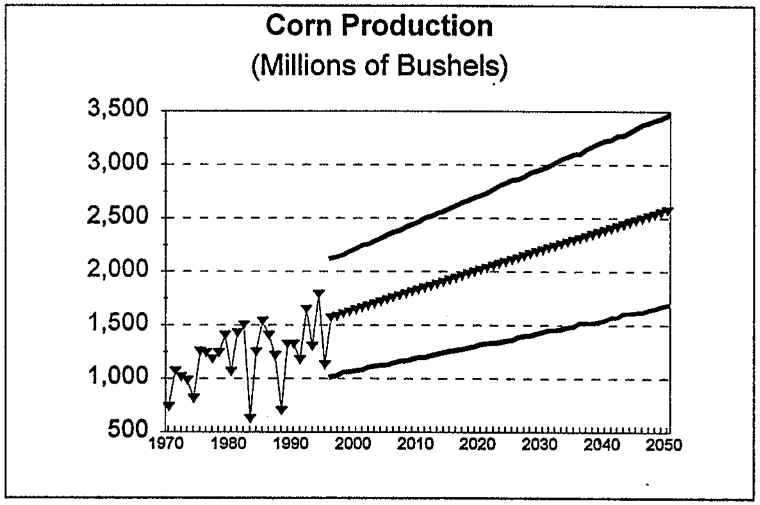
Area of grain and oilseed crops over the past 20 years has held near 21 million acres. An additional 1.5 to 2 million acres was idled under government programs in recent years. The projections assume no annual acreage reduction programs will be in effect and that approximately 200 thousand acres will remain in some form of long term land retirement program. As shown in Table 2-2, area of crops is forecast to increase to 22.7 million acres by 2000 and hold near that level over the following fifty years. The projections for 2050 indicate that corn will remain the dominant crop with a 1 to 1.5 million acre increase over historic levels. Wheat area is expected to be above that of the past ten years, but less than 20 years ago as corn maintains a competitive economic advantage. Soybean area is expected to hold near recent levels during most of the forecast. Barley, oat and sorghum area is projected to remain flat near recent levels of 300 thousand acres. Yields for Illinois, based on a 25 year least squares trend, indicate a 225 bushel per acre level for corn, 64 bushels for soybeans and 87 bushels for wheat. Those yields compare with recent three year averages of 133 bushels for corn, 43 bushels for soybeans and 51 bushels for wheat. Figure 2-7 shows the subsequent production forecasts.

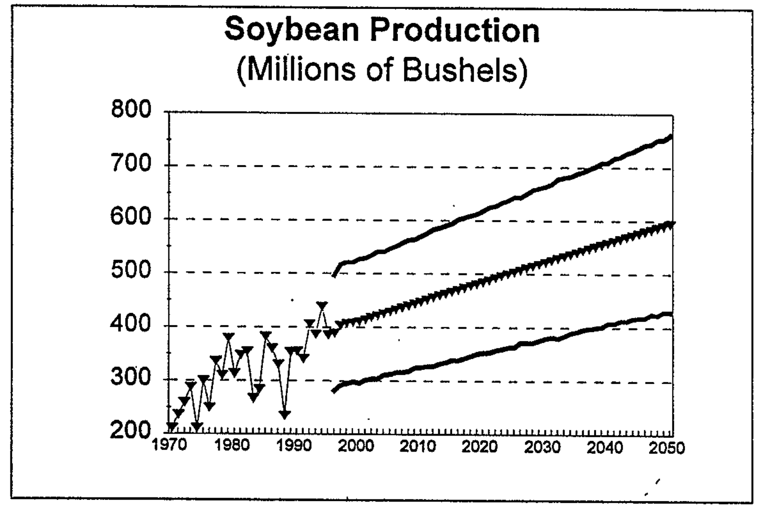
Table 2-2: Illinois Production Forecasts

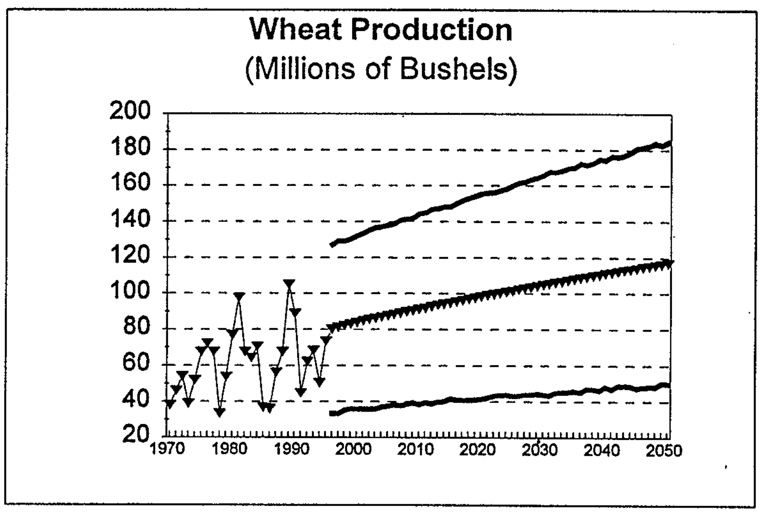
	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	10.1	10.1	10.5	11.5	11.4	11.4	11.4
Soybeans	8.6	9.0	9.4	9.4	9.4	9.4	9.3
Wheat	1.6	1.3	1.3	1.5	1.5	1.4	1.4
Other Grains[1]	0.5	0.5	0.3	0.3	0.3	0.3	0.3
Total	20.8	20.9	21.5	22.7	22.6	22.5	22.4
Annual (ARP)	0.2	2.1	0.6	0.0	0.0	0.0	0.0
Long Term (CRP)	0.0	0.0	0.8	0.3	0.2	0.2	0.2
Grand Total	21.0	23.0	22.9	23.0	22.8	22.7	22.6
Yields (Bushels Per Acre)							
Corn	100.3	109.3	133.0	143.5	159.9	184.5	225.4
Soybeans	30.8	34.5	43.0	43.7	47.7	53.8	63.9
Wheat	33.0	46.3	51.0	55.9	62.1	71.2	86.6
Production (Mil Bushels)							
Corn	1016	1135	1405	1643	1829	2107	2570
Soybeans	266	311	404	410	448	503	594
Wheat	53	57	64	84	91	102	117

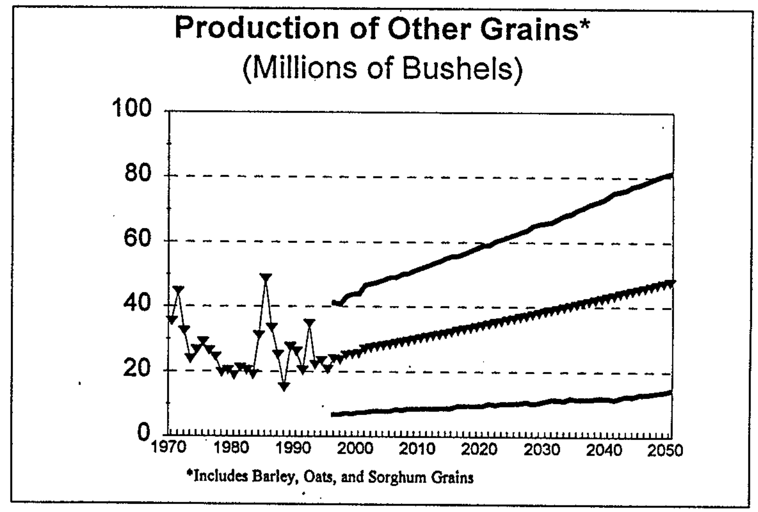
*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Figure 2-7
Illinois Grain Forecasts*









Iowa

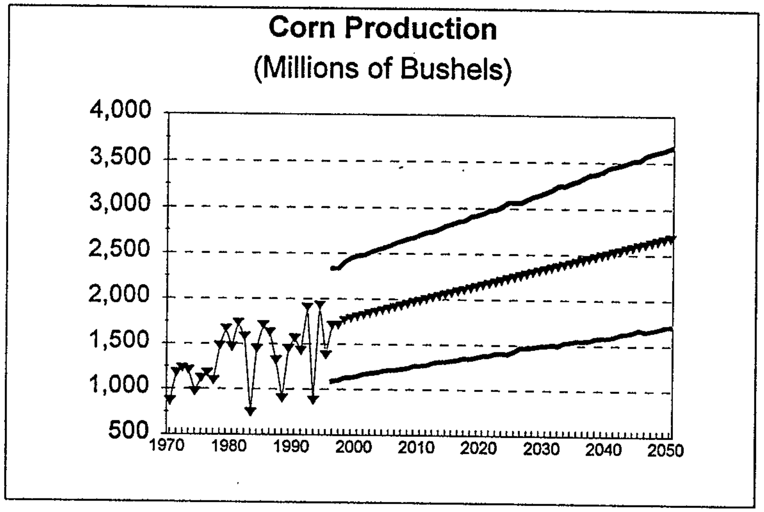
Iowa total crop area is similar to Illinois having historically been 20 to 21 million acres. In recent years there have been slightly more than 3 million acres in government programs. As shown in Table 2-3, the projections reveal an increase in corn area of 1.5 to 1.7 million acres from historic levels to a total of 13.3 million by 2050. Although a fairly flat trend is expected for soybeans, the significant expansion achieved in recent years is maintained through the forecast. Wheat area in Iowa is less than 50 thousand acres. The level of other crops (oats) is expected to hold near 400 thousand acres which is in line with recent totals. Total crop area is forecast to hold near 22.5 million acres or about 1.7 million larger than the average of the past three years. About 1 million acres are expected to be maintained in a long term land retirement program. Crop yields are forecast at 202 bushels for corn, 66 bushels for soybeans, 50 bushels for wheat and 68 bushels for oats. For comparison, recent three year averages were 118 bushels for corn, 42 bushels for soybeans and 37 bushels for wheat. Figure 2-8 portrays production forecasts for Iowa.

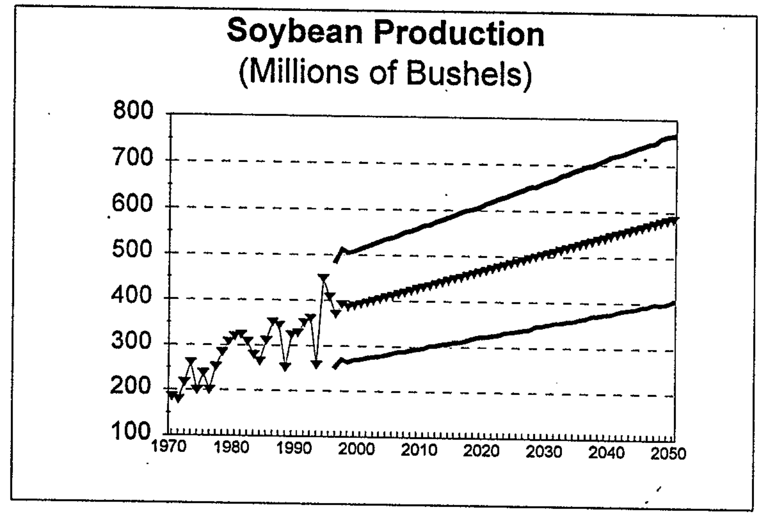
Table 2-3: Iowa Production Forecasts

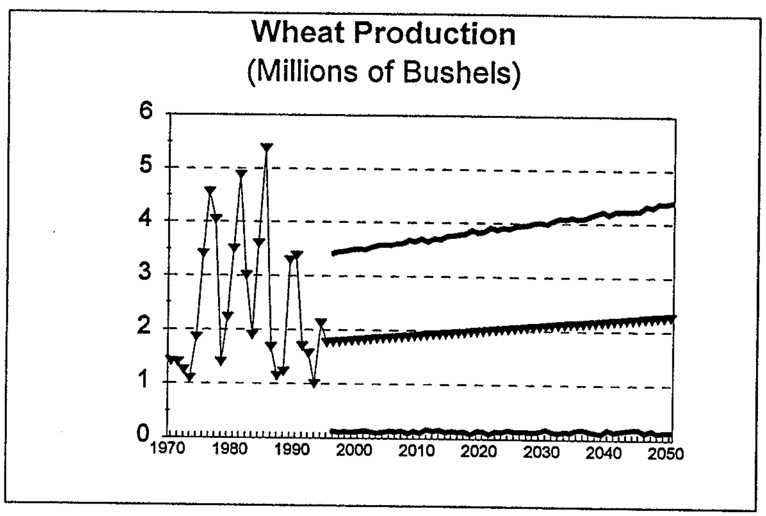
	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	11.9	11.7	11.7	13.4	13.4	13.4	13.3
Soybeans	7.2	8.2	8.8	8.8	8.8	8.8	8.9
Wheat	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Other Grains[1]	1.4	0.8	0.3	0.4	0.4	0.4	0.3
Total	20.6	20.8	20.8	22.6	22.6	22.6	22.5
Annual (ARP)	0.3	2.8	0.9	0.0	0.0	0.0	0.0
Long Term (CRP)	0.0	0.0	2.2	1.3	1.0	1.0	1.0
Grand Total	20.9	23.6	23.9	23.9	23.6	23.6	23.5
Yields (Bushels Per Acre)							
Corn	92.3	108.3	117.7	134.8	148.1	168.1	201.5
Soybeans	32.0	34.8	42.0	44.8	49.0	55.2	65.7
Wheat	32.0	40.7	37.1	40.2	42.2	45.2	50.2
Production (Mil Bushels)							
Corn	1098	1299	1397	1806	1982	2245	2680
Soybeans	232	284	371	392	430	487	584
Wheat	2	4	2	2	2	2	2

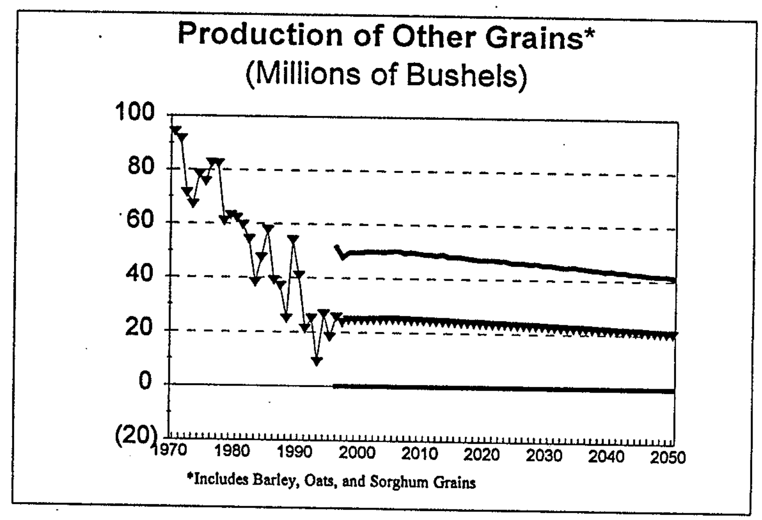
*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Figure 2-8
Iowa Grain Forecasts









Missouri

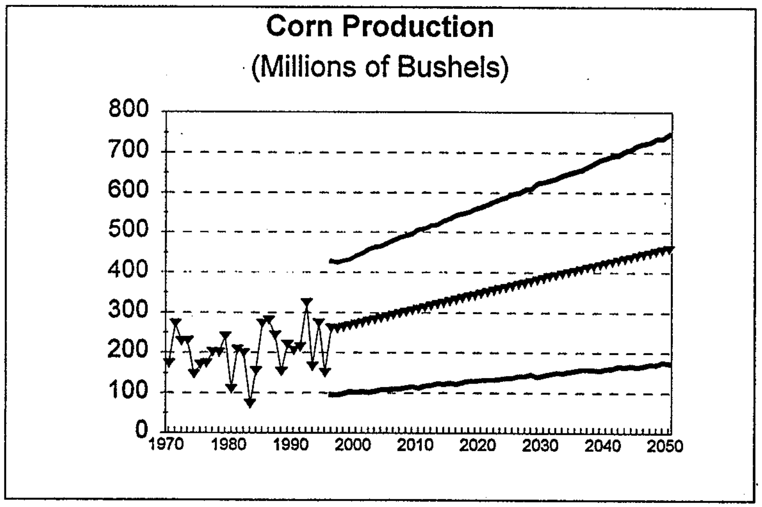
History indicates a total crop area of 8 to 10 million acres with slightly more than 2 million idled acres in recent years. Shown in Table 2-4, the forecast indicates a 300 thousand acre increase each for corn and wheat and a million acre expansion for soybeans during the 50 year forecast interval. A projected increase in sorghum accounts for the 300 thousand acre increase in other crops. The projections suggest a total crop area just shy of 10 million acres during the next 50 years. About 1 million acres of idled land will be returned to crop production and the balance will be maintained in a long term reserve. Trend forecasts indicate a 2050 yield of 209 bushels for corn, 53 bushels for soybeans and 65 bushels for wheat. Grain sorghum yields are projected to increase to 144 bushels per acre by 2050. Average yield for the past three years were 104 for corn, 34 for beans, 42 for wheat and 83 for sorghum. Production forecasts for Missouri are shown graphically in Figure 2-9.

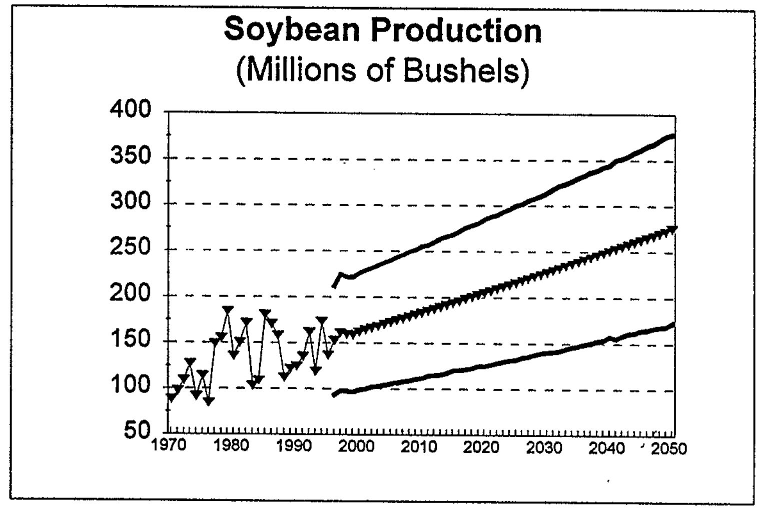
Table 2-4: Missouri Production Forecasts

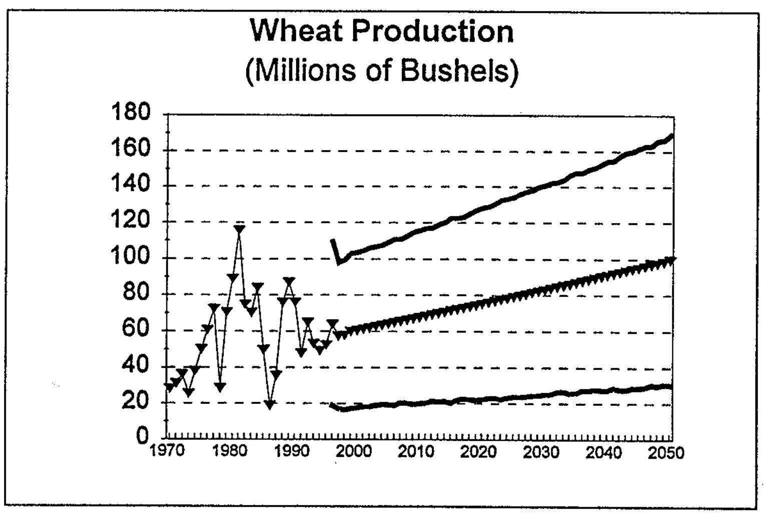
	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	2.7	1.9	1.9	2.3	2.2	2.2	2.2
Soybeans	4.4	5.2	4.2	4.6	4.7	4.9	5.2
Wheat	1.2	1.7	1.2	1.3	1.4	1.4	1.5
Other Grains[1]	0.6	1.2	0.6	0.7	0.7	0.8	0.9
Total	8.9	10.0	7.9	8.9	9.0	9.3	9.8
Annual (ARP)	0.3	1.2	0.4	0.0	0.0	0.0	0.0
Long Term (CRP)	0.1	0.0	1.7	1.1	1.0	1.0	1.0
Grand Total	9.3	11.2	10.0	10.0	10.0	10.3	10.8
Yields (Bushels Per Acre)							
Corn	68.3	80.3	104.3	120.5	138.1	164.5	208.5
Soybeans	24.8	25.0	33.7	35.3	38.9	44.3	53.4
Wheat	30.7	39.3	42.2	45.7	49.5	55.4	65.0
Production (Mil Bushels)							
Corn	182	167	197	271	309	366	459
Soybeans	111	131	143	162	183	216	275
Wheat	38	68	52	60	68	79	100

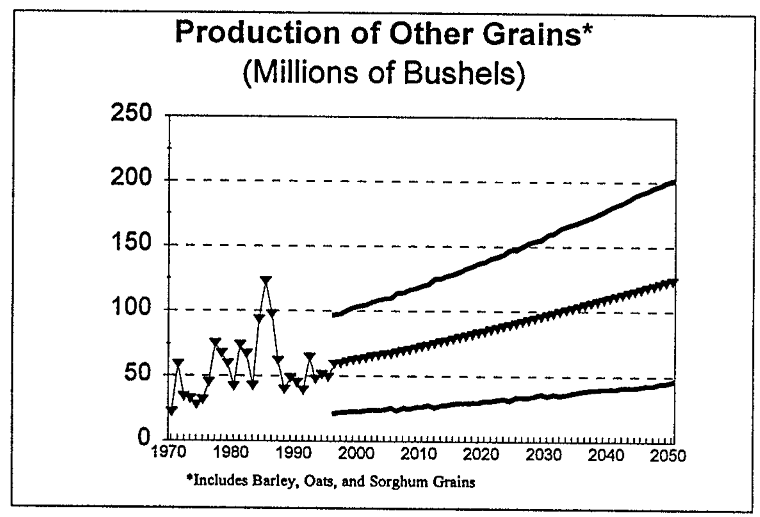
*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Figure 2-9
Missouri Grain Forecasts









Minnesota

History indicates total crop area of about 14.5 in recent years as declines in wheat and other grain area was not offset by increases in corn or soybeans. In the early 1990s, 2.7 million acres were idled in government programs. In Table 2-5, the 50 year projections show total crop area of 16.7 million acres by forecast end. By crop, an increase of 1.3 million acres is forecast for corn. Smaller increases of 300 and 500 thousand acres are projected for soybeans and wheat, respectively. Barley and oats area is steady at 1 million acres. A total of 1.2 million acres is expected to remain in a long-term reserve program. Trend yields are 215 bushels for corn, 58 bushels for soybeans, 51 bushels for wheat and 104 bushels for barley. Historical comparisons for the previous three years are 110 bushels for corn, 34 bushels for soybeans, 33 bushels for wheat, and 56 bushels for barley. Minnesota grain forecasts can be seen in Figure 2-10.

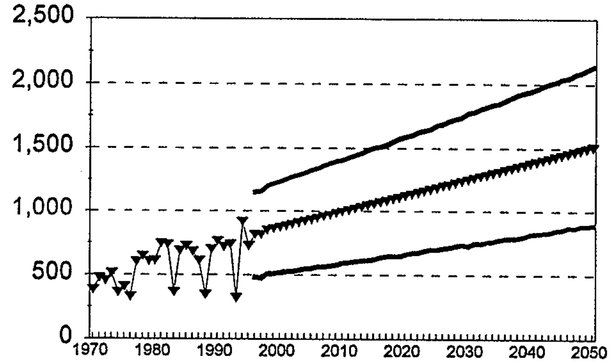
Table 2-5: Minnesota Production Forecasts

	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	5.7	5.7	5.7	6.7	6.7	6.8	7.0
Soybeans	3.9	4.9	5.5	5.8	5.8	5.8	5.8
Wheat	2.6	2.5	2.4	2.6	2.7	2.8	2.9
Other Grains[1]	3.0	2.1	1.0	1.2	1.2	1.1	1.0
Total	15.2	15.2	14.6	16.3	16.4	16.5	16.7
Annual (ARP)	0.2	2.6	0.8	0.0	0.0	0.0	0.0
Long Term (CRP)	0.2	0.0	1.9	1.4	1.4	1.2	1.2
Grand Total	15.6	17.8	17.3	17.7	17.8	17.7	17.9
Yields (Bushels Per Acre)							
Corn	75.0	102.0	110.3	130.3	147.3	172.9	215.4
Soybeans	27.8	32.7	34.3	38.9	42.7	48.4	57.8
Wheat	32.9	45.8	32.8	40.4	42.6	45.8	51.1
Production (Mil Bushels)							
Corn	429	594	655	873	996	1184	1508
Soybeans	110	162	190	224	246	279	335
Wheat	82	114	77	105	113	126	148

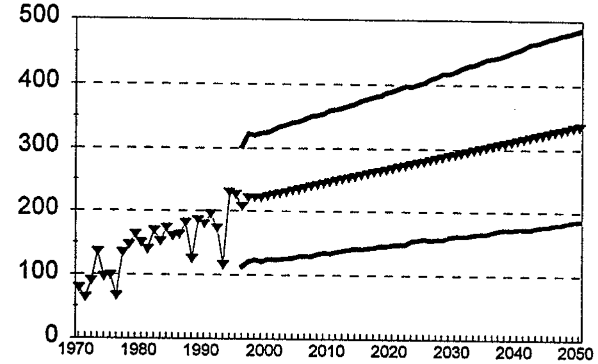
*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Figure 2-10
Minnesota Grain Forecasts

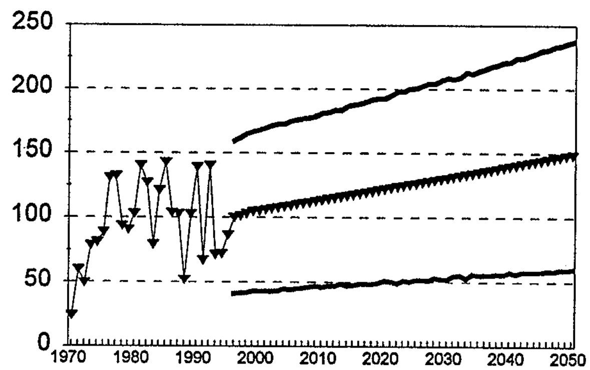
Corn Production
(Millions of Bushels)



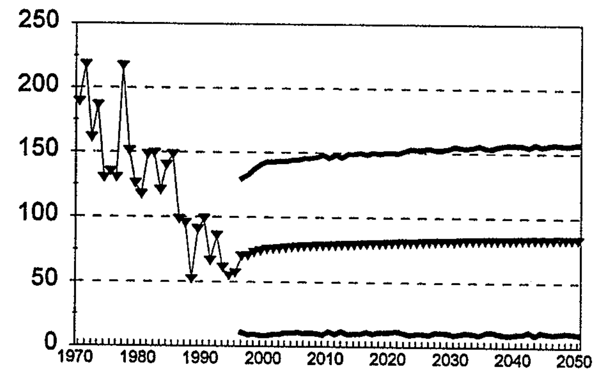
Soybean Production
(Millions of Bushels)



Wheat Production
(Millions of Bushels)



Production of Other Grains*
(Millions of Bushels)



*Includes Barley, Oats, and Sorghum Grains

Wisconsin

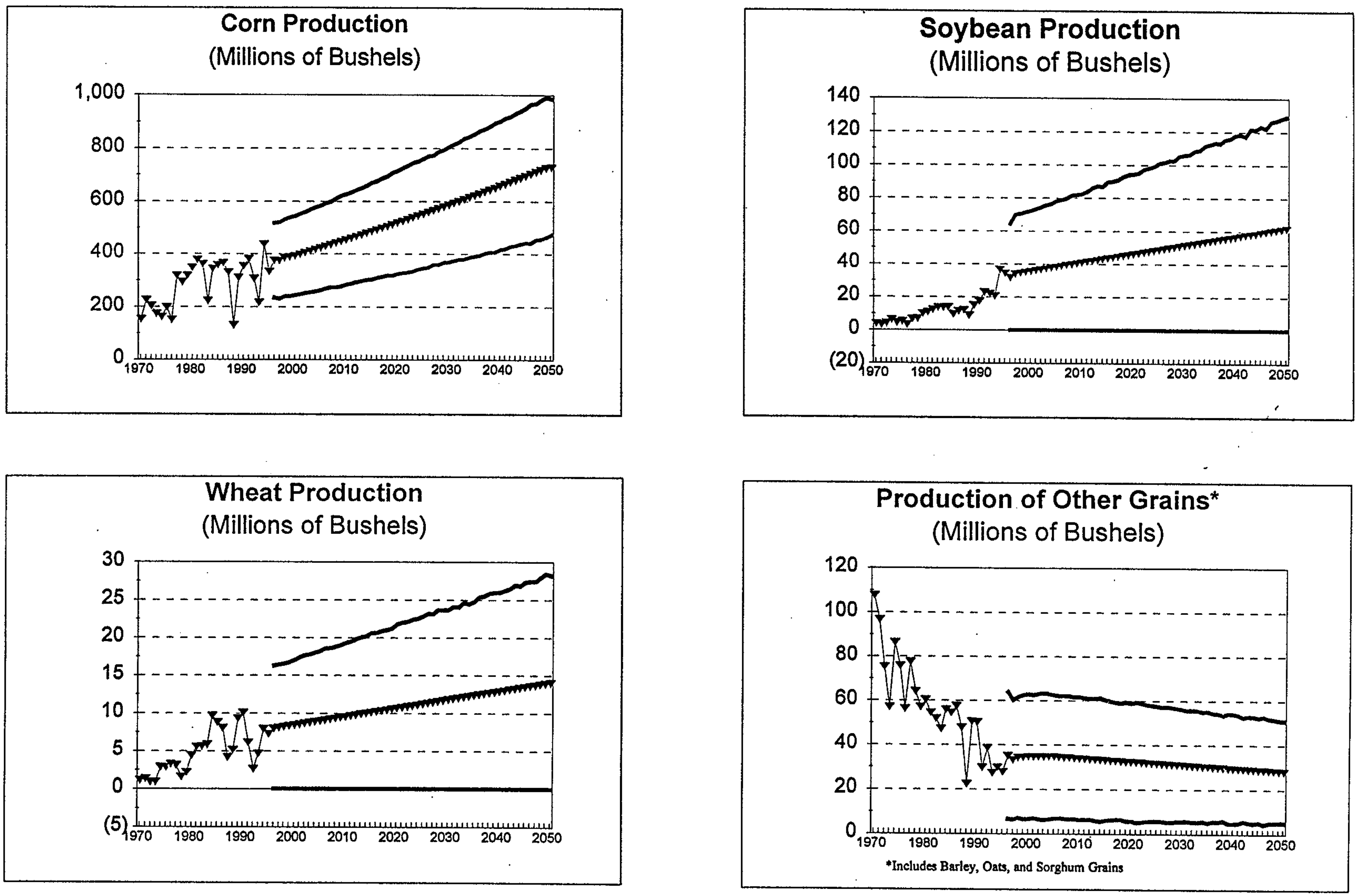
In Table 2-6 it can be seen that the projected crop area of 5.2 million acres for 2050 is one million larger than average of the past three years. By crop, corn is expected to gain 1.1 million acres, soybeans and wheat will increase 100 thousand each while other crops(barley and oats) decline by 100 thousand acres. Over the past three years, 1.1 million acres were idled. Over the next 50 years, 600 thousand of these acres are expected to return to crops with 500 thousand acres remaining in long-term reserve. Long-term trend yields are 193 bushels for corn, 76 bushels for soybeans, 93 bushels for wheat and 62 bushels for barley. Comparative yields for the past three years were 116 bushels for corn, 41 bushels for soybeans, 49 bushels for wheat and 50 bushels for barley. Wisconsin grain production forecasts are shown in Figure 2-11.

Table 2-6: Wisconsin Production Forecasts

	1974*	1984*	1994*	2000	2010	2025	2050
Harvested Area (Mil Acres)							
Corn	2.3	3.0	2.7	3.2	3.3	3.5	3.8
Soybeans	0.2	0.4	0.7	0.8	0.8	0.8	0.8
Wheat	0.1	0.2	0.1	0.2	0.2	0.2	0.2
Other Grains[1]	1.4	0.9	0.6	0.6	0.6	0.6	0.5
Total	4.0	4.5	4.1	4.8	4.9	5.1	5.3
Annual (ARP)	0.1	0.6	0.3	0.0	0.0	0.0	0.0
Long Term (CRP)	0.1	0.0	0.8	0.6	0.6	0.5	0.5
Grand Total	4.2	5.1	5.2	5.4	5.5	5.6	5.8
Yields (Bushels Per Acre)							
Corn	79.0	103.3	116.0	124.7	138.4	158.9	193.1
Soybeans	23.5	32.7	40.7	43.9	50.3	60.0	76.1
Wheat	33.3	52.0	48.9	56.2	63.6	74.8	93.4
Production (Mil Bushels)							
Corn	178	309	329	393	454	552	729
Soybeans	5	12	31	36	41	49	62
Wheat	2	8	7	8	10	11	14

*Three year moving average of the indicated, preceding, and succeeding years
[1]barley, oats, sorghum

Figure 2-11
Wisconsin Grain Forecasts



3.0 CONSUMPTION

This section identifies the markets and industries which demand US grains and oilseeds. Sections 3-1 through 3-4 describe these markets for corn, soybeans, wheat and other grains, respectively. Each of these analyses contains two parts. The first part details domestic uses while the second one describes export markets. In each case, an attempt is made to locate the main US geographic areas where the demand occurs. The location of domestic consumption is determined both by the location of manufacturing industries which process grain and oilseeds, such as ethanol and food processing industries, as well as by the location of livestock and poultry industries, which use grain for feed. Exported grain and oilseeds leave the US from certain ports which have appropriate handling facilities. In a sense, these ports also represent US geographic areas where grain and oilseed are demanded and will be identified. Section 3-5 provides forecasts of grain and oilseed consumption where the data are adequate for making such projections.

3.1 Corn

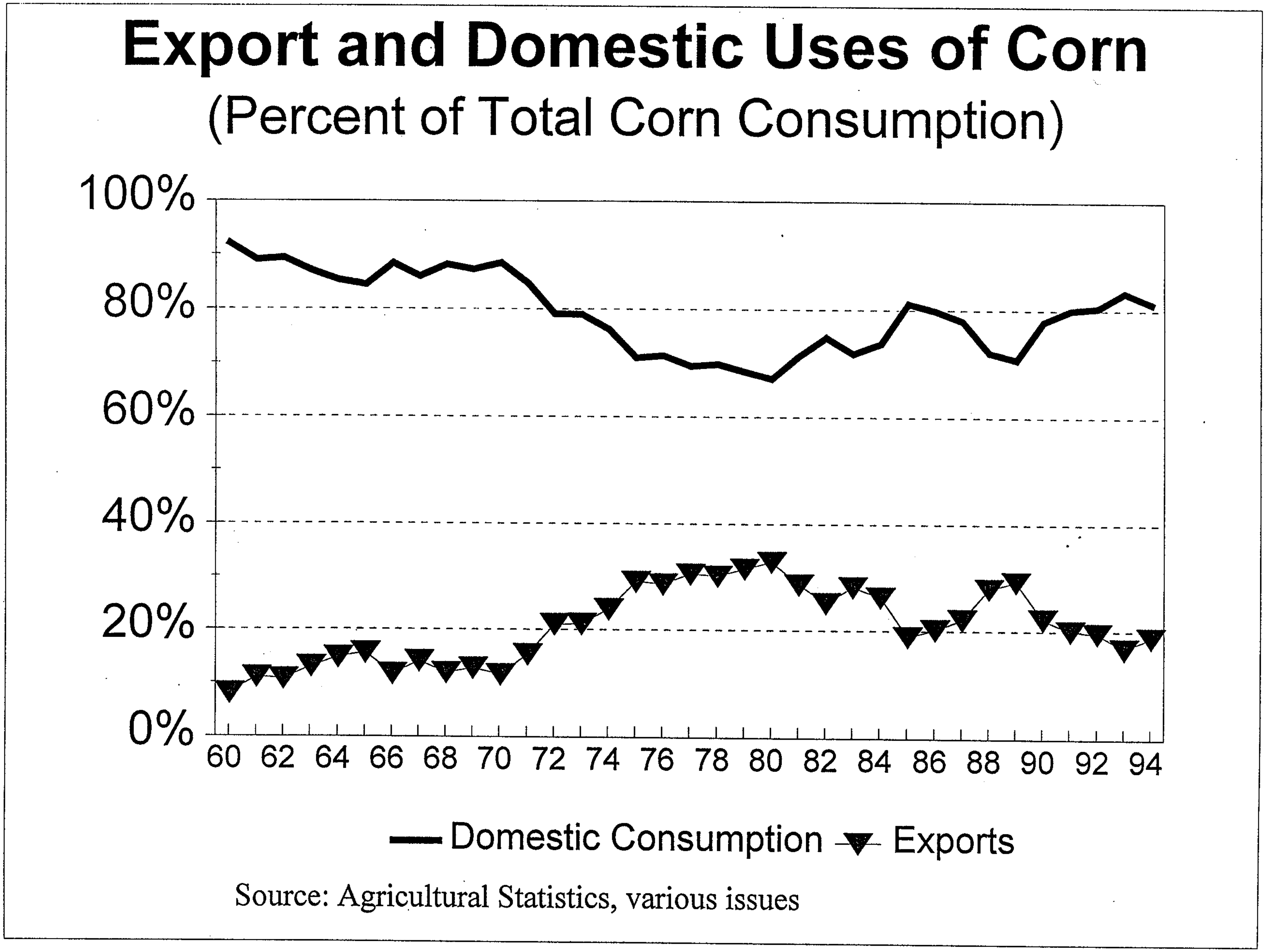
Table 3-1 shows how US corn has been consumed at the national level annually between 1980 and 1993. Over the period, total domestic consumption's share of total consumption increased from approximately 70% to over 80%, shown graphically in Figure 3-1. This increase came at the expense of exports, whose share declined by a concomitant ten percentage points. The shift to domestic consumption has been driven by the food and industrial uses categories, whose shares of total corn consumption have steadily increased over the period. Although there is a lot of variance in feed's share of total consumption, its trend has remained relatively constant, maintaining an average of 60% over the period.

Table 3-1

Consumption of US Corn Production (Millions of Bushels)											
Year*	High Fructose Corn Syrup	Glucose and Dextrose	Starch	Alcoholic Beverage	Cereals	Seed	Fuel	Feed and Residual	Total Domestic Consumption	Exports	Total Consumption
1980	165	156	151	78	54	20	35	4,232	4,891	2,391	7,282
1981	183	160	146	86	53	19	86	4,244	4,977	1,997	6,974
1982	214	165	150	110	60	15	140	4,573	5,427	1,821	7,248
1983	265	167	161	88	70	19	160	3,876	4,806	1,886	6,692
1984	310	167	172	84	81	21	232	4,115	5,182	1,850	7,032
1985	327	169	190	83	93	19	271	4,114	5,266	1,227	6,493
1986	338	171	214	85	109	16	290	4,669	5,892	1,492	7,384
1987	358	173	226	77	113	17	279	4,798	6,041	1,716	7,757
1988	361	182	223	107	114	19	287	3,941	5,234	2,026	7,260
1989	368	193	230	109	115	19	321	4,389	5,744	2,368	8,112
1990	379	200	232	80	114	19	349	4,663	6,036	1,725	7,761
1991	392	210	237	81	116	20	398	4,878	6,332	1,584	7,916
1992	414	215	238	83	117	19	426	5,301	6,813	1,663	8,476
1993	442	223	244	83	118	20	458	4,767	6,355	1,275	7,630
1994	455	225	250	82	118	20	510	5,350	7,010	1,625	8,635

* Marketing year beginning September 1.
Source: Feed Situation and Outlook Yearbook, USDA, 1994.

Figure 3-1


Export and Domestic Uses of Corn
(Percent of Total Corn Consumption)
100%
80%
60%
40%
20%
0%
60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94
Domestic Consumption
Exports
Source: Agricultural Statistics, various issues

3.1.1 Domestic Consumption

Domestic corn consumption includes corn that is used for food, seed, and industrial (FSI) purposes and corn that is used for feed. As can be seen in Figure 3-2, FSI uses of corn have been growing faster than feed uses. Over the fourteen year period, FSI use increased from 13.5% to 25.0% of domestic consumption. The discussions below characterize these different types of domestic corn consumption.

Food, Seed, and Industrial Uses (FSI)

There are over 3,500 different FSI uses for corn. For purposes of this study, these uses have been aggregated into the following four groups: 1) sweeteners (including high-fructose corn syrup, glucose, and dextrose) and starches, 2) fuel alcohol, 3) beverage alcohol, and 4) cereals and other products (including dry milled products, confectionery, baked goods, etc.). Seed use will not be addressed because it constitutes such a small percentage of corn consumption.

For each group, we attempted to locate the main US production regions. This included identifying the primary production facilities for each FSI product group and evaluating industry data indicative of economic activity. Estimated production levels were then used to derive the amount of corn required for each purpose in each region.

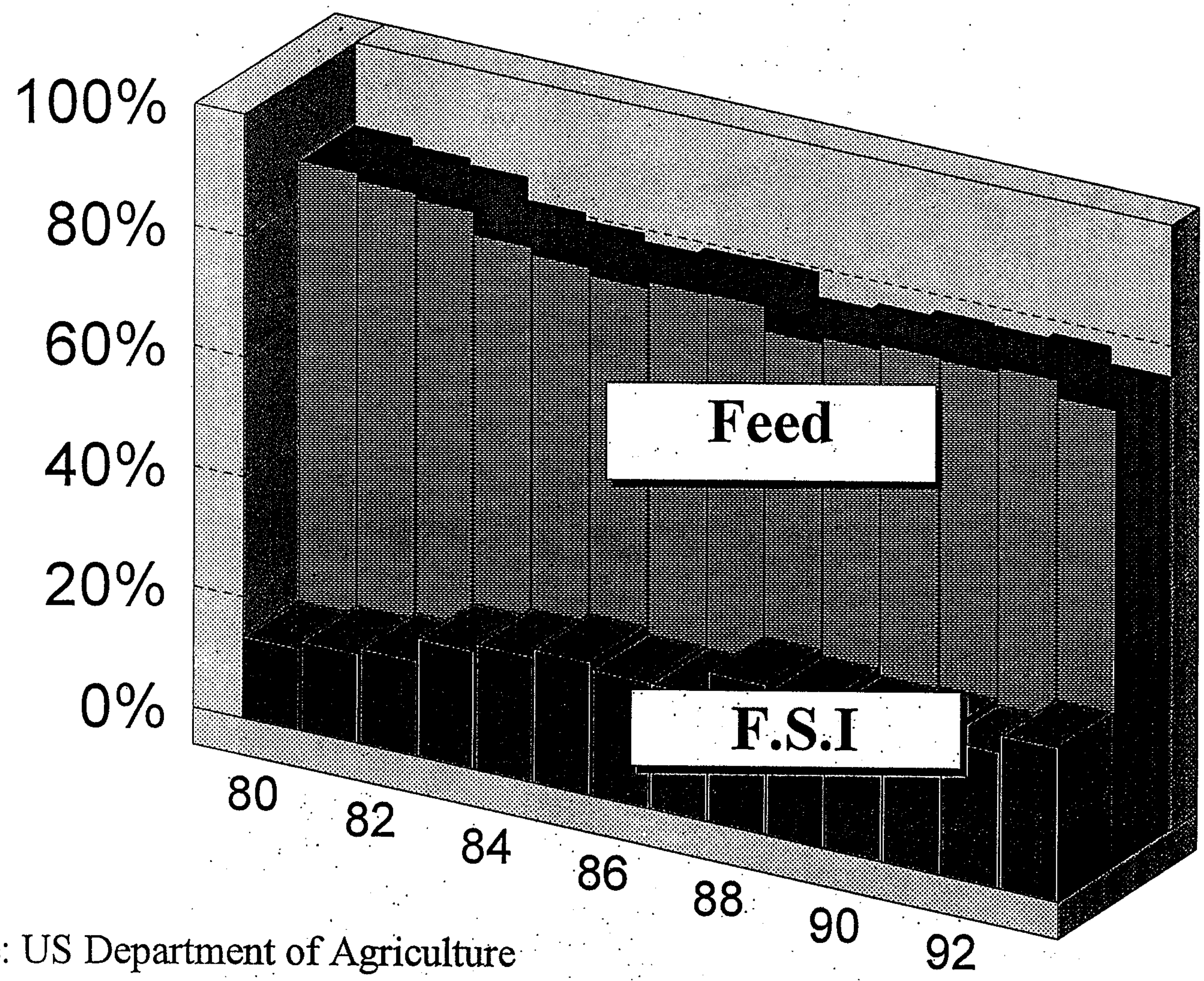
Several sources of information were used to identify the production facilities and to develop the state allocations of FSI corn usage. Initially, the corn marketing board or relevant agency for each state was contacted. These organizations included the Minnesota Department of Agriculture, the Wisconsin Corn and Soybean Association, the Iowa Corn Promotion Board, the Illinois Corn Marketing Board, and the Missouri Department of Agriculture. In addition, a number of trade associations provided valuable data and information, including the American Corn Millers Federation, the Corn Refiners Association, the Renewable Fuels Association, the Distilled Spirits Council of the United States, Information Resources, Inc., and the Illinois Corn Growers Association. Finally, information obtained from the US Department of Agriculture was useful to the analysis. The 1992 Census of Manufactures was the main source used to estimate regional production levels of industrial users of corn.

Sweeteners and Starches

Sweeteners and starches together account for the largest share of FSI use (See Table 3-1). However, as shown in Figure 3-3, that share has been falling steadily since the early 80s and is now approaching 56%. This decline can be attributed to the relatively faster growth rate in the amount of corn used for fuel alcohol.

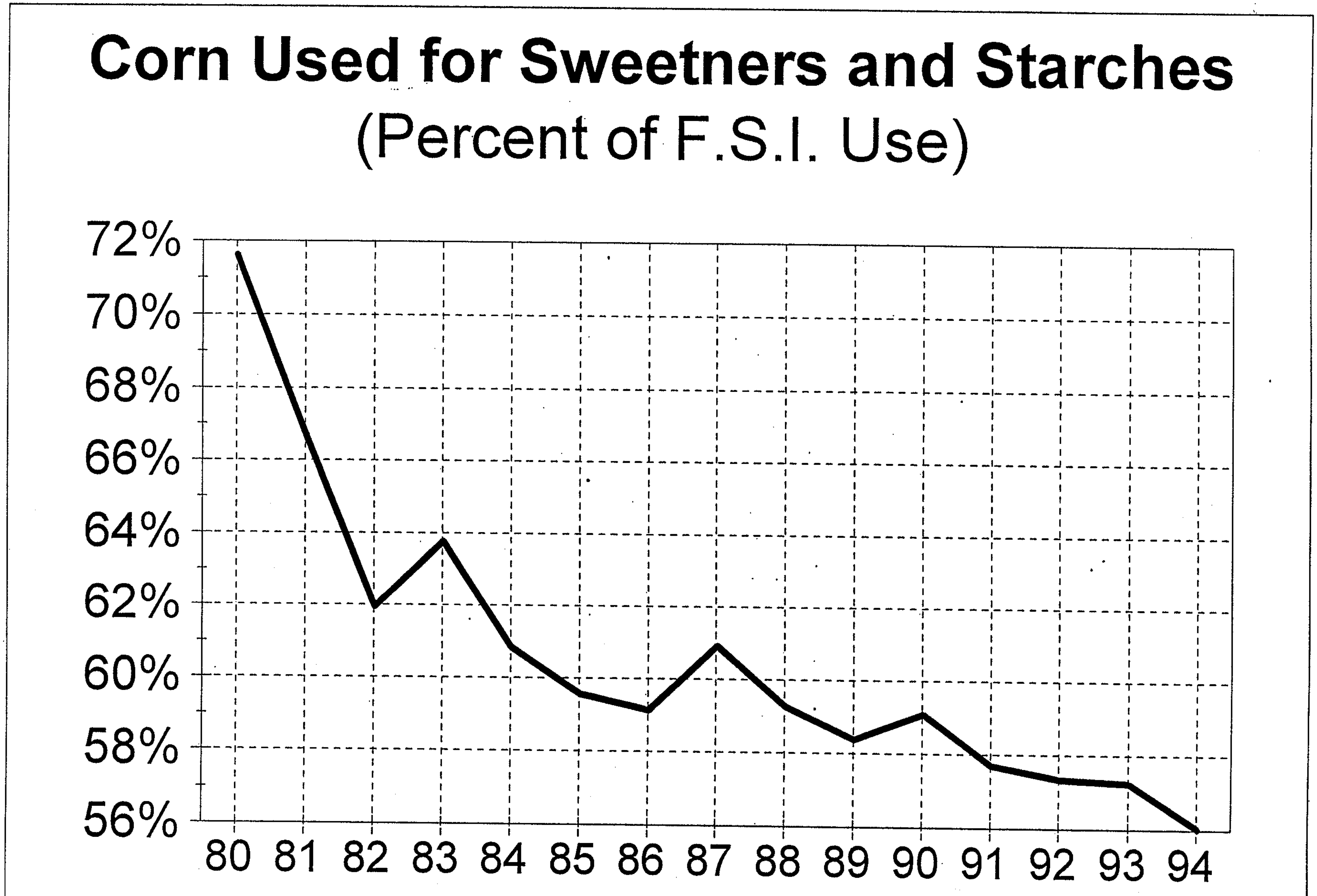
Figure 3-2

Types of Domestic Corn Consumption
(Percent of Domestic Corn Consumption)



Source: US Department of Agriculture

Figure 3-3



Source: US Department of Agriculture, Economic Research Service, 1994.

Manufacturers predominately use the wet corn milling process to produce sweeteners (high fructose corn syrup, glucose, and dextrose), starches, and byproducts such as oil, gluten feed and gluten meal. While ethanol and beverage alcohol production utilize the wet corn milling process, the Census Bureau has assigned them to different industries since they require further refinements beyond the typical wet milling process. In this light, the corn sweeteners and starch industries together accounted for approximately 94% of the US wet corn milling output in 1992.

Iowa, Illinois, and Indiana are the three biggest producers of wet corn milling products. In 1992, these three states accounted for 73% of the US value added in the wet corn milling industry, down from 77% in 1987. To avoid disclosing information about individual proprietors, the Census Bureau did not release any economic related data for the remaining states. However, they did provide broad employment ranges for the few states that account for the rest of the US production. From these ranges, it appears that Tennessee is the next largest producer, followed by Kansas and Ohio.

1993 state estimates of the amount of corn used by the wet corn milling industry are shown in Table 3-2. To develop these estimates, we calculated the product of each state's 1992 share of total US value added in SIC group 2046 (Wet Corn Milling) and the total amount of corn used by US wet corn milling industry (the sum of columns 2-4 in Table 3-1). Table 3-3 lists the names and locations of the US wet corn millers.

Table 3-2
Amount of Corn Used to Produce Sweeteners and Starches by State
1993/1994*

	1992 Value Added in SIC 2046		Corn Usage
State	(Million Dollars)	(Percent of US)	(Million Bushels)
Iowa	1,078	33	300
Illinois	810	25	227
Indiana	498	15	136
Other	872	27	245
US Total	3,258	100	909

*Market year beginning September 1.
Source: 1992 Census of Manufactures.

Table 3-3: Location of US Wet Corn Millers

Company	City	State
Archer Daniels Midland (ADM)	Decatur	IL
ADM	Peoria	IL
ADM	Cedar Rapids	IA
ADM	Clinton	IA
American Fructose	Decatur	AL
American Fructose	Hammond	IN
American Fructose	Dimmitt	TX
Cargill, Inc.	Eddyville	IA
Cargill, Inc.	Cedar Rapids	IA
Cargill, Inc.	Dayton	OH
Cargill, Inc.	Memphis	TN
Golden Technologies, Inc.	Johnstown	CO
CPC International, Inc.	Stockton	CA
CPC International, Inc.	Argo	IL
CPC International, Inc.	Pekin	IL
CPC International, Inc.	Winston-Salem	NC
Grain Processing Corp.	Muscatine	IL
Minnsota Corn Processing	Marshall	MN
Minnsota Corn Processing	Columbus	NE
National Starch and Chemical Co.	Indianapolis	IN
National Starch and Chemical Co.	Kansas City	MO
Penford Products	Cedar Rapids	IA
Roquette America	Keokuk	IA
A.E. Staley Manufacturing Co.	Decatur	IL
A.E. Staley Manufacturing Co.	Lafayette, North	IN
A.E. Staley Manufacturing Co.	Lafayette, South	IN
A.E. Staley Manufacturing Co.	Loudon	TN

Source: US Department of Agriculture, Economic Research Service, 1992.

Ethanol

Since the early 80s, relatively rapid growth in the ethanol industry has contributed to fuel alcohol's increasing percentage of FSI corn use, shown in Figure 3-4. Illinois and Iowa are the two largest producers of ethanol, together accounting for almost 65% of total ethanol production in the US. State estimates of the amount of corn used in ethanol production were developed by using state shares of ethanol production to allocate the total amount of corn used to produce fuel alcohol (shown in Table 3-1). Table 3-4 summarizes the state level estimates of ethanol corn usage for the 1994 marketing year. Table 3-5 lists the principal ethanol producing facilities that are currently in operation.

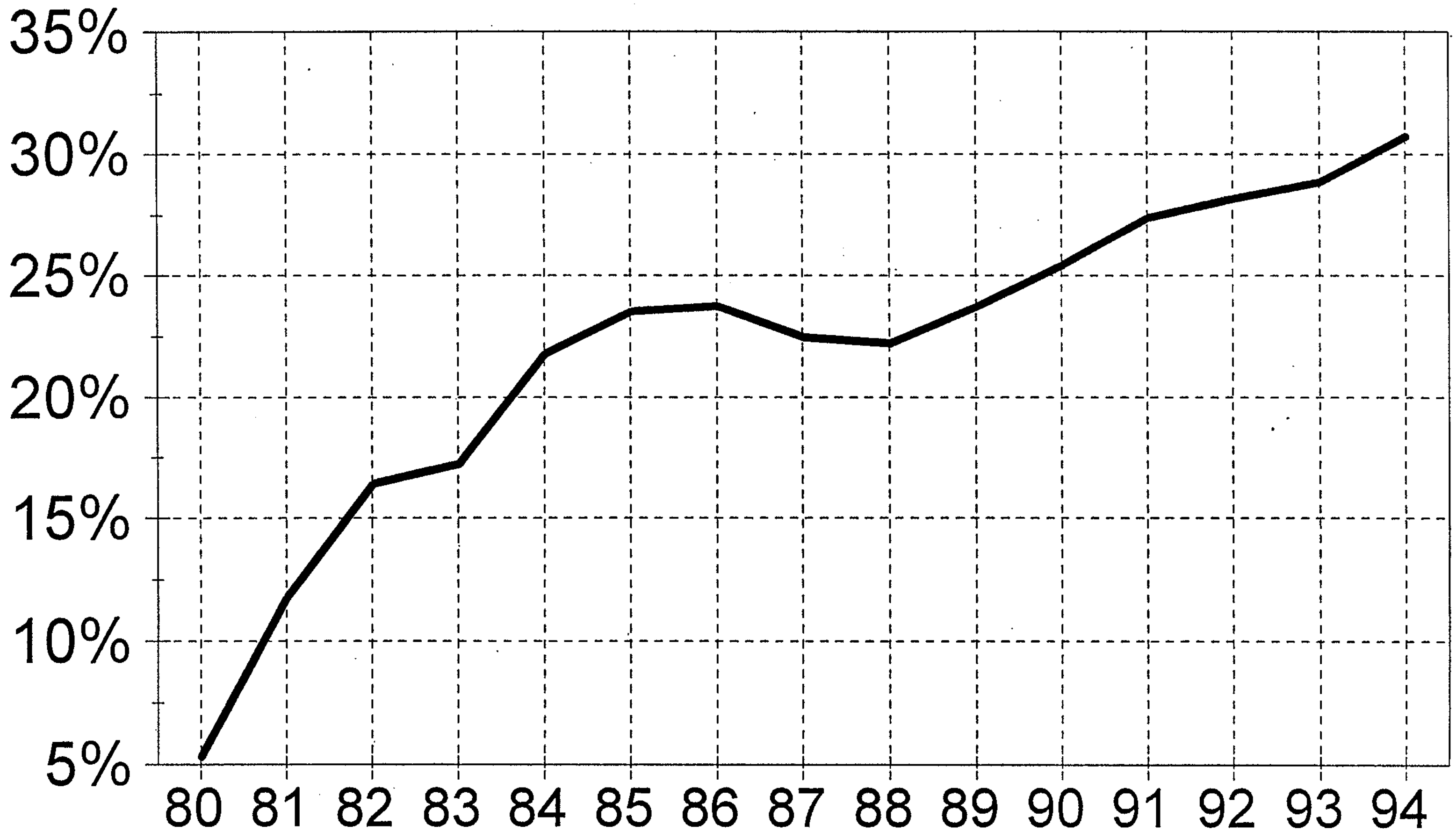
Table 3-4
Corn Used for Ethanol Production by State
1994/95 Marketing Year

State	Ethanol Production* (Percent of US)	Corn Used for Ethanol Production (Millions of Bushels)
Illinois	40.04	204.19
Iowa	24.27	123.76
Nebraska	9.37	47.79
Indiana	5.94	30.32
Ohio	4.55	23.18
Minnesota	4.02	20.51
Tennessee	2.94	14.98
Kansas	2.49	12.70
North Dakota	2.31	11.77
New Mexico	0.94	4.82
South Dakota	0.87	4.42
Washington	0.54	2.75
Idaho	0.42	2.14
South Carolina	0.42	2.14
California	0.40	2.03
Louisiana	0.17	0.89
Montana	0.17	0.89
Colorado	0.10	0.50
Texas	0.04	0.21
Total US	100.00	510**

*Source: National Corn Growers Association.
**Source: US Department of Agriculture, Economic Research Service, 1994.

Figure 3-4

Corn Used for Fuel Alcohol
(Percent of F.S.I. Use)



Source: US Department of Agriculture, Economic Research Service, 1994.

Table 3-5: Ethanol Production Facilities

Company	City	State	Capacity (ml gallons)	1994 Production (ml gallons)*
ADM	Decatur	IL	310.0	NA
ADM	Peoria	IL	200.0	NA
ADM	Cedar Rapids	IA	200.0	NA
ADM	Clinton	IA	160.0	NA
Pekin Energy Company	Pekin	IL	100.0	100.0
New Energy Co. of Indiana	South Bend	IN	90.0	88.0
Minnesota Corn Processors	Columbus	NE	85.0	80.0
Cargill, Inc.	Blair	NE	NA	75.0
South Point Ethanol	South Point	IN	65.0	NA
Minnesota Corn Processors	Marshall	MN	40.0	40.0
A.E. Staley Manufacturing	Loudon	TN	42.0	42.0
Cargill, Inc.	Eddyville	IA	35.0	30.0
High Plains Corp	York	NE	NA	30.0
Ag Processing, Inc.	Omaha	NE	NA	30.0
Nebraska Energy	Aurora	NE	NA	30.0
Chief Ethanol Fuels, Inc.	Hastings	NE	28.5	28.0
ADM	Walhalla	ND	28.0	NA
Midwest Grain Products	Atchison	KS	26.0	26.0
High Plains	Colwich	KS	20.8	20.0
Roquette America	Keokuk	IA	18.0	14.5
Corn Plus	Winnebago	MN	15.0	15.0
Heartland Corn Products	Winthrop	MN	NA	14.0
Midwest Grain Producers	Pekin	IL	12.0	12.0
Alchem Limited	Grafton	ND	12.0	12.0
Giant Industries	Portales	NM	14.0	13.5
Grain Processing Corp.	Muscatine	IA	10.0	NA
Broin Enterprises, Inc.	Scotland	SD	10.0	10.0
Reeve Agri Energy, Inc.	Garden City	KS	10.0	9.0
Manildra Energy, Inc.	Hamburg	IA	6.0	6.0
Burns Philp	Kingstree	SC	6.0	6.0
Morris Ag Energy	Morris	MN	5.0	5.0
Heartland Grain Fuel	Abeerdeen	SD	4.0	4.0
J.R. Simplot Co.	Caldwell	ID	4.0	4.0
J.R. Simplot Co.	Burley	ID	4.0	4.0
Wyoming Ethanol	Torrington	WY	NA	4.0
Georgia Pacific Corp.	Bellingham	WA	3.5	3.2
Parallel Products	Rancho Cucamonga	CA	3.0	3.0
Golden Cheese of California	Corona	CA	2.7	2.7
Reyncor Industrial	Shreveport	LA	NA	2.5
Alcotech, Inc.	Ringling	MT	2.0	NA
Kraft, Inc.	Glenville	IL	1.5	1.5
Permeate Refining	Hopkinton	IA	NA	1.5
Ag Power of Colorado	Golden	CO	NA	1.4
Minnesota Clean Fuels	Dundas	MN	1.2	1.0
ESE Alcohol, Inc.	Leott	KS	1.0	0.6
Pabst Brewing Co.	Olympia	WA	0.7	0.7
Dairyman's Cooperative	Tulare	CA	0.7	NA
Jonton Alcohol	Edinburg	TX	NA	0.6
Vienna Correctional Center	Vienna	IL	0.5	0.5

Source: Information Resources, Inc.
*Data from the Renewable Fuels Association

Beverage Alcohol

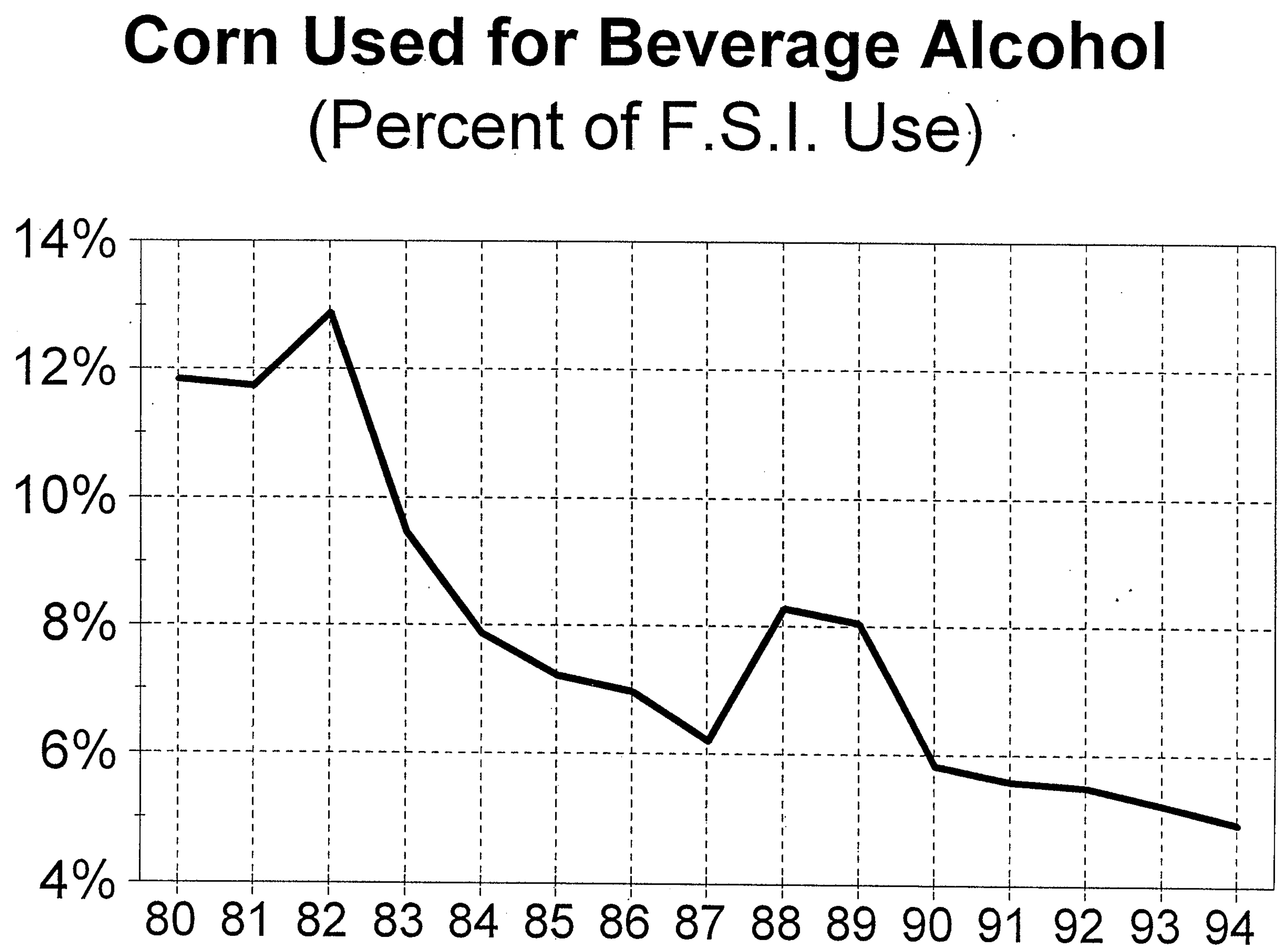
As shown in Figure 3-5, the beverage alcohol percent of FSI uses of corn has dropped consistently over the past ten years: from almost 12% of FSI use in the early 80s to approximately 5% in the mid 90s. Table 3-6 presents state level estimates of the amount of corn used to produce beverage alcohol. These estimates are based on 1993 (the most recent year available) data provided by the Distilled Spirits Council of the United States (DSCUS). The DSCUS records state-level production data on distilled products. State shares of corn based alcohol production (whisky, gin, vodka, and alcohol and other spirits) were used to allocate to the state level the amount of corn that is used nationally to make beverage alcohol[1]. As can be seen, Illinois and Iowa consume most of the corn used to make beverage alcohol, as they produced over 80% of the corn based alcohol produced in the US in 1993. Table 3-7 lists the location of the major distillers in the US.

Table 3-6
Corn Used for Beverage Alcohol Production by State
1994/95 Marketing Year

State	Beverage Alcohol Production (000 Proof Gallons)					Total Beverage Alcohol Production	Corn Used for Beverage Alcohol Production
	Gin	Vodka	Alcohol & Spirits	Whiskey	Total	(% of US)	(ml Bushels)
California	0	0	21,704	1	21,705	1.5%	1.25
Florida	0	0	4,715	0	4,715	0.3%	0.27
Illinois	2,424	0	757,989	0	760,414	53.6%	43.95
Indiana	7,048	2,702	3,901	4,621	18,272	1.3%	1.06
Iowa	1,675	0	377,507	0	379,182	26.7%	21.91
Kentucky	0	0	0	39,862	39,862	2.8%	2.30
Michigan	0	0	429	0	429	0.03%	0.02
Minnesota	0	0	2,677	0	2,677	0.2%	0.15
Ohio	0	0	803	0	803	0.06%	0.05
Tennessee	0	0	51,030	13,458	64,488	4.6%	3.73
Texas	0	0	45,931	0	45,931	3.2%	2.65
Virginia	0	0	2,132	162	2,295	0.2%	0.13
Other	1,779	1,006	75,225	19	78,029	5.5%	4.51
Total	12,926	3,708	1,344,044	58,123	1,418,801	100%	82.00

[1] Such an allocation assumes that the amount of corn consumed is proportional across different alcohol types.

Figure 3-5



Source: US Department of Agriculture, Economic Research Service, 1994.

Table 3-7: Location of US Distillers

Company	City	State
Alaska Mountaintop Spirits Co.	Anchorage	AK
Alambic, Inc.	Ukiah	CA
Bonny Doon Vineyards	Santa Cruz	CA
Carneros Alambic Distillery	Napa	CA
Creekside Vineyards	Suisun	CA
Domaine Charbay	St. Helena	CA
Gaetano Specialties Ltd.	Beverly Hills	CA
E & J Gallo Winery	Modesto	CA
Jepson Vineyards	Ukiah	CA
SKYY Spirits, Inc.	San Franscisco	CA
St. George Spirits	Oakland	CA
Heublein, Inc.	Farmington	CT
United Distillers Glenmore	Stamford	CT
Florida Distillers Co.	Lake Alfred	FL
Ron Matusalem Company	Miami	FL
Todhunter International, Inc.	Lake Alfred	FL
Viking Distillery, Inc.	Albany	GA
Silver Creek Distillers, Inc.	Rigby	ID
Archer Daniels Midland Co.	Decatur	IL
Barton Brands Ltd.	Chicago	IL
Jim Beam Brands Co.	Deerfield	IL
Consolidated Distilled Products Inc.	Chicago	IL
Grain Processing Corp.	Muscatine	IA
Midwest Grain Products, Inc.	Atchison	KS
Age International Inc.	Frankfort	KY
Jim Beam Brands Co.	Clermont	KY
Blanton Distilling Co.	Frankfort	KY
Brown-Forman Beverage Co.	Louisville	KY
Commonwealth Distillery Co.	Lawrenceburg	KY
Heaven Hill Distilleries Inc.	Bardstown	KY
Maker's Mark Distillery	Bardstown	KY
Ben F. Medley & Company	Stanley	KY
Sazerac Company, Inc.	New Orleans	NO
White Rock Distilleries, Inc.	Lewiston	ME
Majestic Distilling Co.	Baltimore	MD
Montebello Brands Inc.	Baltimore	MD
M.S. Walker, Inc.	Somerville	MA
Hiram Walker & Sons, Inc.	Detroit	MI
Marie Brizard Wines and Spirits U.S.A.	Princeton	MN
Phillips Beverage Company	Minneapolis	MN
United States Distilled Products Co.	Princeton	MN
McCormick Distilling Co.	Weston	MO
David Sherman Corporation	St. Louis	MO
Jenkins Spirits Corp., Ltd.	Londonderry	NH
The Black Prince Distillery	Clifton	NJ
Laird & Company	Scobeyville	NJ
Austin, Nichols & Co. Inc.	New York	NY
Royal Kedem Wine Corporation	Brooklyn	NY
Joseph E. Seagram & Sons, Inc.	New York	NY
Paramount Distillers Inc.	Cleveland	NY
Clear Creek Distillery	Portland	OR
Hood River Distillers Inc.	Hood River	OR
Charles Jacquin et Cie	Philadelphia	PA
Jack Daniel Distillery	Lynchburg	TN
George A. Dickel Distilling Co.	Tullahoma	TN
A. Smith Bowman Distillery	Fredericksburg	VA
James A. Robertson Co.	Seattle	WA

Source: Distilled Spirits Council of the United States, September 1994.

Cereals and Other Dry Milled Products

Dry milled products consist of a relatively small proportion of the total U.S. FSI corn uses: 7% in 1994/5. Shown in Figure 3-6, this share has dropped over two percentage points since 1987.

Table 3-8 presents state level estimates of the amount of corn used to produce cereals and other dry milled products. It can be seen that the study area accounts for about 60% of the corn used for this purpose. These figures are based upon estimates of average daily corn grinds for each dry corn mill operating in 1995, shown in Table 3-9. Multiplying the daily grind estimates by 350[2] yielded an annual corn grind estimate for each facility; these annual estimates were then aggregated by state to produce state level estimates of annual corn grind. The final step entailed calibrating the state level estimates to conform with USDA's estimate of 118 million bushels of corn used in dry corn mills in the 1994-1995 marketing year.

The American Corn Millers Federation provided most of the daily grind data for each dry milling facility. In instances where only ranges of daily grinds were provided, we used the midpoint of the ranges. The amount of corn used in Iowa dry corn mills is based upon data obtained from the Iowa Corn Promotion Board. For a few of the smaller facilities, daily grind data were not available and we had to obtain estimates directly from company representatives.

Table 3-8
Corn Used for Cereals and Other Dry Milled Products by State: 1994/95 Marketing Year

State	Annual Corn Grind (Percent of US)	Corn Used for Cereals and Other Dry Milled Products (Millions of Bushels)
Illinois	38.4	45.4
Indiana	13.8	16.3
Iowa	5.6	6.6
Kansas	14.3	16.9
Missouri	3.1	3.6
Nebraska	10.8	12.7
Wisconsin	13.0	13.0
US Total	100.0	118

[2] The assumption that dry corn mills operate 350 days a years, on average, is based upon discussions with industry analysts.

Figure 3-6

Corn Used for Cereal Products
(Percent of F.S.I. Use)

Source: US Department of Agriculture, Economic Research Service, 1994.

Table 3-9: Location of U.S. Dry Corn Mills

Company	City	State
The American Milling Co.	Cahokia	IL
Lauhoff Grain Co.	Danville	IL
J.R. Short Milling Co.	Kankakee	IL
Cargill, Inc.	Paris	IL
Quaker Oats Co.	Cedar Rapids	IA
Natural Products, Inc.	Grinnell	IA
Hodgson Mill, Inc.	Gainesville	MO
Quaker Oats Co.	St. Joseph	MO
Conagra Flour Milling	Decatur	AL
Hearn & Rawlins, Inc.	Seaford	DE
Southeastern Mills, Inc.	Rome	GA
Arnett's Milling Co.	Tifton	GA
Wilkes Mill & Feed Co., Inc.	Washington	GA
Azteca Milling Co.	Evansville	IN
Cargill, Inc.	Indianapolis	IN
Agricor, Inc.	Marion	IN
Wilson's Corn Products, Inc.	Rochester	IN
Conagra Corn Processing	Atchison	KN
Cereal Food Processors, Inc.	Bonner Springs	KN
Scott's Auburn Mills, Inc.	Auburn	KY
Crescent Mills	Hopkinsville	KY
Hopkinsville Milling Co.	Hopkinsville	KY
Weisenberger Mills, Inc.	Midway	KY
Wilkins-Rodgers, Inc.	Ellicott City	MD
The Attala Co.	Kosciusko	MS
Lauhoff Grain Co.	Crete	NE
ADM Milling Co.	Lincoln	NE
New Hope Mills	Moravia	NY
Champlain Valley Milling Corp.	Westport	NY
North State Milling Co., Inc	Greensboro	NC
King Milling Co.	King	NC
Midstate Mills, Inc.	Newton	NC
House-Autry Mills, Inc.	Newton Grove	NC
Lakeside Mills, Inc.	Rutherfordton	NC
Lakeside Mills, Inc.	Seven Springs	NC
Jewel Evans Family Foods, Inc.	Bidwell	OH
Clifton Mill Co.	Clifton	OH
Shawnee Milling Co.	Shawnee	OK
H.R. Wentzel Sons, Inc.	Landisburg	PA
White Lilly Foods Co.	Knoxville	TN
Spaulding Milling Co.	Manchester	TN
Clover Hill Milling Co.	Maryville	TN
Arrowhead Mills, Inc.	Hereford	TX
Azteca Milling Co.	Plainview	TX
Pioneer Flour Mills	San Antonio	TX
Big Spring Mill, Inc.	Elliston	TX
ADM Milling Co.	Milwaukee	WI

Source: American Corn Millers Federation

Feed

In Table 3-1 it can be seen that the livestock and poultry industry is the largest market for corn, accounting for approximately 60% of the total consumption of US corn. Of the animal feed fed to livestock and poultry, corn currently accounts for approximately 85% of the feed grains, 62% of the concentrates, and 46% of the total feed. As shown in Figure 3-7 through 3-9, these percentages have been steadily increasing since 1984.

To evaluate how the regional patterns of animal feed consumption have been changing, we developed estimates of the number of grain consuming animal units (GCAUs) in each state for 1983-1993. The method used to construct these series is similar to the one used by USDA to estimate the number of GCAUs for the nation. In short, average relative feed rates (the relative amount of grain concentrates - expressed in terms of the equivalent feeding value of corn - consumed by different classes of livestock and poultry) are used as weights in aggregating livestock and poultry inventories into a single series. The state livestock and poultry inventories used to develop these series were obtained from USDA.

Figure 3-10 graphically presents historical shares of US GCAUs for different regions of the US. As can be seen, the figures show regional shifts in the concentration of GCAUs away from the study area and toward the Southeast, Midsouth, and Northern Plains.

Several caveats need to be kept in mind in interpreting these graphs. First, the relative feed rates used to develop these series are based on average relative feed rates for the years 1969-71. These rates have probably changed since that time, especially given the growth and development of the poultry industry since 1971. In addition, the relative feed rates that were used to develop the state series are based upon national averages and state-to-state differences likely exist. The relative feed rates are also in reference to total concentrates consumed. However, the specific concentrates (e.g., corn) that a farmer feeds his animals depends upon his access to different types of feed. For example, a hog farmer in Oklahoma will probably feed his animals relatively more wheat and relatively less corn than an Iowa hog farmer will feed his animals.

In addition to the problems embodied by the GCAU shares, the national feed and residual use numbers also may not accurately reflect feed use. For example some analysts have noted discrepancies between the feed/residual use numbers and USDA's crop and animal production estimates[3].

Using the regional (or state) GCAU shares to allocate the national feed and residual use numbers may be asking too much from these data. Nonetheless, the regional GCAU series yield discernible trends that are probably indicative of the changes taking place in the consumption locations of corn feed. The fact that corn feed constitutes such a large share of the concentrates fed to livestock and poultry adds some credence to this point.

[3] See Stewart, John P., "Squaring USDA's Feed/Residual Usage Estimates with Production Data -- The Unexplained Discrepancy", in National Grain and Feed Association's FOCUS, Vol. 13, #5, 9/28/95.

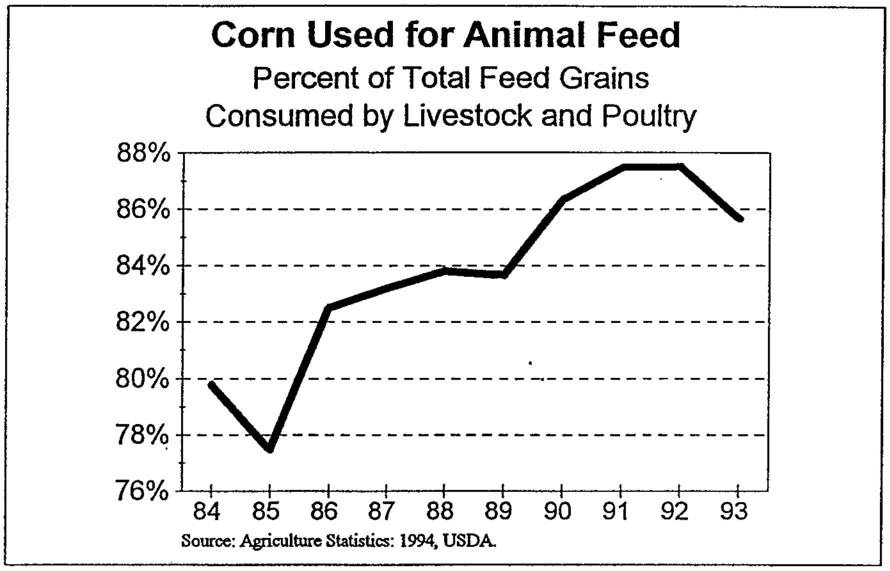


Figure 3-7

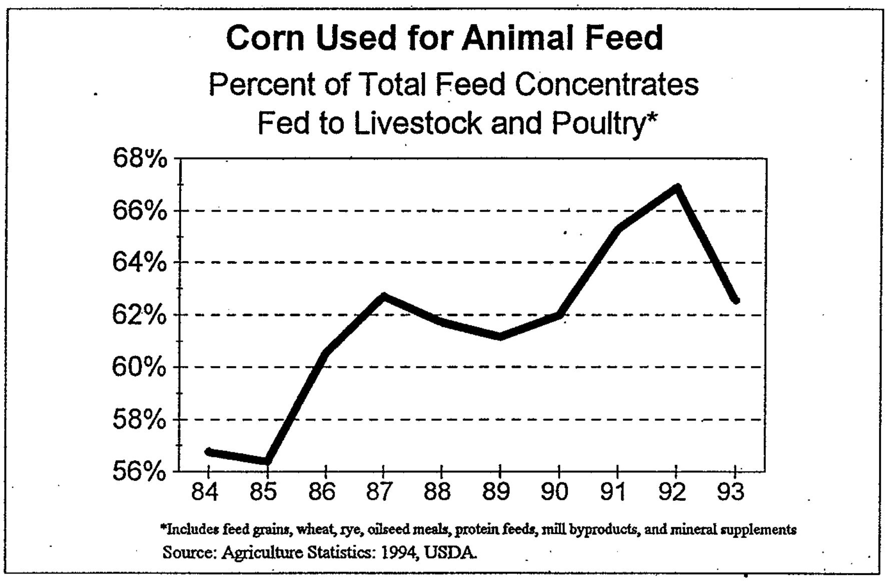


Figure 3-8

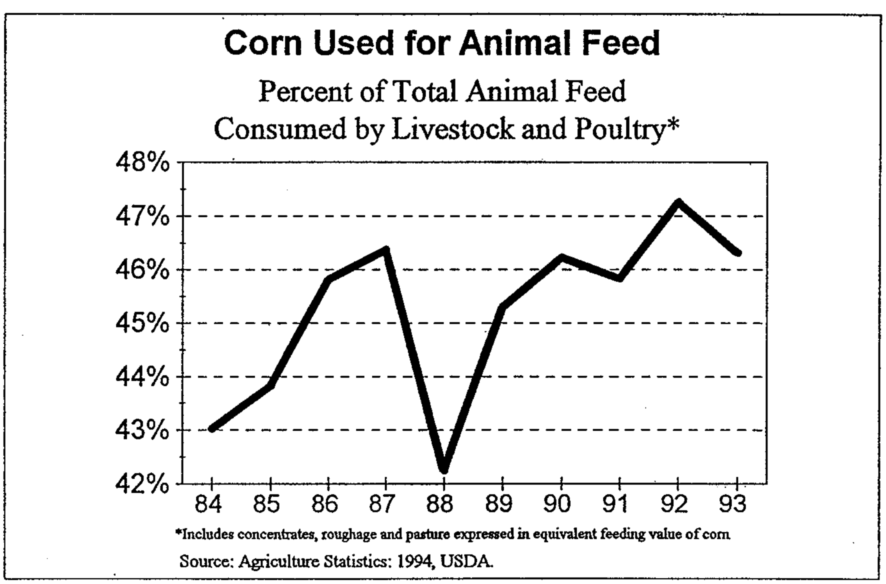
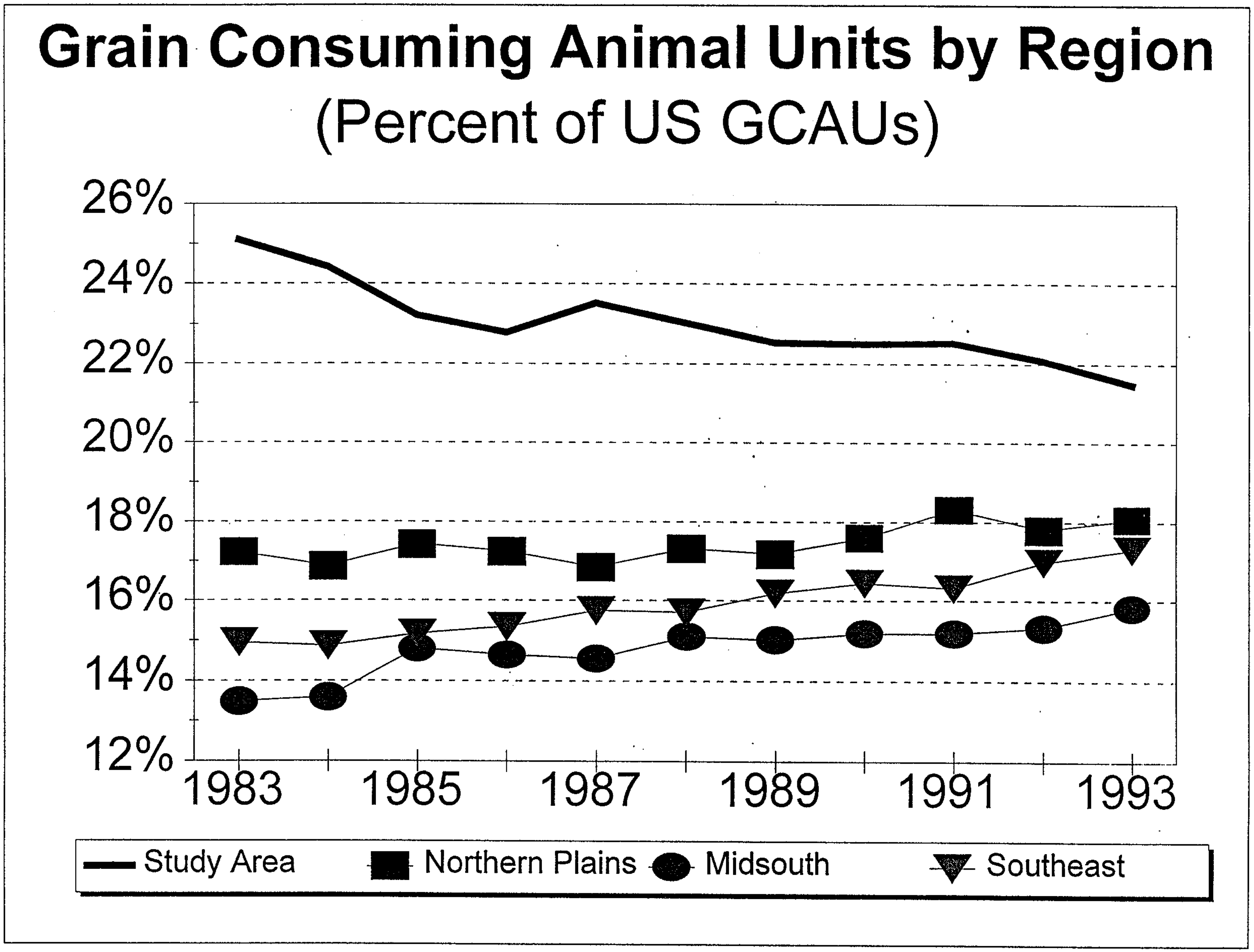


Figure 3-9

Figure 3-10



*The Study Area includes IA, IL, MN, MO, WI. The Southeast includes AL, FL, GA, MS, NC, and TN. The Midsouth includes AR, LA, NM, OK, and TX. The Northern Plains include CO, KS, MT, ND, NE, SD, and WY.

Table 3-10

U.S. Corn Exports by Foreign Destination (Percent of Total U.S. Corn Exports)									
Year	Canada	Mexico	South America	Western Europe	Central Europe	Former Soviet Union	Asia	Africa	TOTAL (Million Bushels)
1983	1.53%	5.11%	5.23%	18.61%	0.50%	12.93%	43.23%	12.85%	1,868
1984	3.43%	3.28%	3.34%	13.85%	0.35%	32.63%	33.43%	9.70%	1,924
1985	1.61%	4.75%	6.08%	12.84%	2.16%	21.42%	41.08%	10.06%	1,251
1986	2.05%	7.39%	6.81%	7.58%	0.66%	10.54%	51.45%	13.53%	1,532
1987	1.94%	6.45%	4.09%	7.30%	2.69%	11.47%	56.26%	9.79%	1,779
1988	3.59%	5.37%	2.43%	5.85%	2.25%	31.04%	41.17%	8.29%	2,114
1989	2.44%	7.63%	3.34%	6.19%	2.31%	26.92%	42.52%	8.66%	2,409
1990	1.44%	4.32%	6.35%	7.00%	3.34%	18.98%	47.22%	11.32%	1,762
1991	1.82%	1.92%	7.02%	3.99%	0.24%	17.91%	49.31%	17.79%	1,616
1992	2.84%	0.64%	7.56%	3.56%	2.66%	10.70%	48.43%	23.60%	1,704
1993	1.88%	3.30%	10.87%	5.38%	0.14%	8,33%	54.22%	15.85%	1,293
1994	2.57%	4.82%	9.17%	5.52%	0.16%	0.39%	62.76%	14.43%	2,206

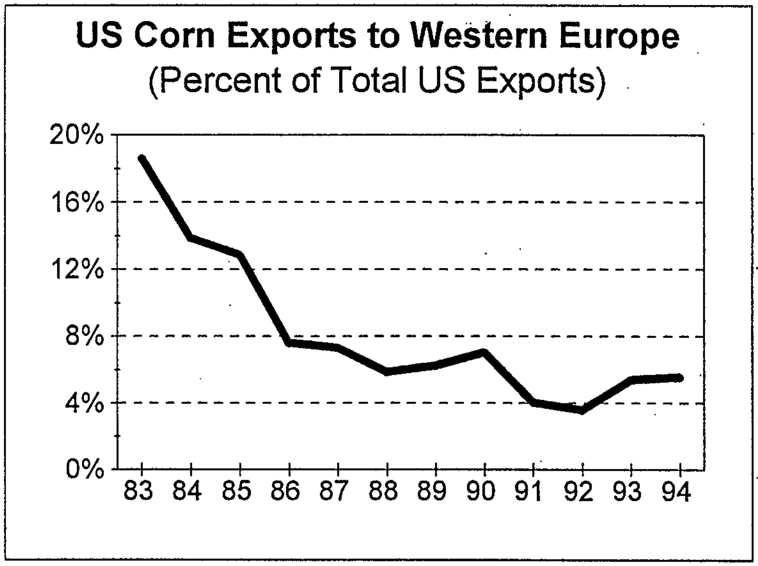
Source: Sparks Companies, Inc.

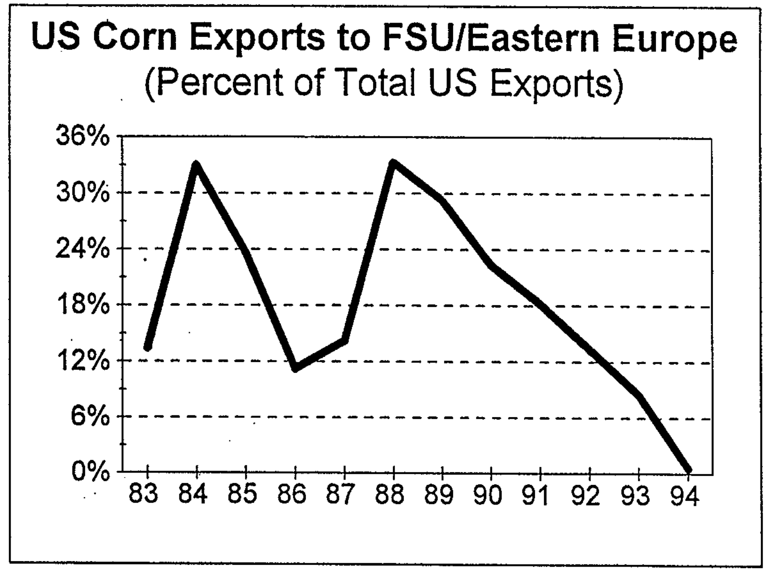
3.1.2 Exports

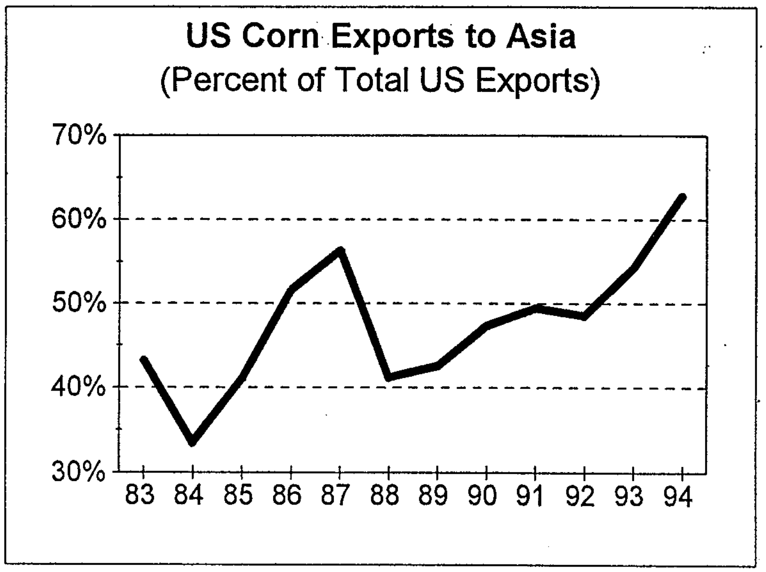
Table 3-10 presents data for US corn exports by foreign destination. In Figure 3-11, some of the more notable trends in the table are shown graphically. The data were obtained from SCI and can be found in Appendix D. US corn exports to Western Europe have declined steadily over the past decade in response to protectionist barriers that those nations have implemented in order to develop their own grain industries. As can be seen, Asia receives the largest percentage of US corn exports: over 60% in 1994. The increase that can be seen in that share is a result of several factors. Rising per capita incomes in Asia has led to more meat consumption which, in turn, has generated a greater demand for feed grains. In addition, exports out of China have been declining as they been struggling to meet their own consumption needs; as a result, the US has been able to pick up some of China's former Asian customers. For information on how these trends are likely to affect US port shares and the amount of traffic on the Upper Mississippi River, see Section 4.

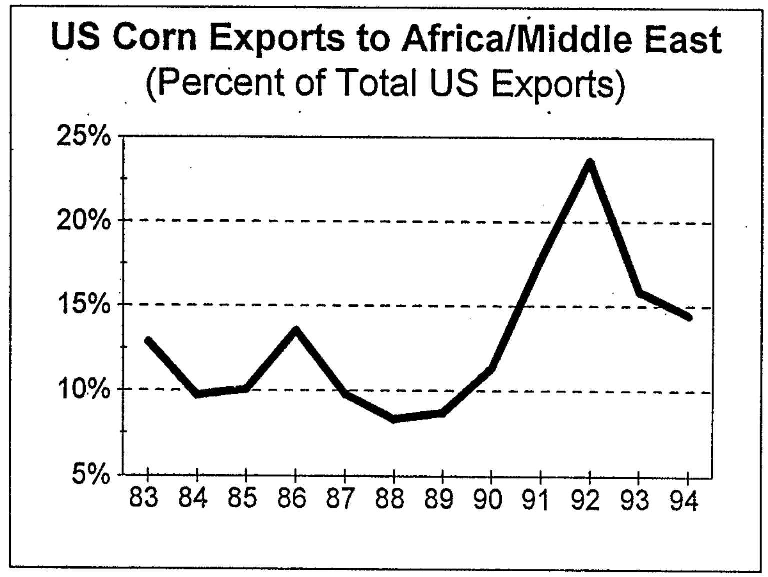
Most of the US corn exports leave the US either from Louisiana ports or from ports in the PNW (Portland and Seattle). Figure 3-12 reveals that these two areas have accounted for over 85% of the total US corn exports since 1987 (raw data are located in Appendix E). It can be seen that PNW lost share to the Louisiana ports between 1988 and 1993. The competition between these two ports significantly affects the amount of corn traffic generated on the Upper Mississippi River. Section 4 explores some of the factors that explain the outcomes of this competition.

Figure 3-11: US Corn Exports by Foreign Destination



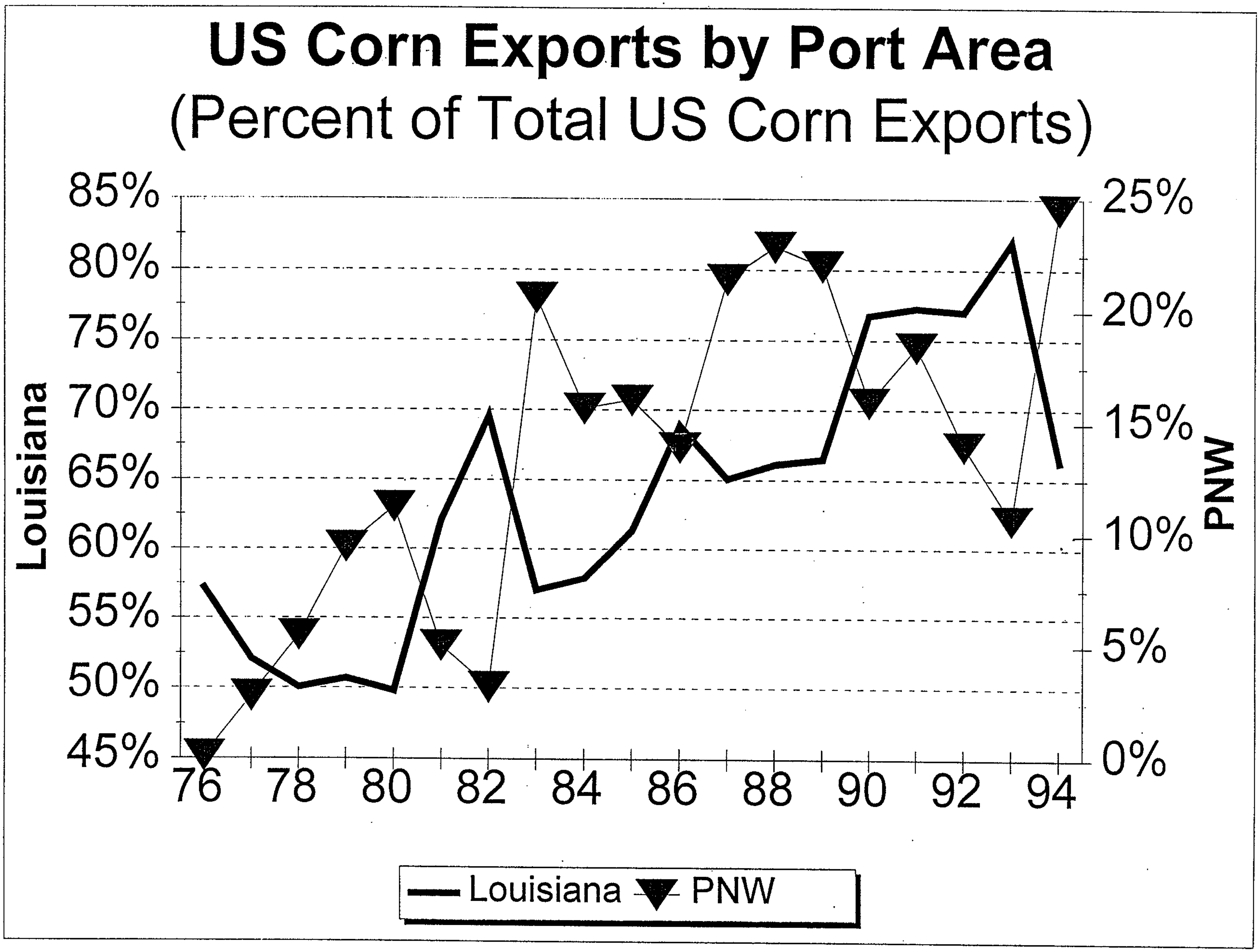






Source: Sparks Companies, Inc.

Figure 3-12



US Corn Exports by Port Area
(Percent of Total US Corn Exports)
Louisiana
85%
80%
75%
70%
65%
60%
55%
50%
45%
PNW
25%
20%
15%
10%
5%
0%
76
78
80
82
84
86
88
90
92
94
Louisiana
PNW

3.2 Soybeans

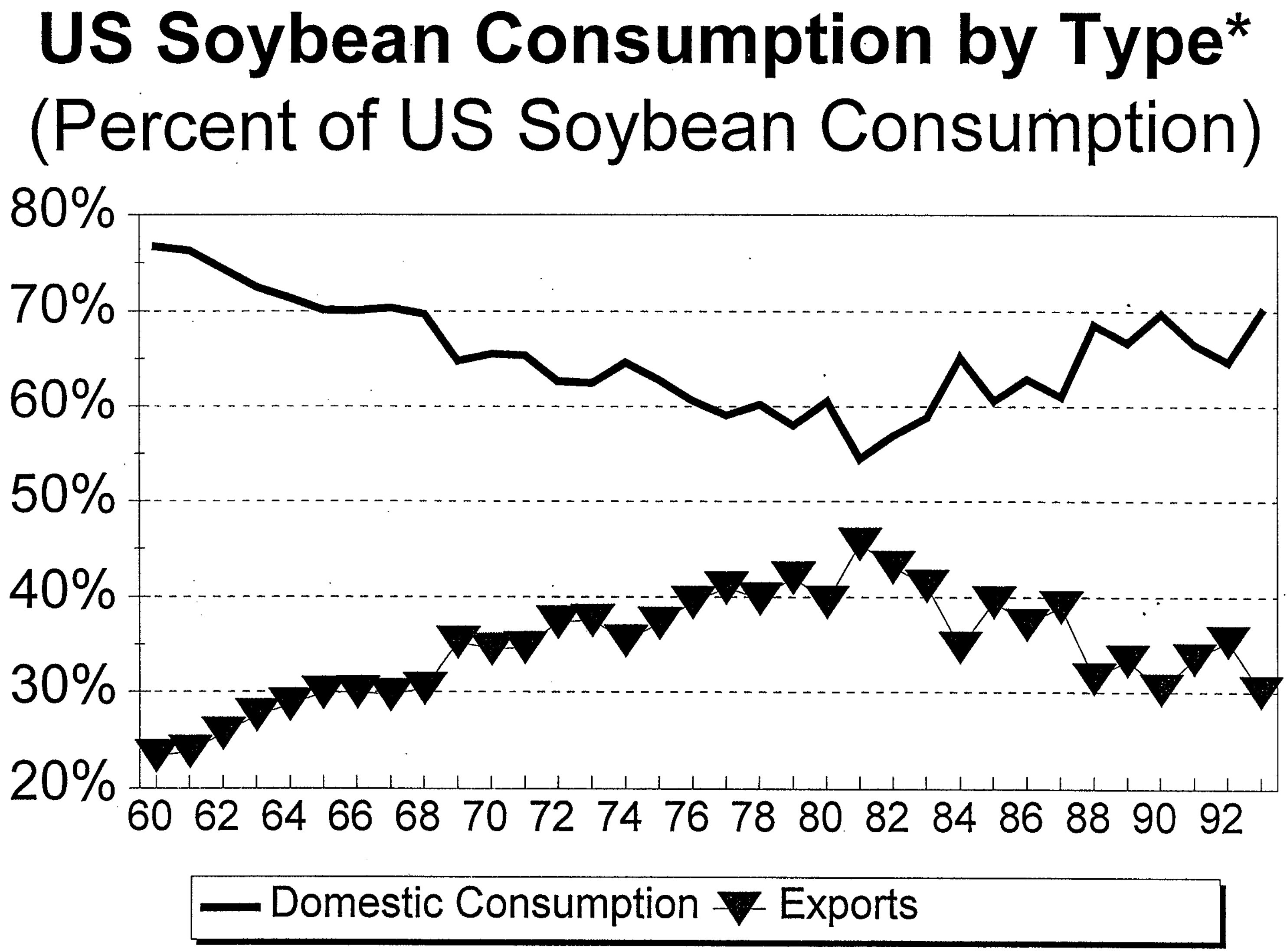
Table 3-11 presents annual soybean consumption in the US for the years 1983-93. In the table, it can be seen that domestic consumption levels have been rising while export levels have remained relatively flat. As a result, the export share has fallen while domestic consumption has seen growth in its share. These trends are shown graphically in Figure 3-13. Note that exports account for over 30% of total soybean consumption whereas corn exports account for under 20% of total corn consumption.

Table 3-11
Consumption of US Soybeans
(Thousands of Bushels)

Year*	Crushed	Feed and Residual	Total Domestic Consumption	Exports	Total Consumption
1983	982,685	79,265	1,061,950	742,760	1,804,710
1984	1,030,474	91,854	1,122,328	598,174	1,720,502
1985	1,052,827	84,727	1,137,554	740,672	1,878,226
1986	1,178,769	104,336	1,283,105	756,914	2,040,019
1987	1,174,482	80,565	1,255,047	801,686	2,056,733
1988	1,057,668	88,711	1,146,379	526,501	1,672,880
1989	1,146,434	99,732	1,246,166	622,886	1,869,052
1990	1,187,287	94,943	1,282,230	557,315	1,839,545
1991	1,253,537	103,106	1,356,643	683,943	2,040,586
1992	1,278,955	127,694	1,406,649	769,463	2,176,112
1993	1,271,956	97,242	1,369,198	589,064	1,958,262

*Market year beginning September 1.
Source: USDA, Agricultural Statistics, 1994.

Figure 3-13



*Market year beginning in September
Source: USDA, Agricultural Statistics, various issues

3.2.1 Domestic Use

Almost all of the soybeans that are consumed in the US are first crushed in order to make soybean meal and oil. Between 1983 and 1993, an average of 92.3% of the soybeans consumed domestically were crushed. For this reason, the analysis will focus upon this aspect of domestic use.

As part of its M20J Current Industry Report series, "Fats and Oils - Oilseed Crushings", the Census Bureau publishes monthly data regarding soybean crushings by state. The three series of interest in this report are the amount of soybeans crushed, the amount of soybeans received at mills, and ending stocks. While receipts is more indicative of demand for current production, much of this data is withheld for disclosure reasons. As a result, we have chosen to use the series on the amount of soybeans crushed or used.

In Table 3-12, the monthly M20J data has been converted to an annual basis for the years 1987 through 1994. Data prior to 1987 is somewhat sparse. On average, the states in the table account for over 65% of the US soybean crush. Arkansas, which isn't shown in the table because of missing data, explains an additional 3%[4] The individual state shares are fairly stable throughout the period. Between 1982 and 1987, Illinois' share changed more sharply and fell three percentage points.

Table 3-12
Soybean Crushings for Selected States 1987-1994*
(Percent of US)

State	1987	1988	1989	1990	1991	1992	1993	1994
Illinois	19.83%	19.02%	18.88%	19.04%	19.69%	18.66%	18.08%	18.43%
Indiana	6.33%	5.78%	6.47%	6.48%	6.68%	6.61%	6.57%	6.03%
Iowa	16.11%	17.01%	17.72%	17.91%	17.98%	17.76%	(D)	(D)
Kansas	3.62%	4.44%	4.50%	4.40%	4.06%	4.39%	3.97%	4.21%
Minnesota	7.00%	7.45%	7.23%	7.27%	7.01%	6.48%	6.02%	6.83%
Missouri	5.05%	5.79%	5.49%	5.59%	5.93%	6.08%	5.81%	5.98%
Ohio	6.43%	6.59%	6.45%	6.58%	6.67%	6.74%	7.22%	7.46%

*Market years beginning October 1.
(D) Withheld for disclosure reasons.

We used a two-pronged approach to identify the other major geographic markets for soybeans. First, a list of soybean crushing facilities was obtained from the '*95-'96 Soya Bluebook plus*[5], shown in Table 3-13. This publication provides free listings to qualified members of the oilseed industry. A total of 98 soybean processors were listed. Second, we analyzed rail and barge flows to identify the primary states served by soybeans grown in or adjacent to the study area (IA, IL, MN, MO, WI, IN, MI, ND, NE, SD). The states identified were Alabama, Georgia, North Carolina, Nebraska, Texas, Mississippi, and

[4] Average share for 1989, 1991, 1992, and 1993.
[5] Published by Soyatech, Inc., 1995.

Virginia. Between 1986 and 1993, these states received between 2.6 thousand tons and 3.9 thousand tons of soybeans (by rail and barge combined) from the states in or adjacent to the study area. Of that tonnage, their average shares over the period were the following:

Alabama:	21.34%
Georgia:	12.67%
Mississippi:	18.95%
Nebraska:	5.62%
North Carolina:	6.28%
Texas:	27.47%
Virginia:	7.67%

Table 3-13: Soybean Processing Plants

COMPANY	CITY	STATE
Bunge Corporation	Decatur	AL
Riceland Foods, Inc.	Stuttgart	AR
Quincy Soybean Company of Arkansas	Helena	AR
Ag Processing Inc.	Van Buren	AR
Archer Daniels Midland Company	Little Rock	AR
Central Valley Vegetable Oils	Los Angeles	CA
Pokonobe Industries	Santa Monica	CA
Townsends, Inc.	Millsboro	DE
Archer Daniels Midland Company	Valdosta	GA
Archer Daniels Midland Company	Augusta	GA
Cargill, Inc.	Gainesville	GA
The Metamora Elevator Company	Lyons	GA
American Hawaiian Soy Company	Honolulu	HI
West Bend Elevator Company	West Bend	IA
West Central Cooperative	Ralston	IA
Cargill, Inc.	Sioux City	IA
Feed Energy Company	Des Moines	IA
Cargill, Inc.	Cedar Rapids	IA
Cargill, Inc.	Des Moines	IA
Cargill, Inc.	Iowa Falls	IA
Ag Processing Inc.	Sheldon	IA
Ag Processing Inc.	Eagle Grove	IA
Ag Processing Inc.	Manning	IA
Ag Processing Inc.	Mason City	IA
Archer Daniels Midland Company	Des Moines	IA
Archer Daniels Midland Company	Des Moines	IA
Ag Processing Inc.	Sergeant Bluff	IA
Archer Daniels Midland Company	Granite City	IL
BAR N.A., Inc.	Seymour	IL
Central Soya Company, Inc.	Gibson City	IL
The American Milling Co.	Cahokia	IL

Table 3-13: Soybean Processing Plants

COMPANY	CITY	STATE
Archer Daniels Midland Company	Decatur	IL
Bunge Corporation	Cairo	IL
Cargill, Inc.	Bloomington	IL
Archer Daniels Midland Company	Galesburg	IL
Seymour Organic Foods	Seymour	IL
A.E. Staley Manufacturing Company, Gunther Division	Decatur	IL
Van den Bergh Foods Company	Lisle	IL
Archer Daniels Midland Company	Taylorville	IL
Archer Daniels Midland Company	Champaign	IL
Quincy Soybean Company	Quincy	IL
Lauhoff Grain Company	Danville	IL
Central Soya Company, Inc.	Decatur	IN
Central Soya Company, Inc.	Indianapolis	IN
Cargill, Inc.	Lafayette	IN
Central Soya Company, Inc.	Fort Wayne	IN
Archer Daniels Midland Company	Frankfort	IN
Cargill, Inc.	Wichita	KS
Bunge Corporation	Emporia	KS
Archer Daniels Midland Company	Fredonia	KS
Producers Cooperative Association	Girard	KS
Bunge Corporation	Destrehan	LA
Perdue Farms, Inc.	Salisbury	MD
Wysong Corporation	Midland	MI
North Central Companies	Minnetonka	MN
Archer Daniels Midland Company	Mankato	MN
SunRich Inc.	Hope	MN
Ag Processing Inc.	Dawson	MN
Honeymead Products Company	Mankato	MN
Agronico Inc.	Le Center	MN
Roseland Incorporated	Minneapolis	MN
Cargill, Inc.	Minneapolis	MN

Table 3-13: Soybean Processing Plants

COMPANY	CITY	STATE
Cargill, Inc.	Kansas City	MO
Ag Processing Inc.	St. Joseph	MO
Archer Daniels Midland Company	Mexico	MO
Bunge Corporation	St. Louis	MO
Archer Daniels Midland Company	Kansas City	MO
Bunge Corporation	Marks	MS
Bunge Corporation	Vicksburg	MS
Archer Daniels Midland Company	Clarksdale	MS
C & T Qunicy	Charlotte	NC
Perdue, Inc.	Cofield	NC
Cargill, Inc.	Fayetteville	NC
Cargill, Inc.	Raleigh	NC
Archer Daniels Midland Company	Lincoln	NE
Archer Daniels Midland Company	Fremont	NE
Ag Processing Inc.	Omaha	NE
Penta Manufacturing Company, Inc.	Livingston	NJ
Logan Farms	Fort Plain	NY
Homer Oil Co., Inc.	Homer	NY
American Commodities Brokerage Co.	New York	NY
Central Soya Company, Inc.	Delphos	OH
Cargill, Inc.	Sidney	OH
Central Soya Company, Inc.	Bellevue	OH
Archer Daniels Midland Company	Fostoria	OH
Nutri Meal Products Company	Clarksville	OH
Southern Proteins, Inc.	Ada	OK
Bake Rite Foods, Inc.	Oklahoma City	OK
Turtle Island Foods, Inc.	Hood River	OR
Schnupp's Grain Roasting	Lebanon	PA
Colfax, Inc.	Pawtucket	RI
Pendleton Oil Mill, Inc.	Pendleton	SC
Archer Daniels Midland Company	Kershaw	SC

Table 3-13: Soybean Processing Plants

COMPANY	CITY	STATE
Southern Soya Corp.	Estill	SC
Pagaza & Sons Company	Houston	TX
Houston Calco Inc.	Houston	TX
Arrowhead Mills Inc.	Hereford	TX
C & T Quincy	Richmond	VA
Cargill, Inc.	Chesapeake	VA

3.2.2 Exports

US soybean exports by foreign destination are presented in Table 3-14. The raw data were obtained from SCI and can be found in Appendix D. Figure 3-14 illustrates some of the salient trends in the table. US exports to Western Europe have dropped over five percentage points since the early 80s; however, in contrast to US corn exports to Western Europe, they still constitute a relatively large share: approximately 40% of total US soybean exports. Europe does not produce soybeans as efficiently as it produces corn and therefore does not protect its soybean industry to the same extent. Europe also has a large beef industry which relies upon soybean meal for feed. As a percentage of US soybean exports, exports to Mexico and Asia have been increasing. Note that soybean exports to Asia have not been growing as fast as corn exports to Asia and account for a smaller percentage of US exports.

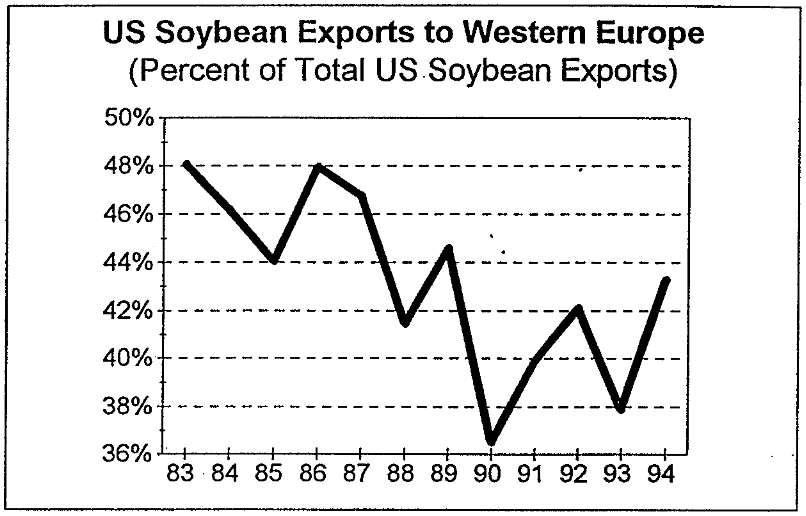
In contrast to US corn exports, a larger number of port areas compete for US soybean exports. Figure 3-15 shows the prominent shifts which have occurred among these major port areas which handle US soybean exports (Appendix E contains the raw data). It can be seen that ports on the Atlantic Coast and on the Great Lakes have lost a large percentage of the US soybean exports. Texas ports also show an obvious decrease in importance; however; over half of that decline transpired between 1981 and 1982. Louisiana's share of US soybean exports has remained relatively flat since 1981 while the PNW's share has been steadily increasing. Explanations for these shifts are detailed in Section 4.

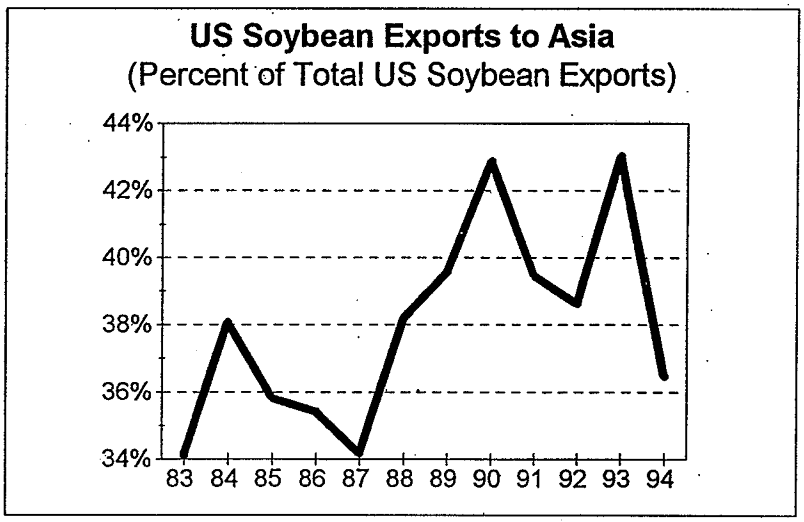
Table 3-14

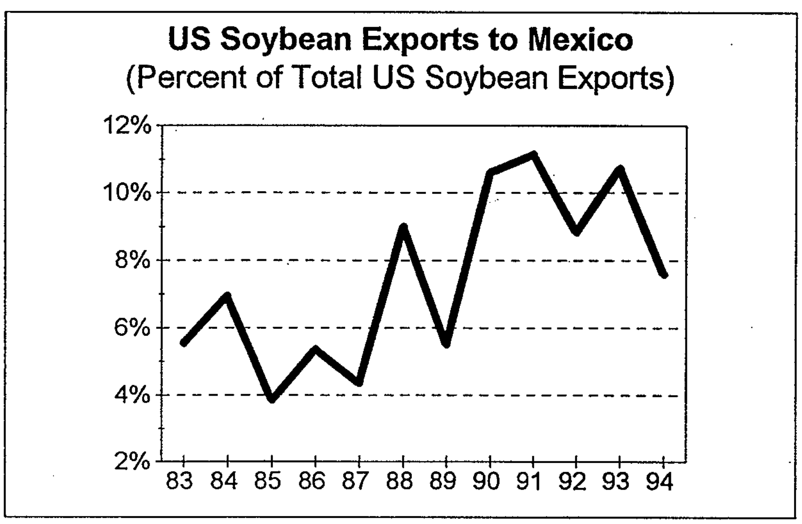
US Soybean Exports by Foreign Destination (Percent of Total US Soybean Exports)								
Year	Canada	Mexico	South/Central America	Western Europe	Eastern Europe/FSU	Asia	Africa/Middle East	TOTAL (Million Bushels)
1983	2.32%	5.53%	2.04%	48.07%	5.54%	34.12%	2.31%	740
1984	1.31%	6.96%	2.23%	46.21%	2.39%	38.07%	2.62%	603
1985	0.94%	3.83%	2.77%	44.06%	10.10%	35.82%	2.48%	745
1986	1.24%	5.36%	3.79%	47.97%	3.32%	35.41%	2.90%	775
1987	0.58%	4.36%	5.09%	46.79%	6.05%	34.18%	2.63%	803
1988	1.45%	8.99%	3.43%	41.45%	3.47%	38.20%	2.76%	545
1989	0.62%	5.50%	2.12%	44.58%	4.89%	39.58%	2.56%	620
1990	0.05%	10.62%	2.76%	36.51%	3.96%	42.88%	2.73%	558
1991	0.04%	11.14%	2.59%	39.91%	4.14%	39.48%	2.41%	694
1992	2.80%	8.84%	3.67%	42.09%	0.67%	38.64%	2.96%	802
1993	1.78%	10.72%	3.11%	37.89%	0.64%	43.04%	2.64%	609
1994	2.91%	7.60%	5.61%	43.28%	0.79%	36.47%	2.87%	880

Source: Sparks Companies, Inc.

Figure 3-14

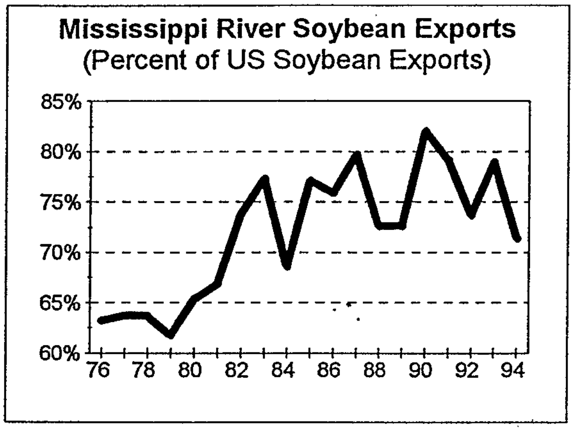


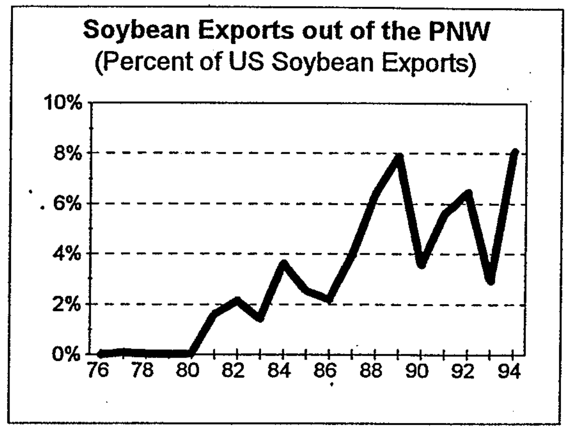


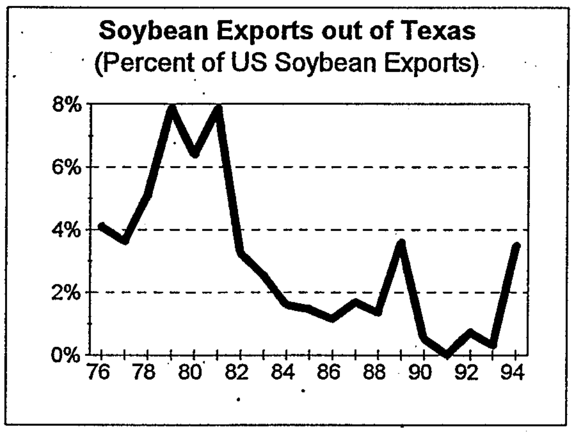


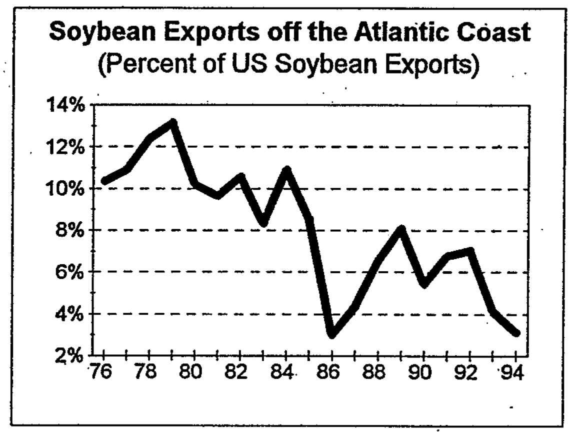
Source: Sparks Companies, Inc.

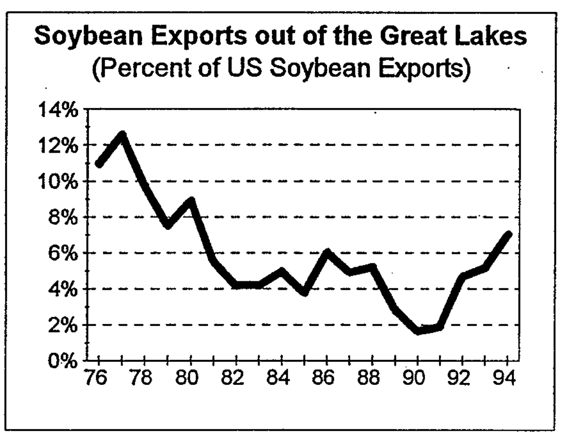
Figure 3-15











Source: Sparks Companies, Inc.

3.3 Wheat

Table 3-15 presents annual US wheat consumption by primary consuming sector for the years 1984-1993. The data indicate that total domestic consumption levels have been gradually rising, while export levels have been falling since 1987. Resulting changes in the shares are shown graphically in Figure 3-16. As can be seen, the export share fell almost ten percentage points between 1987 and 1993. Increases in total domestic consumption have been fueled by steady growth in the amount of wheat used in the food sector (primarily flour production), which grew by more than 33% over the period. This growth was slightly offset by a gradual decline in the amount of wheat used for feed.

Table 3-15
Consumption of US Wheat
(Millions of Bushels)

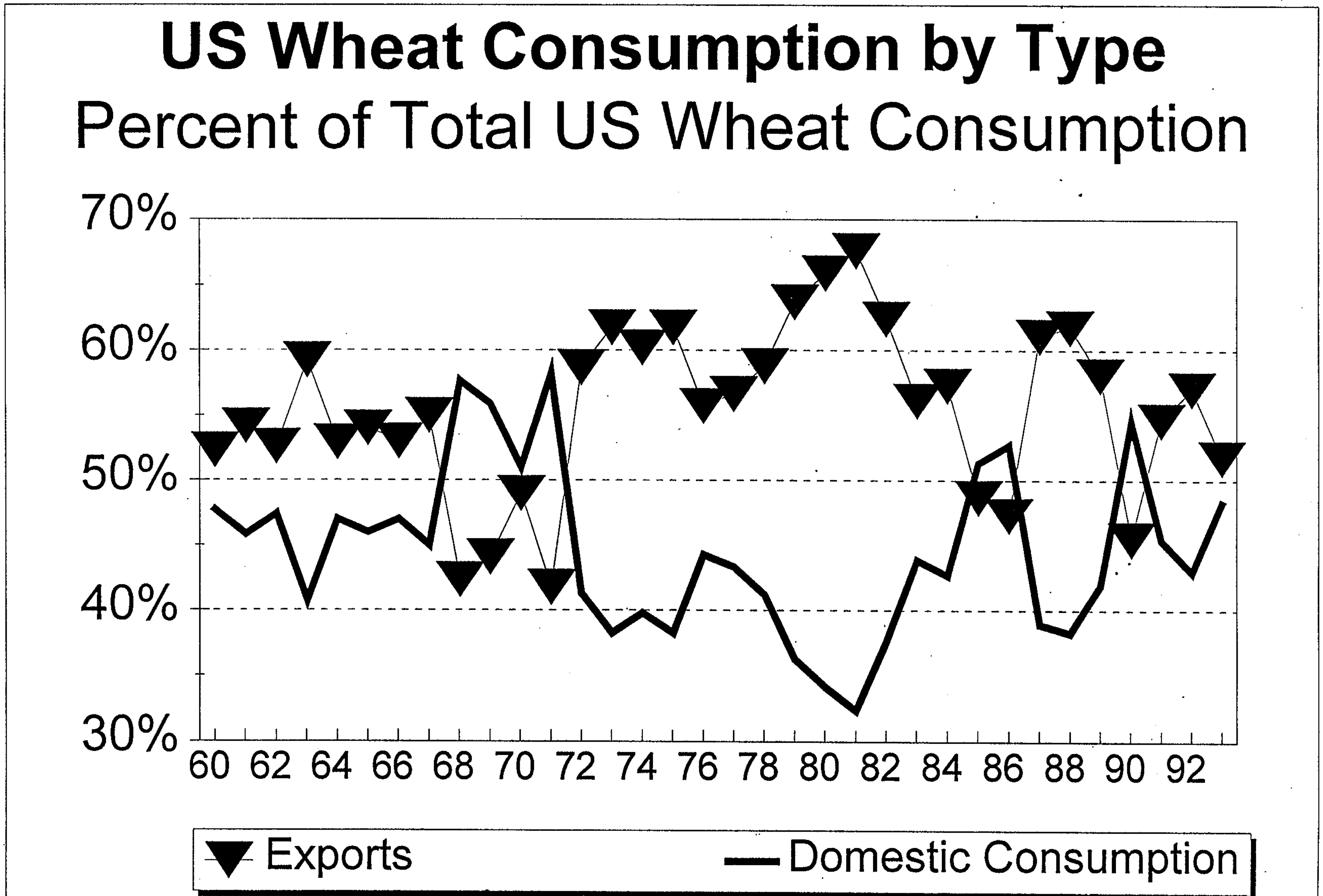
Year*	Food	Feed and Residual	Total Domestic Consumption**	Exports	Total Consumption
1984	651	407	1,058	1,421	2,479
1985	674	284	958	909	1,867
1986	712	401	1,113	999	2,112
1987	721	290	1,011	1,588	2,599
1988	726	150	876	1,415	2,291
1989	749	139	888	1,232	2,120
1990	790	491	1,281	1,069	2,350
1991	789	276	1,065	1,282	2,347
1992	834	186	1,020	1,354	2,374
1993	869	276	1,145	1,228	2,373

*Market year beginning June 1.
**Excludes seed.
Source: USDA, Agricultural Statistics, 1994.

3.3.1 Domestic Use

The food industry is the largest domestic consuming sector of wheat. Its share of total domestic consumption increased from 61.5% in 1984 to 84.4% in 1988; it has gradually declined since that time and now accounts for a little over 75% of domestic wheat consumption. Almost all of the remaining wheat that is consumed domestically is used to feed livestock and poultry.

Figure 3-16



Source: Agricultural Statistics, various issues

Food

The "Flour and Other Grain Mill Products" industry, SIC 2041, consumes almost all of the wheat used by the food sector. The production of wheat flour (SIC 20411) accounts for approximately 68% of this industry's output[6]. Other products include wheat mill products other than flour (SIC 20412: primarily wheat mill feed), corn mill products (SIC 20413), and flour mixes and refrigerated and frozen doughs and batters (SIC 20415). The industry that produces cereal breakfast foods (SIC 2043) also consumes a relatively small amount of wheat.

Table 3-16 shows state-level production data for the two wheat milling industries (SIC 20411 and SIC 20412) in the Flour and Other Grain Mill Products industry. The states in the table account for approximately 77% of the output of these wheat milling industries. Between 1987 and 1992, the study area's share of wheat flour production changed very little, staying between 22% and 23%. Within the study area, Missouri picked up over two percentage points to become the second largest producer of wheat flour. This gain was offset by Minnesota's two percentage point loss, causing it to drop from being the largest producer to the third largest producer. One of the most notable developments in the table, New York increased its share of wheat flour production by almost 2.5 percentage points, registering a 63% increase in production to become the number one wheat flour producer. Aside from Nebraska, Tennessee was the only state to see its production actually decline, dropping by 27% and causing its share to fall over four percentage points.

In terms of wheat mill products other than flour, production became more evenly distributed throughout the US between 1987 and 1992. This can be seen in the fact that Kansas was the only state whose production level declined, resulting in over a five percentage point loss in its share; yet it still remains the number one producer and accounts for over 9% of US production. The study area's share increased notably by almost four percentage points, spurred by over a two percentage point gain in Illinois.

[6] Based upon 1987 and 1992 value of shipments data published in the Census of Manufactures.

Table 3-16
Wheat Milling Production by State

State	Wheat Flour				Wheat Mill Products Other than Flour			
	1992		1987		1992		1987	
	(Million Dollars)	(% of US)	(Million Dollars)	(% of US)	(Million Dollars)	(% of US)	(Million Dollars)	(% of US)
United States	4,192	100.00%	3,219	100.00%	494	100.00%	337	100.00%
California	302	7.19%	176	5.47%	38	7.77%	23	6.92%
Florida	94	2.24%	65	2.02%	12	2.37%	9	2.73%
Georgia	54	1.29%	41	1.26%	9	1.80%	6	1.81%
Illinois	229	5.46%	172	5.34%	24	4.92%	9	2.67%
Kansas	331	7.89%	281	8.74%	45	9.10%	48	14.28%
Michigan	56	1.33%	47	1.45%	21	4.33%	13	3.77%
Minnesota	347	8.28%	325	10.08%	40	8.05%	27	7.90%
Missouri	382	9.10%	226	7.01%	34	6.88%	18	5.40%
Nebraska	70	1.67%	84	2.60%	NA	NA	NA	NA
New York	509	12.13%	313	9.72%	45	9.00%	30	8.85%
North Carolina	121	2.88%	79	2.45%	14	2.87%	11	3.21%
Ohio	208	4.96%	141	4.39%	23	4.69%	15	4.36%
Oklahoma	NA	NA	NA	NA	12	2.33%	7	2.05%
Oregon	53	1.27%	43	1.34%	9	1.80%	6	1.81%
Tennessee	218	5.20%	300	9.32%	22	4.49%	NA	NA
Texas	150	3.59%	135	4.19%	22	4.51%	15	4.51%
Utah	88	2.10%	81	2.52%	14	2.87%	NA	NA

Source: 1992 Census of Manufactures

Feed

Approximately 15% of the wheat that is consumed as feed is manufactured to produce pet foods and other animal feeds including complete feeds, concentrates, and premixes.[7] This section will look at how these feed processing industries are geographically distributed across the US. The consumption locations of the remaining wheat that is consumed as feed will be determined to some extent by the regional densities of GCAUs. The discussion on feed in Section 3.1.1 addresses this issue and will not be considered here.

According to the 1992 Census of Manufactures, 78% of the wheat that is used to make prepared animal feeds goes into feeds for livestock and poultry. The remaining 22% is used in pet foods. Table 3-17 shows state level production data for the industry that makes prepared feeds for livestock and poultry. The states in the table account for approximately 86% of the US value added in this industry. In 1987, the five state study area produced a little over 27% of the prepared feeds for livestock and poultry; that share was over a percentage point higher in 1992. Wisconsin and Minnesota displayed strong gains in the industry, with each increasing their share of value added by over a percentage point (1.39% and 1.13%, respectively). Illinois' share dropped by 1.67 percentage points due an actual decline in its level of value added. Other states in which the level of value added declined include Georgia, South Carolina, Tennessee, Nebraska, Utah, Washington, and Arkansas. Georgia and Nebraska are the most important in this group, as each of their shares declined by 2.25 percentage points. Texas, Oklahoma, and Ohio were three most noteworthy states that captured additional share of the industry: 1.68, 1.66, and 1.44 percentage points respectively.

Table 3-18 presents 1992 regional production data for the pet food industry. Data for 1987 was generally not available for this industry. The states in the table contribute over 99% of the US value added in this industry. The states in the study area are responsible for almost one-third (31.8%) of the value added in the pet food industry, with Iowa being the largest single state producer.

[7] Estimated using data from the 1992 Census of Manufactures (COM) and Agricultural Statistics 1994. The COM provides data on the amount of wheat used to produce prepared feeds and dog and cat foods: for 1992 the reported value was 1.0737 million tons or 35.79 million bushels. After converting USDA's feed usage data to a calendar year basis, this amount translates into 15.49% of the amount of wheat used for feed in 1992. This percentage does not include wheat that is used to produce wheat mill feed, which is then used to make animal feed. Wheat mill feed is a by-product of the flour milling industry and is produced in the same locations where flour is milled. These locations were identified in the section on food.

Table 3-17
Value Added by State for Prepared Feed Manufacturing*

State	1992 (million dollars)	1992 (Percent of US)	1987 (million dollars)	1987 (Percent of US)
United States	2,876	100.00%	2,603	100.00%
Alabama	56	1.93%	49	1.87%
Arkansas	62	2.16%	85	3.27%
California	183	6.36%	169	6.50%
Colorado	30	1.03%	34	1.29%
Florida	44	1.54%	35	1.36%
Georgia	92	3.19%	141	5.43%
Illinois	176	6.13%	203	7.80%
Indiana	121	4.19%	111	4.25%
Iowa	260	9.06%	235	9.02%
Kansas	65	2.27%	64	2.47%
Minnesota	115	4.01%	75	2.88%
Mississippi	33	1.15%	22	0.86%
Missouri	115	4.00%	95	3.65%
Nebraska	126	4.36%	172	6.62%
New York	69	2.38%	55	2.12%
North Carolina	131	4.57%	117	4.51%
Ohio	89	3.08%	43	1.64%
Oklahoma	85	2.94%	33	1.28%
Oregon	36	1.23%	26	1.00%
Pennsylvania	123	4.27%	119	4.56%
South Carolina	9	0.30%	10	0.39%
Tennessee	25	0.88%	38	1.45%
Texas	201	7.00%	139	5.32%
Utah	23	0.79%	26	1.00%
Washington	42	1.45%	46	1.78%
Wisconsin	151	5.24%	100	3.85%

*Excluding pet food.

Source: 1992 Census of Manufactures.

Table 3-18 1992 Value Added by State for the Pet Food Industry (Percent of US Pet Food Industry Value Added)	
Alabama	2.31%
Arizona	0.30%
California	8.39%
Colorado	1.60%
Georgia	3.29%
Illinois	4.53%
Indiana	0.80%
Iowa	12.66%
Kansas	9.02%
Michigan	0.42%
Minnesota	1.42%
Mississippi	1.35%
Missouri	8.60%
Nebraska	4.45%
New Jersey	1.08%
New York	9.35%
Ohio	8.42%
Oklahoma	3.16%
Pennsylvania	7.07%
South Dakota	0.18%
Tennessee	0.99%
Texas	3.07%
Utah	0.52%
Virginia	0.85%
Washington	0.57%
Wisconsin	4.60%

Source: 1992 Census of Manufactures

3.3.2 Exports

Table 3-19 presents US wheat exports by foreign destination for 1983-1994. SCI provided the raw data used to calculate the percentages; they are located in Appendix D. Note that some of the 1987 percentages appear to be out of line with the other numbers in the table; this incongruency is due to a very large purchase made by the Former Soviet Union in 1987.

Since 1985, Africa and Asia have received an average of just over 70% of US wheat exports. Africa's share has increased by over ten percentage points since 1988; however; that growth appears to be slowing. Exports to Asia (as a percentage of US exports) increased by over twenty percentage points between 1987 and 1988 and then gradually lost a little over five percentage points between 1988 and 1994. Asia's share of US wheat exports is a function of wheat exports out of Canada and Australia, which are the primary competitors for the Asian markets. For example, the jump between 1987 and 1988 was precipitated by a very small Canadian crop in 1988; the share has remained relatively high due to a combination of relatively small export levels out of Canada and Australia. The share of US wheat exports delivered to South/Central America declined over eight percentage points between 1986 and 1988 as Brazil and Argentina expanded wheat production. The share of US wheat exports to Mexico indicate an accelerating upward trend.

As can be seen in Figure 3-17, the distribution of wheat exports across US ports is even more dispersed than it is for soybeans. Note that the Mississippi's share of wheat exports is considerably smaller than its share of corn and soybean exports.. This fact is due to the existence of different growing regions for the separate crops. Much of the US wheat acreage is concentrated in areas further west than corn and soybean acreage concentrations. As a result, Texas ports and the PNW are often in a better position than Louisiana ports to serve the US wheat growing areas. Also note that the main competition to the Louisiana ports comes from Texas. These areas compete for the large African and Middle East markets whereas the PNW serves Asia. The figure also indicates that the PNW has been increasing its share of US wheat exports while the Lakes have been losing share. This development is due to the shift from FSU and European markets (served by the Lakes) to Asian markets.

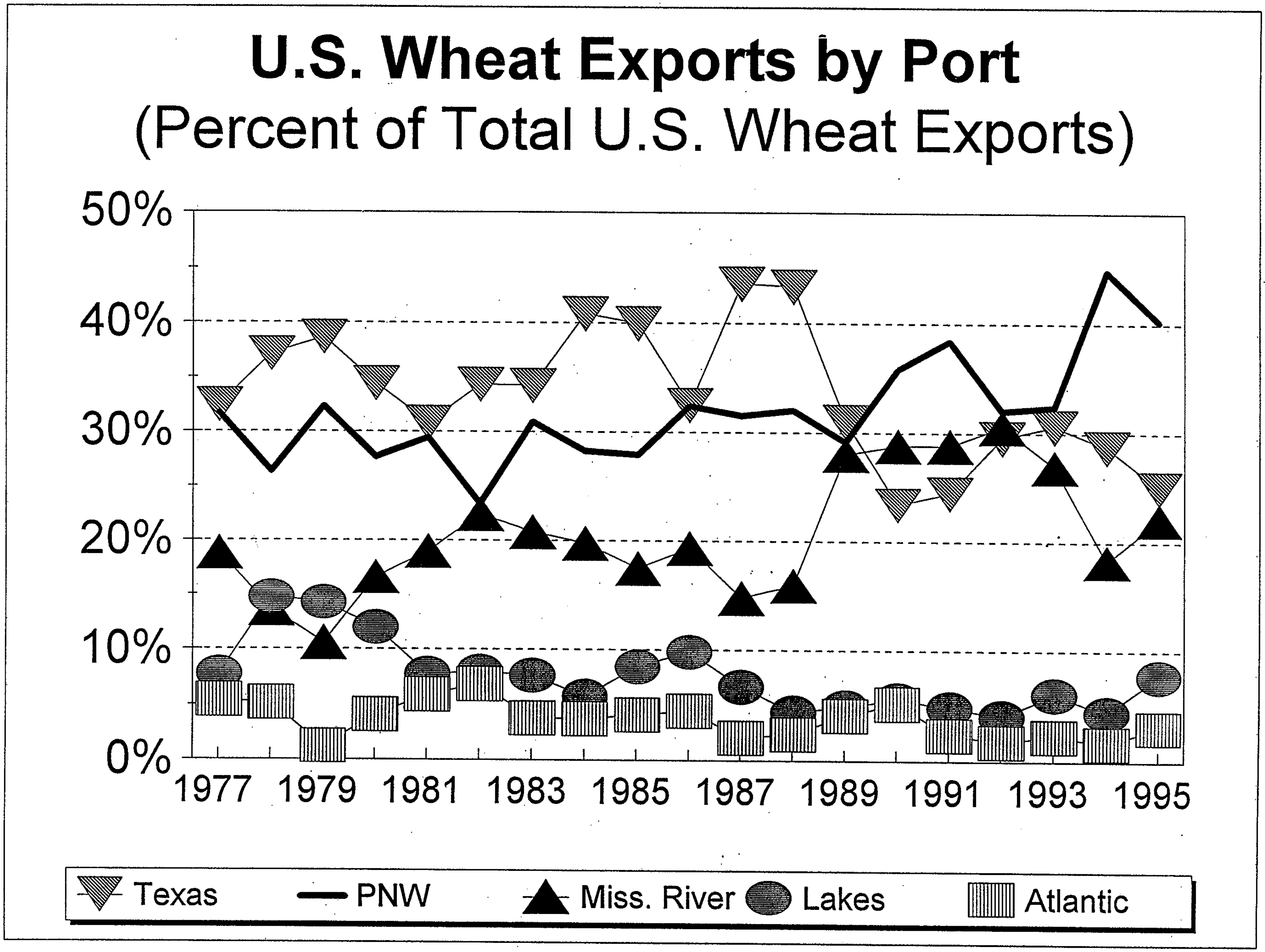
Table 3-19

US Wheat Exports by Foreign Destination
(Percent of Total US Wheat Exports)

Year	Canada	Mexico	South/Central America	Western Europe	Eastern Europe/FSU	Asia	Africa/Middle East	TOTAL (Million Bushels)
1983	1.91%	0.08%	19.01%	6.74%	11.76%	37.42%	23.08%	1,362
1984	2.54%	0.06%	19.47%	4.55%	16.76%	32.85%	23.77%	1,398
1985	1.94%	0.00%	17.97%	6.64%	1.04%	42.25%	30.16%	865
1986	1.24%	0.33%	16.54%	4.58%	4.38%	35.06%	37.88%	945
1987	0.59%	0.55%	7.55%	2.01%	33.12%	32.10%	24.07%	1,574
1988	1.49%	2.77%	8.08%	2.22%	12.82%	53.43%	19.20%	1,426
1989	2.04%	0.62%	9.51%	2.93%	12.83%	47.70%	24.37%	1,248
1990	2.03%	1.20%	10.80%	2.63%	10.30%	45.91%	27.13%	1,073
1991	2.61%	0.40%	9.08%	2.07%	20.51%	45.47%	19.86%	1,284
1992	3.70%	1.79%	8.80%	1.87%	16.56%	38.16%	29.12%	1,380
1993	1.68%	2.34%	10.11%	1.88%	9.73%	41.60%	32.66%	1,212
1994	4.19%	2.11%	8.06%	2.29%	4.94%	46.20%	32.21%	1,223

Source: Sparks Companies, Inc.

Figure 3-17


U.S. Wheat Exports by Port
(Percent of Total U.S. Wheat Exports)
50%
40%
30%
20%
10%
0%
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
Texas
PNW
Miss. River
Lakes
Atlantic

3.4 Forecasts of Grain Consumption

This section presents SCI's forecasts of US exports out to 2050. For each type of grain, separate forecasts were developed for US exports by port area and US exports by foreign destination. As described in Section 5, the forecasts of US exports by port area are a critical component of this project, as they provide the foundation for the waterway traffic projections. Regional forecasts of domestic consumption were not developed for several reasons. Historical consumption data are sparse and those that are available are generally not adequate for such purposes. In addition, some of the political uncertainties that could substantially impact domestic grain consumption (e.g., sugar quotas and ethanol tax exemptions) make it impossible to develop such forecasts with any precision.

3.4.1 Total US Exports

Total US export volume (for each type of grain) is forecast to be the residual of supply less domestic use. As discussed in Section 2, US grain/oilseed production levels were determined with the use of trend yields combined with the long-term acreage forecast to determine forecast production totals. Forecast US production was then combined with assumed import and stock levels to determine potential supply at the national level. Ending stocks for grains and soybeans were assumed to remain at a constant percentage of use during the forecast period.

The primary determinants used to forecast domestic use for the total US were historical per capita consumption trends since 1970. Consideration was given to the long term needs of both the food and feed sectors and to respective growth rates for use of each grain with professional judgment the final criteria. Observed growth in domestic use during the 20 year period 1974 to 1994 formed the base period from which growth during the forecast period was derived.

US exports of grain/oilseeds were then calculated as the residual: i.e., the quantity of grain available for export in any given year was equal to the quantity remaining after domestic use and stocks were subtracted from the potential supply. This mechanical approach was used to ensure that supply equals demand, an accounting framework by which ANY forecasting approach would have to abide:

Production + Imports = Exports + Domestic Consumption + Change in Stocks

Exports must equal Production plus Imports minus Domestic Consumption minus Change in Stocks, regardless of whether or not exports dominate the market and/or whether or not they are estimated first or last. This approach makes no assumptions about the relative importance of export markets to U.S. farmers.

Treating U.S. exports as the residual of production less domestic use is the correct approach over the long term given four critical assumptions:

1. U.S. producers are among the world's low cost producers;
2. U.S. producers are free to produce those crops they choose to produce;
3. Trade barriers do not prevent deficit producing countries from satisfying their needs from low cost suppliers; and
4. U.S. consumers are economically able to out bid non-U.S. consumers for the commodity in question.

Assumptions 1 and 4 have been valid for U.S. grains and oilseeds for many years. Growth in foreign food demand will be largely income based; but it is still highly unlikely, even with this income growth, that foreign consumers will be able to bid demand away from U.S. domestic users of grain. Assumption 2 is a valid assumption if future U.S. commodity policy retains the general characteristics of the 1996 FAIR Act which is believed to be a valid long range assumption though it may be violated in the short run. Assumption 3 is also believed to be warranted given the shift toward more liberalized trade that has occurred over the past 3 to 5 years.

The recent GATT settlement (activated January 1, 1995, following nearly 10 years of negotiations) and the redirection of the US commodity policy (commencing with the end of the 1990 Farm Bill) significantly changes the forces directing world agriculture production and trade from those which have prevailed for over 50 years. The GATT settlement stops the trend toward trade distorting practices that have been present for decades and which included import barriers, export subsidies, and the establishment of geographical trade groups (EEC/EC/EU, NAFTA, Mercosur, etc.); and prescribes the early steps toward freer trade. This reversal significantly favors world producers who are "competitive low-cost producers" to the detriment of those who are "high-cost producers" who have been protected/subsidized in the past. The US grain producer is unquestionably in the first group.

Concurrent with this shift in world trade regulations is the ending of a US commodity policy era which has been in place since the 1930s that was dominated by legislation that restricted US production. The ending of this restrictive focus removes a limiting factor that has regularly been applied to US agriculture.

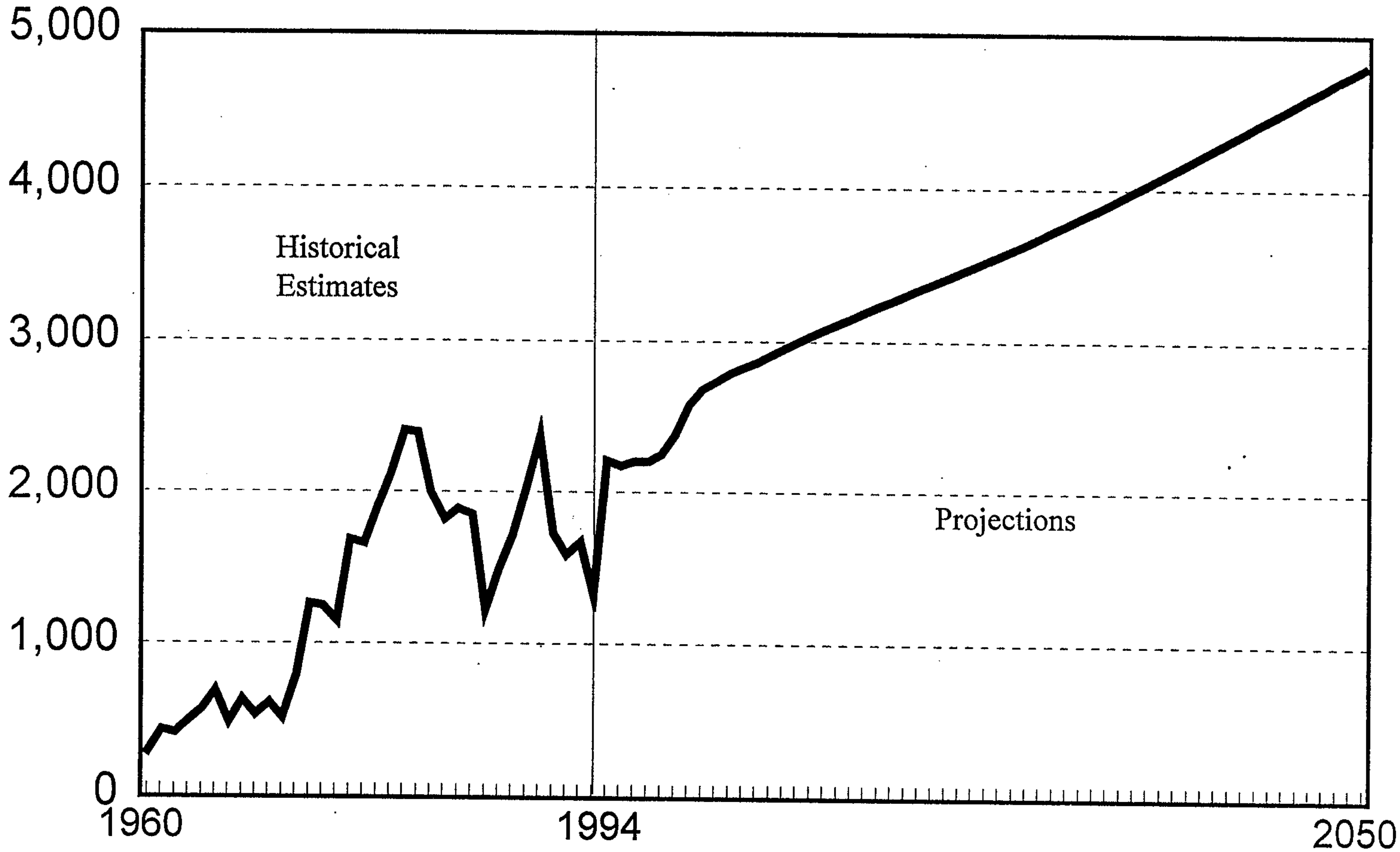
The simultaneous occurrence of these issues dictates a different research methodology/approach than that which would be appropriate in their absence. Given the environment which these forces provide, the estimation of US exports as the residual of US production minus domestic use is deemed appropriate. That U.S. grain and oilseed exports have not been the residual of production and domestic use in the past is acknowledged and embraced. That the same will be the case for individual years in the future is also acknowledged. That they will be the residual to production and domestic use over the longer term given a world consistent with the four assumptions identified is however warranted by both theory and practice in our opinion.

Other efforts to forecast long-run agricultural production, domestic consumption, and export demand have been done many times, and comparisons could be made. However, we are not aware of any that have been done for the fundamental environment presumed in the study. The USDA recently released updated long-run projections. This report "Long-term Agricultural Projections to 2005" (WAOB-96-1, February 1996) specifically assumes "that provisions of the Food, Agriculture, Conservation and Trade Act of 1990, as amended, remain in effect". The USDA further states in this publication that "the projections are not intended to be a Departmental forecast of what the future will be, but instead a description of what would be expected to happen with an extension of 1990 agricultural law as amended." These statements are reflective of existing long-term materials to which comparisons might be made and also indicative of the problems in doing so.

Figures 3-18 through 3-23 show the projections of total US exports by type of grain. The underlying production and use data are located in Appendix A. Corn's share of US grain and soybean exports is projected to remain flat at approximately 51%. Soybeans are also expected to maintain a relatively constant share of close to 15%. In regard to wheat, the forecasts indicate that its share will fall gradually to about 27%: a drop of just over two percentage points. Sorghum grains are expected to lose a half of a percentage point in the early part of the period and then reverse course and acquire two percentage points until the end of the period, arriving at 6%. According to the predictions, barley's share will increase slightly during the next five years and then decline after that to just over 1% in 2050. Oats' share of US grain and soybean exports, which is very small, is expected to taper off slightly.

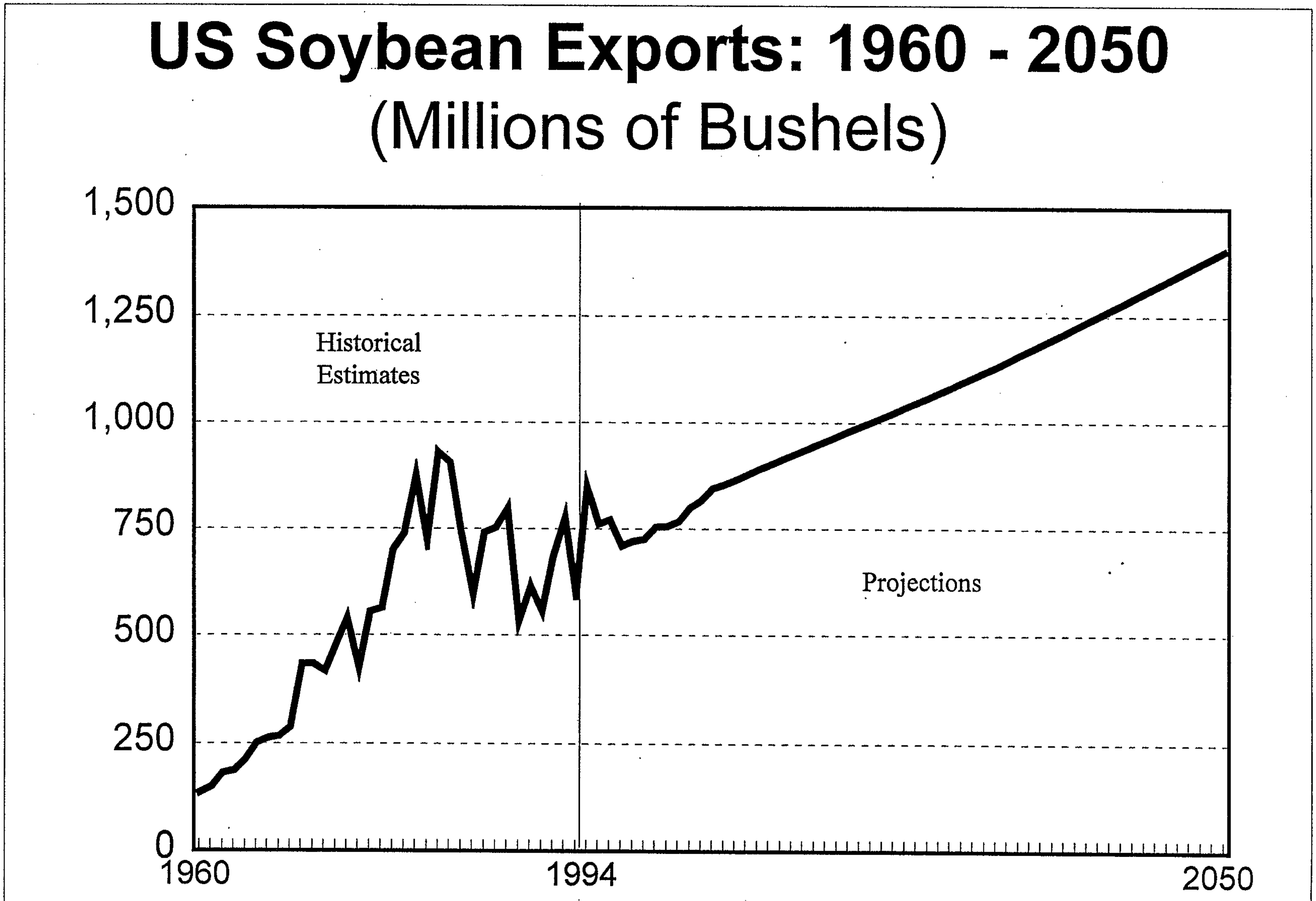
Figure 3-18

US Corn Exports: 1960 - 2050
(Millions of Bushels)



Source: Historical data from USDA. Forecasts by Sparks Companies, Inc.

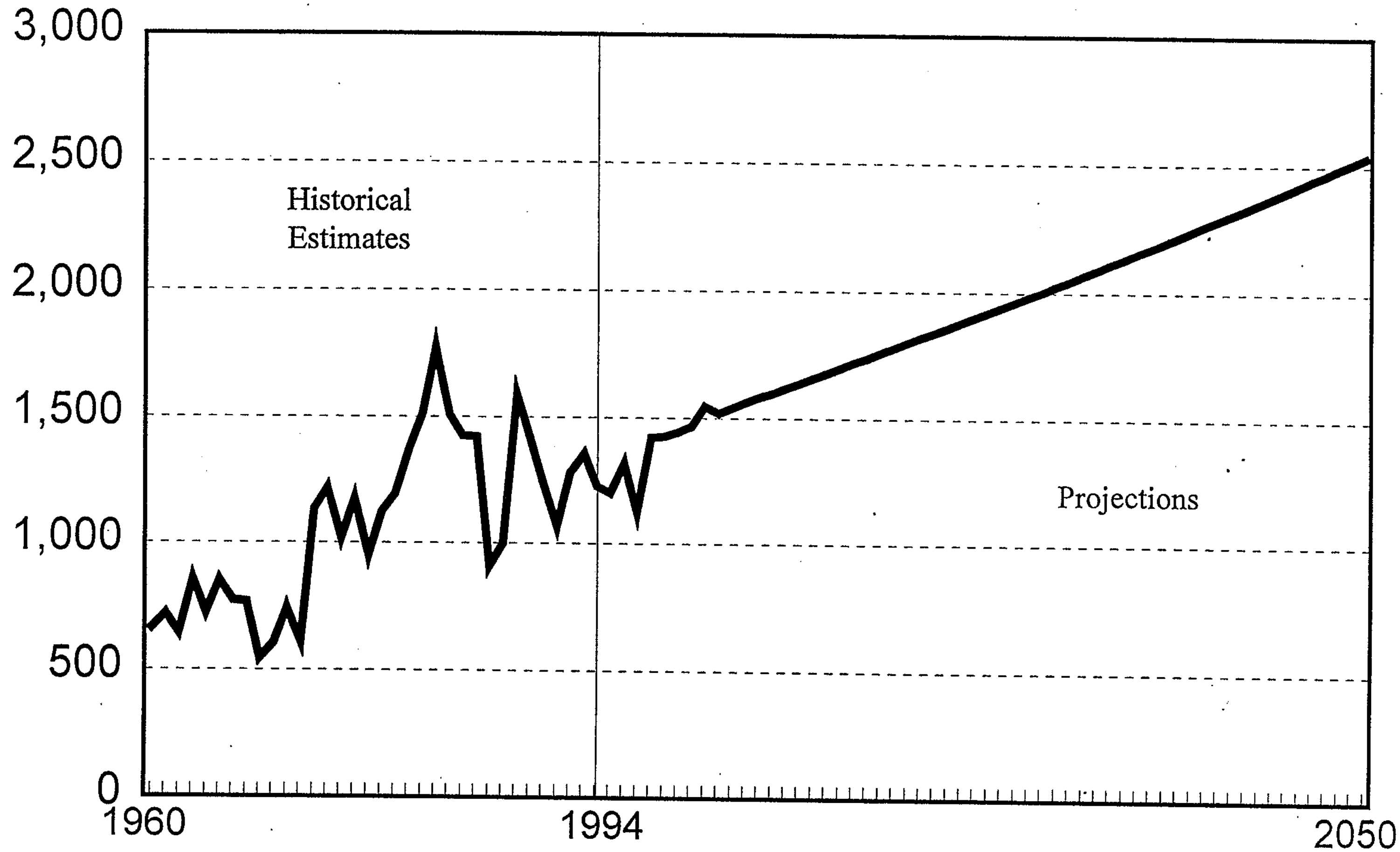
Figure 3-19



Source: Historical data from USDA. Forecasts by Sparks Companies, Inc.

Figure 3-20

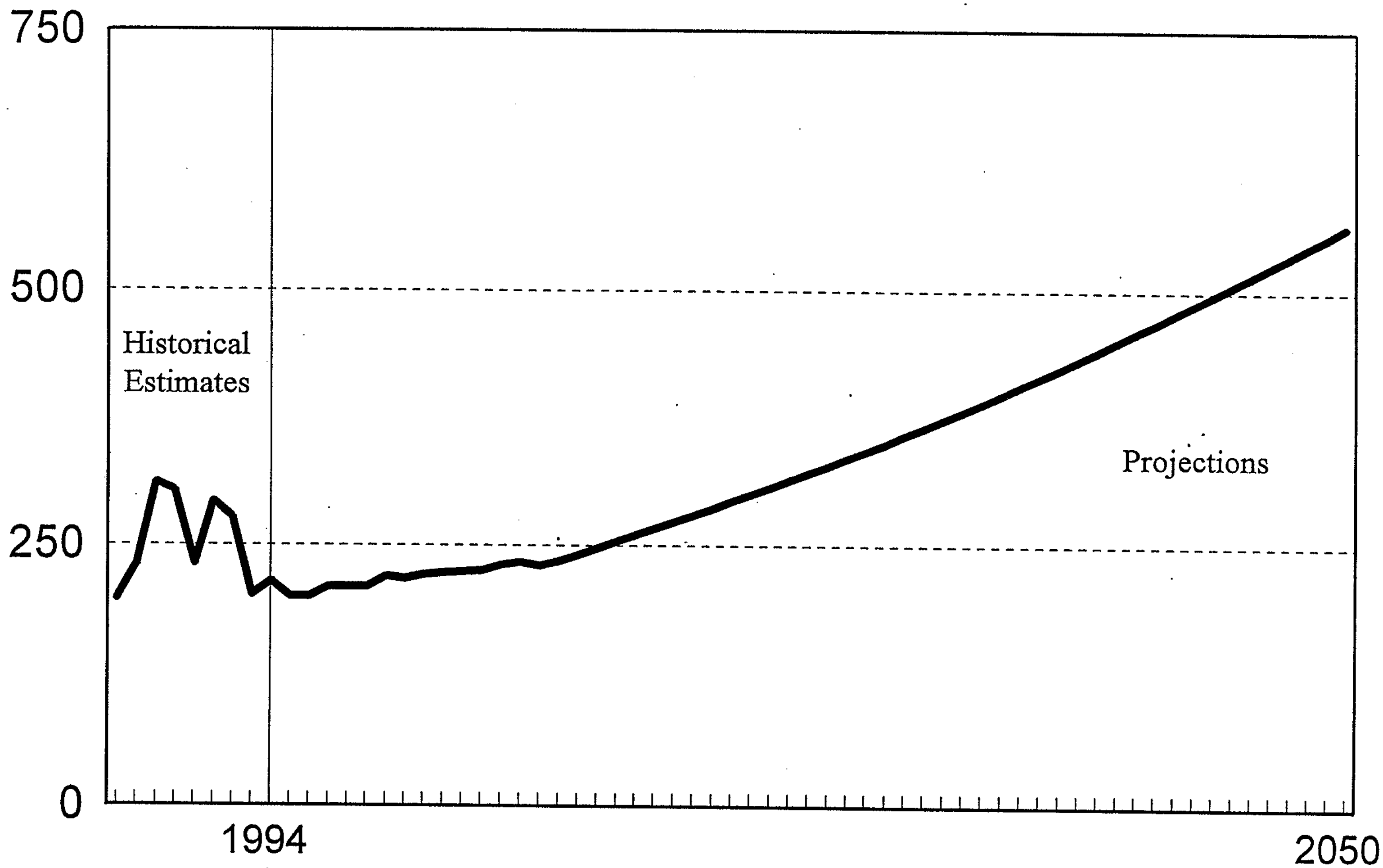
US Wheat Exports: 1960 - 2050
(Millions of Bushels)



Source: Historical data from USDA. Forecasts by Sparks Companies, Inc.

Figure 3-21

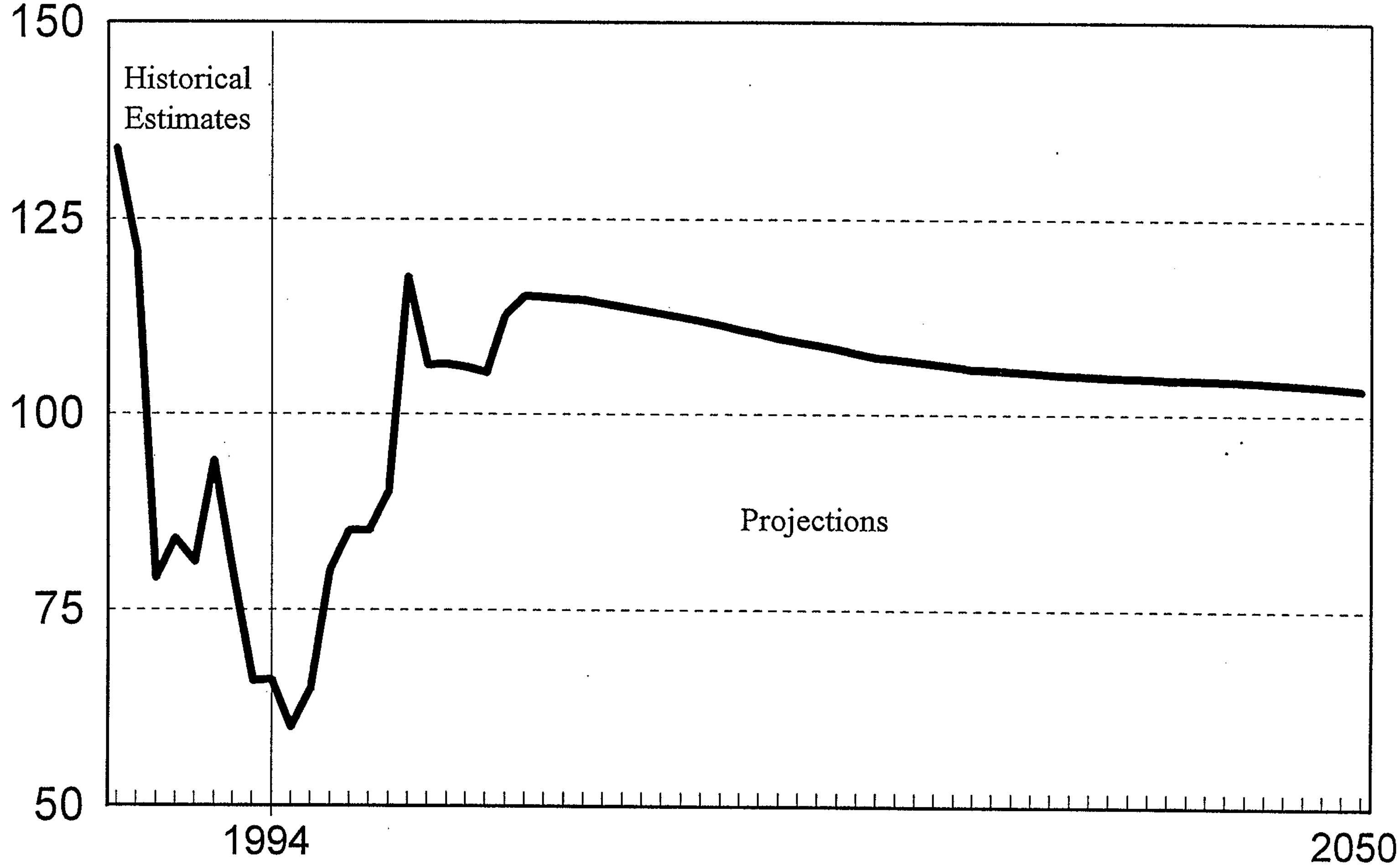
US Sorghum Exports: 1986 - 2050
(Millions of Bushels)



Source: Sparks Companies, Inc.

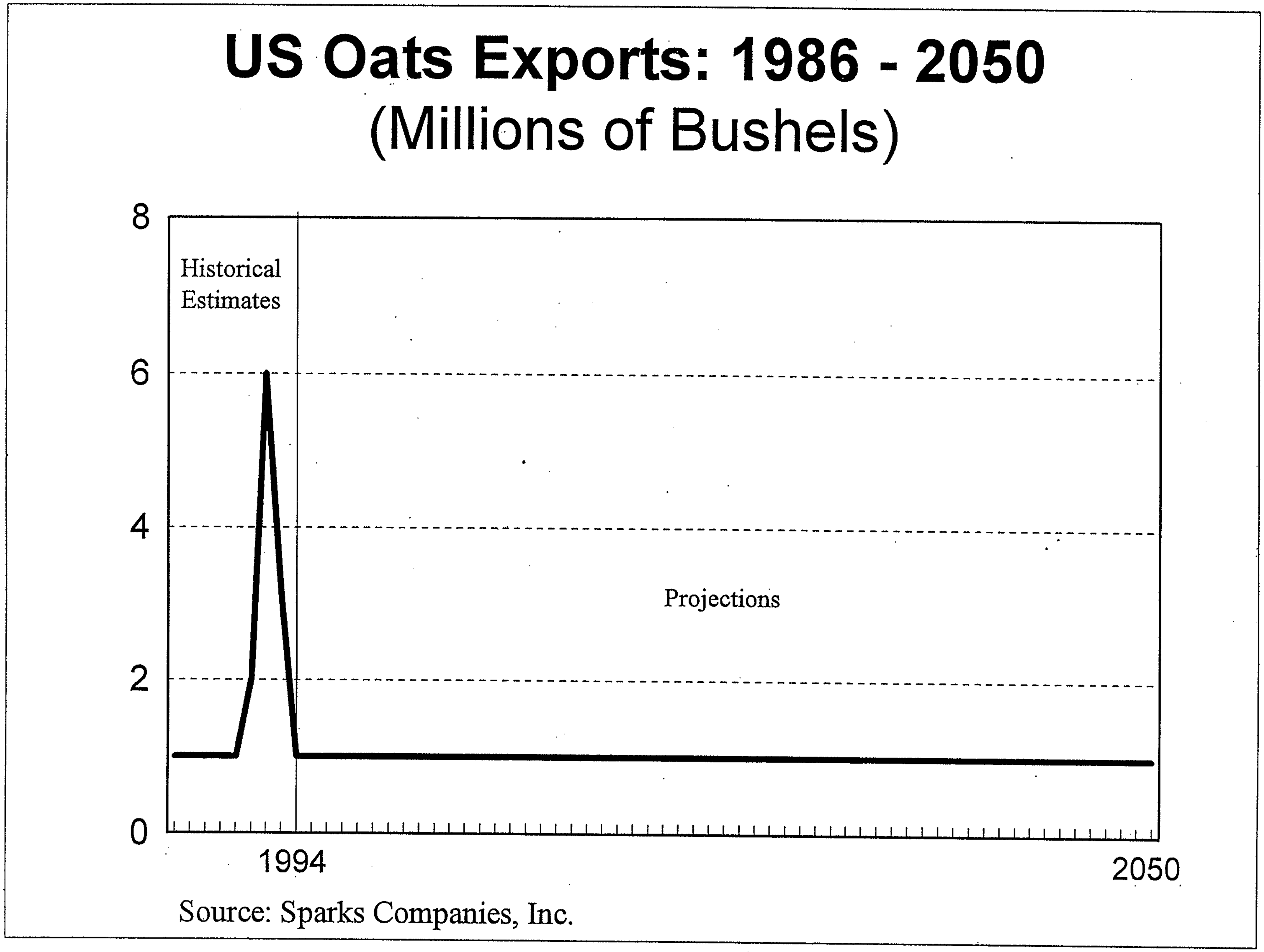
Figure 3-22

US Barley Exports: 1986 - 2050
(Millions of Bushels)



Source: Sparks Companies, Inc.

Figure 3-23



US Oats Exports: 1986 - 2050
(Millions of Bushels)
8
6
4
2
0
Historical Estimates
Projections
1994
2050
Source: Sparks Companies, Inc.

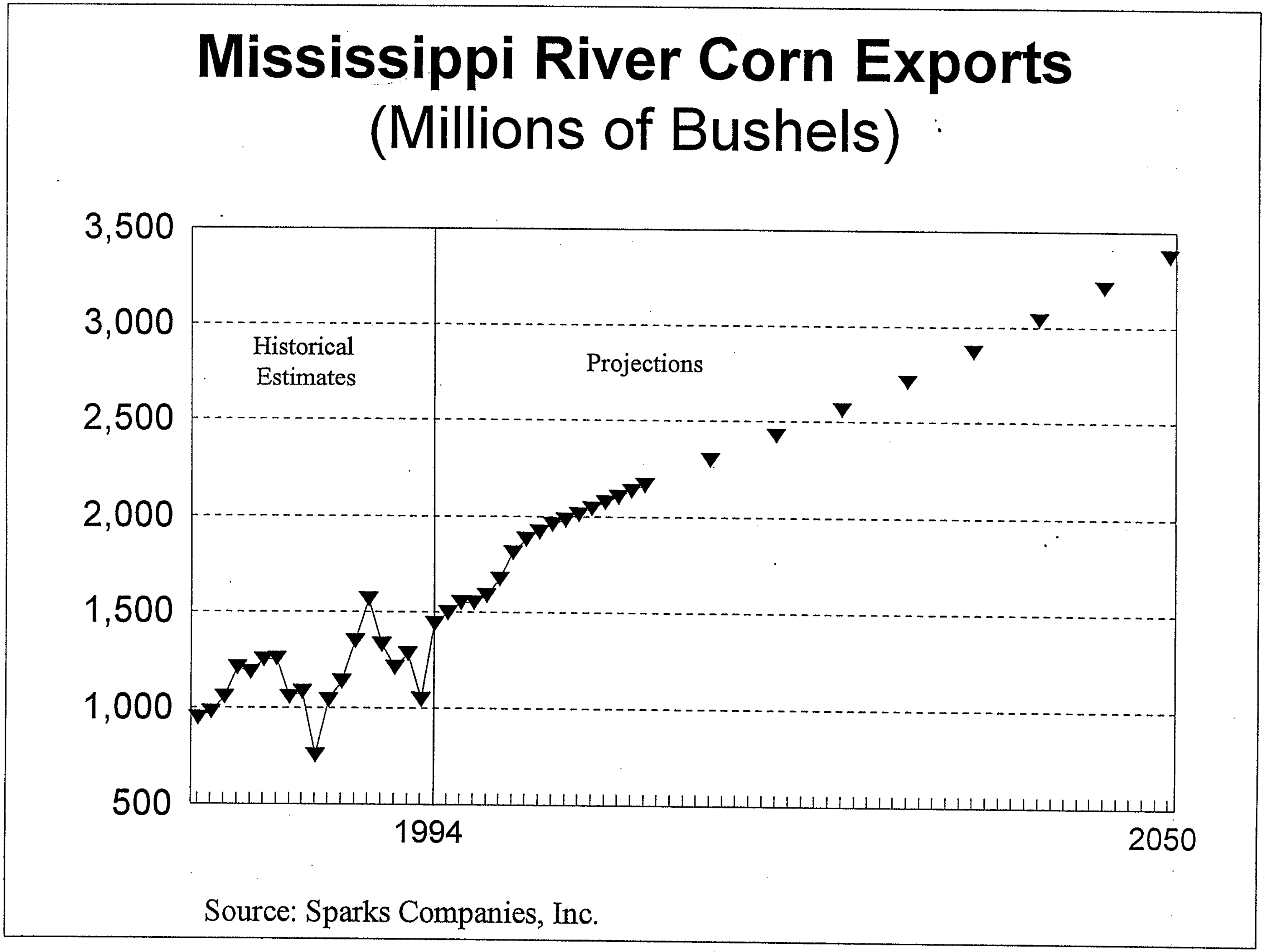
3.4.2 US Exports By Port

Export shipments of grains and soybeans by major US ports were projected by SCI using an estimated port share to allocate the total US export forecasts of the different grain commodities. The port shares that were used to make these allocations were based upon each port's average share (percent) of the respective commodity inspections during the 1992-1995 period. Consideration was also given to the respective port's historic share of inspections during the previous 20 year time frame.

For the most part, there is little evidence that would suggest that future exports by port will vary significantly from historic patterns. While it may be argued that destination is an important consideration for determination for port of shipment, history would indicate that the location/source of the grain to be shipped has played a more important role in the determination of the port of export. The forecast assumes that port facilities will be adjusted to accommodate the increased level of shipments expected over the next 55 years.

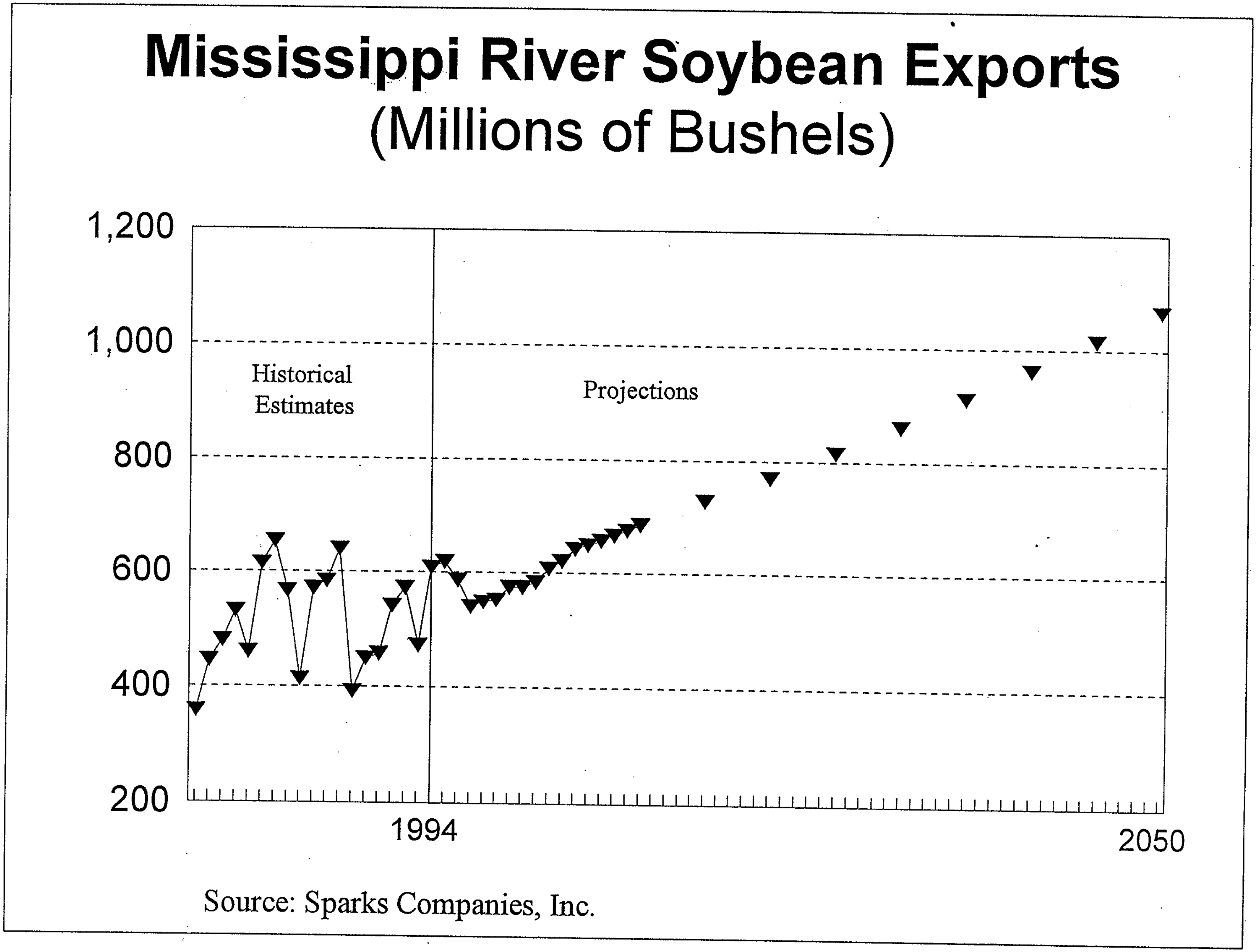
US grain and oilseed exports by port and expected percent share are shown in Appendix E. Figures 3-24 through 3-29 show the projected Mississippi River exports by type of grain. It is expected that corn exports out of Louisiana will more than double over the forecast horizon. Corn's share of Mississippi River grain/oilseed exports is to increase by approximately five percentage points over the next decade and then remain relatively flat at 64%. Although annual soybean exports out of Louisiana are expected to increase by almost 500 million bushels, it is anticipated that they will lose approximately five percentage points of Mississippi River grain and oilseed exports over the next ten years; after that, their share is predicted to remain relatively flat at 20%. In regard to wheat, the forecasts indicate that its share of Mississippi River grain/oilseed exports will vary between 11% and 12%. Sorghum's share of Mississippi River exports will see a slight decline out to 2010 and then is expected to increase by two percentage points to 5.5% in 2050. Barley's share of Mississippi River exports is very small and predicted to remain so; any changes in it will be imperceptible.

Figure 3-24



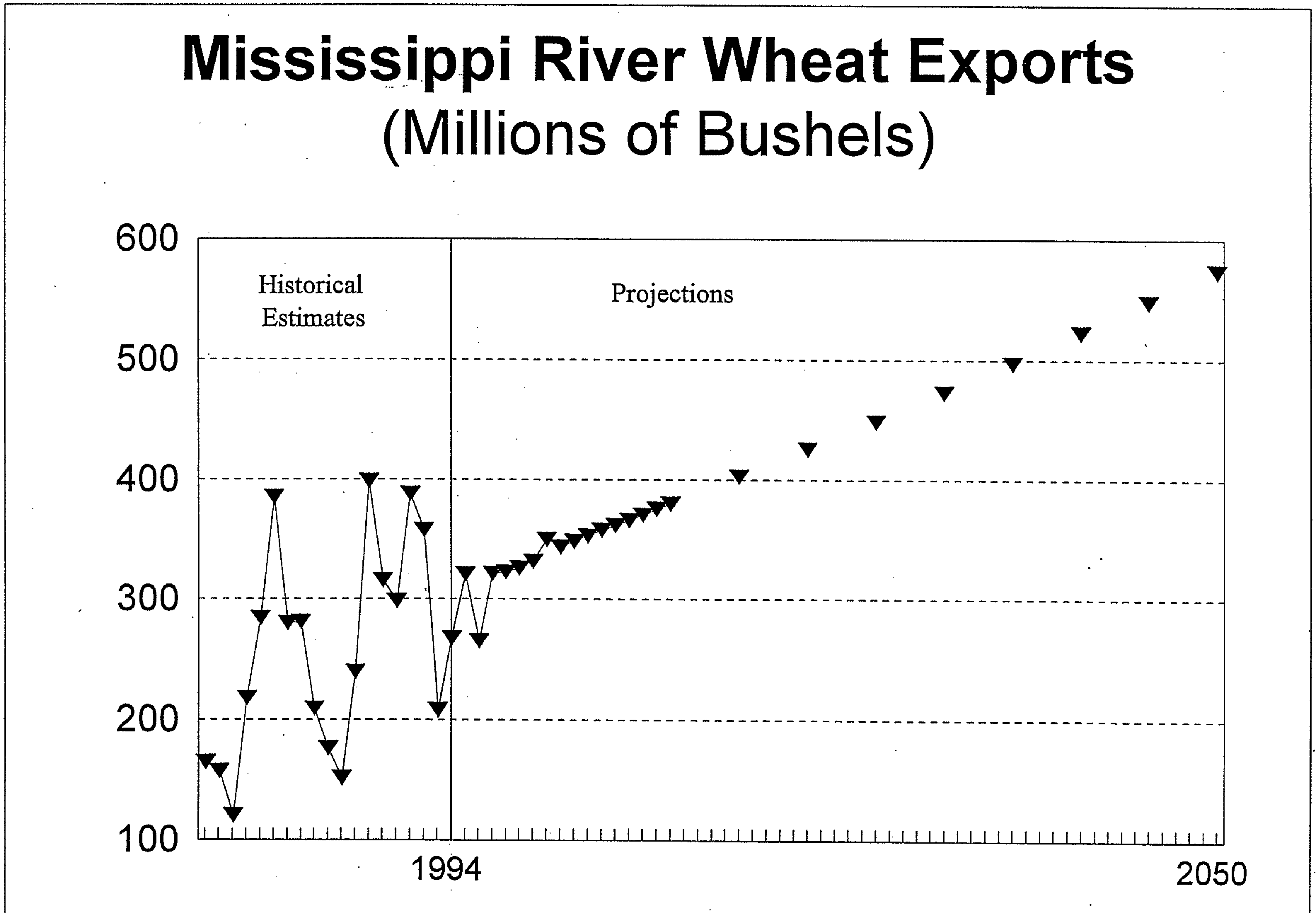
Mississippi River Corn Exports
(Millions of Bushels)
3,500
3,000
2,500
2,000
1,500
1,000
500
Historical Estimates
Projections
1994
2050
Source: Sparks Companies, Inc.

Figure 3-25



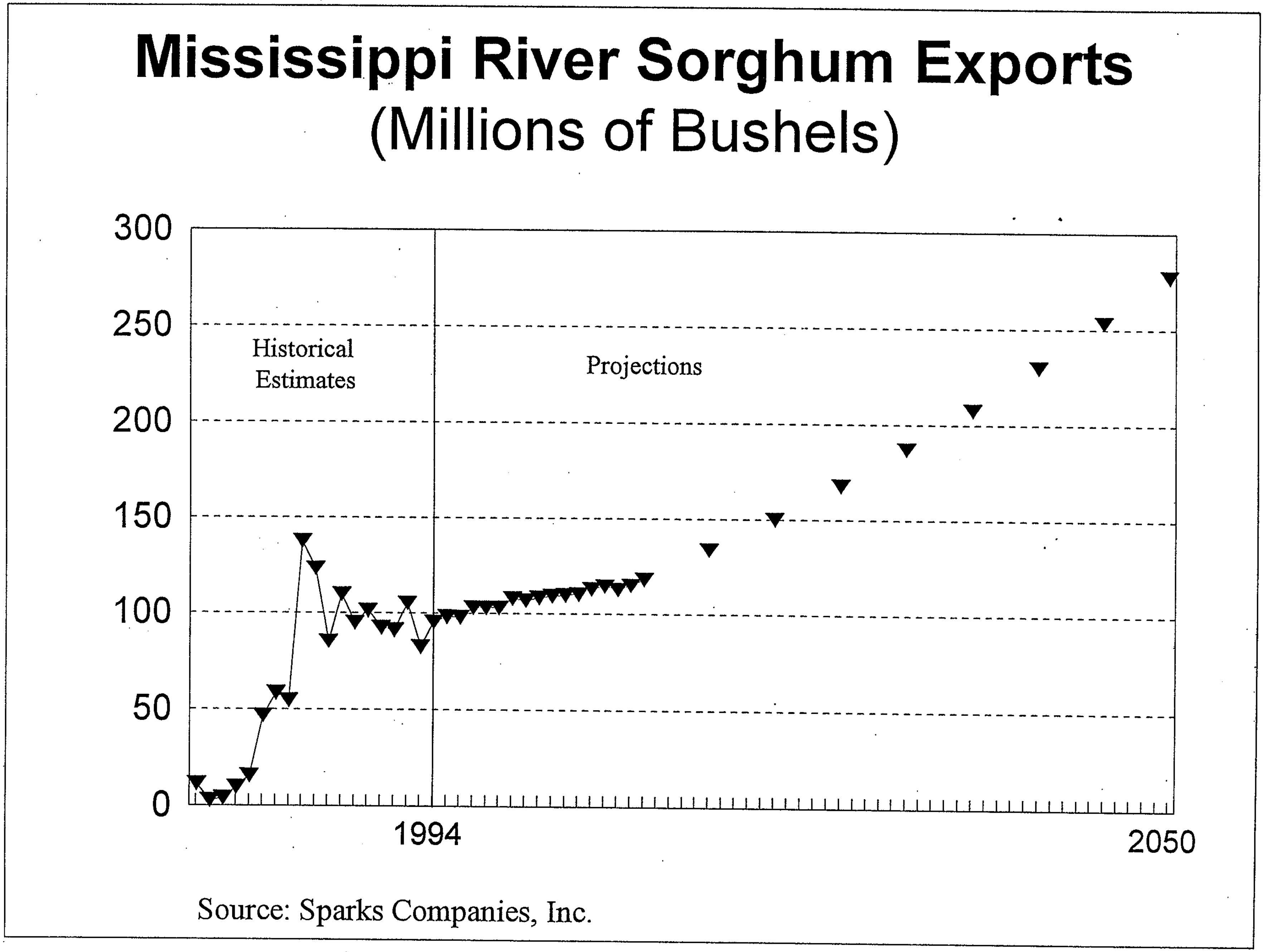
Mississippi River Soybean Exports
(Millions of Bushels)
1,200
1,000
800
600
400
200
Historical
Estimates
Projections
1994
2050
Source: Sparks Companies, Inc.

Figure 3-26



Source: Sparks Companies, Inc.

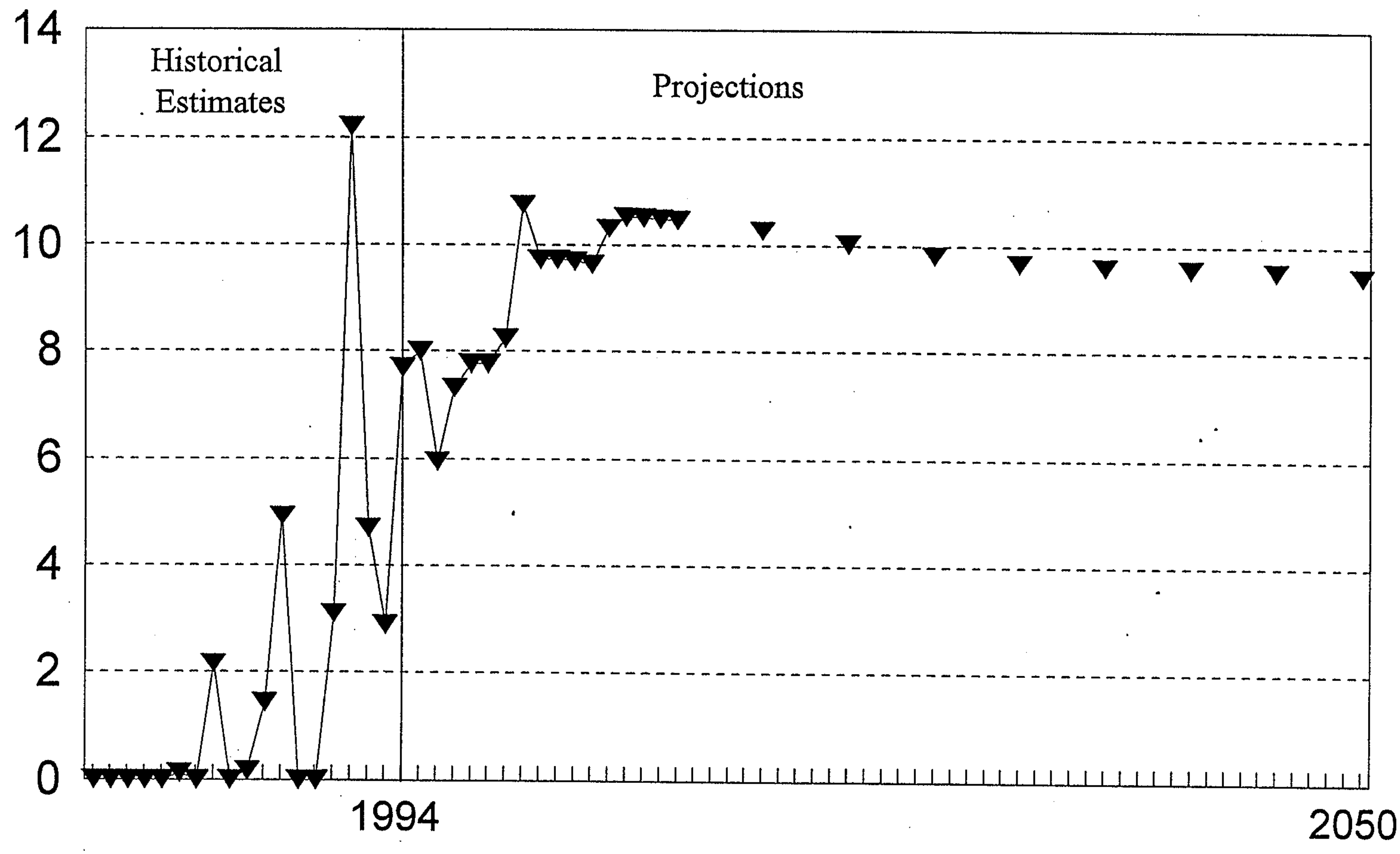
Figure 3-27



Mississippi River Sorghum Exports
(Millions of Bushels)
300
250
200
150
100
50
0
Historical
Estimates
Projections
1994
2050
Source: Sparks Companies, Inc.

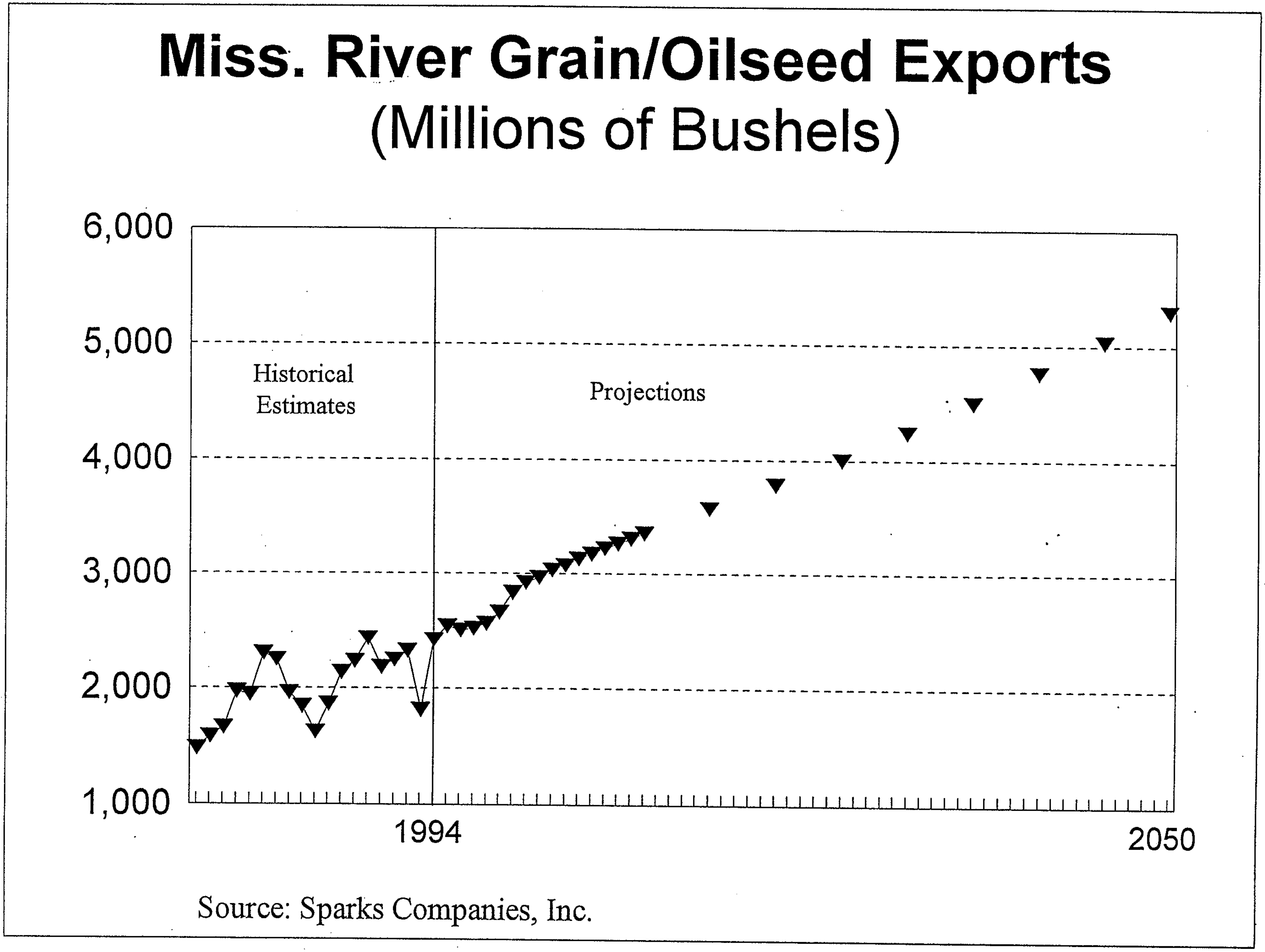
Figure 3-28

Mississippi River Barley Exports
(Millions of Bushels)



Source: Sparks Companies, Inc.

Figure 3-29



Miss. River Grain/Oilseed Exports
(Millions of Bushels)
6,000
5,000
4,000
3,000
2,000
1,000
Historical
Estimates
Projections
1994
2050
Source: Sparks Companies, Inc.

3.4.3 US Exports By Foreign Destination

Grain and soybean exports by destination were projected by SCI by allocating total US exports to selected countries and regional groupings. The respective country/region trade forecasts contained in SCI's ongoing world analysis and summarized in its "World Grain and Oilseed Review" published in November 1995 formed the basis and point of departure for these estimates. That particular report is included here as Appendix F and specifically addresses the 1995 to 2000 time frame. The level of imports/exports for each of the 26 countries/regions were forecast for the 1995-2000 period based on trend per capita grain and oilseed use measured against domestic production and an assumed constant level of reserve stocks if appropriate. For this forecast, trade projections to 2050 were made only for countries/regions determined to be significant importers. Calculated growth in trade over the past 20 to 25 years was used as the primary basis for forecasting imports for the 2000 to 2050 period. Percentage increases in imports were set for the major importers considering their expected needs and historical consumption patterns. The US share of each country or region's imports was set on the basis of its historic share of US exports and expected changes during the coming 50 to 55 years. The forecast for US grain and oilseed exports by destination are shown in Appendix D.

4.0 Modal Split Analysis

This section evaluates how grain and soybeans grown in the study area are transported to domestic processing or export destinations. The analysis focuses upon the competition between barge and rail. Truck deliveries are used to move these commodities relatively short distances and seldom compete with long-haul barge movements.

Rail data used in the analyses consist of historical commodity flows from the confidential waybill files; they were obtained from the Tennessee Valley Authority (TVA). Time series data on barge flows were provided by the U.S. Army Corps of Engineers. To make comparisons possible, the two data sets were processed in order to place them on a consistent commodity and origin-destination (O-D) basis.

Over half of the grain produced in the Study Area is also consumed within the Study Area and largely transported by truck. About two-thirds of the remaining production is exported and barge dominates as the transport mode. Lesser competition between barge and rail is for domestic shipments to states bordering the Mississippi and its connecting waterways. Shipments to other states are predominately rail with a minor share for truck. This division of markets limits the competition among the transport modes and leads to remarkable stability in the modal splits of the separate state-market commodity flows. This perspective is highlighted in Table 4-1, 4-2 and 4-3. These tables are from a 1985 survey and represent the latest comprehensive data collected on modal split for Study Area shipments.

As a consequence of this division of markets which generally stabilize the modal split, the discussion below centers on the competition between barge and rail in export trade, largely dictated by the port of export.

4.1 Corn

Between 1981 and 1993, the study area typically shipped between 25 and 35 million tons of corn each year by barge. Figure 4-1 shows these shipments graphically by origin BEA. During the same time period, an average of 92% of these shipments were delivered each year to Louisiana ports for export, shown in Figure 4-2.

This high concentration of corn shipments to Louisiana means that competition for these movements will be found primarily in rail shipments to ports that serve the same foreign destinations. Most of it is exported either from ports around New Orleans or from ports in the Pacific Northwest. Figure 3-12 in Section 3.1.2 reveals that over the last ten years, these two areas together have accounted for almost 90% of all of the U.S. corn exports, with New Orleans accounting for almost 71% and the PNW accounting for over 18% (See Appendix E for data on exports by ports). As a result, the following analysis will be divided into two sections. The first section looks at competition between barge movements to the Gulf and rail movements to the PNW; the second section focuses on the competition between barge and rail movements that are both going to the Gulf.

Table 4-1
1985 Corn Shipments from Study Area States by Destination and Mode
(Million Bushels)

Origin State	Mode	Intra Study Area	Other River States*	Other States	Louisiana Gulf Ports**	Other Gulf Ports**	PNW Ports**	Total
Illinois	Truck	495.1	13.7					508.8
	Rail	76.7	64.2	21.2	54.4	7.1		223.6
	Barge	0.6	18.7		448.7	1.7		469.7
	Total	572.4	96.6	21.2	503.1	8.8		1,202.1
Iowa	Truck	351.4	7.9	16.3		0.1		375.7
	Rail	186.6	15.1	48.9	4.9	10.6	25.8	291.9
	Barge	0.2	9.7		110.9	0.8		121.6
	Total	538.2	32.7	65.2	115.8	11.5	25.8	789.2
Minnesota	Truck	129.2	0.3	19.4				148.9
	Rail	67.1	13.6	50.2		2.9	56.0	189.8
	Barge	0.2	18.9	0.1	91.4	3.2		113.8
	Total	196.5	32.8	69.7	91.4	6.1	56.0	452.5
Missouri	Truck	28.6	13.0	6.3				47.9
	Rail	3.1	4.3	27.0	3.8			38.2
	Barge	0.1	3.6		69.4	0.4		73.5
	Total	31.8	20.9	33.3	73.2	0.4		159.6
Wisconsin	Truck	56.3						56.3
	Rail	5.1	1.0	4.1				10.2
	Barge	0.1	2.1	0.1	17.1			19.4
	Total	61.5	3.1	4.2	17.1			85.9
Study Area	Truck	1,060.6	34.9	42.0		0.1		1,137.6
	Rail	338.6	98.2	151.4	63.1	20.6	81.8	753.7
	Barge	1.2	53.0	0.2	737.5	6.1		798.0
	Total	1,400.4	186.1	193.6	800.6	26.8	81.8	2,689.3

*Includes states bordering on the Mississippi, Ohio, Tennessee, and Tennessee-Tombigbee Waterways.
**Not included in state destination data.

Source: Jerry E. Fruin, Daniel N. Halback, and Lowell D. Hill, Corn Movements in the United States, Agricultural Experiment Station, College of Agriculture, University of Illinois at Urbana-Champaign, 1985.

Table 4-2
1985 Soybean Shipments from Study Area States by Destination and Mode (Million Bushels)

Origin State	Mode	Intra Study Area	Other River States*	Other States	Louisiana Gulf Ports**	Other Gulf Ports**	PNW Ports**	Total
Illinois	Truck	191.5	1.5					193.0
	Rail	19.3	3.5	3.1	3.1	1.9		30.9
	Barge	2.2	13.5		107.1	1.0		123.8
	Total	213.0	18.5	3.1	110.2	2.9		347.7
Iowa	Truck	186.1	0.3	0.9				187.3
	Rail	47.3	4.9	3.3	1.0	1.2	4.5	62.2
	Barge	0.9	5.5		26.9	1.0		34.3
	Total	234.3	10.7	4.2	27.9	2.2	4.5	283.8
Minnesota	Truck	86.6		0.3				86.9
	Rail	22.0	0.1	1.0		2.7	5.7	31.5
	Barge	0.8	3.0		45.5			49.3
	Total	109.4	3.1	1.3	45.5	2.7	5.7	167.7
Missouri	Truck	35.0	0.7	8.2				43.9
	Rail	12.5	1.3	7.1	1.1	1.4		23.4
	Barge	0.7	1.1		53.2	0.4		55.4
	Total	48.2	3.1	15.3	54.3	1.8		122.7
Wisconsin	Truck	9.3						9.3
	Rail	0.1						0.1
	Barge	0.1	0.1		3.6			3.8
	Total	9.5	0.1	0.0	3.6			13.2
Study Area	Truck	508.5	2.5	9.4	0.0	0.0	0.0	520.4
	Rail	101.2	9.8	14.5	5.2	7.2	10.2	148.1
	Barge	4.7	23.2	0.0	236.3	2.4	0.0	266.6
	Total	614.4	35.5	23.9	241.5	9.6	10.2	935.1

*Includes states bordering on the Mississippi, Ohio, Tennessee, and Tennessee-Tombigbee Waterways.
**Not included in state destination data.

Source: Donald W. Lawson, Thomas R. Smith and E. Dean Baldwin, Soybean Movements in the United States, Agricultural Experiment Station, College of Agriculture, University of Illinois at Urbana-Champaign, 1985.

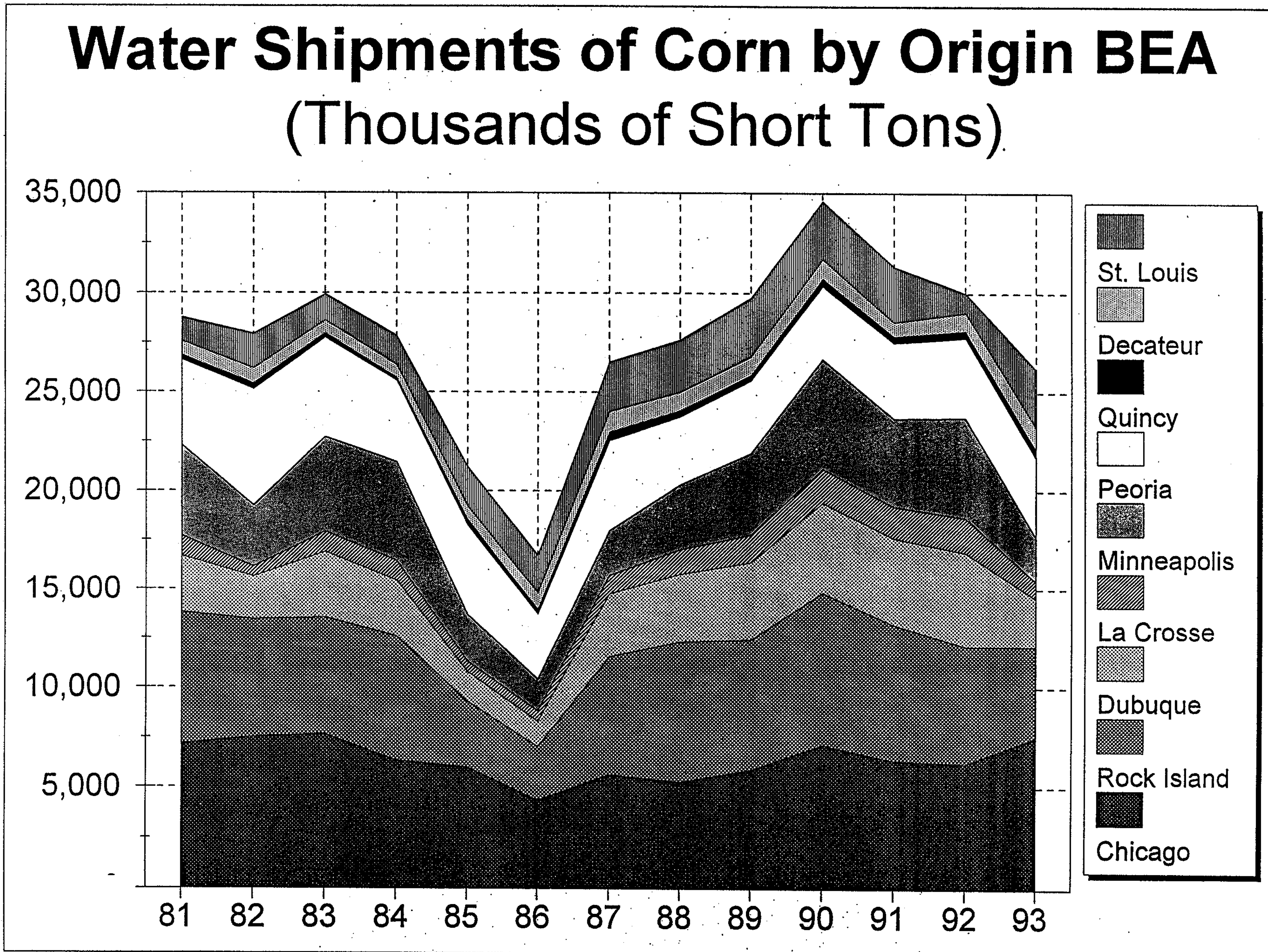
Table 4-3
1985 Wheat Shipments from Study Area States by Destination and Mode
(Million Bushels)

Origin State	Mode	Intra Study Area	Other River States*	Other States	Louisiana Gulf Ports**	Other Gulf Ports**	PNW Ports**	Total
Illinois	Truck	36.0	7.7					43.7
	Rail	5.3	4.9	9.4	5.2	0.1		24.9
	Barge	0.9	2.3		16.2	0.1		19.5
	Total	42.2	14.9	9.4	21.4	0.2		88.1
Iowa	Truck	3.4	0.2					3.6
	Rail	3.0		1.8	0.4			5.2
	Barge	0.1	0.3		2.7			3.1
	Total	6.5	0.5	1.8	3.1			11.9
Minnesota	Truck	32.5	0.1	2.0				34.6
	Rail	69.4	7.8	29.0			1.8	108.0
	Barge	6.2	18.1	7.9	55.6	0.2		88.0
	Total	108.1	26.0	38.9	55.6	0.2	1.8	230.6
Missouri	Truck	8.4	0.5	0.4		0.3		9.6
	Rail	9.0	1.4	5.3	1.8	7.1	0.4	25.0
	Barge	1.2	9.9		20.5			31.6
	Total	18.6	11.8	5.7	22.3	7.4	0.4	66.2
Wisconsin	Truck	4.7						4.7
	Rail	2.9	3.2	1.0		0.3		7.4
	Barge		0.3	11.7	0.1			12.1
	Total	7.6	3.5	12.7	0.1	0.3		24.2
Study Area	Truck	85.0	8.5	2.4	0.0	0.3	0.0	96.2
	Rail	89.6	17.3	46.5	7.4	7.5	2.2	170.5
	Barge	8.4	30.9	19.6	95.1	0.3	0.0	154.3
	Total	183.0	56.7	68.5	102.5	8.1	2.2	421.0

*Includes states bordering on the Mississippi, Ohio, Tennessee, and Tennessee-Tombigbee Waterways.
**Not included in state destination data.

Source: Michael J. Reed and Lowell D. Hill, Wheat Movements in the United States, Agricultural Experiment Station, College of Agriculture, University of Illinois at Urbana-Champaign, 1985.

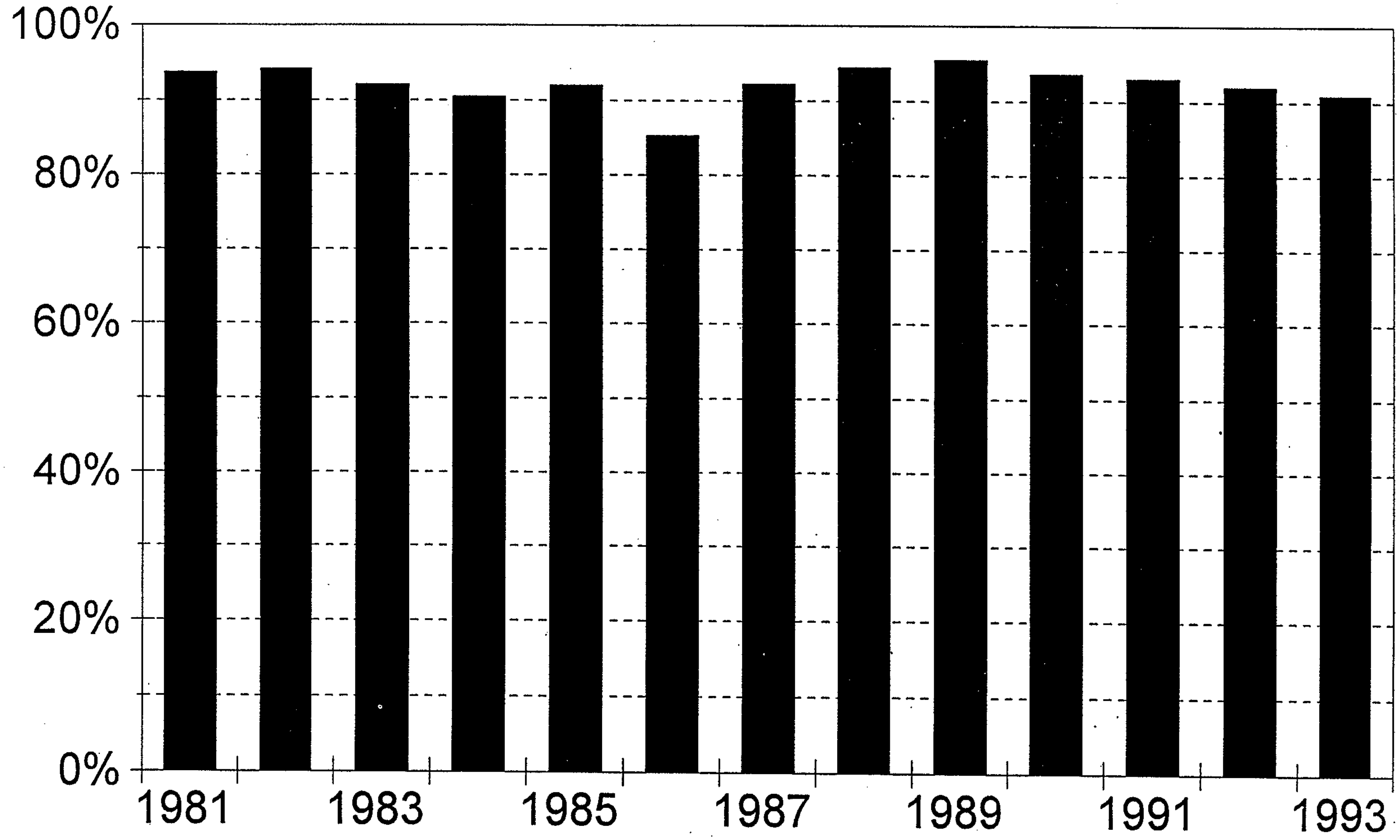
Figure 4-1



Water Shipments of Corn by Origin BEA
(Thousands of Short Tons)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
81
82
83
84
85
86
87
88
89
90
91
92
93
St. Louis
Decateur
Quincy
Peoria
Minneapolis
La Crosse
Dubuque
Rock Island
Chicago

Figure 4-2

Study Area Barge Shipments of Corn to Louisiana (Percent of Total Study Area Barge Shipments of Corn)



4.1.1 Competition with Rail to the PNW

There are numerous factors that can affect the share of US corn exports that move out of a given port. We have chosen to focus on those factors that will impact the PNW's share of US corn exports since competition between the PNW and Gulf ports will remain strong while the share of US exports to Asia remains high. These factors are relevant not only to the mode split analysis but also to the waterway traffic projections since they have import on the amount of traffic that moves down the river. In other words, corn that moves out of the PNW comes at the expense of corn that could have been exported out of the Gulf, and vice versa.

The best way to see this is to take the perspective of Asian[1] buyers who are trying to minimize their costs of obtaining corn. Such costs include ocean and inland freight costs, corn production costs, and markups on those production costs generated from competing demand sources (e.g. a local miller or another foreign country). Asian buyers take these things into consideration when comparing different origins of corn and the concomitant transportation costs associated with delivering it to a given destination (these things are embedded in the prices quoted at US export points and may be considered implicitly rather than explicitly; however, the end result is the same). If the total cost associated with acquiring Nebraska corn becomes cheaper than the total costs associated with obtaining Iowa corn, relatively more corn will move out of the PNW. Farmers located near the river compete with farmers in the Plains states in serving Asian markets.

Anything that has an impact on the total cost differentials (from an Asian buyers perspective) between production areas in the US will affect the percentage of grain that moves out of a given port. We have evaluated several of the most important things which have a bearing on these differentials, including: (1) export levels by other countries that compete with the US in specific markets; (2) relative grain handling capacity; (3) changing patterns in the production locations of corn; (4) relative transportation costs; and (5) the distribution of foreign destinations of US corn exports. Factors which could affect relative production efficiencies between different producing areas in the US were not addressed because it was felt they would be too difficult or costly to quantify.

Export Levels by Other Countries

As shown in Appendix F, the U.S. dominates the world corn market, supplying almost 80% of the corn traded on the world market between 1987 and 1994. For the 1995-2000 time period, SCI is projecting that share to increase to almost 89%. Historically, the other major corn exporters have included Argentina, China, and South Africa. In 1994 China became a net importer for the first time since the mid 1980s. Rising per capita income in the country has led to increases in its per capita demand for meat, which in turn has resulted in a greater demand for corn feed. In addition, family-owned livestock

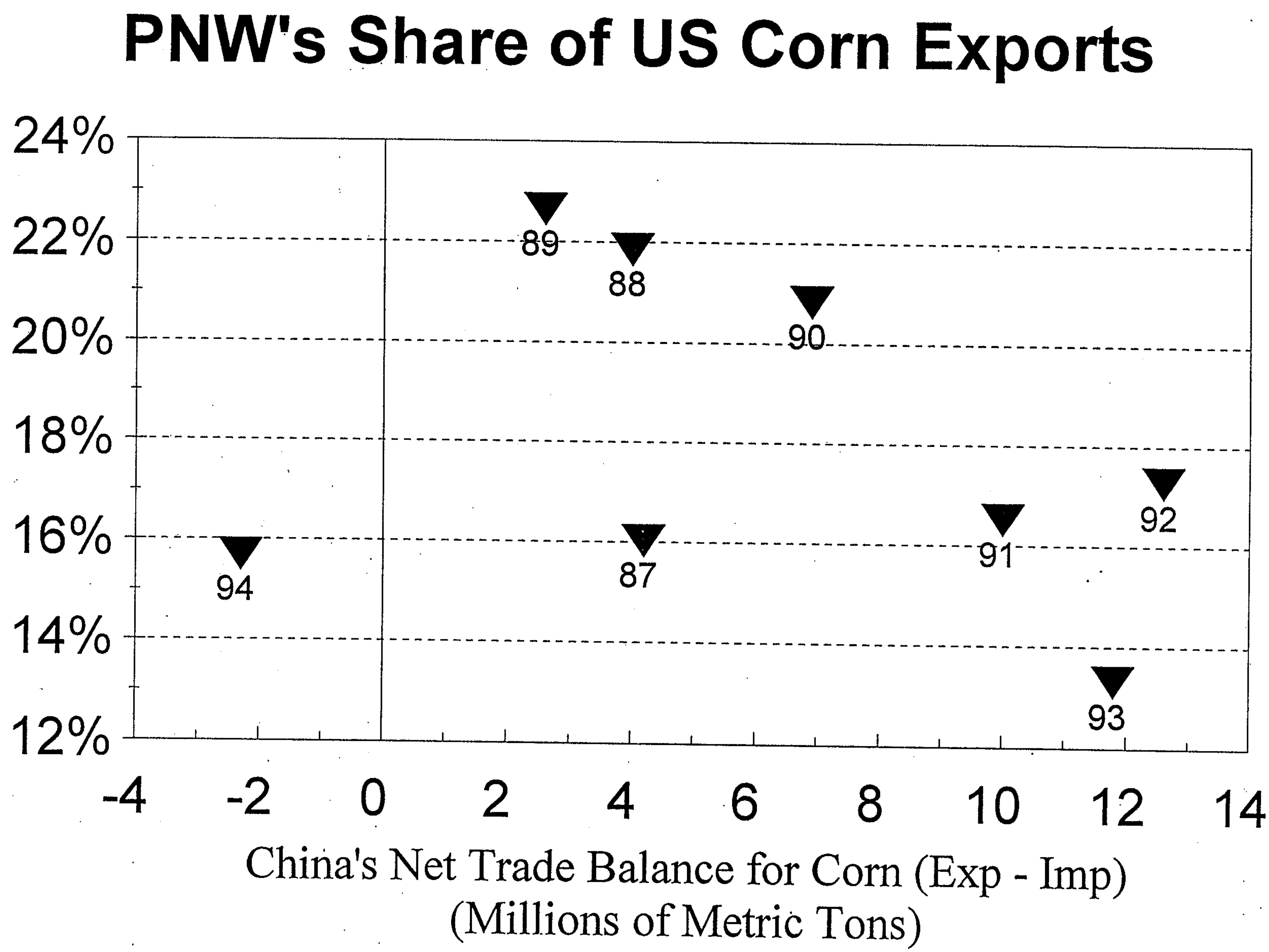
[1] The PNW and the Gulf compete primarily for Asian markets as almost all of the PNW's grain exports are shipped there.

operations which rely on table scraps and slop are being replaced by industrial operations which use feed grains. Both of these changes have given rise to higher levels of corn consumption in China. For self sufficiency reasons, China has been reluctant to import grain; it has diverted its exports to domestic consumption and has been attempting to raise production in order to meet the increased consumption levels. This diversion of exports to domestic consumption has opened up Asian markets to the US, increasing the demand for US corn. Furthermore, there has been a considerable amount of speculation about whether China will be able to increase its corn production fast enough to even meet its increasing domestic consumption levels. Both USDA and SCI are projecting that China's net trade balance for corn will remain negative over the next five to ten years. It should be mentioned that there is the possibility that China will continue to export corn from its surplus regions in the Northeast and offset this by importing corn into its domestic livestock markets in the central and southeast regions of the country. Chinese exports have typically flowed into a few main markets, notably South Korea and Japan and to a lesser extent Malaysia and Indonesia. If Chinese exports continue to move only into their primary North Asia markets, the U.S. could see an increased demand for corn from these South Asian countries. However, the Gulf is less competitive in serving the South Asian countries than it is in serving the North Asian countries since many South Asian countries demand smaller vessel shipments. Larger vessel shipments, demanded by most North Asian countries, allow the Gulf to take advantage of economies of scale which more than compensate for the cost of having to ship its grain so far.

Figure 4-3 shows the historical relationship between the PNW's share of US corn exports and China's net trade balance (exports minus imports) for corn. As expected, a loose negative relationship can be seen. Even though this relationship is negative, China's declining trade balance has had a positive effect on the level of exports out of the Gulf, shown in Figure 4-4.

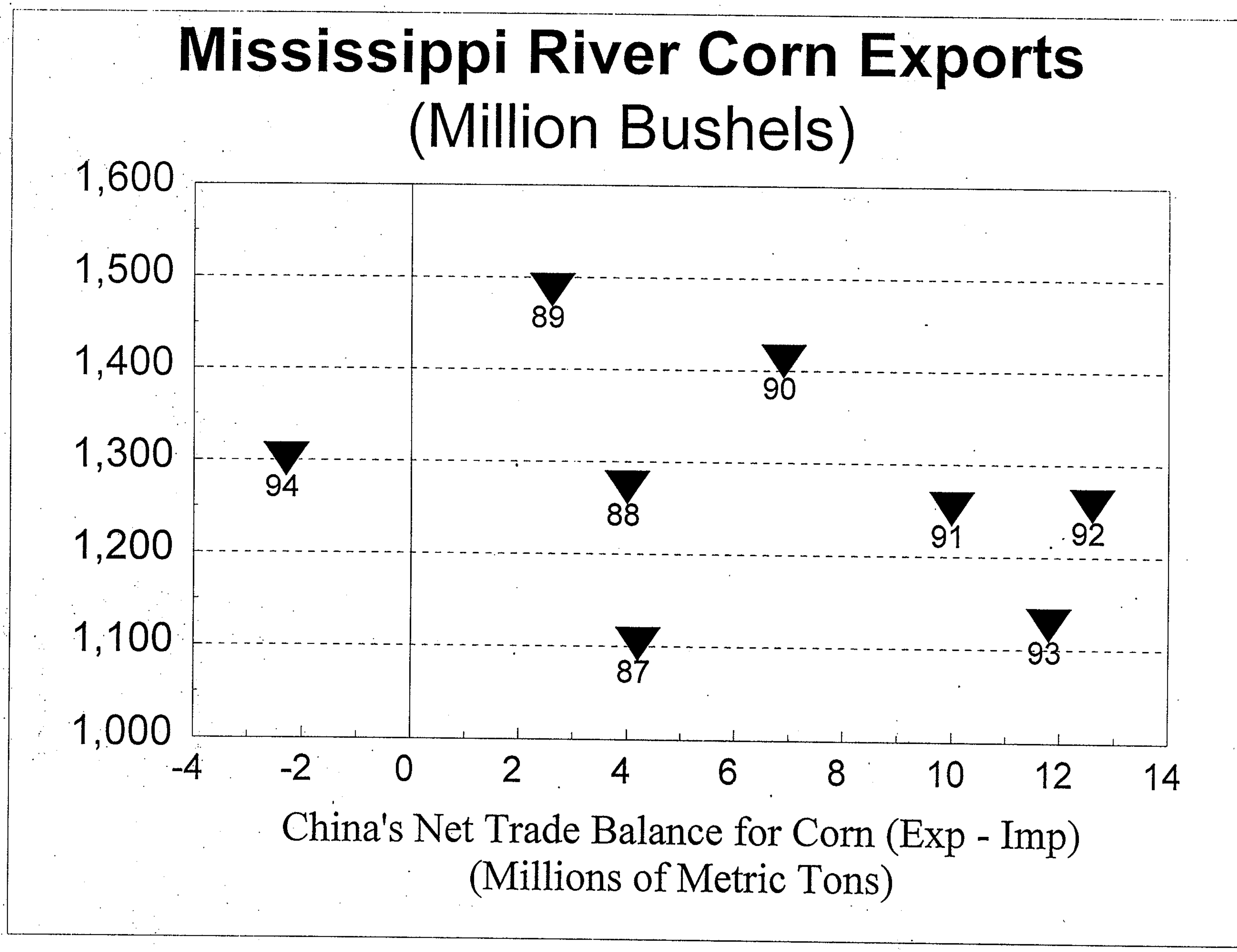
Argentina, the other major corn exporter in the world, supplies a little over 9% of the corn traded on world markets. From a two-dimensional graph, it is difficult to decipher any relationship between the Gulf's share of US corn exports and Argentina's export levels. However, in Figure 4-5 a negative relationship does seem to exist between the PNW's share and Argentina's export levels. This seems to indicate that Argentina competes more directly with the PNW than it does with the Gulf, likely for the Asian markets.

Figure 4-3



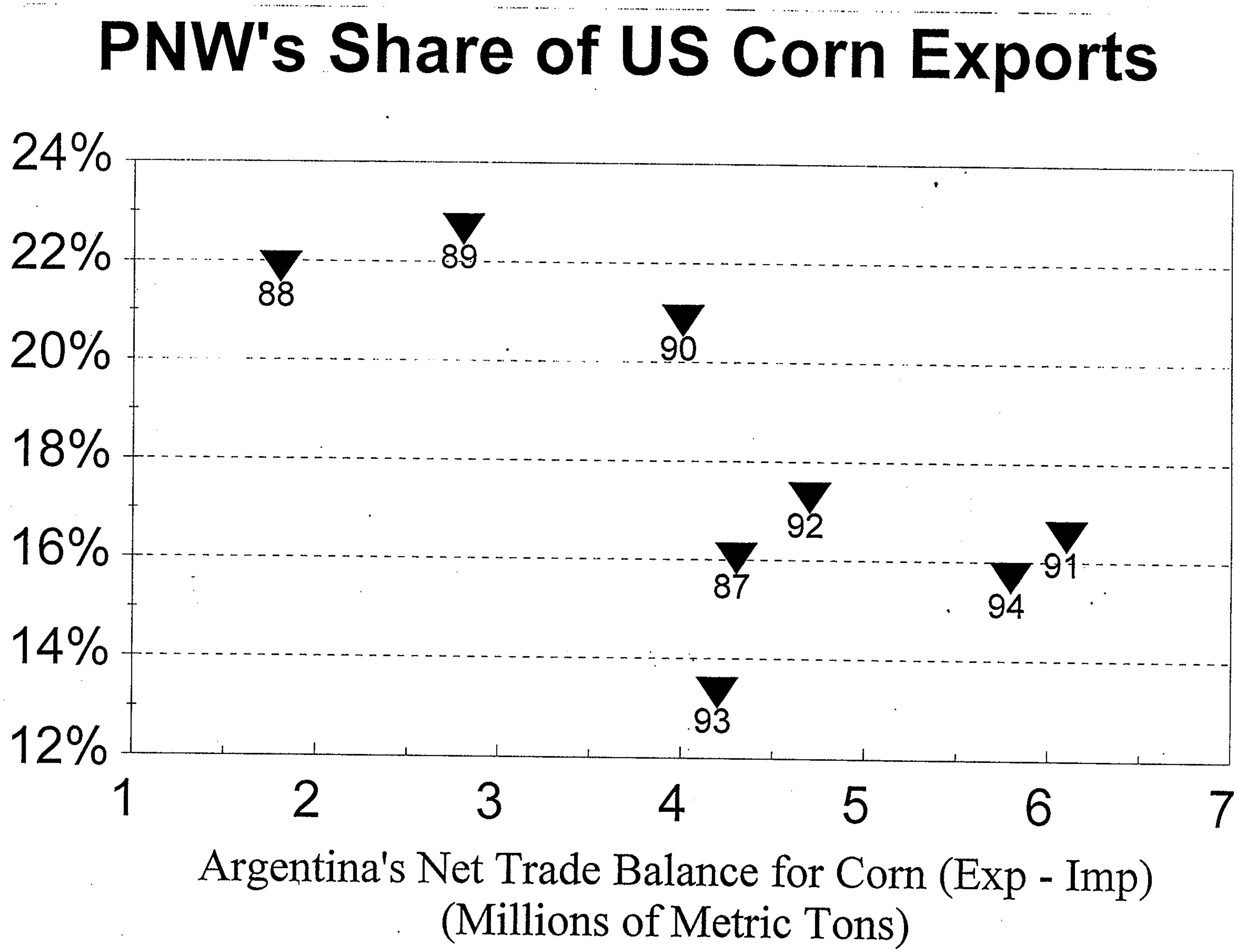
Source: Sparks Companies, Inc.

Figure 4-4



Mississippi River Corn Exports
(Million Bushels)
1,600
1,500
1,400
1,300
1,200
1,100
1,000
-4
-2
0
2
4
6
8
10
12
14
89
90
94
88
91
92
87
93
China's Net Trade Balance for Corn (Exp - Imp)
(Millions of Metric Tons)

Figure 4-5



Source: Sparks Companies, Inc.

Relative Grain Handling Costs and Capacity

With respect to corn, the PNW ports are often referred to as overflow ports because they tend to draw some of the excess when export volumes are relatively high. This relationship is somewhat confirmed in the Figure 4-6, which shows that the PNW's share of US corn exports is a positive function of total US export levels. The Gulf is generally more efficient than the PNW at handling large volumes of corn. However, when export volumes are high, system blockages develop that drive up delivery costs. In such cases, corn has to be temporarily stored in barges before it can be moved into an elevator. Higher inventory costs result both because it costs more to store grain in a barge than it does to store grain in an elevator and also because turnover rates are generally slower.

It should be noted that some of this relationship can be explained by large corn purchases in 1984, 1987 and 1988 from the Former Soviet Union (FSU) , which coincide with high US export levels. Some of the high US export levels were driven in part by the increased demand in the FSU, resulting from crop shortages and inefficiencies in their grain markets. In other words, the FSU was not just responding to low prices due to relatively high surpluses of US corn. Rather, their large purchases increased export prices[2] and caused farmers to shift relatively more of their shipments to export markets at the expense of domestic markets. Had the FSU not made such large purchases at those times, exports probably would not have been as high as some of their demand would have gone into US stocks and domestic consumption channels.

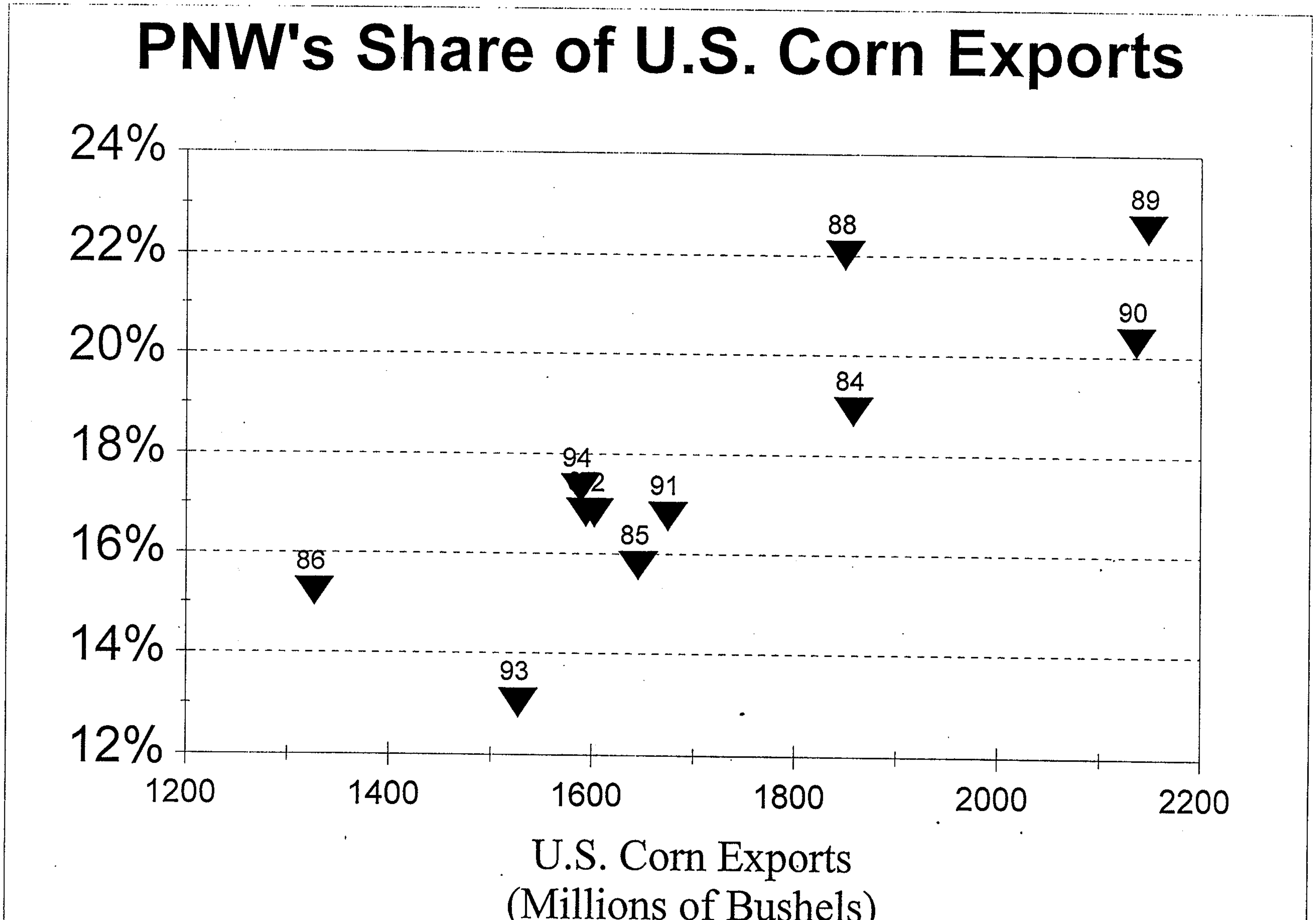
The increased demand brought about by the FSU had several implications for the PNW's share of US corn exports. First, almost all of the US exports of corn to the FSU originate in the Gulf and destinate in ports on the FSU's western seaboard. As a result, the higher levels of traffic that moved through the Gulf probably reached capacity constraints at some point, increasing inventory costs and causing exports destined for Asia to divert to the PNW. Second, it is likely that the large purchases by the FSU increased the demand for ocean vessels serving the Gulf. Such a phenomenon would affect relative ocean freight rates to Asia, increasing the PNW's advantage in serving the larger Asian markets. An examination of the relationship between relative ocean freight rates to Asia and the level of US exports to the FSU reveals a loose positive relationship supporting this conclusion. Third, large unexpected purchases can bid up Gulf corn prices by causing demand to suddenly exceed expected supply. Most of the grain that is exported is stored in interior elevators until shortly before it is needed in the Gulf. When a large unexpected purchase is made, there may not be enough grain stored in interior elevators to meet the increased demand in the Gulf and exporters may have to make additional purchases of grain from farmers. However, this takes time and in the short run demand will exceed supply, causing competing exporters to bid up prices in order to get their ships loaded and

[2] Since the Gulf ports are the primary ports that serve the FSU, the prices that would be affected are those quoted in these areas. Historical corn prices for Louisiana were found to be positively correlated with corn export levels to the FSU over the period 1984 - 1993.

honor their contract dates. As a result of the relatively higher corn prices in the Gulf, some Asian buyers will start to pull their corn out of the PNW.

This phenomenon is not likely to continue in the future. The break-up of the FSU has left the resulting countries strapped for cash and SCI is projecting grain exports to them to be negligible. On the other hand, the transition of China from a net exporter to a net importer could produce similar results. The real question is whether China will continue to support high and increasing levels of demand for US corn. If China does remain a consistent large net importer, in the short run capacity constraints in the Gulf (storage and transportation) will cause the PNW to see a larger percentage of US corn exports. However, in the long run capacity would be added to take advantage of the higher average export levels and the PNW's share would probably revert back to historic averages. Another question is how China will enter the market. If it occasionally makes large unexpected purchases, price increases in the Gulf will allow the PNW to pick up additional share of US exports at those times. However, if it chooses to become a consistent and reliable importer of US corn (which US officials are pressing for), Gulf prices will not be as volatile and the Gulf's share of US corn exports will be more stable.

Figure 4-6



Source: Sparks Companies, Inc.

Regional Shifts in Production and Domestic Consumption Locations

Notable regional shifts in US corn production include losses in share in the Southeast and in the Great Lakes area (Indiana, Ohio, and Michigan) and share increases in the Plains states (Colorado, Kansas, Nebraska, North Dakota, and South Dakota,). Production increases in Nebraska and South Dakota have accounted for most of the gain by the Plains states, together picking up three percentage points since the early 80s. The steady gain in share evident in the Plains states (shown in Figure 2-2) suggests the possibility of relatively more exports leaving the PNW. If consumption in the domestic markets served by the Plains states grows slower than production in these states, the additional supply will push domestic prices down. Such a price reduction would make export markets more attractive to farmers in the Plains states by affecting markup differentials between export points and domestic consumption points (see "Relative Transportation Costs and Price Markups" below for more information).

The scatterplot in Figure 4-7 explores this issue and plots the historical relationship between the PNW's share of US corn exports and the Plains states share of US corn production. A very loose positive relationship is apparent. The relationship is not stronger because rising domestic consumption in the Western US has been absorbing the production increases. The Plains states serve the growing number of feed-lots located in the Western US. Indicative of increased feed usage, the number of grain consuming animal units (GCAUs) in the western US has increased by 16% since 1987, having gained over three percentage points of the total number of GCAUs in the US. Since 1988 increasing domestic consumption in the West seems not only to have absorbed the increased production in the Plains states but also to have captured some of the corn that previously had been exported out of the PNW. Figure 4-8 reveals a tight negative relationship between the PNW' share of US exports and the number of GCAUs in the West.

Figure 4-7

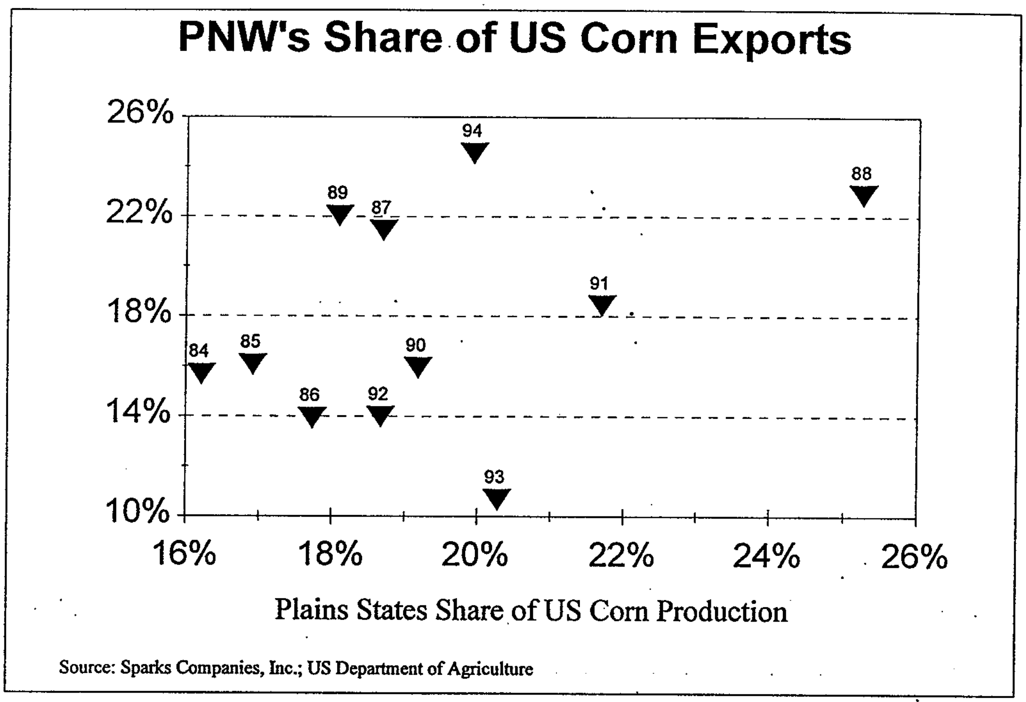
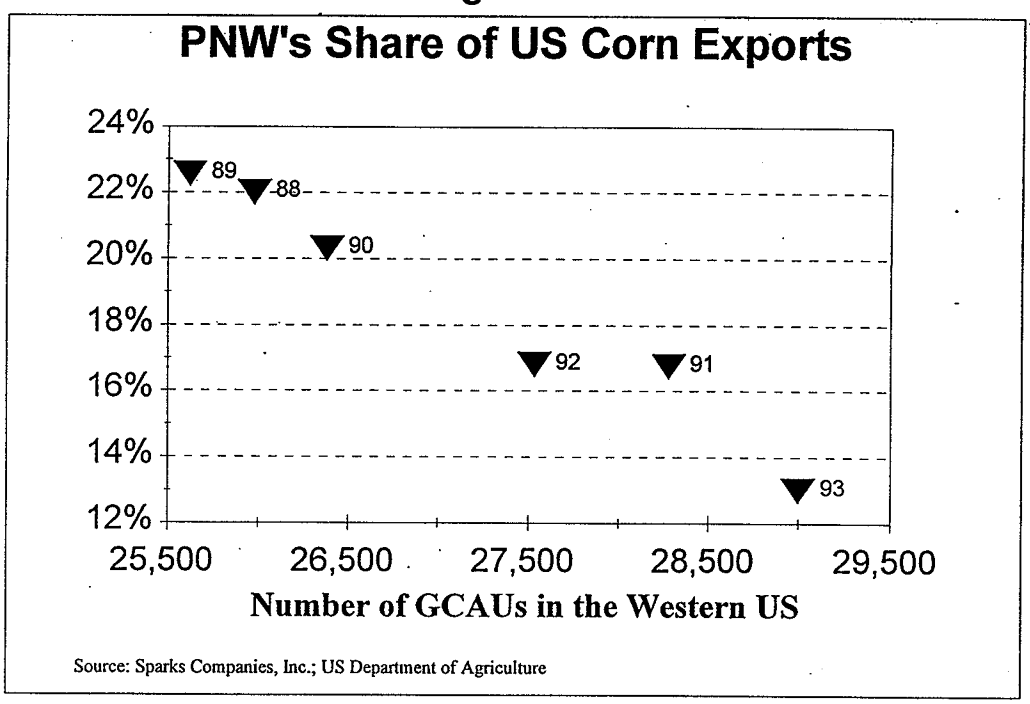


Figure 4-8



Relative Transportation Costs and Price Markups

Relative transportation costs and price markups can affect port shares through their influence on the size of the areas from which ports draw their grain. These areas are often defined by what are called drawing arcs. Below, a drawing arc will be described that divides the corn belt into two areas (but not necessarily equal halves): one that exports its grain through the PNW and one that exports its grain through the Gulf. As will be shown, growth in the size of one of the areas will be offset by contraction in the size of the other area.

Since the PNW serves Asian markets almost exclusively, the relevant transportation costs to consider in defining this curve are those associated with shipping grain to Asia. These costs include both inland freight charges as well as ocean freight rates. Inland freight rates are heavily affected by capacity which is affected both by the quantity of transportation stock (i.e., barges or rail cars) and by competing demand for those resources from other commodity groups such as coal.

Transportation costs associated with shipping grain out of the PNW are defined by the sum of the rail costs to get the grain from the growing area to the export elevators and the vessel costs of shipping the grain to Asia from the PNW. Transportation costs incurred when shipping grain out of the Gulf are defined by the sum of the barge costs to deliver the grain to Louisiana ports and ocean freight rates for shipping grain from the Gulf through the Panama Canal to Asia. In both cases, other costs will be involved including loading/unloading costs, the costs of transporting the grain to/from a rail or barge facility, and inventory costs.

A price markup (or profit margin) is the difference between a farmer's production costs and the grain's selling price, after adjusting for inland transportation charges. The amount of demand relative to supply in the export market varies in each port area and farmers will evaluate the different profit margins associated with each area in deciding where to sell their grain. The information will tell them if they should sell their grain in the export market and, if so, which market (port area) they should pursue.

The following equation defines an isoquant that to some extent will determine the port (PNW versus Gulf) through which a region will export its grain:

$$P + R + C + M_{PNW} = G + B + C + M_{GULF},$$

where P is the cost of ocean freight from the PNW to Asia, R is the cost of shipping the grain from a point within the US to a PNW port, C is production cost, M_{PNW} is the price markup in the PNW export market, G is the cost of ocean freight from the Gulf to Asia, B is the cost of shipping grain from the same point in the US to a Gulf port, and M_{GULF} is the price markup in the Gulf export market.

An illustrative isoquant is shown in Figure 4-9. The isoquant shows those areas where the cost of shipping grain to Asia out of the PNW are equal to the cost of shipping grain out of the Gulf (from the perspective of an Asian buyer). Areas to the left of the isoquant will ship grain out of the PNW because the overall costs are less than those required to ship grain out of the Gulf. Areas to the right of the isoquant will ship grain out of the Gulf.

Holding ocean freight rates constant, an increase in one of the inland transportation rates will shift the isoquant to a new geographic region and will require corresponding changes in the price markups and other inland freight rates in order to offset the increase[3]. For example, if B increases, the isoquant will shift right; R will then increase to reflect the additional costs of having to transport the grain a longer distance. In addition, M_{PNW} will increase and M_{GULF} will fall to reflect the resulting changes in demand at the different ports. The overall result is to change the size of the areas from which the ports draw their grain.

A change in ocean freight rates from one of the ports will also impact the sizes of the different drawing areas. For example an additional surcharge at the Panama Canal would increase G, causing the isoquant to shift right and reducing the size of the Gulf's drawing area. The increase in the ocean freight rate differential would be offset by corresponding changes in the inland transportation costs and price markups.

To corroborate these explanations, we tried to find a relationship between the PNW's share of corn exports and the average corn price differential between Louisiana and the PNW (average of Oregon and Washington). Except for years when the rail/barge freight rate differential was extremely large (e.g., 1993), the relationship was very murky. The finding was unexpected but can be explained. First, our assumption that an increase in the size of the PNW's drawing area would lead to an increase in the PNW's share of US corn exports may be flawed. Due to rising domestic consumption in the western US, a larger drawing area may be required for the PNW to be able to maintain its current share. This explanation is somewhat reasonable. The drawing arc simply defines a port's drawing area; it does not determine the level of exports drawn from that area. The level of exports moving through a port is determined by the difference between the price a farmer (located in the port's drawing area) can get in a local market and the price that can be obtained from the port's export market. If foreign demand had remained fairly proportionate to domestic demand (i.e., relative prices did not change), it is likely that the size of the PNW's drawing area would have had a more significant impact on its port share.

[3] It is unlikely that relative changes between the inland costs significantly affects ocean freight rates because the resulting incremental changes in volumes at the port areas are relatively small.

Transportation Cost Isoquant for PNW Versus Gulf

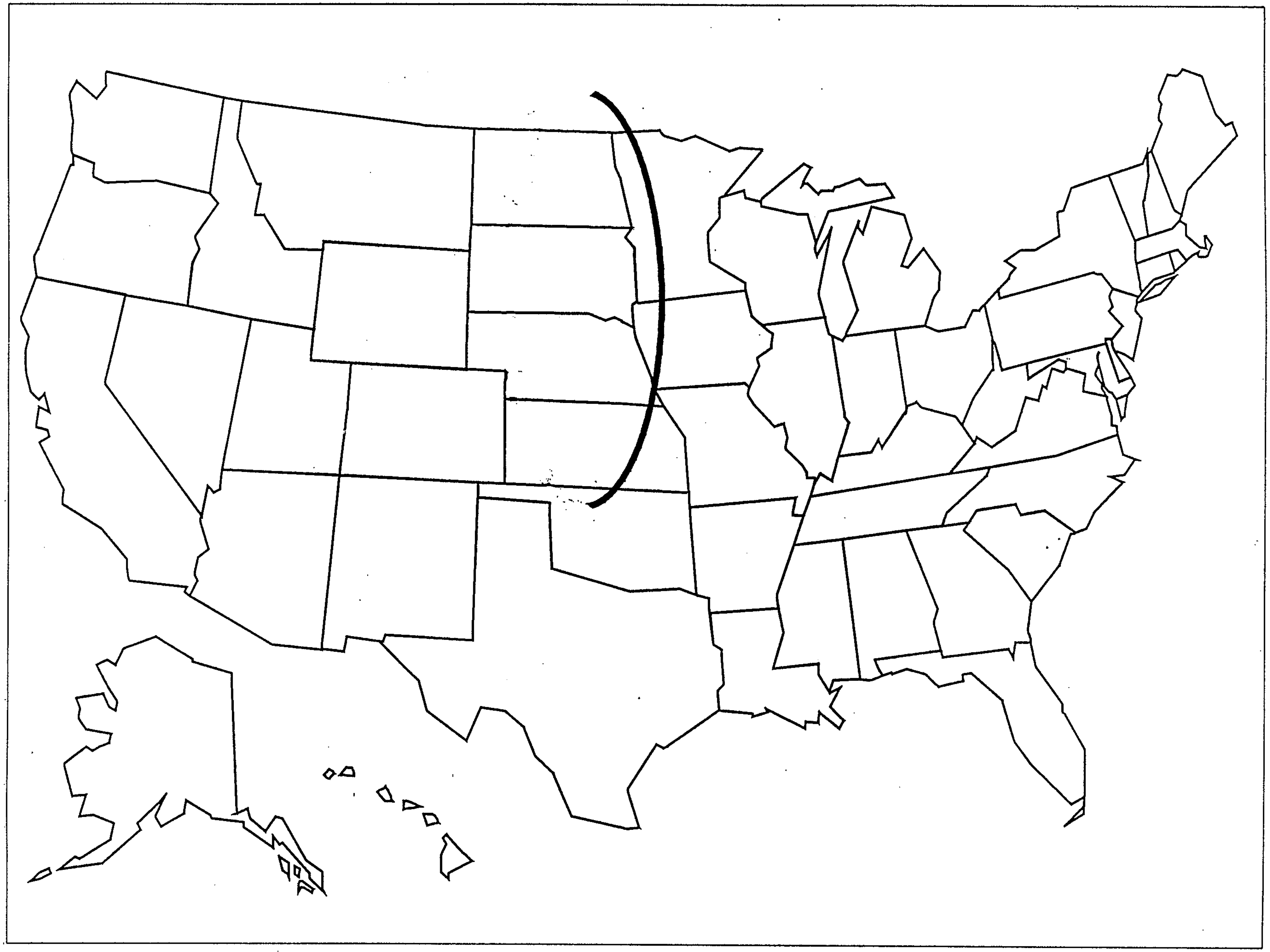


Table 4-4 presents annual corn prices by state for the period 1984-1995. No clear relationship were identified between the PNW's port share and the price spreads shown in the table. Figure 4-10 graphically depicts the PNW and Louisiana corn prices shown in the table. A general increase in the price differential is evident. On average, the price of corn in the PNW was $0.25 higher than the Louisiana price between 1985 and 1994. While the PNW's higher prices have been somewhat offset by relatively cheaper ocean freight rates to Asia, in general the Gulf is still able to offer a lower delivered price. For example, the total costs of shipping corn to Japan are compared in Figure 4-11. To develop these cost estimates, port area prices were converted from bushels to metric tons and then added to the respective ocean freight rate. Excluding 1993 (which appears to be an outlier), it cost an average of $3.41/metric ton more to ship PNW corn to Japan than it cost to ship Gulf corn.

Evidence of how changes in the ocean freight rate differential can affect a port's share is shown graphically in Figure 4-12 A very loose positive relationship indicates that as the differential increases, PNW's share of US corn exports to Asia also increases. The weakness of the relationship can probably be explained by other factors, some of which have already been mentioned, which overpower the influence of ocean freight rates on the PNW's port share.

Figure 4-13 gives a general idea of where the isoquants typically fall in the corn producing region of the US. The figure shows the BEA areas which have been the primary source of PNW grain[4]. As can be seen, historically, the PNW has only been able to draw corn from the very western edge of the corn belt. Between 1981 and 1993, these BEA areas accounted for an average of 98% of the corn railed to the PNW from North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana, and Ohio. That percentage never dropped below the 96.95% share exhibited in 1985. The isoquants probably fall within the blue and black shaded area, as shipments out of Minneapolis to the PNW occur mostly during the winter when the Upper Mississippi River is frozen and the locks are iced up. The eastern edge of this strip is fairly close to the river and relative transportation costs seem to preclude the PNW from being able to draw from areas further east. In contrast to the Upper Mississippi River, it can be seen that the PNW's drawing area is fairly limited, especially since North Dakota and South Dakota account for less than 4% of US corn production. Although the Plains states share of corn production has been increasing, the size of the drawing area places bounds on how much corn the PNW can be expected to export, especially since it must compete with increasing domestic consumption in the western US.

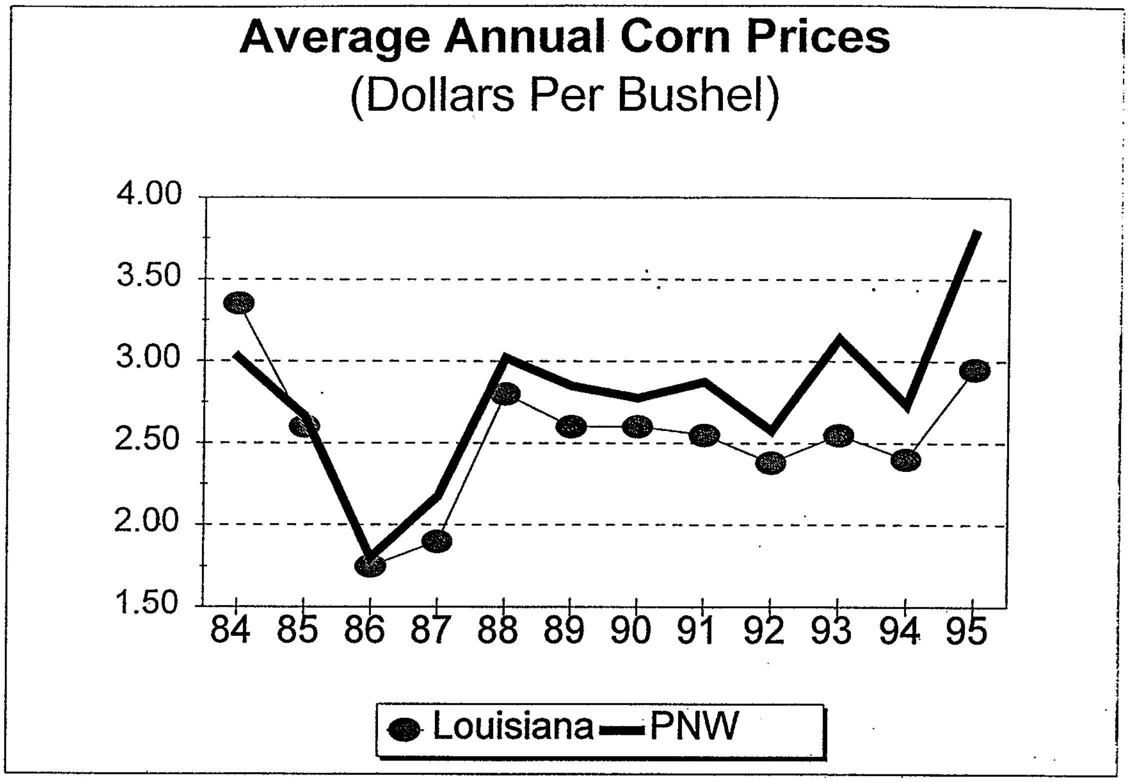
[4] Each color in the map represents a different BEA area.

Table 4-4
Average Annual Corn Prices by State
(Dollars Per Bushel)

State	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Upper Mississippi River Basin*	3.05	2.47	1.91	1.51	2.25	2.42	2.37	2.32	2.35	2.46	2.24	3.25
Iowa	2.97	2.41	1.83	1.45	2.19	2.34	2.30	2.26	2.30	2.44	2.22	3.2
Illinois	3.13	2.53	2.00	1.61	2.32	2.49	2.46	2.42	2.46	2.57	2.27	3.3
Minnesota	2.91	2.39	1.84	1.48	2.14	2.30	2.25	2.18	2.22	2.26	2.23	3.14
Missouri	3.18	2.52	1.91	1.54	2.32	2.51	2.48	2.48	2.45	2.58	2.25	3.48
Wisconsin	3.04	2.51	1.94	1.49	2.28	2.45	2.35	2.26	2.30	2.46	2.25	3.11
PNW Drawing Area*	2.87	2.41	1.84	1.64	2.29	2.33	2.28	2.27	2.20	2.43	2.20	3.24
Colorado	3.03	2.60	2.12	1.66	2.34	2.43	2.44	2.41	2.43	2.65	2.38	3.33
North Dakota	2.54	2.17	1.42	1.91	2.4	2.24	2.15	2.19	1.85	2.27	2.06	3.16
Nebraska	3.00	2.49	2.00	1.56	2.23	2.39	2.35	2.31	2.34	2.52	2.33	3.22
South Dakota	2.91	2.36	1.83	1.43	2.19	2.27	2.19	2.16	2.16	2.27	2.01	3.23
Great Lakes/Ohio River Basin*	3.12	2.48	1.96	1.58	2.37	2.50	2.49	2.36	2.42	2.51	2.24	3.30
Indiana	3.14	2.51	1.99	1.62	2.39	2.54	2.53	2.39	2.45	2.51	2.25	3.38
Ohio	3.14	2.50	1.98	1.61	2.40	2.54	2.52	2.42	2.48	2.57	2.23	3.32
Michigan	3.08	2.42	1.90	1.51	2.30	2.43	2.42	2.28	2.34	2.46	2.23	3.2
Port Areas												
Louisiana	3.35	2.60	1.75	1.90	2.80	2.60	2.60	2.55	2.38	2.55	2.4	2.95
Oregon	3.05	2.68	1.80	2.20	3.04	2.85	2.80	2.90	2.60	3.18	2.77	4.11
Washington	3.00	2.65	1.80	2.15	3.00	2.85	2.75	2.85	2.55	3.1	2.7	3.45
United States	3.05	2.49	1.96	1.56	2.27	2.43	2.43	2.34	2.37	2.50	2.26	3.24
Price Spreads												
Spread: PNW* - PNW Drawing Area*	0.15	0.26	-0.04	0.54	0.73	0.52	0.49	0.61	0.38	0.71	0.54	0.55
Spread: Louisiana - Study Area*	0.30	0.13	-0.16	0.39	0.55	0.18	0.23	0.23	0.03	0.09	0.16	-0.30
Spread: PNW* - Louisiana	-0.33	0.06	0.05	0.27	0.22	0.25	0.17	0.33	0.20	0.59	0.34	0.83

*Average of state prices within group

Figure 4-10


Average Annual Corn Prices
(Dollars Per Bushel)
4.00
3.50
3.00
2.50
2.00
1.50
84 85 86 87 88 89 90 91 92 93 94 95
Louisiana
PNW

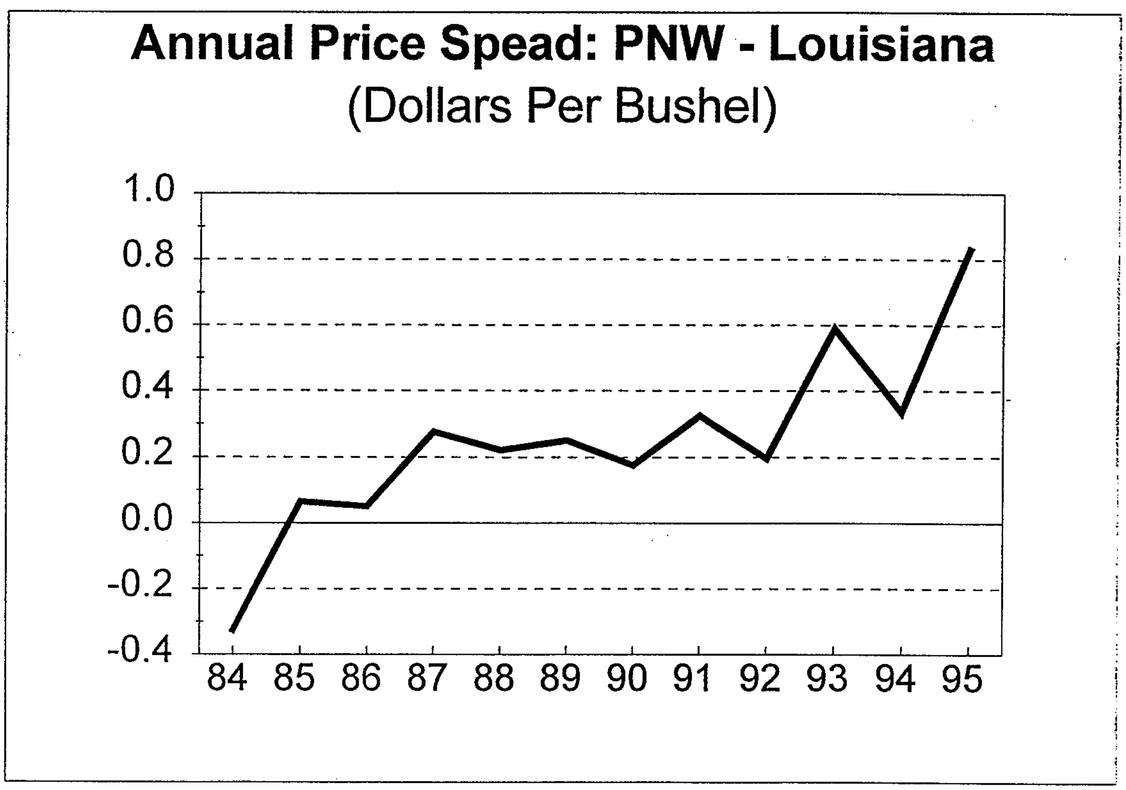

Annual Price Spead: PNW - Louisiana
(Dollars Per Bushel)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
84 85 86 87 88 89 90 91 92 93 94 95

Figure 4-11

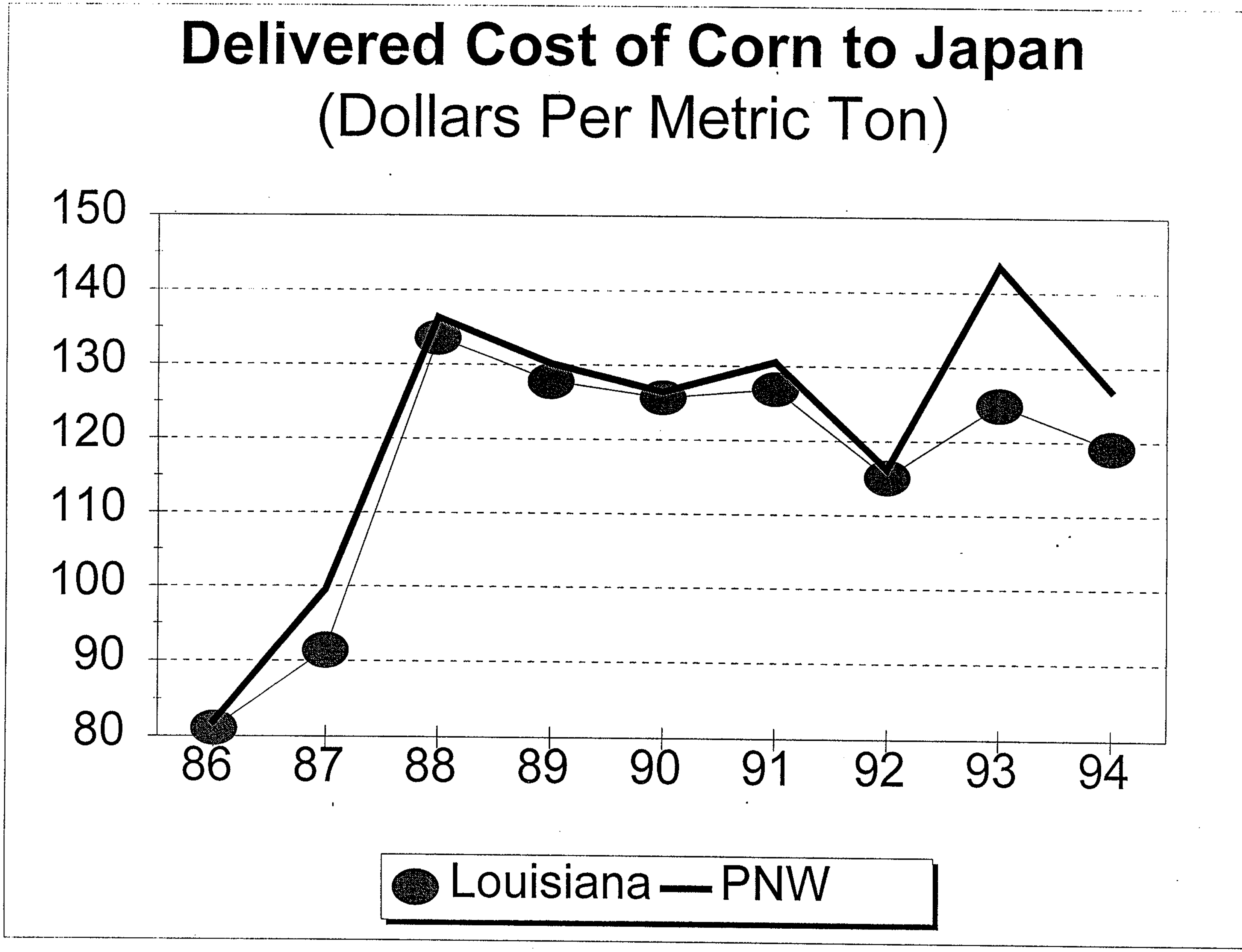
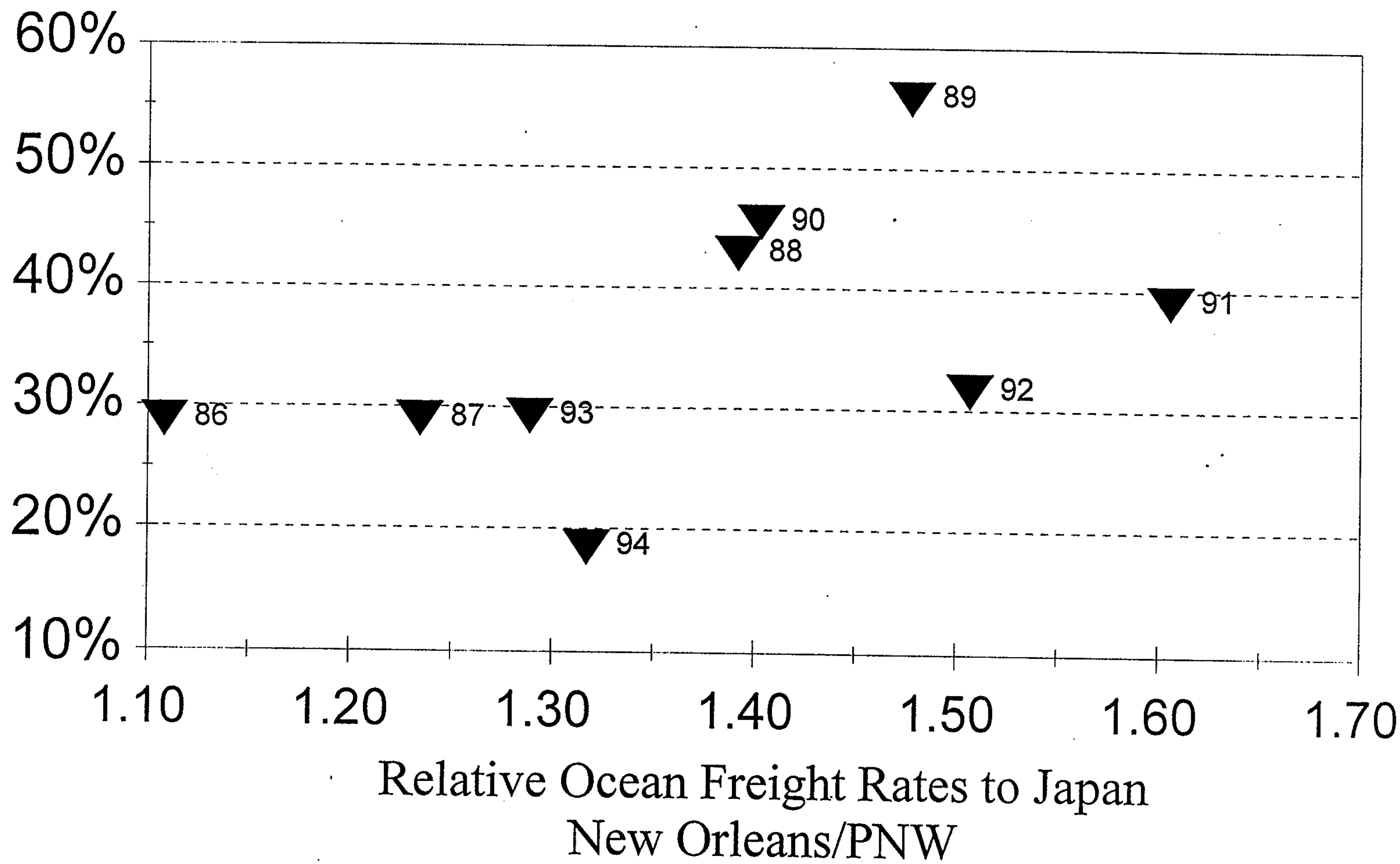

Delivered Cost of Corn to Japan
(Dollars Per Metric Ton)
150
140
130
120
110
100
90
80
86
87
88
89
90
91
92
93
94
Louisiana
PNW

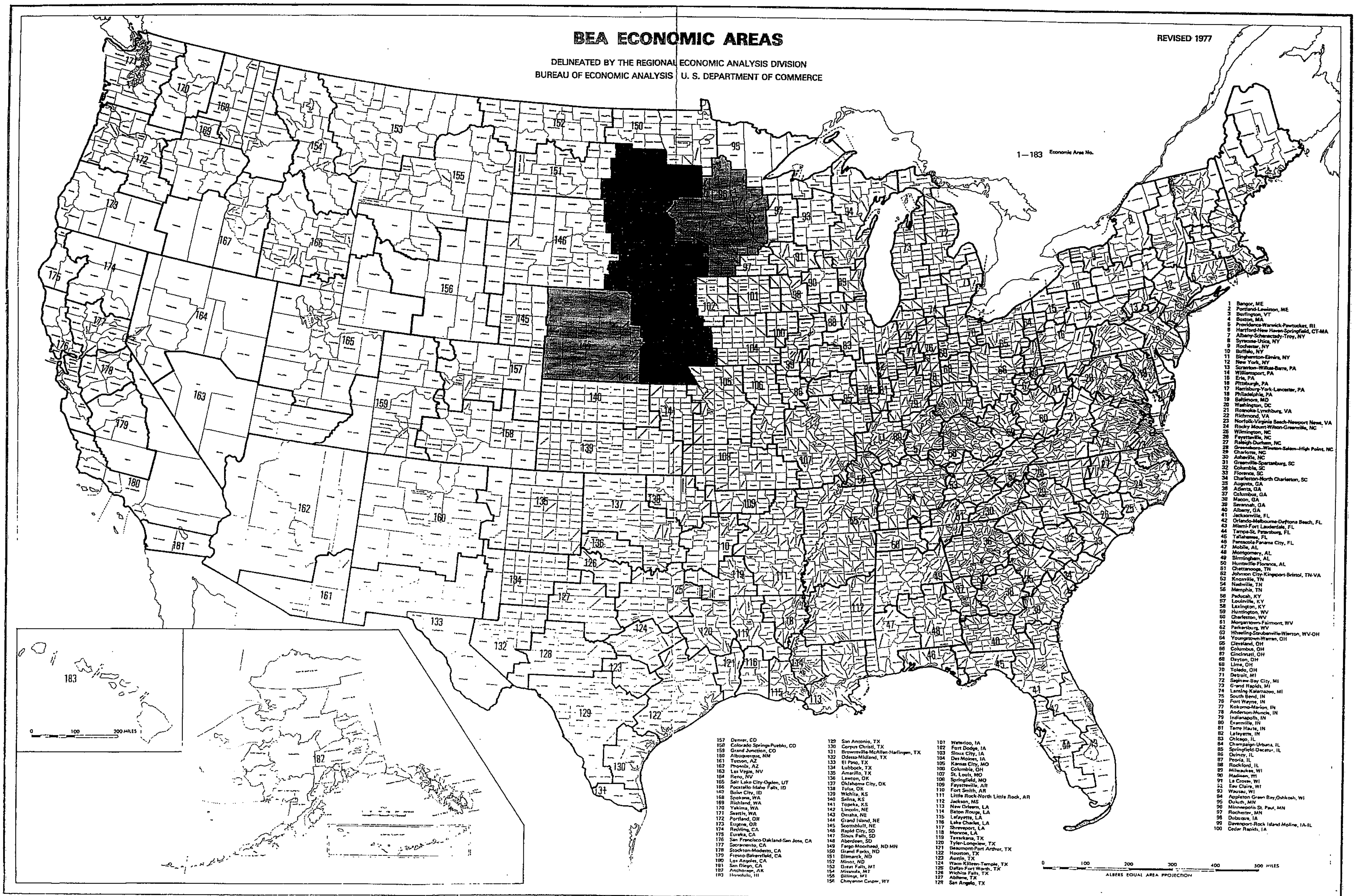
Figure 4-12

PNW CORN EXPORTS TO ASIA
(Percent of US Corn Exports to Asia)

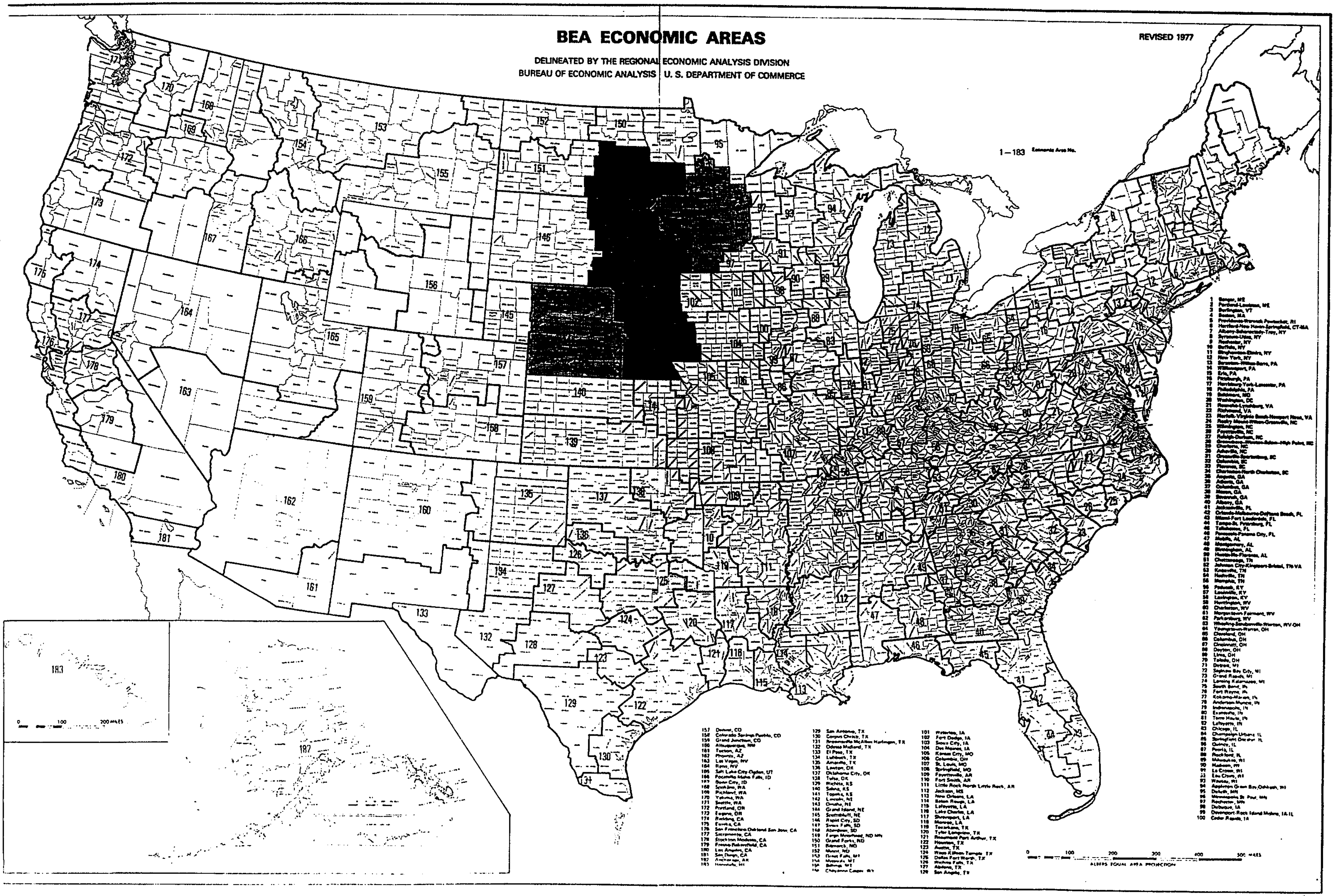


Source: US Census Bureau, Foreign Trade Division; US Department of Agriculture

PRIMARY BEAS FROM WHICH THE PNW DRAWS ITS CORN EXPORTS



PRIMARY BEAS FROM WHICH THE PNW DRAWS ITS CORN EXPORTS



Foreign Destinations of US Corn Exports

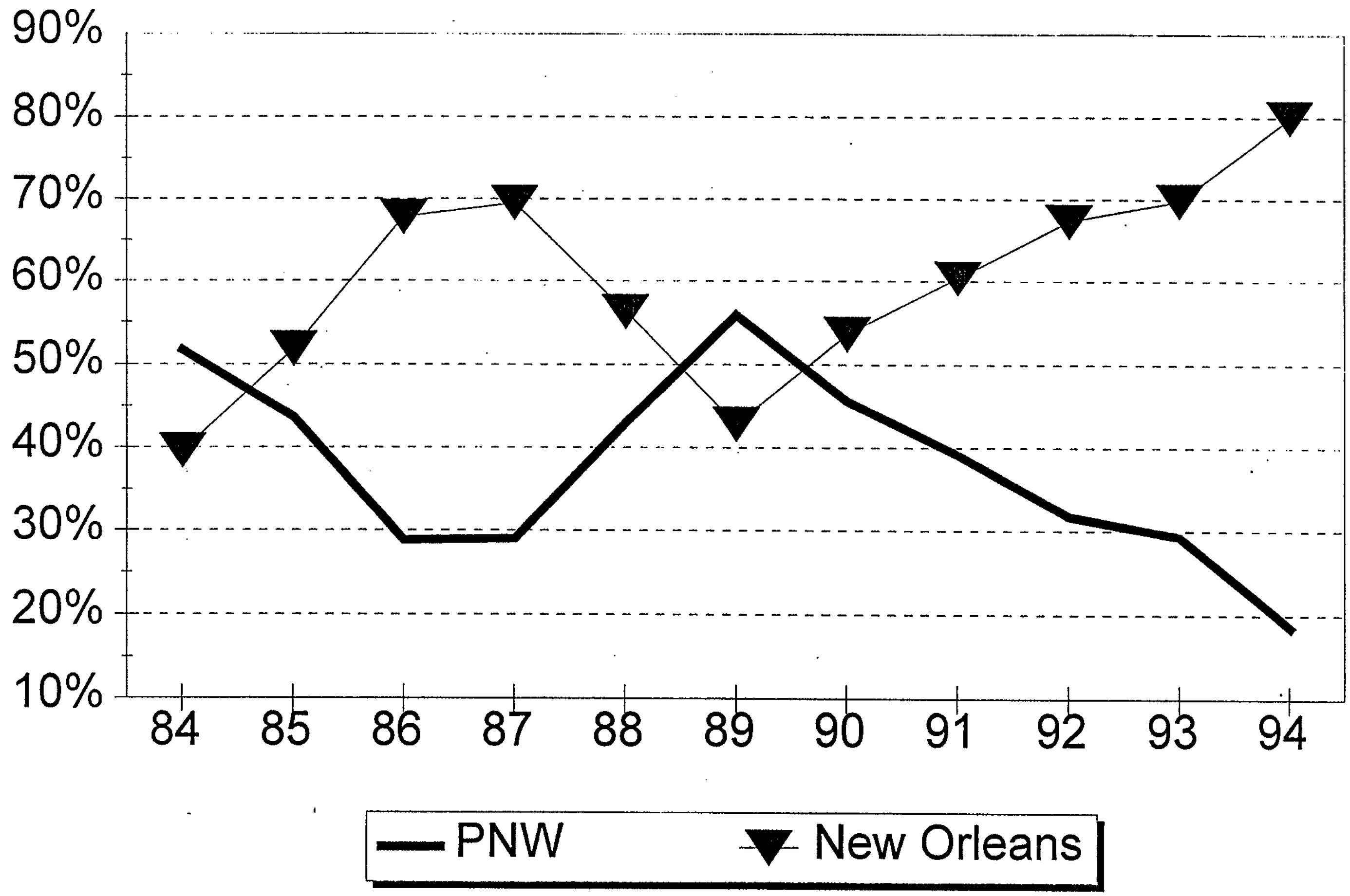
As shown in Figure 3-11, there has been a noticeable trend in Asia's share of US corn exports. This share is projected to remain high due to rising per capita incomes which tend to foster increased meat consumption. The possibility of China becoming a large net importer of corn could further boost US exports to Asia. These trends make it necessary to investigate whether or not the PNW has a relative advantage in serving Asian markets and could increase its share of US corn exports at the expense of the Gulf.

Figures 4-14 and 4-15, shown below, seem to indicate that the PNW has not had a relative advantage in serving Asian markets. The first graph shows that the PNW's share of exports to Asia has fallen almost forty percentage points since 1989. The second graph reveals a negative relationship between the PNW's share of US exports and the percent of US exports to Asia. These graphs reveal that the Gulf has captured most of the growth to the Asian markets and suggest that Asian buyers pay a lower cost for Gulf corn than they do for PNW corn. In addition, the volume of PNW corn exports is limited by the size of its drawing area, as explained above. And while the PNW's drawing area has increased its share of US corn production, this has not translated into an increased percentage of export shipments since domestic consumption in the area has also been increasing.

On the other hand, it should be noted that there are currently no significant differences between the vessel sizes of corn shipments from the PNW versus the Gulf. Japan, South Korea, and Taiwan all receive corn in Panamax sized vessels (50-55 KMT) from either port range. If the Pacific Rim countries started to demand larger sized shipments of corn (e.g., Capesize (70-100 KMT)), then the PNW would have a clear advantage.

Figure 4-14

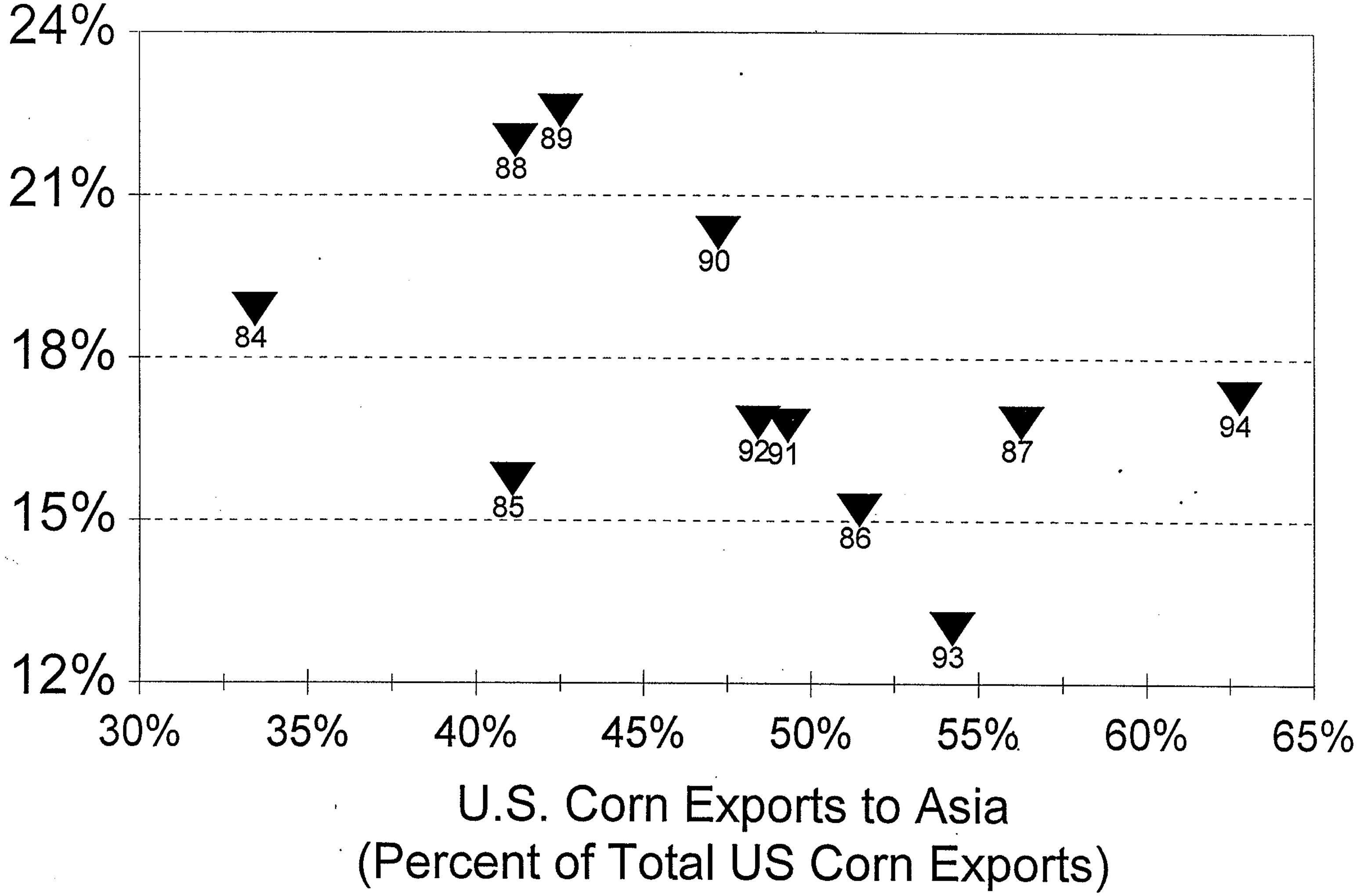
US Corn Exports to Asia by Port Area
(Percent of Total US Exports to Asia)



Source: U.S. Census Bureau, Foreign Trade Division

Figure 4-15

PNW's Share of U.S. Corn Exports



Source: Sparks Companies, Inc.

Summary

Taking all of these factors into consideration, it is unlikely that the PNW will significantly increase its share of US corn exports at the expense of the Gulf. Changes in relative ocean freight rates will be balanced by offsetting changes in inland freight rates. If needed, grain handling capacity (storage and barge) for Mississippi River grain will be added to avert transportation delays.

Growth in the Asian markets probably will have little effect on US port shares. Asia currently receives over 60% of US corn exports. Including US corn exports to China, SCI is projecting that US corn exports to Asia will constitute approximately 68% of total US corn exports during the next five decades. That is a very high percentage which raises questions about how much further it could increase. As shown in Figure 4-15, however, the PNW's share of US corn exports has historically been relatively low when US exports to Asia are relatively high.

The other factor that could increase the PNW's share of US corn exports, relatively higher production growth in the Plains, is likely to be dampened by acreage limits and growing domestic consumption in the western US. Between 1975 and 1994, increases in harvested acreage accounted for approximately 49% of the production growth in the Plains while yield increases explained 51%. A considerable amount of the acreage increases in the Plains occurred after 1988: just over 4 million acres. Such acreage increases cannot continue indefinitely and will soon reach a limit, leaving production growth to depend primarily on technological advances. While some technological advances may favor corn production in the Plains by allowing it to be grown in relatively drier climates, growing concerns about the availability and competition for water in the Plains could play a mitigating factor. Domestic consumption in the western US will also continue to expand in the short run. Development of the hog industry will proceed to take place in the West as farmers look for areas with relatively low population densities where the treatment of waste and odors are less costly. Wet milling capacity has also been expanding faster in the Plains as the industry seeks to avoid the higher corn prices that are propped up by export markets near the river. These two developments will continue to absorb some of the production increases taking place in the Plains and will compete for corn that is exported out of the PNW.

4.1.2 Competition with Rail to the Gulf

In moving corn from the Study Area to the Gulf, the barge industry on the Upper Mississippi River competes not only with rail shipments to the PNW but also with rail shipments to the Gulf. Potential rail competition by origin state is shown in Table 4-5. As a percentage of the total competitive traffic (combined rail and barge flows) that moves to the Gulf, rail traffic has varied from 8% (1982-1985) to 12% (1986-89) and now accounts for approximately 10%. This historical share has not exhibited an obvious trend; however, since 1984, the percentage of Gulf corn exports accounted for by barge movements that originate in the study has been slightly increasing.

Table 4-5
Rail Corn Shipments to Louisiana by Origin State
(Thousands of Short Tons)

Origin State	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Illinois	2,126	1,418	1,478	1,447	1,491	1,645	1,089	1,701	913	1,515	1,639	1,682
Iowa	273	481	269	99	136	122	844	1,129	243	41	26	4
Missouri	50	74	69	125	65	224	57	166	257	240	393	199
Nebraska	12	220	50	3	174	1,135	1,316	1,157	1,478	1,225	1,072	861
Other*	71	30	0	0	0	53	206	136	67	52	30	18
Total	2,533	2,222	1,865	1,674	1,866	3,179	3,514	4,289	2,958	3,073	3,160	2,762

*Indiana, Michigan, Minnesota, South Dakota, Wisconsin

Not all of the traffic in Table 4-5 is truly competitive as rail often serves as a backup during times when the river is not navigable. For example, the somewhat flat volume of rail shipments originating in Illinois can be partially explained by winter traffic. For a couple of weeks during the winter, it can be difficult to navigate the Illinois Waterway above Peoria. Navigating the Upper Mississippi River is even more of a problem during the winter; as a result, corn grown in Minnesota, Wisconsin and Iowa is shipped to Chicago where trains to the Gulf are put together[5]. In a similar fashion, the increase in Nebraska rail shipments to the Gulf, which began in 1987, can be partly attributed to a shorter barge season and navigation curtailments on the Missouri River. After these factors are taken into consideration, the amount of competitive traffic to the Gulf becomes negligible.

[5] Due to the manner in which waybill records are recorded, corn can move to Chicago under one waybill and then leave Chicago under a different waybill. It is likely that some of the traffic between Chicago and the Gulf actually originates in Illinois, Indiana, Iowa, Minnesota, and Wisconsin. Together, these states account for over 95% of the rail shipments that destinate in Chicago.

4.2 Soybeans

From 1981 to 1993, annual barge shipments of soybeans from the Study Area ranged between seven million tons and twelve million tons. However, that traffic fell below ten million tons only four times throughout the period. Figure 4-16 displays these shipments by origin BEA. It should be noted that an average of 90% of these shipments were delivered each year to Louisiana ports for export, shown in Figure 4-17.

As in the case of corn, this high concentration of shipments to Louisiana means that competition for these movements will be found primarily in rail moves to ports that serve the same foreign destinations. However, the distribution of soybean exports across US ports is more dispersed than the respective distribution for corn, which is dominated by Louisiana and the PNW. Soybean exports by port area are illustrated in Figure 3-15.

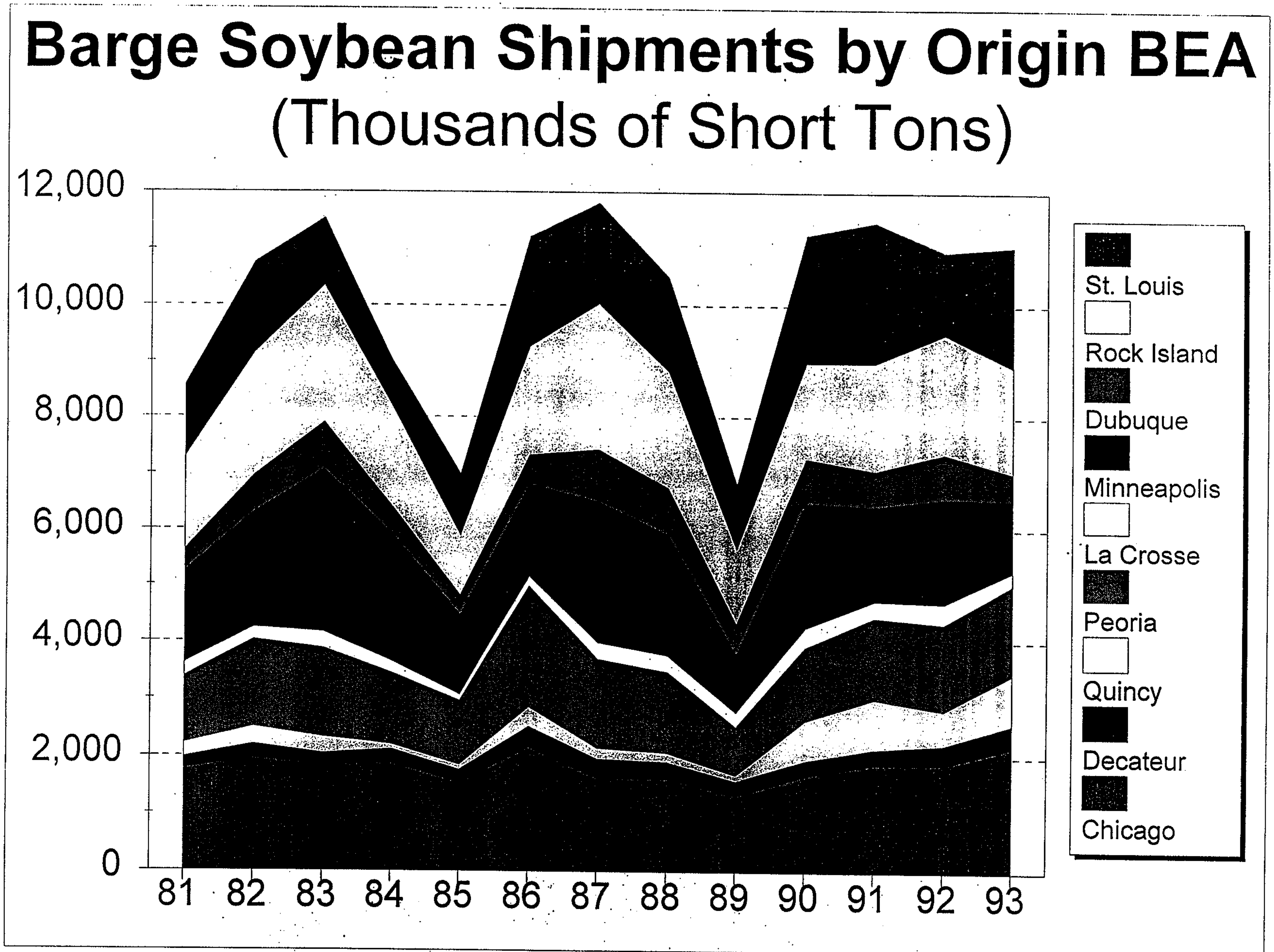
The following analysis looks at five important factors that determine whether exported soybeans get to US ports via barge or rail. As in the case of corn, many of these factors affect a shipper's mode choice indirectly.

<u>Export Levels by Other Countries</u>

Since 1987, the US has provided an average of 71% of the soybeans traded on world markets. The other major soybean exporters are Brazil and Argentina, together which have accounted for over 25% of world soybean trade.

The level of South American soybean exports influences the percentage of US soybean exports that moves through the Gulf. This occurrence is due primarily to the effect of South American export levels on ocean freight rates tied to shipments originating in the Gulf. The US Gulf and South American ports essentially compete for the same supply of ocean vessels, which is fixed in the short run. When South American export levels are relatively low, total demand for ocean vessels which serve Atlantic ports declines causing respective freight rates to fall. On the other hand, relatively high South American export levels raises the demand for these vessels and gives rise to increasing ocean freight rates. In both cases, the overall result is to change the relative ocean freight rates between the Gulf and other US ports which serve soybean exporters. Figure 4-18 illustrates the effect that South American export levels have on ocean freight rates originating in the Gulf. Figure 4-19 shows how this impact translates into a negative relationship between the Gulf's share of US soybean exports and South American export levels.

Figure 4-16



Barge Soybean Shipments by Origin BEA
(Thousands of Short Tons)
12,000
10,000
8,000
6,000
4,000
2,000
0
81
82
83
84
85
86
87
88
89
90
91
92
93
St. Louis
Rock Island
Dubuque
Minneapolis
La Crosse
Peoria
Quincy
Decateur
Chicago

Figure 4-17

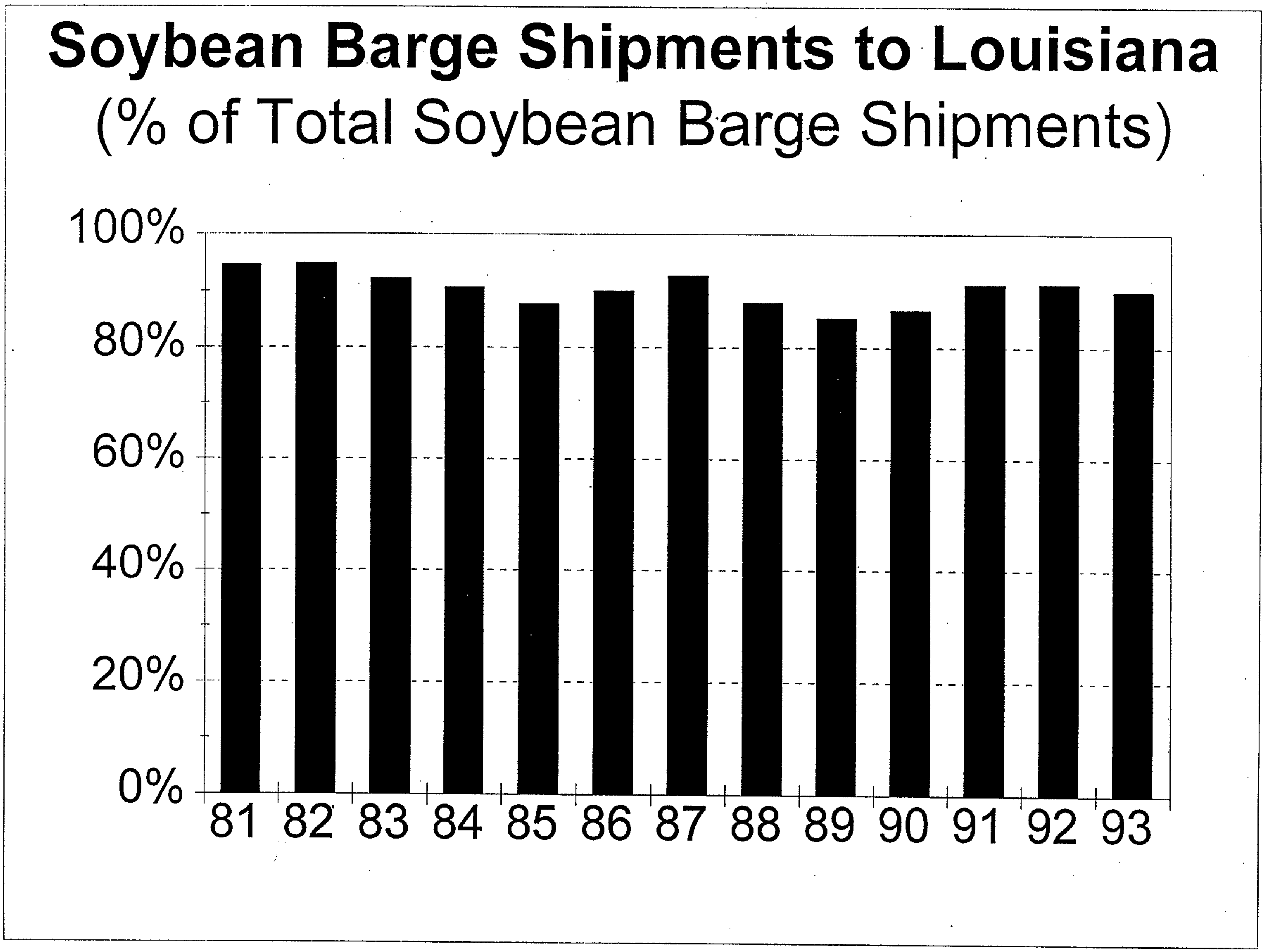
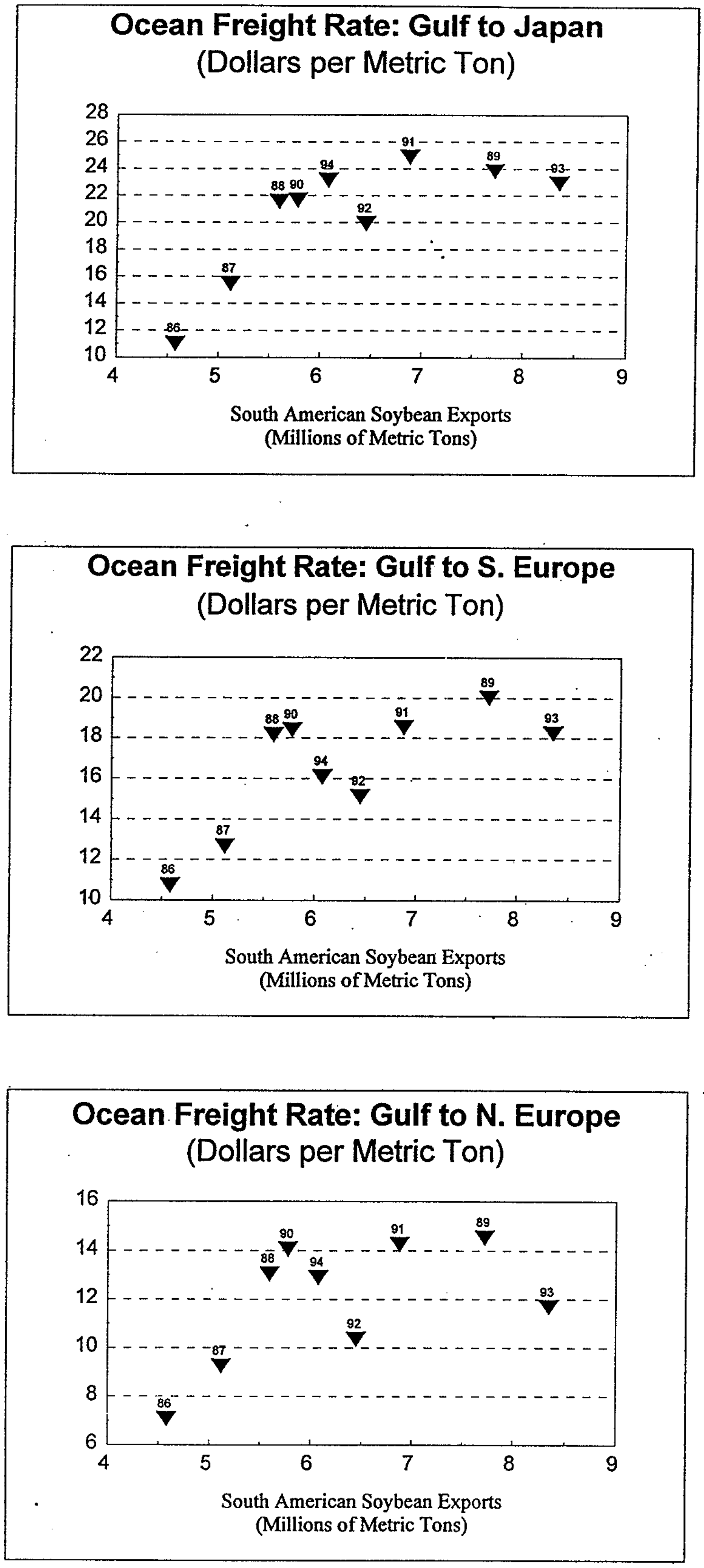
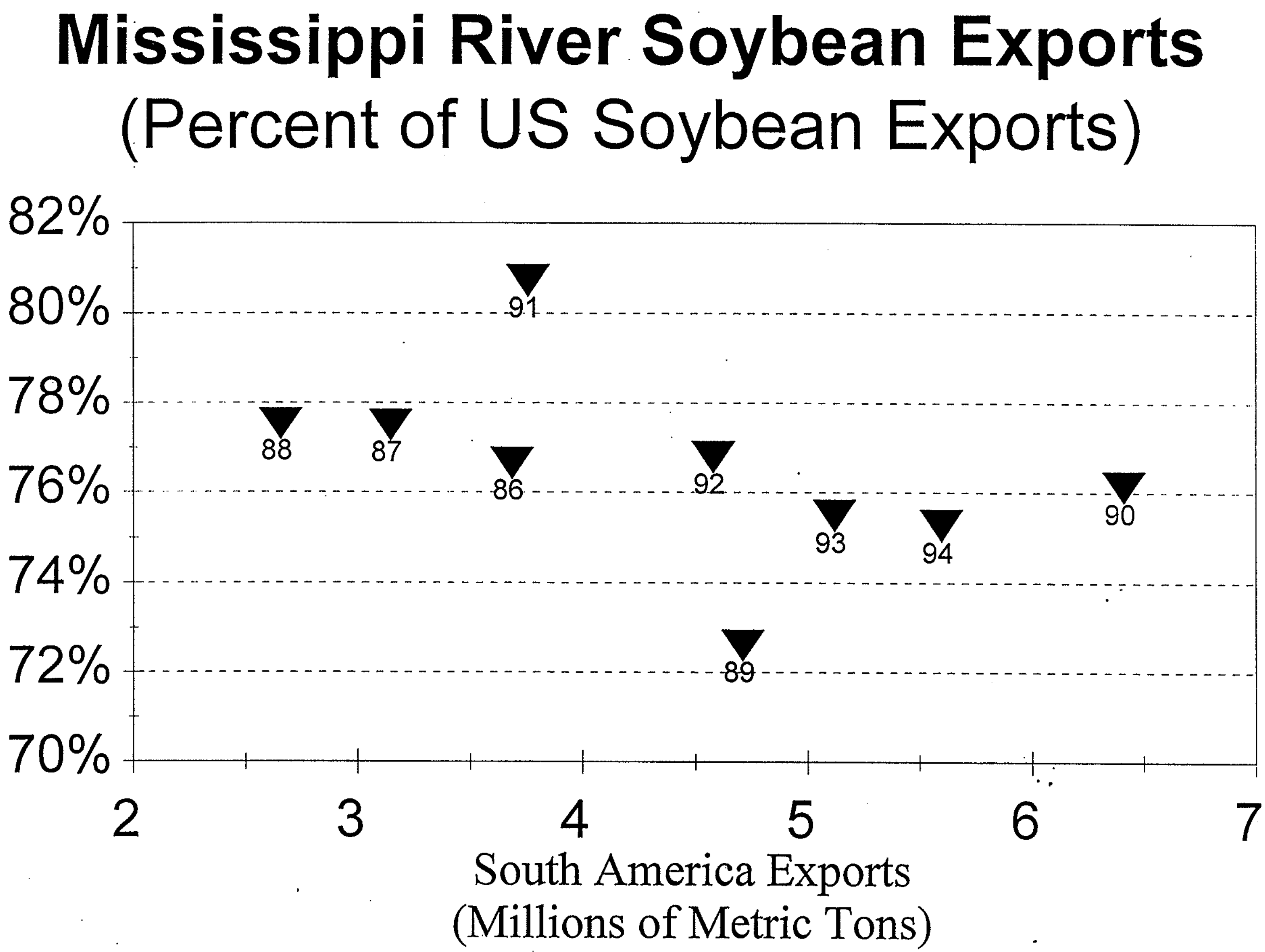

Soybean Barge Shipments to Louisiana
(% of Total Soybean Barge Shipments)
100%
80%
60%
40%
20%
0%
81
82
83
84
85
86
87
88
89
90
91
92
93

Figure 4-18



Source: US Department of Agriculture

Figure 4-19



Source: Sparks Companies, Inc.; US Department of Agriculture

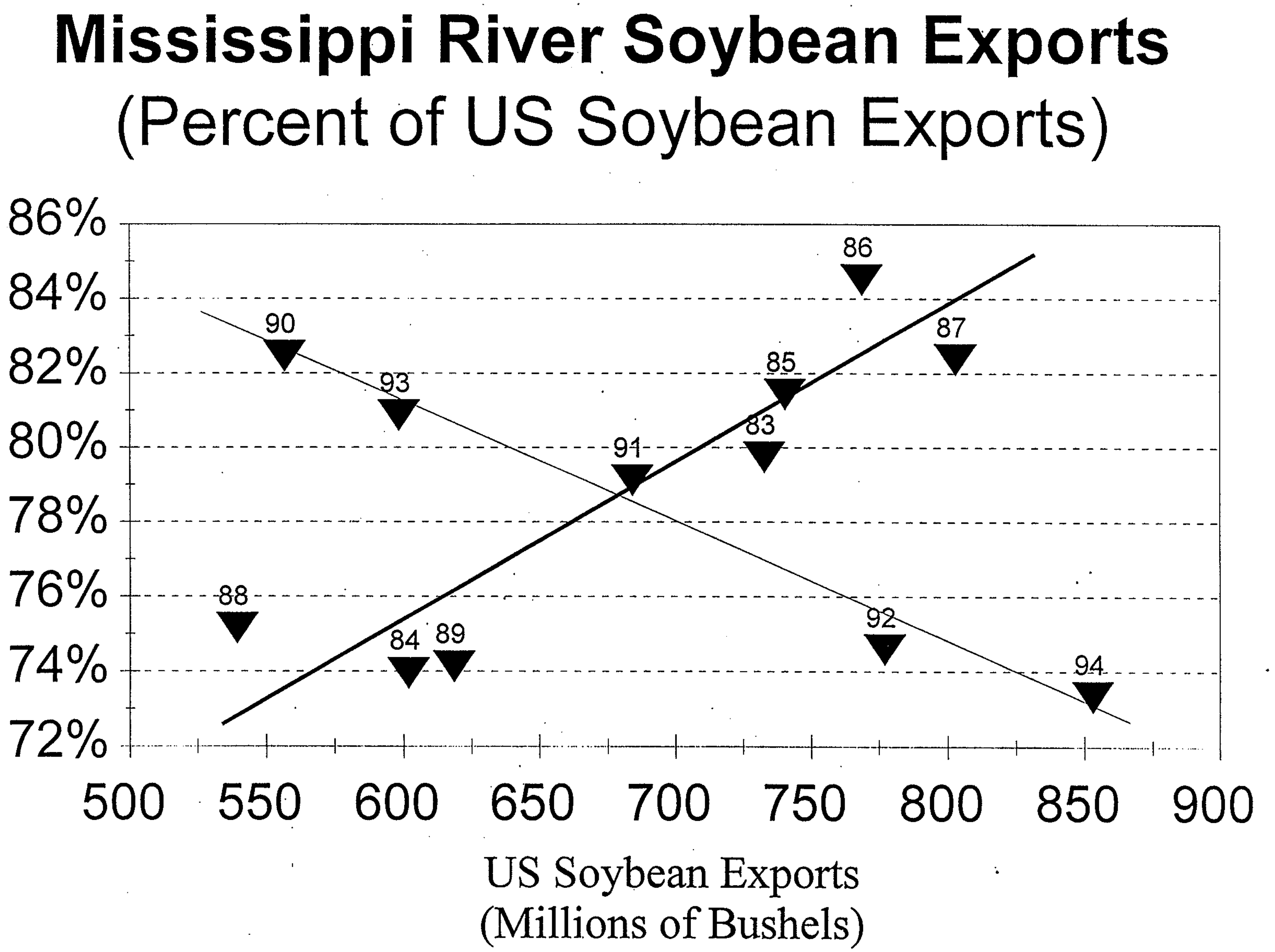
Relative Grain Handling Costs and Capacity

As a first step in evaluating how relative grain handling capacity affects the volume of soybean exports through Louisiana ports, Figure 4-20 plots the relationship between the Mississippi River's share of US Soybean exports and the total volume of US soybean exports. The graph manifests two distinct trends. The relationship depicts a positive trend between 1983 and 1989, which then becomes negative between 1990 and 1994. Also note that in 1989 and 1990 there is almost a ten percentage point difference in the Mississippi River's share of US soybean exports even though the volume of US exports changes very little. The disparity between the 1989 and 1990 shares can be attributed to a drop in ocean freight rates out of the Gulf due to a small South American crop in 1990. However, the reversal in the trend beginning in 1990 is more difficult to explain.

The most obvious explanation is the relaxation of the ARPs[6] and technological innovations, which began in the late 80s. Both of these factors gave rise to a gradual turnaround in production and exports of US soybeans (See Figure 2-3 and Figure 3-19). However, soybean exports out of Mississippi River ports were not able to keep pace with previous growth rates, causing the Mississippi River's share to level off (See Figure 3-15). The relatively slower growth could be due to increases in the total volume of grain and oilseeds moving through the Louisiana ports, since the same barges and elevators are used to move and store all types of grain and oilseeds. At some point, increases in the total volume of grain and oilseed traffic results in corresponding increases in the costs of handling each additional unit of grain or oilseed. Since 1985, the total volume of grain and oilseeds moving through Louisiana ports has been steadily increasing and, since 1987, has exceeded 2.1 billion bushels every year except for 1993 (See Figure 4-21). Figure 4-22, however, shows that the Mississippi River's share of US soybean exports declines sharply when the total volume of grain and oilseed traffic exceeds 2.1 billion bushels.

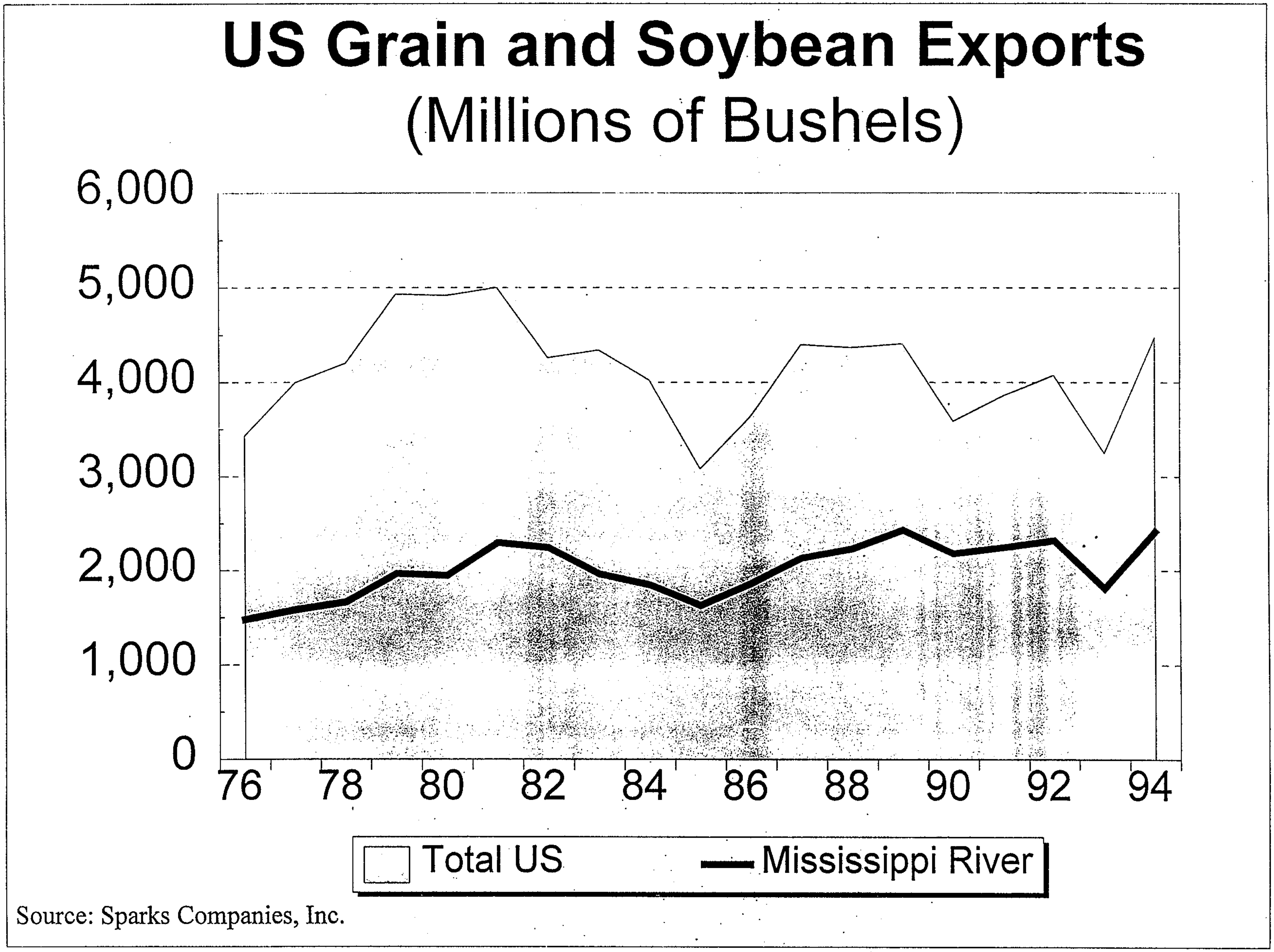
[6] Although there are no actual ARPs on soybeans, some of the ARPs on corn that are brought back into production are used to produce soybeans since farmers like to maintain a relatively even split between soybean and corn production.

Figure 4-20



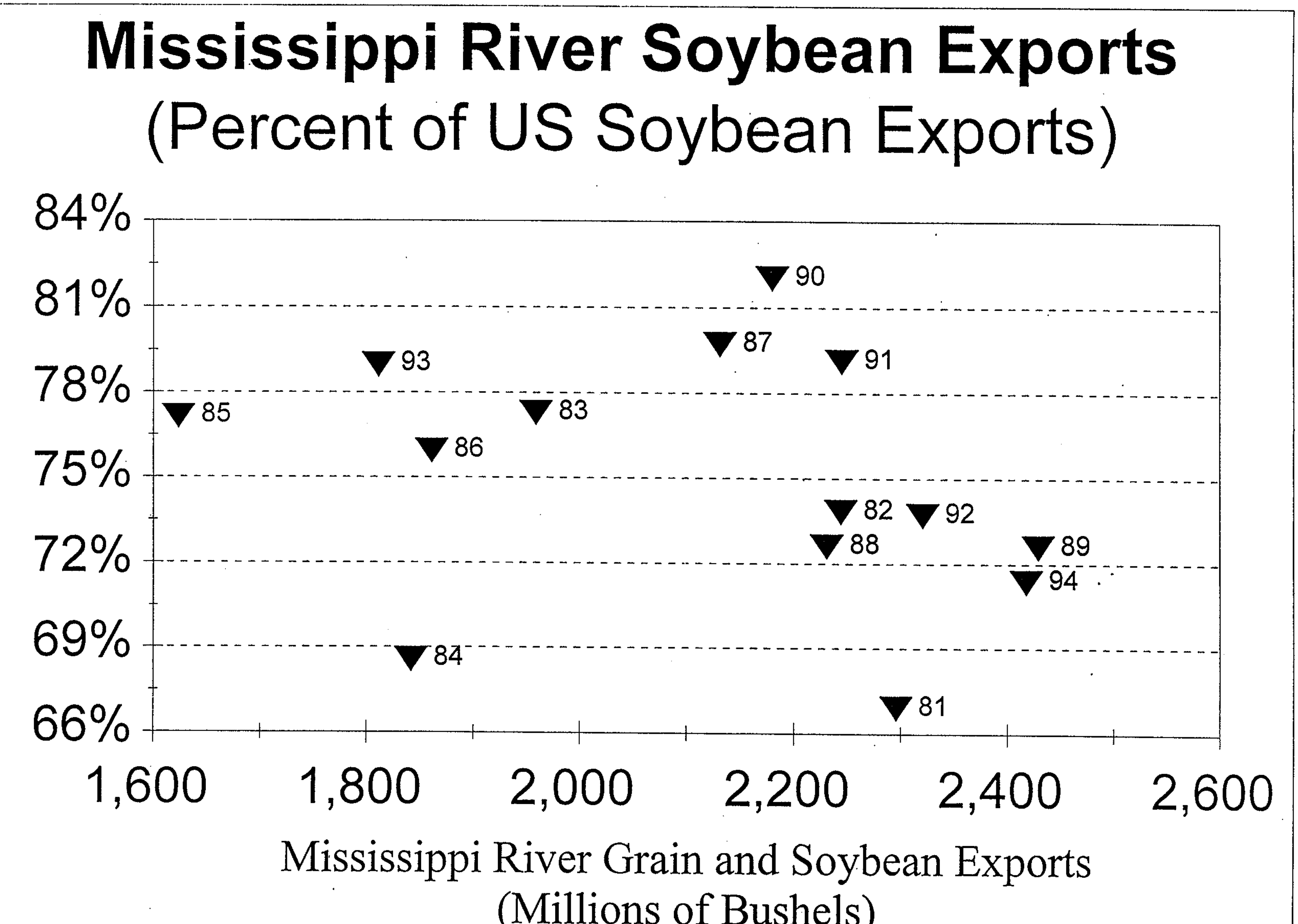
Source: Sparks Companies, Inc.

Figure 4-21



US Grain and Soybean Exports
(Millions of Bushels)
6,000
5,000
4,000
3,000
2,000
1,000
0
76
78
80
82
84
86
88
90
92
94
Total US
Mississippi River
Source: Sparks Companies, Inc.

Figure 4-22

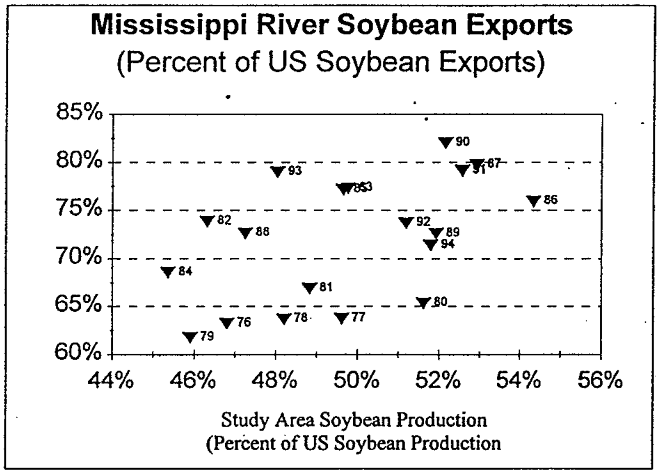


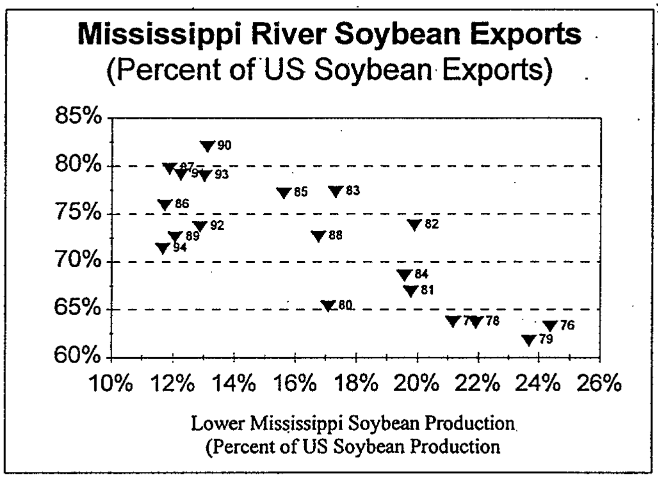
Source: Sparks Companies, Inc.

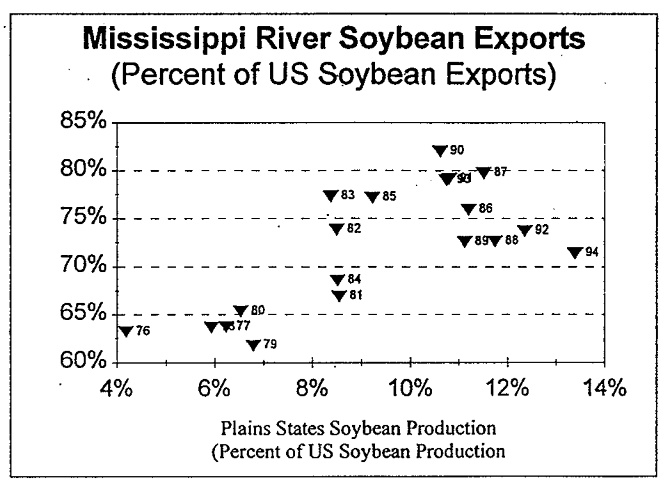
Regional Shifts in Production

Figure 4-23 examines the impacts that regional production shifts have had on Louisiana's share of US soybean exports. These shifts are highlighted in Section 2.1. The first panel indicates a loose positive relationship between the Study Area's share of US production and Louisiana's share of US soybean exports. However, the second panel indicates that a smaller percentage of U.S. soybean exports move through Louisiana ports when the Lower Mississippi Region's production share increases. The increase in the lower region's production share occurs most likely as a result of a relatively small crop in the Study Area. Soybean processors would then be crushing a larger percentage of the beans grown in the area, limiting the available stocks for export. This makes some sense as, on average, the Study Area accounts for 67% of the soybeans exported through Louisiana ports. The final graph plots the relationship between Louisiana's export share and relative soybean production in the Plains states. A negative relationship developed in 1986, implying that production increases in the Plains since then have been moving into export channels that compete with Louisiana; they could also be displacing beans at processors located in the drawing areas of competing ports (notably Duluth), allowing relatively more beans to move through them. Note that soybean production increases in the Plains have outpaced its crushing capacity, resulting in the surpluses that compete with Louisiana exports.

Figure 4-23







Source: Sparks Companies Inc.; US Department of Agriculture

Relative Transportation Costs

The soybean cropping area is highly concentrated around the Mississippi River. Thus, most of the soybeans that are delivered to the Louisiana export market get there by barge. In addition to the Study Area, the cropping area contains a narrow band extending south around the Lower Mississippi River. Due to lower freight costs, the southern region displaces some soybean traffic that could originate in the Study Area.

In evaluating the barge/rail mode split from the Study Area to Louisiana, the amount of barge traffic originating in the Study Area was compared with all competitive rail movements (those that originate in the Study Area, North Dakota, South Dakota, Nebraska, Indiana, and Michigan) to Louisiana. Except for 1986 and 1987, barge accounted for over 90% of this traffic between 1982 and 1993, with an overall average of 94%. Due to the proximity of the cropping area to the river, the railroads have not been able to make inroads into this market, even with the efficiency gains that they were able to realize under the Staggers Act.

The historical barge/rail mode split from the Study Area to all of the primary export points reveals a similar story. As a percentage of barge and competing rail (defined above) traffic to Louisiana, the PNW, and Duluth, barge's share has dropped slightly by just over two percentage points since the early 80s. The share seems to have leveled off at approximately 83%. More pronounced shifts are visible within rail, which shows that rail shipments to Duluth have been picked up by the PNW and Louisiana.

An analysis of changes in relative ocean freight rates upon Louisiana's port share revealed no discernible impact.

Changes in Foreign Markets

Shifts in foreign markets have not had a noticeable impact on Louisiana's port share. The proximity of the cropping area to the river gives it access to cheap barge transportation. These low transportation costs more than offset higher ocean freight rates to distant markets such as Asia and allow Louisiana to compete in markets all over the world. The one exception is Mexico: there does seem to be a positive relationship between Louisiana's share of US soybean exports and the share of soybean exports destined for the Mexican market.

4.3 Wheat

Figure 4-24 appears to indicate a slight downward trend in the total amount of wheat that is transported by barge on the Upper Mississippi River. This pattern closely resembles the trend seen in the total US export levels of wheat. Note that these wheat tonnage levels are considerably smaller than corresponding levels for corn and soybeans. Between 1981 and 1993, wheat maintained an average of 9% of the grain and soybean barge traffic that originated in the study area.

Like corn and soybeans, most of the wheat traffic on the Upper Mississippi River originates within the five state study area and moves to Louisiana export markets. On average, Louisiana receives over 85% of the wheat that is shipped by barge from the study area. Again, this means that the primary competition for these moves consists of rail movements either to Louisiana ports or to competing ports. As seen in Figure 3-17, the distribution of wheat exports across US ports is not nearly as concentrated as the corn distribution. The PNW has captured the largest share of the wheat export market, although Texas and Louisiana ports have still maintained relatively large shares. The trends in these shares indicate that Louisiana ports face most of their competition from ports located in Texas.

The type of wheat exported strongly affects the port used and the mode used to transport it. The predominate type of wheat exported through Louisiana is soft red winter (SRW) wheat and to a lesser extent hard red spring wheat (HRS). Due to the proximity of the SRW and HRS wheat production areas to the river, barge provides a low cost mode of shipment. Additionally, SRW is a low protein wheat, and typically is not blended (where wheat of different protein levels is mixed together to produce a grade of wheat that meets the customer's protein requirements: a common practice with HRS wheat). As a result, SRW wheat can be loaded at any number of river elevators. HRS wheat is commonly blended and must be loaded where blending facilities are present. One of the key blending centers is Minneapolis/St. Paul.

In the following analysis, we will focus upon the competition between barge and rail, where the rail movements terminate either in Louisiana or in a competing port area (primarily Texas, the PNW, or Duluth). Most of the wheat traffic on the Upper Mississippi River originates either in the Northern Plains (Minnesota, North Dakota, South Dakota) or in Kansas, Missouri, or Southern Illinois. Evidence of this fact can be seen in Figure 4-24 which shows that most of the wheat is shipped out of the Minneapolis/St. Paul BEA or the St. Louis BEA. On average, almost 80% of the Upper Mississippi River wheat traffic originates in these two BEAs. Therefore, the analysis will consider the competitive aspects primarily for movements that originate in the Northern Plains; as stated, other wheat traffic enters the Upper Mississippi River at St. Louis or below.

In evaluating the competition between barge and rail, several factors were considered: export levels by other countries, grain handling capacity, shifts in regional production, relative transportation costs, and foreign export markets. To assess these factors, which could have a potential impact on the Mississippi River's share of US wheat exports, it will be useful to have an idea of how the foreign markets are served by the US port areas. Table 4-6 presents the major foreign markets and the percentage of US wheat that they receive from the main US port areas. It can be seen that Louisiana has a strong presence in the African, Central/South American, and North Asian markets. This finding is corroborated by the distribution of wheat exports out of Louisiana; between 1990 and 1994, an average of 72% of the wheat exports out of the New Orleans customs district were destined for these three markets.

Figure 4-24

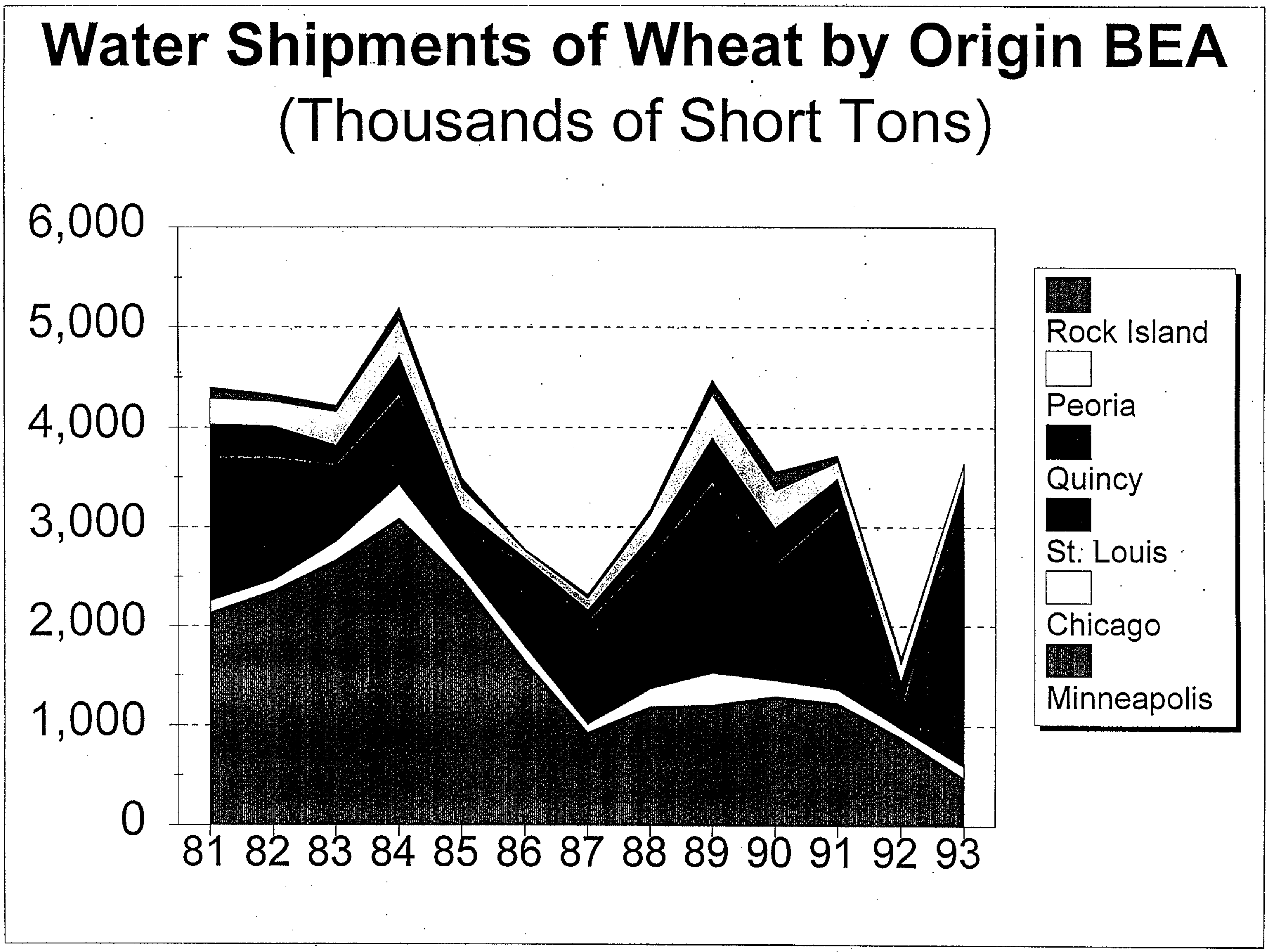

Water Shipments of Wheat by Origin BEA
(Thousands of Short Tons)
6,000
5,000
4,000
3,000
2,000
1,000
0
81
82
83
84
85
86
87
88
89
90
91
92
93
Rock Island
Peoria
Quincy
St. Louis
Chicago
Minneapolis

Table 4-6 Foreign Wheat Markets by US Port Areas* (Percent of US Exports to Market from Port Area)			
	US Port Area		
Foreign Market	PNW	Texas	Louisiana
Africa	21	35	34
Central/South America	3	31	60
Mexico	2	83	12
Middle East	53	35	8
North Asia†	64	13	21
South Asia‡	76	11	10

*Five year average: 1990-1994.
† China, Hong Kong, Japan, North Korea, South Korea, Taiwan.
‡Bangladesh, Brunei, India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand.
Source: US Exports History CD-ROM, US Census Bureau, issued May 1995.

Export Levels by Other Countries

Besides the US, the main wheat exporters in the world include Canada, Europe, Australia, and Argentina. World exporters serve specific markets for a number of reasons. Distance from the market determines both freight costs and transit time, which can affect an exporters competitiveness in a given market. Also, many countries demand certain types of wheat and look for exporters who produce the types they desire. For example, North African and Middle Eastern countries can use relatively low grade wheat to make their flat breads and do not need the higher grade, and more costly, wheat produced in countries such as Canada and Australia.

The main US competitor in the African market is Europe. However, Europe's competitive stance relative to the US will change in the future. In the past, Europe heavily subsidized its wheat exports but will no longer be able to do so under GATT. As a result, the US should capture a larger share of the African market. Argentina competes with the US for the Central/South American market. In the North Asian markets, Australia and Canada contend with the US.

Exports by these competitors can affect Louisiana's share of US exports in two ways. First, the level of foreign exports can impact relative ocean freight rates in the US. For example, if Canada has a large surplus that it exports off its west coast, it is likely that ocean freight rates in the US PNW will be driven up since the PNW competes with Canada for the same ocean vessels. This change will affect the relative ocean freight rates between the PNW and the Gulf, making the Gulf relatively more attractive. Second, the level of foreign exports can affect relative prices between different export points in the US. For example, if exports out of Argentina increase, the demand for US wheat in Central/South America could decline. Wheat prices at Louisiana ports would fall in response to the lower demand. The change in price would have two implications. Some of the wheat previously destined for the South/Central American market would be diverted to domestic consumption channels since that export market became less profitable to US farmers. The relative price between the PNW and the Gulf would also change in response to the price decline, affecting the drawing arc which determines the export points where farmers will choose to sell their grain (See <u>Relative Transportation Costs and Price Markups</u> in Section 4.1.1).

<u>Relative Grain Handling Capacity</u>

Figures 4-25 and 4-26 show Louisiana's share of US wheat exports as a function of total US wheat exports and total Louisiana grain and oilseed exports respectively. These graphs explore two issues: 1) whether Louisiana serves as an overflow when US wheat exports are high and capacity constraints are reached in other port areas (e.g., the PNW and Texas); 2) to what extent have capacity constraints been reached in Louisiana. In regard to the second issue, it should be noted that such constraints include both handling and storage capacity constraints as well as limits on barge and rail capacity needed to get the grain to Louisiana.

The graphs are difficult to interpret. In the first graph it appears that there was a positive relationship between the level of US wheat exports and Louisiana's export share between 1977 and 1987. Such a relationship would support the overflow hypothesis. However, the relationship turned slightly negative between 1988 and 1992. In 1993 it appears that the relationship once again became positive, but that is unclear. The second graph is even more difficult to interpret. At first glance, there seems to be a positive relationship between Louisiana's share of wheat exports and the total amount of grain and oilseeds moving through Louisiana ports. On the other hand, the apparent positive relationship may actually reflect upward shifts in an otherwise negative relationship. For instance, 1976-78, 1984-87, and 1988-94 are three periods during which a negative relationship is evident[7]. It is possible to explain both relationships. In the first instance, factors that affect the amount of wheat that moves through Louisiana can have a similar effect upon other grains: e.g., the 1993 flood. In the second case, when capacity is tight a negative relationship is likely to exist until the constraints are overcome through the expansion of storage and/or transportation. Note that the negative relationship seen in the latter period was also found in soybeans when the total amount of grain and oilseeds moving through the Louisiana ports surpassed approximately the same level: just over 2.1 billion bushels.

[7] With 1993 being an outlier due to the flood.

Figure 4-25

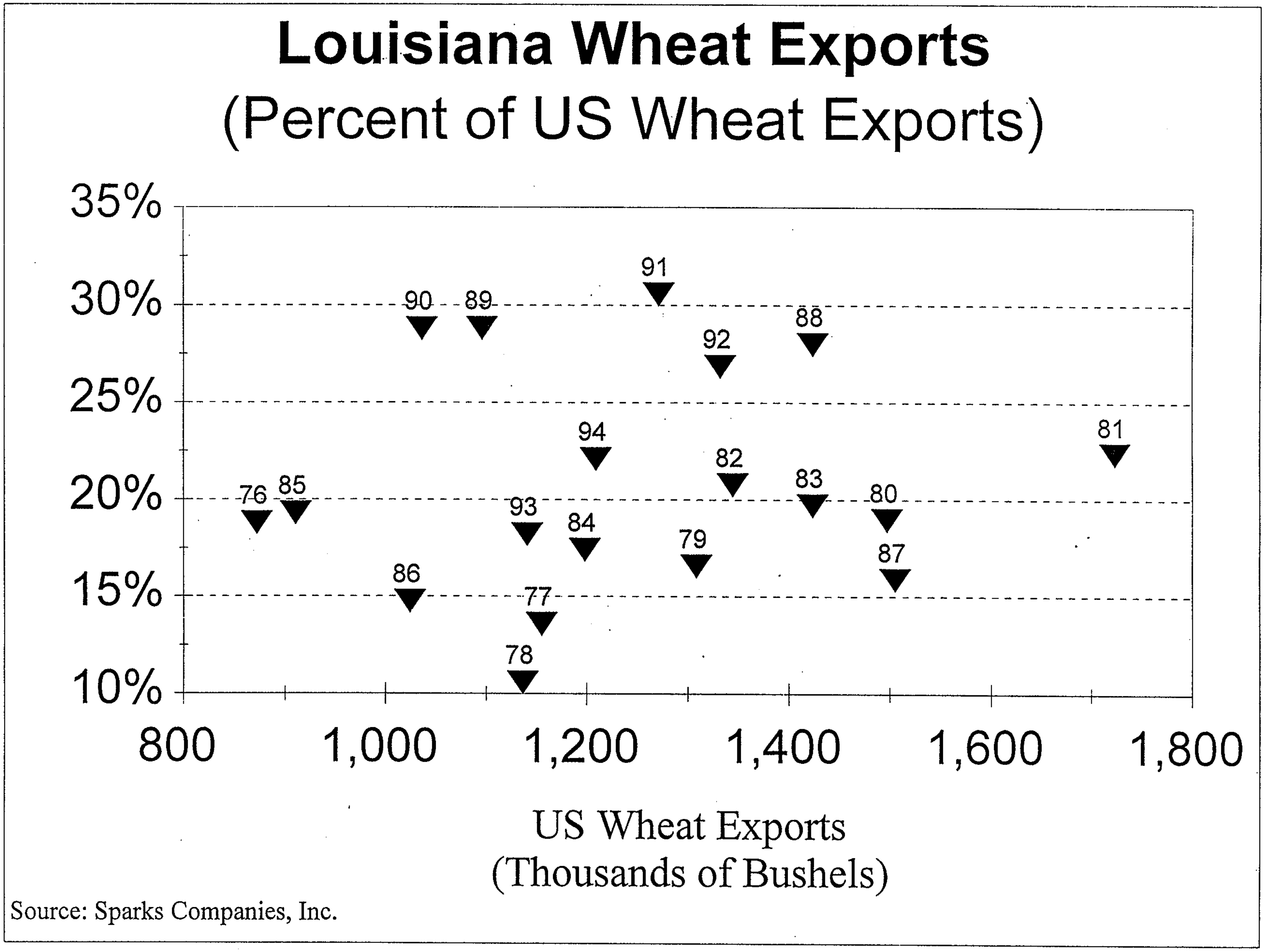
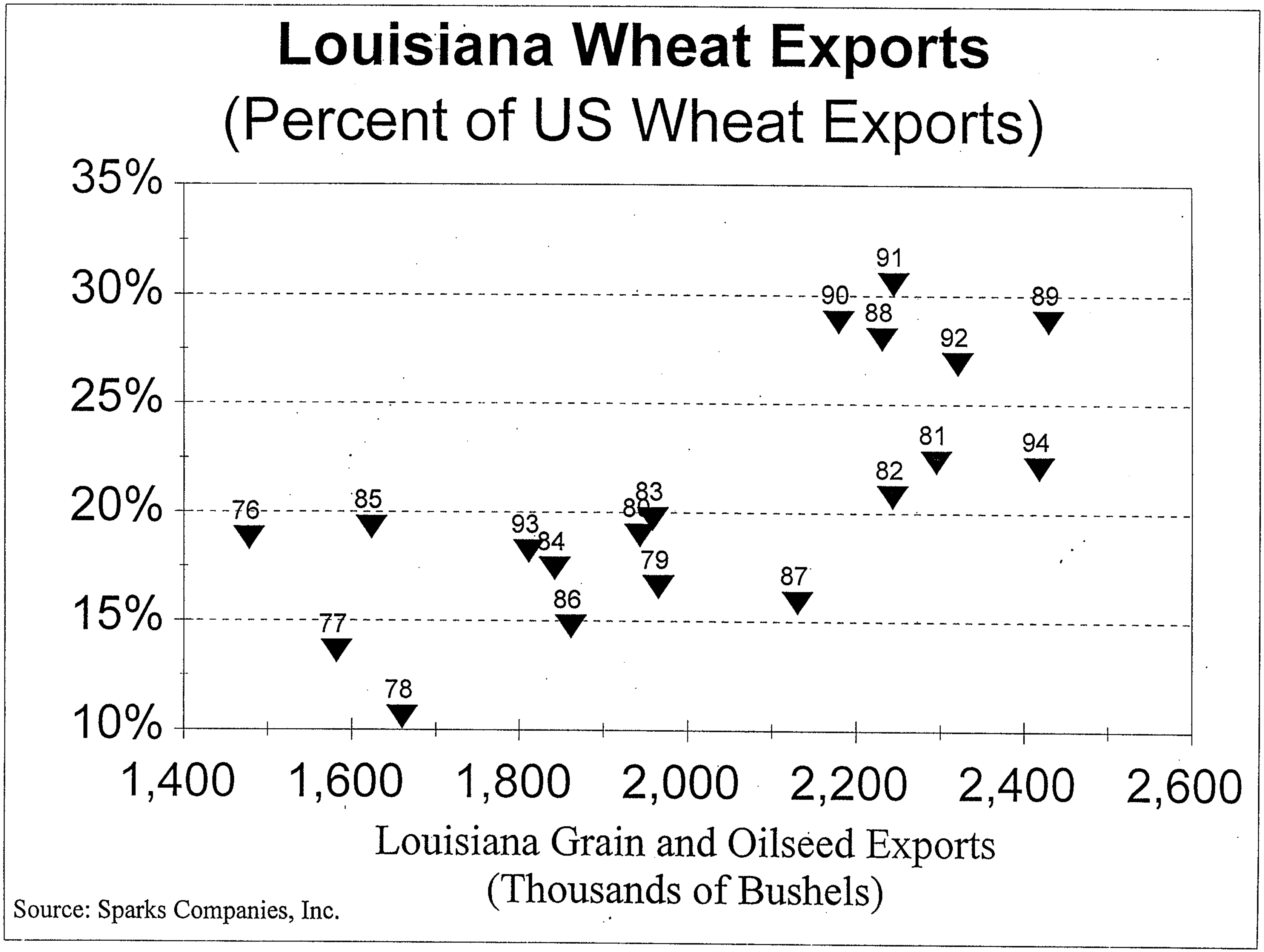

Louisiana Wheat Exports
(Percent of US Wheat Exports)
35%
30%
25%
20%
15%
10%
800
1,000
1,200
1,400
1,600
1,800
91
90
89
88
92
94
81
82
83
76
85
80
93
84
79
87
86
77
78
US Wheat Exports
(Thousands of Bushels)
Source: Sparks Companies, Inc.

Figure 4-26



Louisiana Wheat Exports
(Percent of US Wheat Exports)
35%
30%
25%
20%
15%
10%
1,400
1,600
1,800
2,000
2,200
2,400
2,600
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
Louisiana Grain and Oilseed Exports
(Thousands of Bushels)
Source: Sparks Companies, Inc.

Regional Shifts in Production

Figure 4-27 plots Louisiana's share of US wheat exports against the production share of its wheat drawing area. No apparent relationship is visible. Between 1989 and 1991, there was almost a twelve percentage point difference in the drawing area's share of US production while Louisiana's share of US wheat exports changed by less than two percentage points. The data also show little relationship when Louisiana's share of US exports is around 20% instead of 30%. The lack of such a relationship indicates that domestic consumption in the drawing area has been changing at roughly the same rate as production.

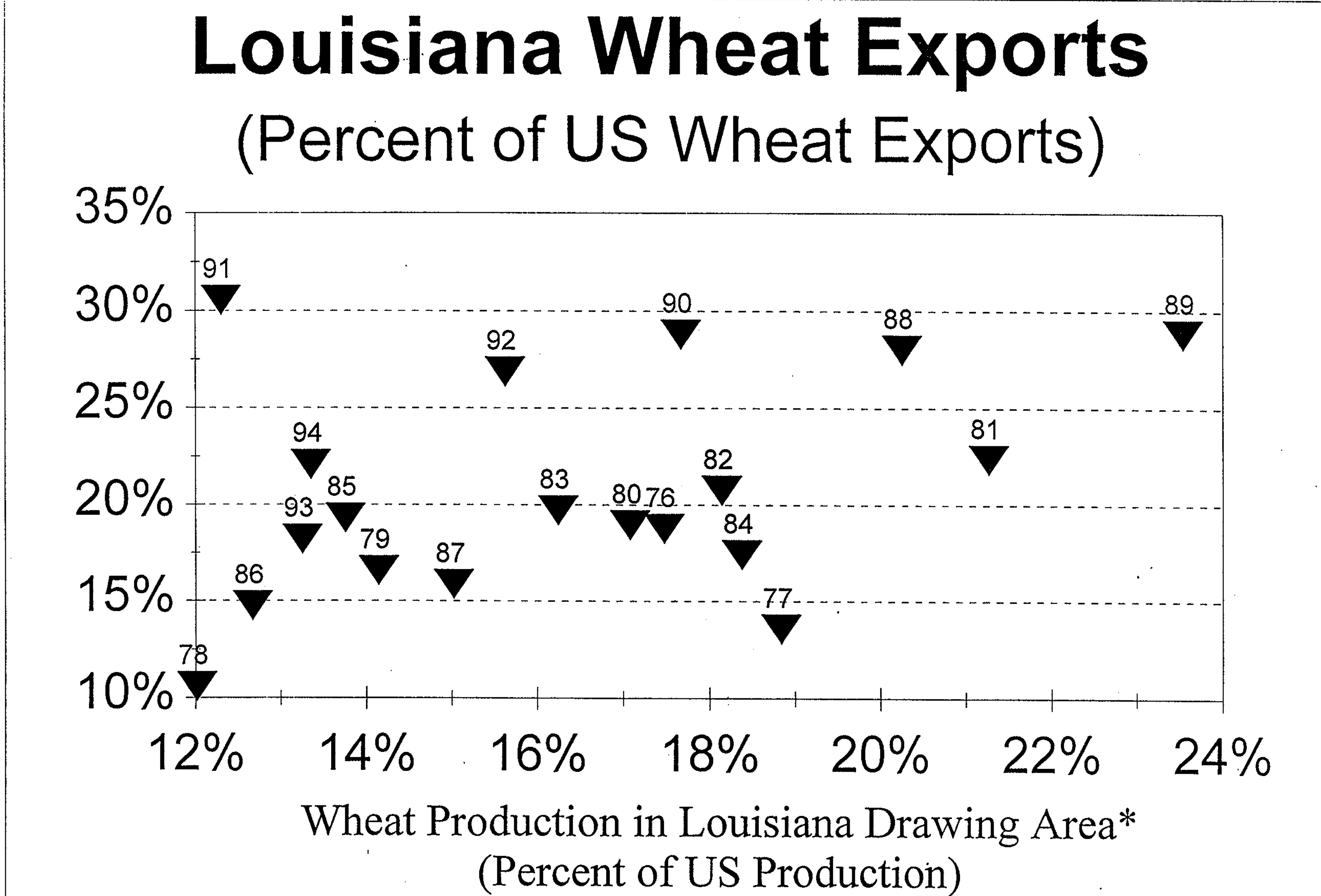
Relative Transportation Costs

As noted above, competition for Louisiana wheat exports comes primarily from Texas. Louisiana does compete with the PNW for the African market but it is difficult for it to compete with the PNW in the Asian market. Wheat acreage in the Northern Plains is concentrated further west than corn and soybean acreage. Moving this wheat down the Mississippi River requires both moving the grain a relatively long distance to the river by rail or truck and then transferring it to barge, substantially increasing the freight costs involved. These higher transportation costs make the rail move to the PNW significantly more competitive than that seen with corn and soybeans. In conjunction with lower ocean freight rates, this factor allows the PNW to dominate the Asian markets. The PNW does not control the African market because ocean freight costs from the PNW to Africa are considerably higher than they are from the Gulf to Africa. This is especially true for the North African markets, which require grain from the PNW to pass through the Suez Canal.

The competition between Texas and Louisiana is a function more of relative transportation rates within the US than it is of external factors such as ocean freight rates or export levels by other countries. For example, changes in export levels out of Argentina will have a similar effect on both port areas but their ability to adapt to such changes on a relative basis will be determined by internal transportation cost structures.

Figure 4-28 shows the barge-rail mode split between the Northern Plains and the primary export points for wheat in the US. As can be seen, barge has lost a considerable amount of this market. 1986 was the first year in which large volumes of wheat started to move by rail to the Texas, causing the precipitous forty-three percentage point drop in the barge share.

Figure 4-27

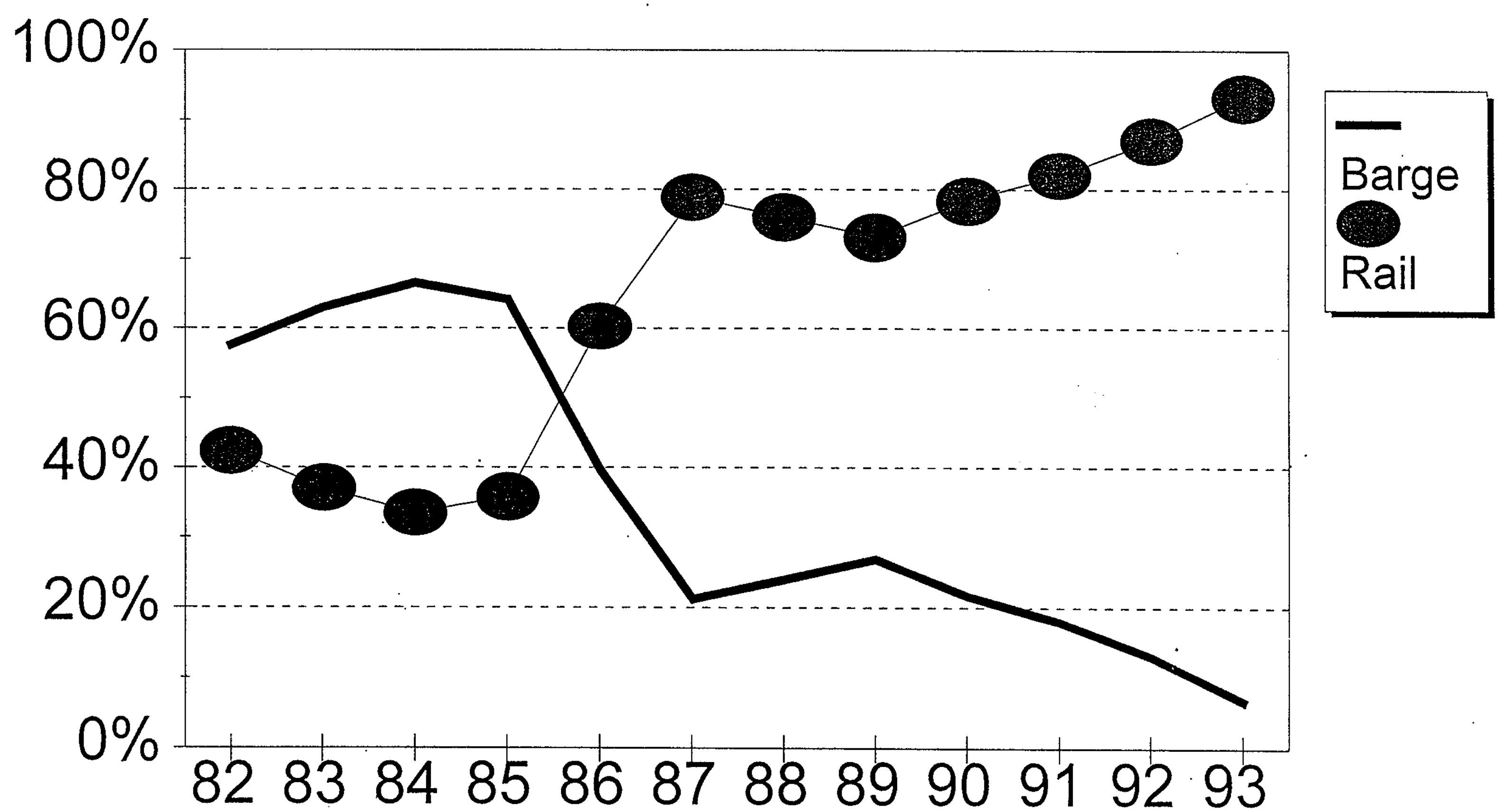


*AR, IA, IL, IN, KY, LA, MN, MO, MS, TN, WI
Source: Sparks Comanies, Inc.; USDA

Figure 4-28

Barge-Rail Mode Split

Northern Plains* to Major Export Points**



*Minnesota, North Dakota, South Dakota

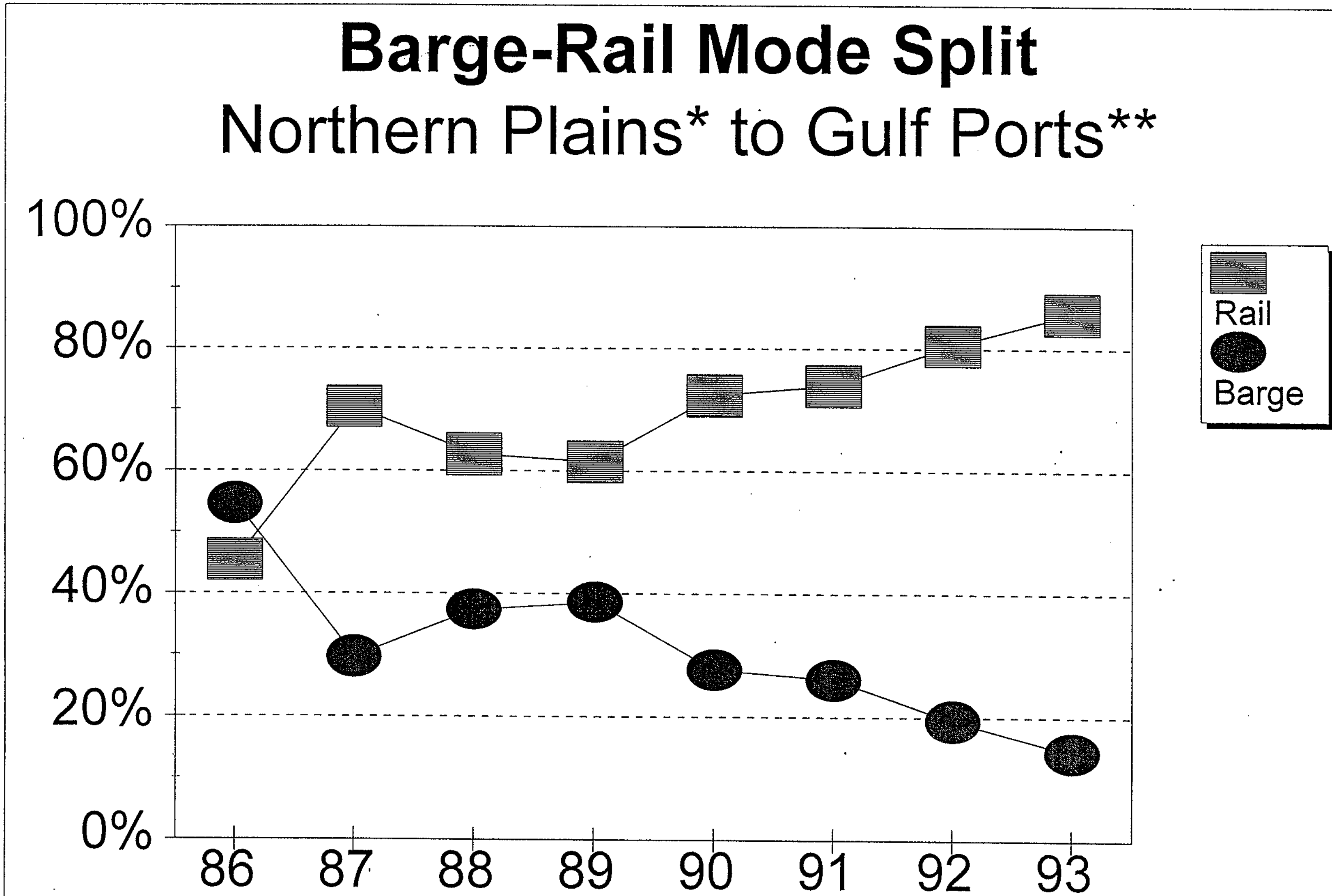
**Louisiana, PNW, Texas

These shifts are due to a number of transitions in the railroad industry that began with the 1982 Staggers Act. It was several years before the railroads began to take advantage of this act, but in 1986 and 1987, they started to institute changes which allowed them to cut their rates and become more competitive with barge. An immediate modal shift resulted. Prior to 1986, barge was used to deliver almost 100% of the wheat that was shipped from the Northern Plains to the Gulf ports. Since 1986 that share has dropped to less than 20%, shown in Figure 4-29.

Rail mergers have also had an effect on this shift. When a movement begins on one rail line and must switch to a different line to reach its final destination, railroads charge what is known as a switching fee. These fees can be relatively expensive and often deter shippers from using multiple rail line movements. For example, of the wheat that is shipped by rail from North Dakota to the Gulf ports, almost all of it winds up in the Texas. The Burlington Northern-Sante Fe (BNSF) is the only railroad which owns a relatively direct route from North Dakota to a Gulf port; those ports are located in Texas and the BNSF does not serve the ports in Louisiana. On the other hand, a large percentage of the wheat shipped by rail from Minneapolis to the Gulf destinate in Louisiana. In this case, a one railroad movement is available on the UP. The consolidation of the railroads which has been occurring has helped to reduce switching fees and has led to more direct routes between given origins and destinations. However, railroads are also able to capture markets through these consolidations, making price-gouging a possibility. The existence of the river mitigates such behavior and places upper limits on the prices in would-be captured markets.

Other factors which influence the mode split between barge and rail include relative equipment capacity and the introduction of certificates of transportation (COTs) in the rail market. In 1994, COTs were introduced by BNSF and have subsequently been implemented in various forms by other railroads. COTs are similar to a future's contract in that a shipper can arrange for rail service at a specific time in the future, but can sell that contract on the open market. COTs are a form of insurance against changes in capacity and freight rates that can lead to business disruptions. Shippers are able to insure themselves against capacity shortages (which lead to higher freight rates and shipping delays) while the railroads use COTs to hedge against capacity surpluses and declining freight rates. By improving the reliability of rail service, COTs could allow rail to capture additional share of the freight market for wheat.

Figure 4-29



*Includes Minnesota, North Dakota, and South Dakota
**Includes Texas and Louisian Ports

Changes in Foreign Markets

Changes in the ultimate foreign destinations of US wheat exports does not seem to affect Louisiana's export share. Such changes are imperceptible because Texas and Louisiana are rivals in the same markets and both have similar advantages and disadvantages in terms of geographic location.

Possible exceptions include exports to China and exports to Central/South America (excluding Mexico). China is one of the fastest growing export markets in the world (Note SCI's export projections by foreign destination in Appendix D). Yet China will not import wheat from the US PNW. China is concerned about TCK spore, which exists on some of the grain grown in the PNW. TCK is a winter wheat smut disease occurring in isolated areas where long snow cover persists over unfrozen soils. In the US, the disease occurs primarily west of the Rocky Mountains, within the PNW's drawing area. Since the Chinese opened their market to wheat imports in 1972, they have maintained quarantine restrictions on importation of any wheat containing TCK spores. Chinese officials believe that TCK could cause an infection in the Chinese wheat crop. This concern is viewed as unjustified by USDA. However, China has been able to use the issue in political negotiations and until the disagreement is resolved, US wheat exports to China (which are predicted to expand rapidly in the next few years) will move through ports in the Gulf. Large purchases of wheat by China could increase the percentage of wheat moving through Louisiana. On the other hand, the resolution of the TCK issue could lead to a decline in the Gulf's share of U.S. wheat exports.

The Central/South American market is the other possible exception. As shown above, 60% of the US wheat exported to that market leaves the US from ports in Louisiana. SCI is projecting the Central/South American share to expand from 11% of the US export market in 1994 to 18% in 2050 (percentages based on a three year moving average).

As shown in Appendix D, the African markets are predicted to lose about four percentage points over the forecast horizon. It is unlikely that the decline itself will have a significant impact on Louisiana's share of US exports as the African markets are captured fairly evenly by the three major port areas (See Table 4-6). The decline in Africa's share is predicted to be picked up by Asia and Central/South America. The PNW has a relative advantage in serving the Asian markets while Louisiana has an advantage in serving the Central/South American markets (See Table 4-6); as a result, it is difficult to predict exactly how Louisiana will be impacted by the relatively slower growth in the African markets. It should be noted that the Export Enhancement Program has allowed the U.S. to compete in the African markets. The program still exists, but could be phased out if Europe, Canada, or Australia stop subsidizing their wheat exports. If the program were eliminated, the U.S. could lose some market share in Africa.

5.0 Waterway Traffic Projections

This section presents forecasts of grain traffic on the Upper Mississippi River out to 2050. The forecasts are presented in five year increments beginning in the year 2000 for each business economic area (BEA)[1] that touches either the Illinois Waterway or the Mississippi River above Cairo, Illinois. BEAs which had grain tonnage originating in them at least one year between 1981 and 1993 include the following:

083	Chicago, Illinois
085	Springfield/Decateur, Illinois
086	Quincy, Illinois
087	Peoria, Illinois
091	La Crosse, Wisconsin
096	Minneapolis/St. Paul, Minnesota
098	Dubuque, Iowa
099	Davenport, Iowa/Rock Island Illinois
107	St. Louis, Missouri

5.1 Methodology

As discussed in Section 4, almost all of the grain traffic on the Upper Mississippi River originates in the Study Area and moves to Louisiana ports. For this reason, SCI's export projections for the Mississippi River were used to drive the waterway traffic projections. The Mississippi River export projections were allocated to the study area based upon the study area's historical share of Mississippi River exports and the historical mode split from the study area to Louisiana port areas. This tonnage was then adjusted upward slightly for non-export shipments.[2]

Historical BEA shares of the study area's waterborne shipments were used to allocate total tonnage originating in the study area to origin BEAs. We considered adjusting the historical BEA shares for projected changes in relative production (at the state level).

[1] As defined by the Bureau of Economic Analysis, US Department of Commerce.

[2] It should be noted that there is very little coastwise grain traffic. Under the Jones Act, grain that is shipped between two US ports must by transported by a US flagged vessel. Ocean freight rates charged by the US fleet are considerably higher than rates charged by other foreign fleets and are generally too expensive for US domestic grain consumers. However, we are aware of a large consumer of feed grains in the Southeast who is currently looking for an supplemental delivery system. They currently use rail to bring in large quantities of corn from the US corn belt. To some extent, the consumer has been captured by a railroad and has raised concerns about the reliability of rail service in general. The elimination of the Jones Act would make it more affordable for such consumers to ship corn from the Great Lakes and/or Louisiana to Southeast ports . Such a possibility would be an attractive alternative to the single mode rail system currently in place, and would increase the amount of coastwise shipments emanating from the Great Lakes and Louisiana. US grain interests are currently undertaking significant efforts to repeal the Jones Act.

However, analysis of the historical data revealed that there is no evident relationship between a state's production share and its share of waterborne shipments. Some relationships (not necessarily strong) were found between a state's waterborne shipments and its domestic consumption or surplus (production plus change in stocks minus domestic consumption); however, our domestic consumption estimates by state are not very precise and we did not feel that we could adequately forecast domestic consumption for each state.

Through traffic estimates for each BEA were estimated by assuming that all traffic originating in the study area moves downstream and out of the study area. This is a reasonable assumption given that less than 1% of the study area's grain shipments are internal and that the amount of grain received in the study area from other states is negligible.

Risk Analysis

Uncertainty bands for the traffic forecasts are based upon the ratio of the historical variance (defined in terms of a 95% confidence interval) in the corn shipments from the study area to the historical mean of that series.

Given the methodology used to forecast U.S. exports by port, the waterway traffic projections depend upon four key variables: harvested acreage, yields, domestic consumption, and Mississippi River port share. The forecast of total acreage is fairly flat across the forecast horizon and represents a full production scenario: in other words, the forecast assumes that all available land will be fully utilized. It is not likely that future acreage will be significantly greater than what we have forecast as it is already approaching the upper limit. Acreage could be less than what we have forecast if (1) foreign suppliers become relatively more competitive, (2) if the movement towards free trade is reversed and there is an erection of trade barriers, and/or (3) if USDA regains its authority to idle land.

Our domestic consumption forecasts could go either way. On the one hand, rising world incomes will continue to cultivate a growing demand for meat. Foreign countries will opt either to raise their own meat or import meat from world exporters. Countries that choose to raise their own livestock and poultry will need corn and soybeans for feed, which they may want to import. Countries that choose to import meat may do so from the US but they will need relatively less grain/soybeans for feed. As can be seen, there is a trade-off between meat and grain/soybeans in regard to exports. Grain that is not exported may be consumed by US livestock producers who then export the meat. Higher (lower) than anticipated US meat exports could result in relatively lower (higher) US grain exports. Lower (higher) US grain exports would reduce (increase) the amount of grain that moves on the river.

In addition, US domestic consumption of corn has been considerably impacted by government legislation that protects the ethanol and corn sweeteners industries. Without such protection, the demand for the outputs of these industries would likely fall. The legislation is continually being challenged by opposing interest groups. The elimination of the sugar quotas and/or the ethanol subsidy would likely result in higher volumes of corn traffic on the river as some of those supplies would move into US export channels.

With Asia's increasing demand for grain and the westward expansion of the cornbelt, the forecast port shares of US corn exports play an important role in the waterway traffic projections. There is a strong rivalry between the PNW and the Louisiana ports as they vie for US corn exports. Some analysts believe that the westward expansion of the cornbelt could allow the PNW to increase its export share, which could decrease Asian bound corn shipments on the river. This issue was explored in detail in Chapter Four and we concluded that the PNW probably will not be able to make significant gains at the expense of the Gulf. Nonetheless, the PNW's port share of US corn exports was forecast to be 22%: almost four percentage points above its average share since 1983. We do not think that the PNW will be able to make significant gains beyond this unless (1) the growth in the number of western feedlots tapers off or (2) Asian countries start to demand their grain shipments in large vessels that will not fit through the Panama Canal: e.g., Capesize (70 - 100 KMT).

Note that much of the uncertainty surrounding these three variables is associated with the occurrence of particular events: e.g., the elimination of the sugar quota. It would be difficult to estimate the probabilities of such occurrences and even more difficult to estimate the joint probabilities associated with the separate events. In addition, the timing of the events would be an important consideration.

Yields, the other main variable used to develop the waterway projections, were forecast using a linear trend and a twenty-five year base period. There will always be uncertainty surrounding yield forecasts since they are based upon rates of technological innovation and investment. Some analysts are optimistic about future growth in yields and think that average annual changes in yields are going to increase. In fact, SCI points out in Chapter 2 that if the forecast errs, it will likely be on the low side. Historical data on corn yields don't point to such increases; however, recent data on soybeans do suggest the possibility. As some analysts indicate, projections of yields based upon historical trends may be inaccurate because of new innovations which are in the final stages of development and may soon enter the market. Comparisons have been made between these new technologies and the introduction of hybrid corn in the early 50s which accelerated yield increases.

Unlike the other three variables (acreage, domestic consumption, and port share), it is a little bit easier to explore these uncertainties surrounding the yield forecasts. To do this, we generated alternate forecasts of waterway corn and soy bean movements by assuming relatively higher growth rates in yields over the forecast horizon. The purpose of this exercise was to determine if the resulting higher traffic levels would fall within our 95% confidence intervals.

Alternative forecasts for corn yields were developed by estimating a linear trend with a fifty year period (1945-1994) rather than a twenty-five year period (1970-1994) as the base. The decision not to use a non-linear curve for the alternative yield forecast was based on the assumption that the long-term growth in yields will accelerate and decelerate around a linear curve. The trend estimated with the longer period has a steeper slope than that estimated with the shorter period; corn yields are forecast to increase by 2.15 bushels per acre in contrast to 1.8 bushels per acre. The alternative yield forecast for corn in 2050 is 235 bushels per acre, compared with 219 bushels per acre estimated using the shorter period. The relatively higher yields result in 2050 export estimates of 5.7 billions bushels, approximately 2.5 times greater than current export levels and 18% higher than the 2050 base export projections.

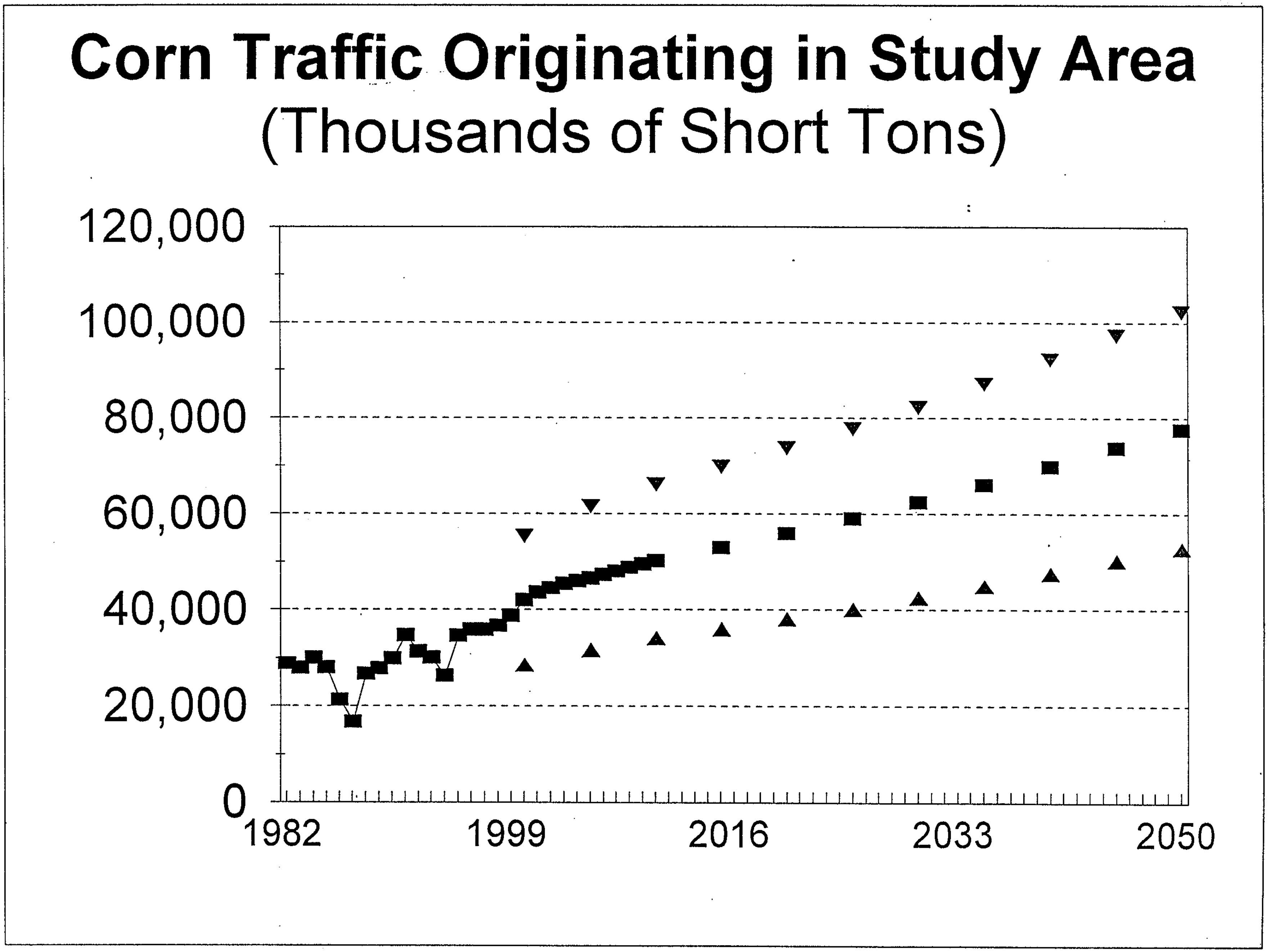
An alternative forecast for soybean yields was developed by allowing soybean yields to increase by 0.7 bushels each year between now and 2005. This growth was then gradually reduced until it reached 0.49 bushels in 2012, where it was held constant for the remainder of the forecast horizon. Base yield forecasts are based on the assumption that yields will increase linearly by 0.48 bushels per year. Since 1983, soybean yields have increased by an average of 0.67 bushels as farmers have begun to experiment with new planting practices. Such practices have not been adopted by all farmers. Some analysts indicate that it may take another five to ten years before all farmers have adopted the practices and their impact on growth starts to diminish. Using the alternative yield forecasts, soybean exports in 2050 are projected to be 1.76 billion bushels. This is a little over 2 times greater than current export levels and 26% higher than the base export forecasts.

5.2 Waterway Traffic Forecasts

Projections of grain traffic originating in the study area are shown graphically in Figures 5-1 through 5-3. By the year 2000, the amount of grain and oilseed tonnage originating in the Study Area is expected to be over 58 million short tons. That represents almost a 25% increase over the 47 million tons of traffic observed in 1991-93 (three year average). Corn's share of the grain and oilseed traffic originating in the Study Area is forecast to increase by almost four percentage points (to 72.47%) while soybeans are predicted to lose almost five percentage points.

By the year 2050, waterway tonnage of grains and oilseeds is projected to exceed 100 million short tons: more than double the 1991-93 base year traffic. It is predicted that corn will gain an additional 1.5 percentage points of that traffic while soybeans will lose a corresponding share.

Figure 5-1



Corn Traffic Originating in Study Area
(Thousands of Short Tons)
120,000
100,000
80,000
60,000
40,000
20,000
0
1982
1999
2016
2033
2050

Figure 5-2

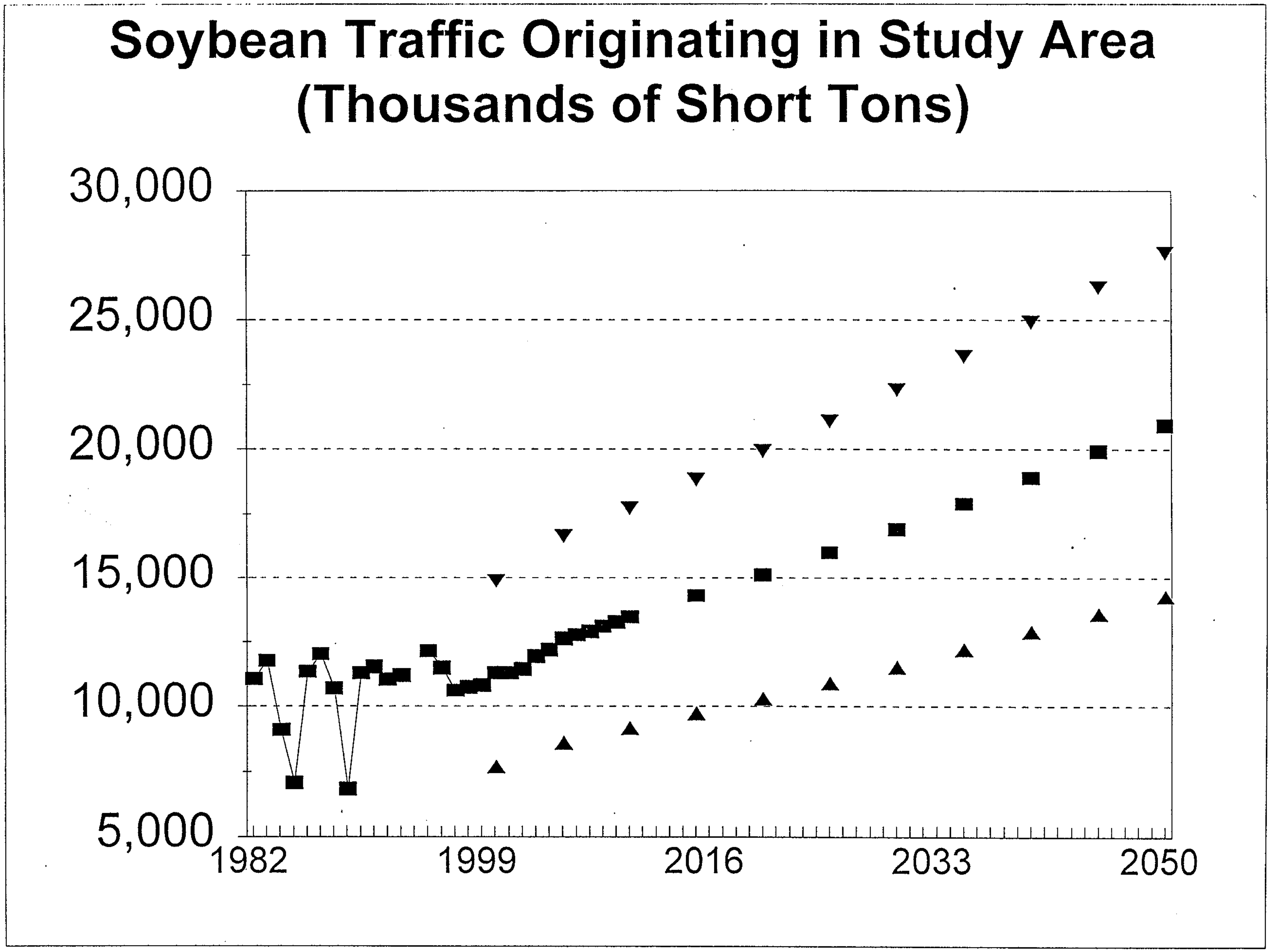
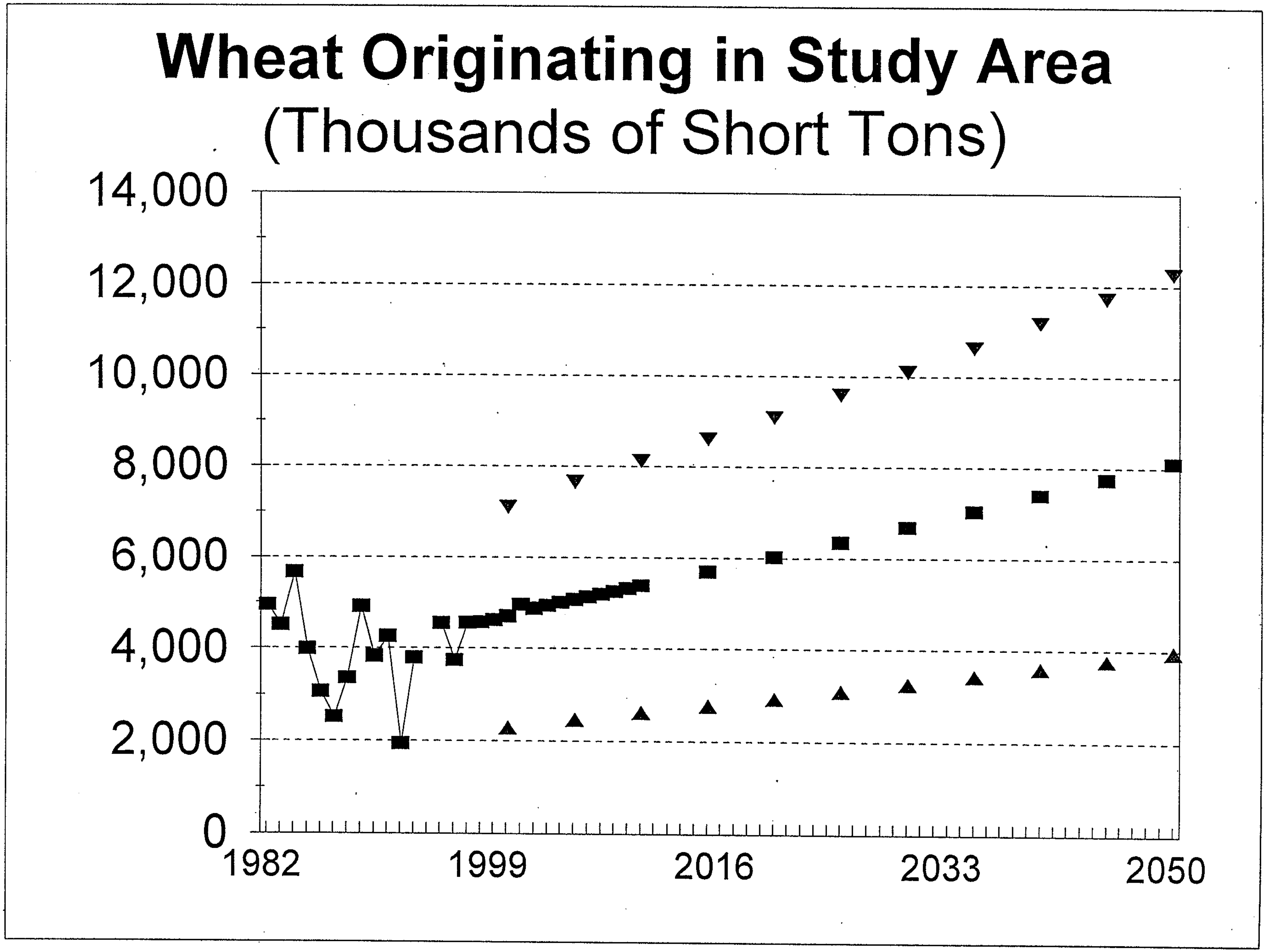

Soybean Traffic Originating in Study Area
(Thousands of Short Tons)
30,000
25,000
20,000
15,000
10,000
5,000
1982
1999
2016
2033
2050

Figure 5-3



Wheat Originating in Study Area
(Thousands of Short Tons)
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1982
1999
2016
2033
2050

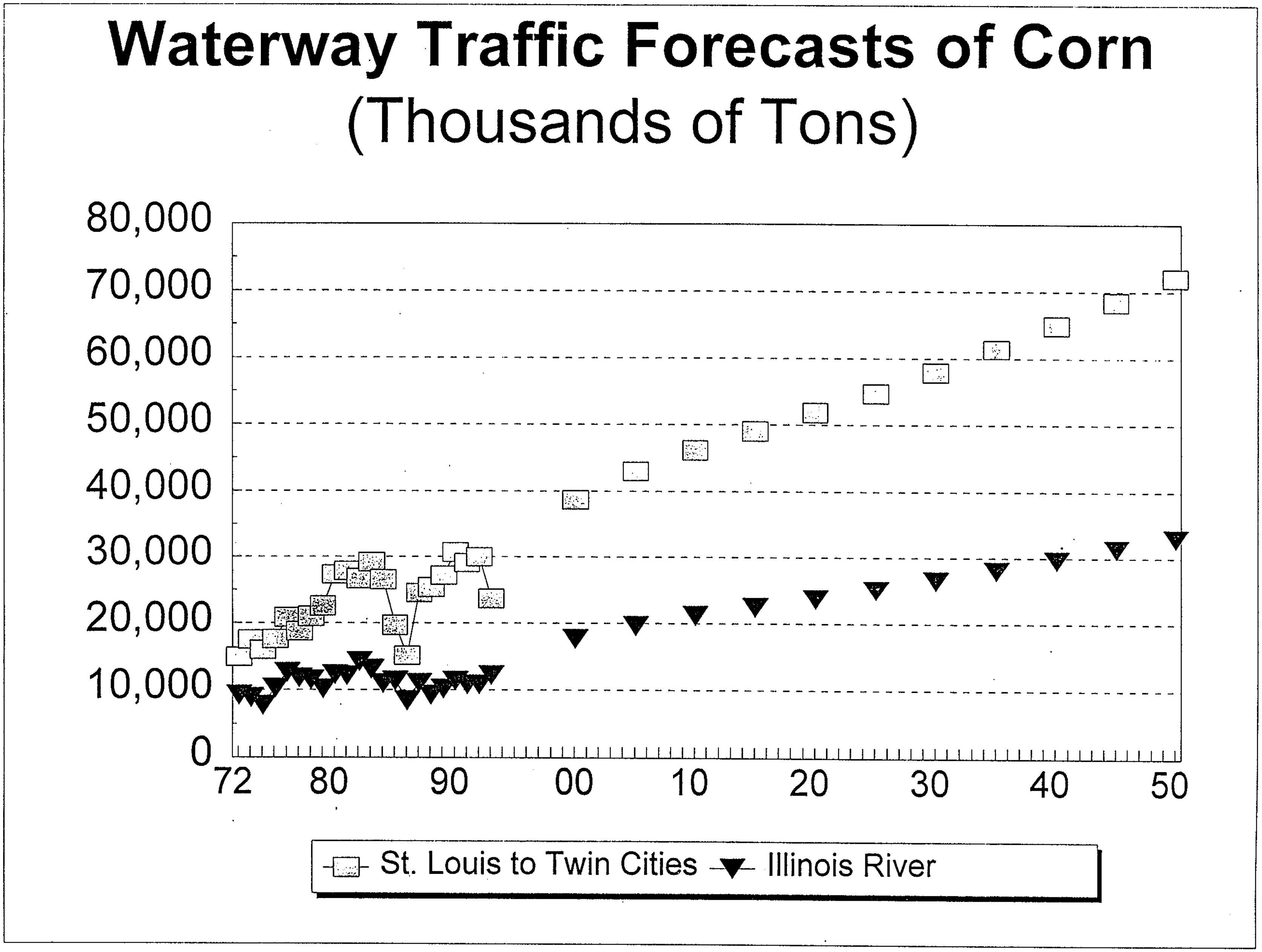
Table 5-1 contrasts the base forecasts with the results of the alternate high growth scenarios for corn and soybeans. In regard to corn, the high growth scenario falls within the 95% confidence interval. In 2000, the high growth traffic level is 6.8% higher than the base forecast and 19.1% lower than the upper band. In 2005 those percentages change to 18.3% and 10.4% respectively. In regard to soybeans, it can be seen that the high growth traffic levels are very close to the upper band. This result follows from the assumption that there will be higher than average growth in soybean yields over the next ten years. On average, the high growth traffic levels are 31% higher than the base traffic forecasts and 0.5% less than the upper band.

Waterway traffic forecasts by BEA are presented in Appendix G. The BEA traffic forecasts were further used to construct estimates for the main river segments in the Upper Mississippi River System: the Illinois Waterway and the Mississippi River between the Twin Cities and the mouth of the Missouri River. Again, through traffic estimates are based on the assumption that all grain traffic moves downstream and leaves the Study Area. These projections are located in Appendix H and depicted graphically in Figures 5-4 through 5-6.

Table 5-1
Forecast of Waterway Traffic Originating in the Study Area
(Thousands of Short Tons)

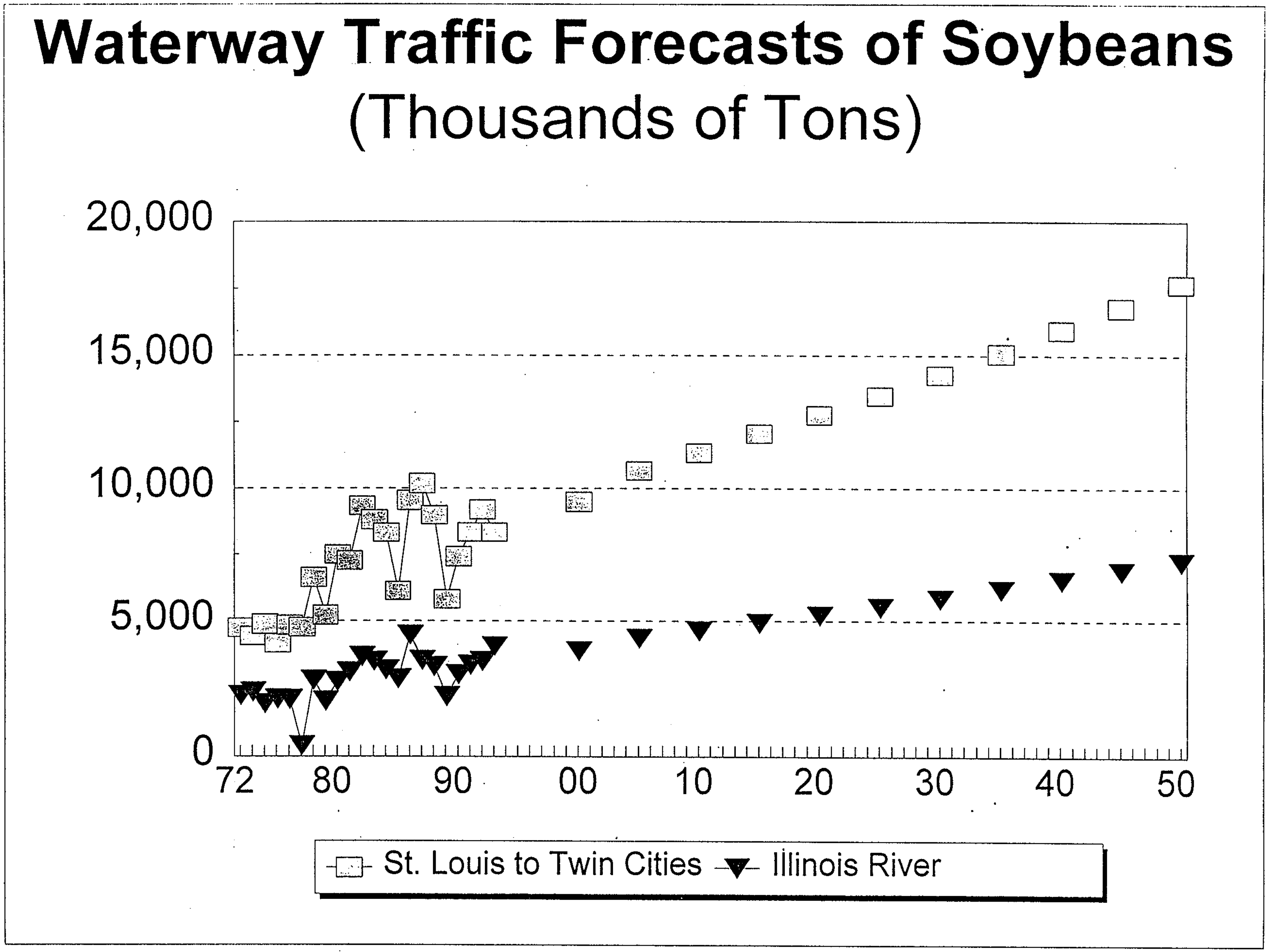
Year	Corn				Soybeans			
	Low Confidence Band	Base Forecast	High Confidence Band	High Growth Scenario	Low Confidence Band	Base Forecast	High Confidence Band	High Growth Scenario
2000	28,590	42,052	55,515	44,918	7,687	11,280	14,873	14,695
2005	31,751	46,702	61,653	50,811	8,601	12,621	16,641	16,981
2010	34,178	50,272	66,366	55,406	9,164	13,448	17,731	18,441
2015	36,301	53,395	70,488	59,652	9,741	14,294	18,847	19,359
2020	38,327	56,375	74,422	63,763	10,305	15,121	19,938	20,230
2025	40,458	59,508	78,559	68,035	10,893	15,984	21,076	21,137
2030	42,795	62,946	83,097	72,619	11,523	16,909	22,295	22,106
2035	45,318	66,658	87,997	77,483	12,190	17,888	23,586	23,129
2040	47,954	70,534	93,115	82,520	12,880	18,900	24,921	24,186
2045	50,622	74,459	98,296	87,612	13,578	19,925	26,271	25,255
2050	53,218	78,278	103,337	92,606	14,265	20,933	27,601	26,308

Figure 5-4



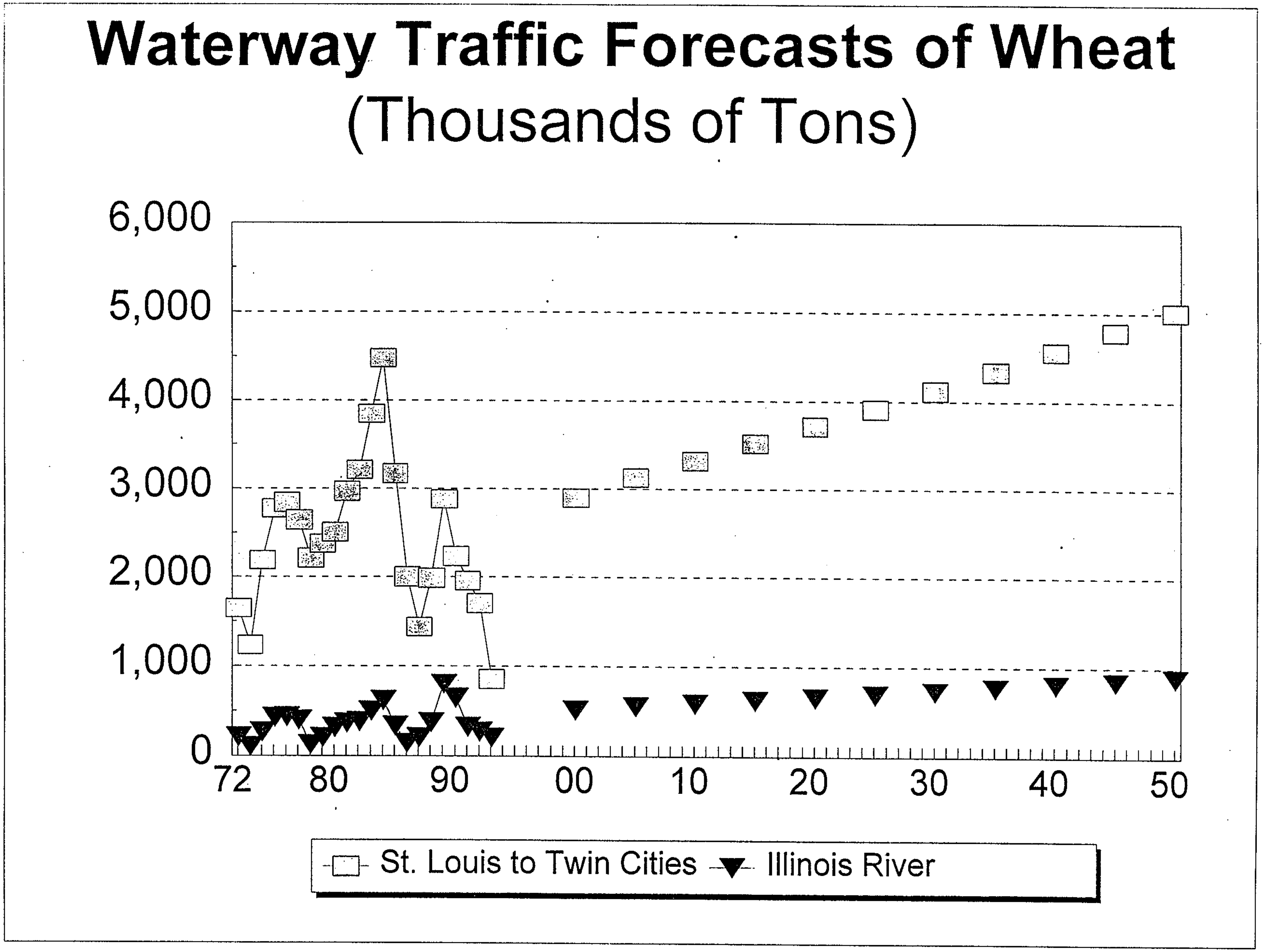
Waterway Traffic Forecasts of Corn
(Thousands of Tons)
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
72
80
90
00
10
20
30
40
50
St. Louis to Twin Cities
Illinois River

Figure 5-5



Waterway Traffic Forecasts of Soybeans
(Thousands of Tons)
20,000
15,000
10,000
5,000
0
72
80
90
00
10
20
30
40
50
St. Louis to Twin Cities
Illinois River

Figure 5-6


Waterway Traffic Forecasts of Wheat
(Thousands of Tons)
6,000
5,000
4,000
3,000
2,000
1,000
0
72
80
90
00
10
20
30
40
50
St. Louis to Twin Cities
Illinois River

5.3 Canadian Grain Traffic

Two important changes that have recently occurred in the Canadian grain industry could increase the amount of grain traffic on the upper Mississippi River. The first change involves the Canadian government's decision to eliminate rail freight subsidies that have been available to grain producers. The subsidies have indirectly promoted the development of the grain industry in the Canadian interior by making it possible for grain producers located there to compete in world markets. The second change is the decision by the Canadian Wheat Board to move the Thunder Bay export pooling point further east to the St. Lawrence River. Thunder Bay is located on the northwest shore of Lake Superior and caters to grain producers located in Manitoba and Saskatchewan. It primarily serves European and African markets.

Taken together, these two changes are going to significantly impact grain producers located in these provinces by raising the transportation costs of delivering their grain to export points. While moving the pooling point to the St. Lawrence River will eliminate some of the costs associated with moving grain through the Great Lakes, those costs could be more than offset by higher rail costs due to the elimination of the subsidy and the need to ship the grain all the way across Ontario to the St. Lawrence River. Of course, the elimination of the subsidy will also make it more expensive for producers to ship grain to export points on Canada's west coast.

Many analysts are still speculating about what the ultimate impacts of these changes will be. Possibilities include: reduced Canadian grain production; the diversion of grain exports to internal consumption channels, such as Canadian grain millers; more Canadian grain being exported through US ports; and increased shipments to US domestic markets in the Northern Plains States;

The last two possibilities are relevant to this analysis because each could affect the amount of grain traffic on the Upper Mississippi River. In the first case, Canadian grain producers are going to start realizing the full transportation costs associated with shipping their grain to export points and probably will start looking for the most profitable alternatives available. In other words, they will be comparing different export points in terms of the prices that can be obtained in those markets, after adjusting them for the requisite inland freight costs. From their perspective, export points that are possible options include: the west coast; Duluth, Minnesota; the Gulf of Mexico) and Canada's new export pooling point on the St. Lawrence River.

In the second case, the increased transportation costs associated with shipping their grain to export points means that Canadian producers will have to reduce their markups in order to continue competing in world markets. This necessity may make these producers start looking for alternative markets either within Canada or across the border in the US. Imports of Canadian grain by US millers, demand previously met by US supplies, would allow a relatively larger share of the US supply to be exported. Relatively larger volumes of grain traffic on the Upper Mississippi River could ensue if part of those elevated export levels were picked up by the Gulf.

In either case, the amount of traffic generated on the Mississippi River is likely to be small. Most of Canada's grain exports are exported from the west coast and the likelihood of this traffic being diverted to the Gulf is remote because almost all of it is destined for Asian markets, where demand for grain is increasing. Grain that could be diverted to the Gulf is that which has historically been exported out of Thunder Bay. However, in the past these volumes have been relatively small. As shown in Figure 5-7, grain exports out of Thunder Bay were relatively flat between 1984 and 1992, maintaining an annual average of just over one million metric tons. Assuming a constant proportionality between Thunder Bay exports and Canada's net trade balance, the quantity of grain available for export through Thunder Bay could be between one and three million metric tons in the year 2000[3]. It is not likely that the volume of traffic on the Mississippi River will increase by the same amount, as the possibility of the grain moving by rail has to be considered. As shown in Figure 5-8, wheat that is delivered from the Northern US Plains to the Gulf ports now moves predominately by rail.

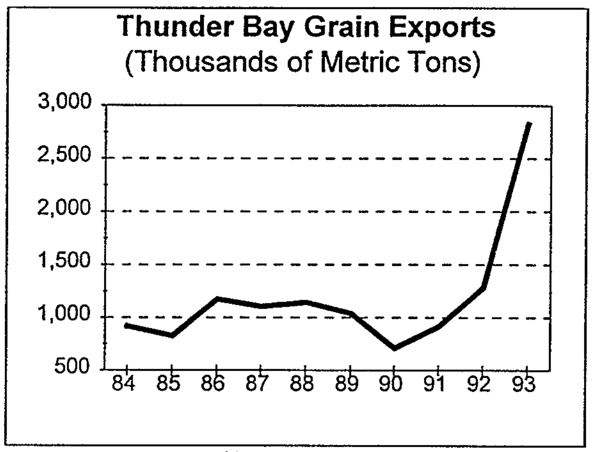
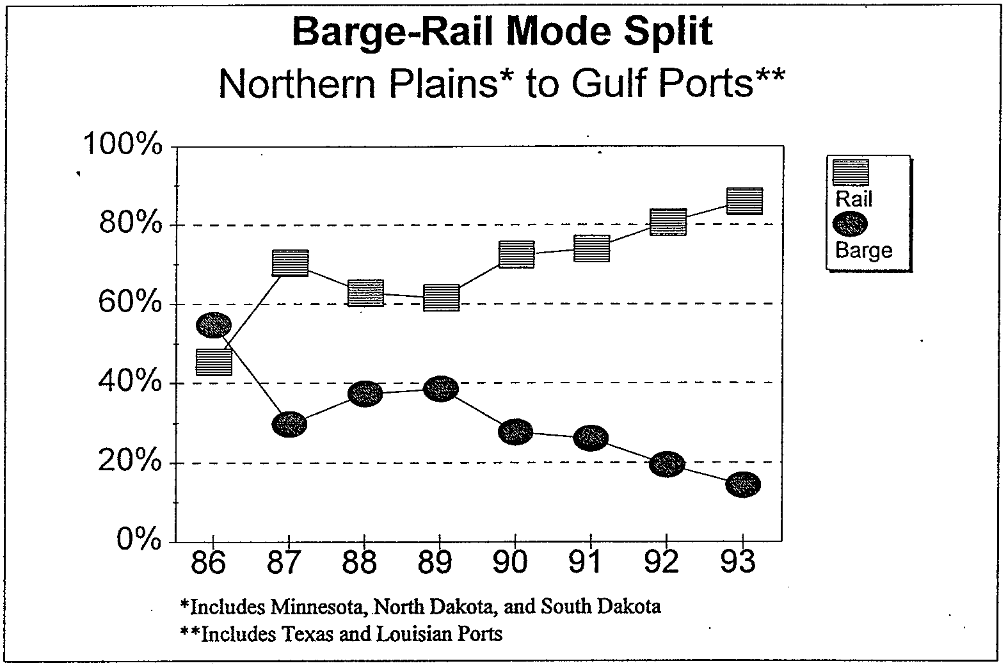


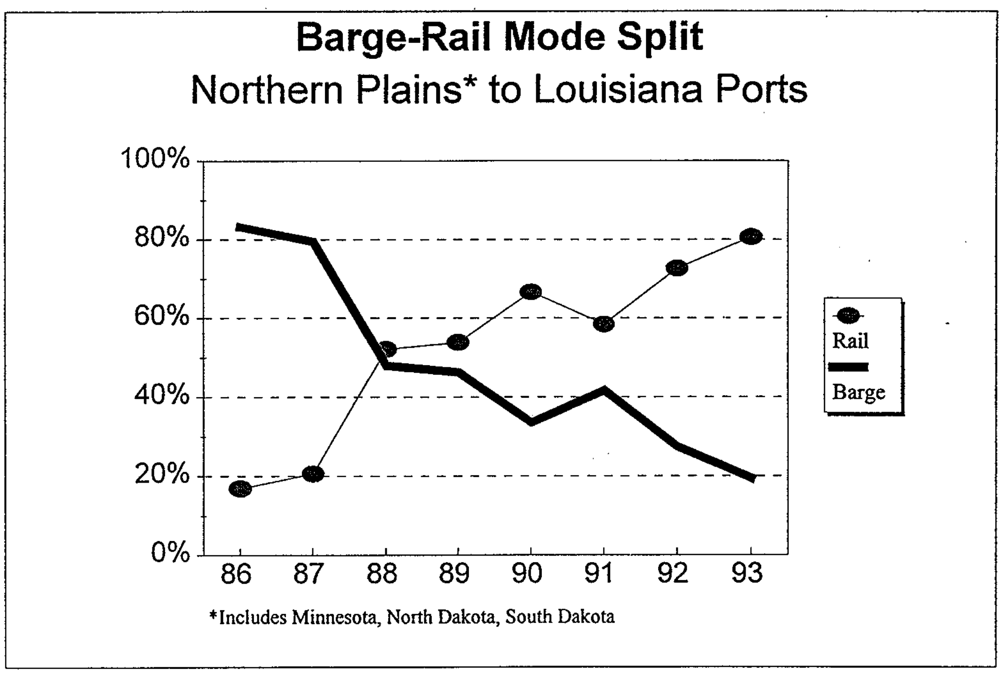
Figure 5-7

The possibility of Canadian grain exports being diverted to US markets also would result only in small increases in the amount of traffic on the river. In this case, the diversion of grain could be drawn not only from Thunder Bay exports but also from exports off the west coast since Saskatchewan is closer to North Dakota markets than it is to Vancouver. However, the concomitant increase in US exports would not be secured entirely by the Gulf. For example, the Northern Plains deliver grain to export markets not only in Louisiana but also in the PNW, Texas, and Duluth. In addition, an examination of rail and water flows from North Dakota and Minnesota to the PNW, Texas or Louisiana ports shows that the percentage of wheat delivered by rail has increased steadily from less than 40% in 1985 to over 90% in 1993 (See Figure 5-9).

[3] Projections of Canada's net trade balance to the year 2000 were developed by SCI and are reported in Appendix F.

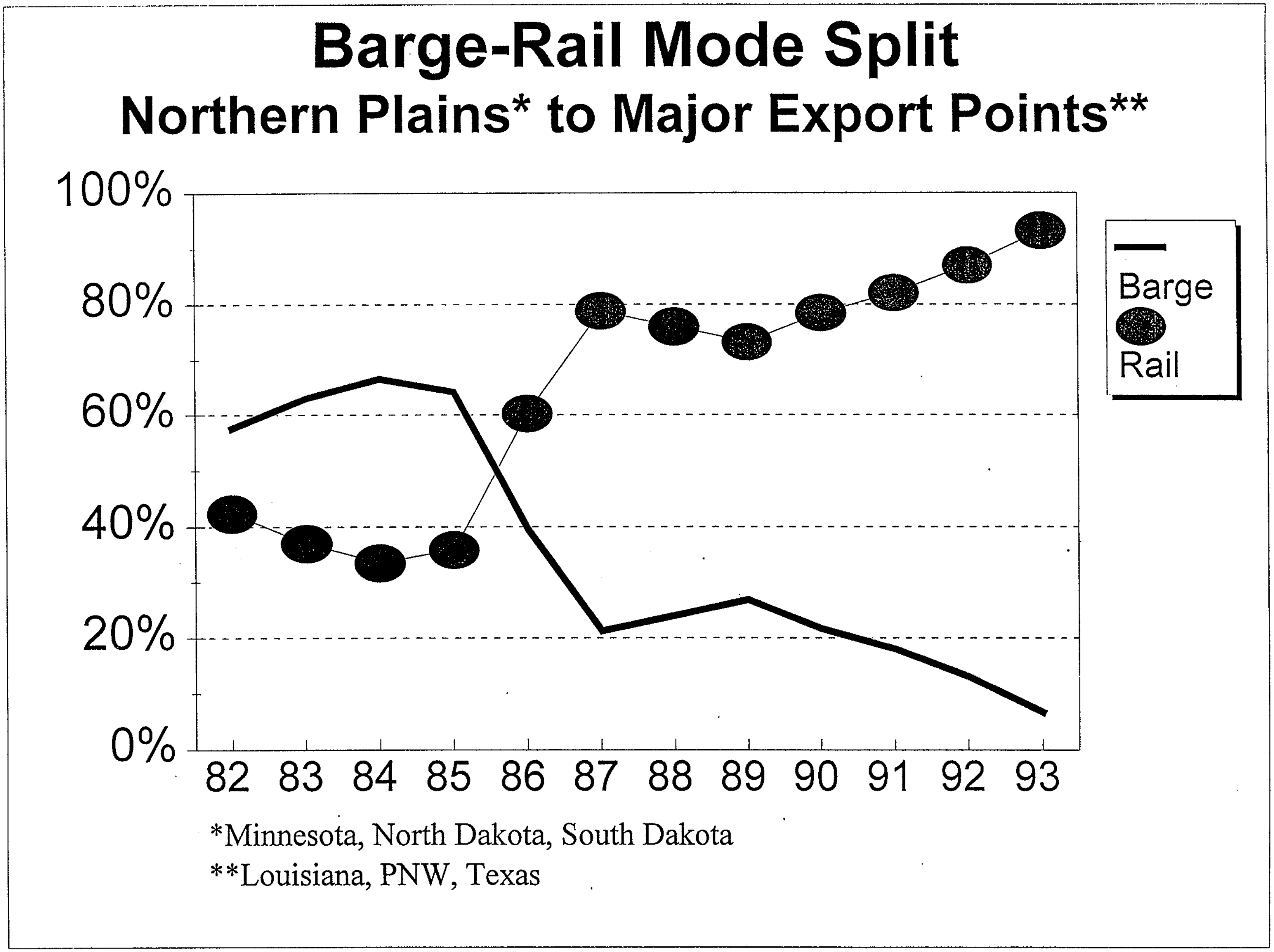
Figure 5-8
Northern Plains Barge-Rail Mode Splits





Source: Rail data from the confidential rail waybill files. Barge data provided by the U.S. Army Corps of Engineers.

Figure 5-9



*Minnesota, North Dakota, South Dakota

**Louisiana, PNW, Texas

APPENDIX A

National Supply and Use Forecasts

CORN

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	68.9	59.5	58.3	64.8	67.0	68.8	72.1	63.0	72.9	64.7	74.5	75.4	75.7	75.9	76.2
Harvested Yield	119.4	119.8	84.6	116.3	118.5	108.6	131.5	100.6	138.6	125.6	128.0	129.8	131.5	133.3	135.0
Beginning Stocks	4039	4882	4259	1930	1349	1542	1108	2136	863	1464	841	1112	1459	1748	1951
Production	8226	7131	4929	7534	7934	7474	9478	6337	10106	8126	9536	9787	9955	10117	10287
Imports	2	3	3	3	20	7	21	10	10	10	10	10	10	10	10
Total Supply	12267	12016	9191	9467	9303	9023	10607	8483	10979	9601	10387	10909	11423	11876	12248
Feed Use/Residual	4669	4798	3942	4396	4663	4877	5296	4704	5600	4820	5250	5375	5500	5575	5600
Food/Ind/Seed	1224	1243	1293	1356	1373	1454	1512	1588	1710	1765	1825	1875	1925	1975	2025
Ttl Domestic Use	5893	6041	5235	5752	6036	6331	6808	6292	7310	6585	7075	7250	7425	7550	7625
Exports	**1492**	**1716**	**2026**	**2366**	**1725**	**1584**	**1663**	**1328**	**2205**	**2175**	**2200**	**2200**	**2250**	**2375**	**2575**
Total Disappearance	7385	7757	7261	8118	7761	7915	8471	7620	9515	8760	9275	9450	9675	9925	10200
Ending Stocks	4882	4259	1930	1349	1542	1108	2136	863	1464	841	1112	1459	1748	1951	2048
ES : Use Ratio	66%	55%	27%	17%	20%	14%	25%	11%	15%	10%	12%	15%	18%	20%	20%
Exp/prod	18%	24%	41%	31%	22%	21%	18%	21%	22%	27%	23%	22%	23%	23%	25%
Per cap dom use	0.0245	0.0249	0.0214	0.0233	0.0242	0.0251	0.0267	0.0244	0.0281	0.0251	0.0267	0.0271	0.0275	0.0277	0.0277

SORGHUM

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	13.9	10.5	9.0	11.1	9.1	9.9	12.1	9.5	9.0	8.3	9.3	9.4	9.6	9.7	9.8
Harvested Yield	67.7	69.4	63.8	55.4	63.0	59.3	72.6	56.3	73.0	65.1	69.3	70.1	70.9	71.7	72.5
Beginning Stocks	551	743	663	441	221	144	54	176	48	86	48	83	102	112	113
Production	939	731	577	615	573	585	875	534	655	539	642	661	683	698	711
Imports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Supply	1490	1474	1240	1056	794	729	929	710	703	625	690	744	784	810	824
Feed Use/Residual	536	555	466	517	410	374	469	453	395	370	400	425	455	480	485
Food/Ind/Seed	12	25	22	15	8	9	7	7	7	7	7	7	7	7	7
Ttl Domestic Use	548	580	488	532	418	383	476	460	402	377	407	432	462	487	492
Exports	**198**	**232**	**311**	**303**	**232**	**292**	**277**	**202**	**215**	**200**	**200**	**210**	**210**	**210**	**220**
Total Disappearance	746	812	799	835	650	675	753	662	617	577	607	642	672	697	712
Ending Stocks	744	662	441	221	144	54	176	48	86	48	83	102	112	113	112
ES : Use Ratio	100%	82%	55%	26%	22%	8%	23%	7%	14%	8%	14%	16%	17%	16%	16%
Exp/prod	21%	32%	54%	49%	40%	50%	32%	38%	33%	37%	31%	32%	31%	30%	31%
Per cap dom use	0.0023	0.0024	0.0020	0.0022	0.0017	0.0015	0.0019	0.0018	0.0015	0.0014	0.0015	0.0016	0.0017	0.0018	0.0018

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

CORN

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	76.2	76.3	76.4	76.4	76.4	76.5	76.5	76.6	76.6	76.7	76.9	77.2	77.4	77.7	77.9	78.2	78.4	78.7
Harvested Yield	136.8	138.5	140.3	142.0	143.8	145.7	147.4	149.2	151.0	152.8	161.7	170.6	179.5	188.4	197.3	206.2	215.1	224.1
Beginning Stocks	2048	2085	2114	2144	2170	2197	2227	2256	2285	2313	2458	2604	2750	2898	3046	3195	3345	3496
Production	10424	10568	10719	10849	10986	11135	11279	11423	11567	11712	12436	13165	13898	14636	15378	16125	16877	17633
Imports	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Supply	12482	12662	12842	13003	13166	13343	13516	13689	13862	14035	14904	15778	16658	17543	18434	19331	20232	21139
Feed Use/Residual	5646	5692	5739	5786	5834	5884	5935	5986	6037	6089	6372	6668	6960	7237	7502	7761	8022	8295
Food/Ind/Seed	2075	2125	2175	2225	2275	2325	2375	2425	2475	2525	2775	3025	3275	3525	3775	4025	4275	4525
Ttl Domestic Use	7721	7817	7914	8011	8109	8209	8310	8411	8512	8614	9147	9693	10235	10762	11277	11786	12297	12820
Exports	**2676**	**2732**	**2785**	**2822**	**2860**	**2907**	**2951**	**2994**	**3036**	**3078**	**3270**	**3452**	**3644**	**3854**	**4082**	**4319**	**4559**	**4793**
Total Disappearance	10397	10549	10699	10833	10969	11116	11260	11404	11548	11693	12417	13145	13879	14616	15359	16105	16857	17613
Ending Stocks	2085	2114	2144	2170	2197	2227	2256	2285	2313	2342	2487	2633	2780	2927	3076	3225	3375	3527
ES : Use Ratio	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Exp/prod	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	27%	27%	27%	27%
Per cap dom use	0.0279	0.0280	0.0281	0.0282	0.0283	0.0284	0.0286	0.0287	0.0288	0.0289	0.0295	0.0300	0.0306	0.0312	0.0318	0.0323	0.0329	0.0335

SORGHUM

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.9	10.1	10.4	10.7	10.9	11.2	11.5	11.7	12.0
Harvested Yield	73.3	74.1	74.9	75.7	76.5	77.9	78.9	79.8	80.8	81.7	86.5	91.3	96.1	100.8	105.6	110.4	115.1	119.9
Beginning Stocks	112	115	117	118	119	120	123	124	125	127	138	150	161	174	187	200	213	227
Production	720	728	737	745	753	767	776	779	793	806	877	949	1025	1102	1183	1266	1351	1439
Imports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Supply	832	843	854	863	872	887	899	903	917	933	1015	1099	1186	1276	1369	1465	1564	1666
Feed Use/Residual	492	499	506	513	520	527	534	541	549	556	594	634	673	712	750	788	826	865
Food/Ind/Seed	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Ttl Domestic Use	499	506	513	520	527	534	541	548	556	563	601	641	680	719	757	795	833	872
Exports	**218**	**221**	**223**	**224**	**225**	**231**	**234**	**230**	**235**	**241**	**273**	**306**	**342**	**381**	**423**	**468**	**515**	**564**
Total Disappearance	717	727	736	744	752	765	775	779	791	804	874	947	1022	1100	1180	1263	1348	1436
Ending Stocks	115	117	118	119	120	123	124	125	127	129	140	152	164	176	189	202	216	230
ES : Use Ratio	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Exp/prod	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	31%	32%	33%	35%	36%	37%	38%	39%
Per cap dom use	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0019	0.0019	0.0019	0.0019	0.0019	0.0020	0.0020	0.0021	0.0021	0.0022	0.0022	0.0023

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

WHEAT

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	60.7	55.9	53.2	62.2	69.1	57.8	62.8	62.6	61.8	60.9	65.1	65.5	65.8	66.0	66.1
Harvested Yield	34.5	37.7	34.1	32.8	39.5	34.3	39.3	38.2	37.6	36.6	39.2	39.5	40.0	40.5	41.0
Beginning Stocks	1905	1821	1261	702	537	869	476	531	568	510	318	646	682	702	727
Production	2091	2108	1812	2037	2730	1980	2467	2396	2321	2227	2554	2587	2632	2673	2710
Imports	21	16	23	22	36	41	70	109	90	75	75	80	80	80	85
Total Supply	4017	3945	3096	2761	3303	2890	3013	3036	2979	2812	2947	3313	3394	3455	3522
Feed Use/Residual	401	290	150	139	482	244	194	272	324	200	190	200	225	225	225
Food/Milling and Seed	796	806	829	853	883	888	934	968	945	975	986	1011	1042	1063	1085
Ttl Domestic Use	1197	1096	979	992	1365	1132	1128	1240	1269	1175	1176	1211	1267	1288	1310
Exports	**999**	**1588**	**1415**	**1232**	**1069**	**1282**	**1354**	**1228**	**1200**	**1319**	**1125**	**1420**	**1425**	**1440**	**1465**
Total Disappearance	2196	2684	2394	2224	2434	2414	2482	2468	2469	2494	2301	2631	2692	2728	2775
Ending Stocks	1821	1261	702	537	869	476	531	568	510	318	646	682	702	727	747
ES : Use Ratio	83%	47%	29%	24%	36%	20%	21%	23%	21%	13%	28%	26%	26%	27%	27%
Exp/prod	48%	75%	78%	60%	39%	65%	55%	51%	52%	59%	44%	55%	54%	54%	54%
Per cap dom use	0.0050	0.0045	0.0040	0.0040	0.0055	0.0045	0.0044	0.0048	0.0049	0.0045	0.0044	0.0045	0.0047	0.0047	0.0048

SOYBEAN

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	58.3	57.2	57.4	59.5	56.5	58.0	58.2	57.3	61.1	61.7	60.5	61.5	62.4	61.0	61.0
Harvested Yield	33.3	33.9	27.0	32.3	34.1	34.3	37.6	32.6	41.9	36.4	36.5	37.0	37.5	38.0	38.5
Beginning Stocks	536	436	302	182	239	329	278	292	209	370	365	302	346	417	442
Production	1943	1938	1549	1924	1926	1987	2190	1869	2558	2246	2207	2277	2341	2316	2347
Total Supply	2479	2374	1851	2106	2165	2316	2468	2161	2767	2616	2572	2580	2687	2733	2789
Crush	1179	1173	1058	1146	1184	1257	1279	1271	1400	1397	1405	1408	1433	1448	1460
Food/Seed/Residual	112	103	75	106	94	97	122	82	149	93	95	116	117	118	118
Ttl Domestic Use	1291	1276	1133	1252	1278	1354	1401	1353	1549	1490	1500	1524	1550	1566	1578
Exports	**752**	**796**	**536**	**615**	**558**	**684**	**775**	**599**	**848**	**761**	**770**	**710**	**720**	**725**	**755**
Total Disappearance	2043	2072	1669	1867	1836	2038	2176	1952	2397	2251	2270	2234	2270	2291	2333
Ending Stocks	436	302	182	239	329	278	292	209	370	365	302	346	417	442	456
ES : Use Ratio	21%	15%	11%	13%	18%	14%	13%	11%	15%	16%	13%	15%	18%	19%	20%
Exp/prod	39%	41%	35%	32%	29%	34%	35%	32%	33%	34%	35%	31%	31%	31%	32%
Per cap dom use	0.0054	0.0053	0.0046	0.0051	0.0051	0.0054	0.0055	0.0053	0.0060	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

jfcnbal.xls

WHEAT

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.2	66.2	66.2	66.2	66.2	66.3	66.3	66.3
Harvested Yield	41.5	42.0	42.5	43.0	43.5	44.0	44.5	45.0	45.5	46.0	48.5	51.0	53.5	56.0	58.5	61.0	63.5	66.0
Beginning Stocks	747	707	715	724	732	740	747	756	764	772	814	855	897	939	980	1022	1064	1106
Production	2743	2777	2810	2843	2876	2909	2943	2976	3009	3042	3209	3375	3542	3708	3875	4042	4209	4376
Imports	85	85	85	85	85	80	80	80	80	80	80	80	80	80	80	80	80	80
Total Supply	3575	3569	3610	3652	3693	3730	3770	3812	3853	3895	4103	4311	4519	4727	4935	5144	5353	5561
Feed Use/Residual	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Food/Milling and Seed	1097	1110	1122	1134	1147	1159	1172	1185	1197	1210	1276	1343	1407	1468	1525	1580	1634	1688
Ttl Domestic Use	1322	1335	1347	1359	1372	1384	1397	1410	1422	1435	1501	1568	1632	1693	1750	1805	1859	1913
Exports	**1546**	**1519**	**1540**	**1560**	**1581**	**1598**	**1618**	**1638**	**1659**	**1679**	**1779**	**1879**	**1981**	**2087**	**2197**	**2309**	**2422**	**2534**
Total Disappearance	2868	2853	2886	2920	2953	2982	3014	3048	3081	3114	3280	3447	3613	3780	3947	4114	4280	4447
Ending Stocks	707	715	724	732	740	747	756	764	772	781	822	864	905	947	989	1030	1072	1114
ES : Use Ratio	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Exp/prod	56%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	56%	56%	56%	57%	57%	58%	58%
Per cap dom use	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0049	0.0049	0.0049	0.0049	0.0050	0.0050	0.0050

SOYBEAN

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	60.0	60.5	61.0	61.0	61.4	61.3	61.3	61.3	61.4	61.4	61.5	61.5	61.6	61.7	61.8	61.8	61.9	62.0
Harvested Yield	39.0	39.5	40.0	40.5	41.0	41.4	41.9	42.4	42.9	43.4	45.8	48.2	50.6	53.0	55.4	57.8	60.2	62.6
Beginning Stocks	456	444	454	463	469	479	483	488	494	500	529	557	586	615	644	673	703	732
Production	2339	2388	2438	2469	2519	2540	2570	2601	2631	2661	2812	2964	3116	3269	3422	3575	3729	3883
Total Supply	2795	2833	2892	2932	2988	3019	3053	3089	3125	3161	3341	3522	3703	3884	4066	4249	4431	4615
Crush	1476	1493	1509	1525	1542	1552	1569	1586	1603	1621	1710	1802	1891	1977	2059	2140	2220	2301
Food/Seed/Residual	119	120	121	122	123	131	132	133	134	135	140	145	150	155	160	165	170	175
Ttl Domestic Use	1595	1613	1630	1647	1665	1683	1701	1719	1737	1755	1850	1946	2041	2131	2219	2304	2389	2476
Exports	**755**	**766**	**799**	**816**	**845**	**853**	**864**	**876**	**888**	**900**	**957**	**1012**	**1070**	**1132**	**1197**	**1265**	**1334**	**1401**
Total Disappearance	2350	2379	2429	2463	2510	2536	2565	2595	2625	2655	2807	2958	3111	3263	3416	3569	3723	3877
Ending Stocks	444	454	463	469	479	483	488	494	500	506	534	563	592	621	650	679	708	738
ES : Use Ratio	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
Exp/prod	32%	32%	33%	33%	34%	34%	34%	34%	34%	34%	34%	34%	34%	35%	35%	35%	36%	36%
Per cap dom use	0.0058	0.0058	0.0058	0.0058	0.0058	0.0058	0.0058	0.0059	0.0059	0.0059	0.0060	0.0060	0.0061	0.0062	0.0063	0.0063	0.0064	0.0065

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

BARLEY

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	12.0	10.0	7.6	8.3	7.5	8.4	7.3	6.8	6.7	6.4	6.7	7.1	7.4	7.6	7.7
Harvested Yield	50.9	52.3	38.0	48.6	56.0	55.2	62.5	58.9	56.2	59.9	57.7	58.3	58.8	59.4	59.9
Beginning Stocks	327	336	321	197	161	135	129	151	139	113	102	94	90	95	110
Production	609	521	290	404	422	464	455	398	375	385	387	416	435	449	462
Imports	7	11	11	13	13	25	11	71	66	60	60	50	50	50	50
Total Supply	943	868	622	614	596	624	595	620	580	557	549	560	575	595	622
Feed Use/Residual	298	253	171	193	205	225	192	241	226	220	215	215	220	225	230
Food/Ind/Seed	175	173	175	176	175	176	172	175	175	175	175	175	175	175	175
Ttl Domestic Use	473	426	346	369	380	401	364	416	401	395	390	390	395	400	405
Exports	**134**	**121**	**79**	**84**	**81**	**94**	**80**	**66**	**66**	**60**	**65**	**80**	**85**	**85**	**90**
Total Disappearance	607	547	425	453	461	495	444	482	467	455	455	470	480	485	495
Ending Stocks	336	321	197	161	135	129	151	139	113	102	94	90	95	110	127
ES : Use Ratio	55%	59%	46%	36%	29%	26%	34%	29%	24%	22%	21%	19%	20%	23%	26%
Exp/prod	22%	23%	27%	21%	19%	20%	18%	17%	18%	16%	17%	19%	20%	19%	19%
Per cap dom use	0.0020	0.0018	0.0014	0.0015	0.0015	0.0016	0.0014	0.0016	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015

OATS

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harvested Area	6.8	6.9	5.5	6.9	5.9	4.8	4.5	3.8	4.0	3.2	4.2	4.0	4.0	4.1	4.1
Harvested Yield	56.3	54.3	39.3	54.3	60.1	50.7	65.6	54.4	57.2	57.3	57.9	58.2	58.5	58.8	59.1
Beginning Stocks	184	133	113	98	157	171	128	113	106	101	86	86	84	87	94
Production	385	374	217	374	358	244	294	207	230	186	242	230	236	240	244
Imports	32	46	63	66	63	75	55	107	93	100	85	85	85	85	80
Total Supply	601	553	393	538	578	490	477	427	429	387	413	401	405	412	418
Feed Use/Residual	384	358	194	266	286	235	233	193	202	175	200	190	190	190	195
Food/Ind/Seed	83	81	100	115	120	125	125	125	125	125	126	126	127	127	128
Ttl Domestic Use	467	439	294	381	406	360	358	318	327	300	326	316	317	317	323
Exports	**1**	**1**	**1**	**1**	**1**	**2**	**6**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Total Disappearance	468	440	295	382	407	362	364	321	328	301	327	317	318	318	324
Ending Stocks	133	113	98	157	171	128	113	106	101	86	86	84	87	94	94
ES : Use Ratio	28%	26%	33%	41%	42%	35%	31%	33%	31%	28%	26%	27%	27%	30%	29%
Exp/prod	0.2%	0.2%	0.3%	0.3%	0.2%	0.6%	1.6%	0.9%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Per cap dom use	0.0019	0.0018	0.0012	0.0015	0.0016	0.0014	0.0014	0.0012	0.0013	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

BARLEY

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	7.7	7.7	7.7	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Harvested Yield	60.5	61.0	61.6	62.1	62.7	64.6	65.2	65.9	66.5	67.1	70.2	73.4	76.5	79.7	82.8	85.9	89.1	92.2
Beginning Stocks	127	117	118	119	120	121	125	126	128	129	135	141	147	153	159	165	171	177
Production	467	472	477	481	486	501	506	510	515	520	544	569	593	617	642	666	690	715
Imports	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Total Supply	644	639	645	651	656	672	681	687	693	699	729	760	790	820	851	881	912	942
Feed Use/Residual	235	240	244	249	254	259	264	269	274	279	306	333	360	385	410	435	460	485
Food/Ind/Seed	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
Ttl Domestic Use	410	415	419	424	429	434	439	444	449	454	481	508	535	560	585	610	635	660
Exports	**118**	**106**	**106**	**106**	**105**	**113**	**115**	**115**	**115**	**115**	**112**	**110**	**107**	**106**	**105**	**105**	**104**	**103**
Total Disappearance	527	521	526	530	534	547	554	559	564	569	593	618	642	666	690	715	739	763
Ending Stocks	117	118	119	120	121	125	126	128	129	130	136	142	148	154	160	166	173	179
ES : Use Ratio	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Exp/prod	25%	23%	22%	22%	22%	23%	23%	23%	22%	22%	21%	19%	18%	17%	16%	16%	15%	14%
Per cap dom use	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0017	0.0017

OATS

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Harvested Area	4.1	4.1	4.1	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.8	3.7	3.6	3.4	3.3	3.2	3.1	3.0
Harvested Yield	59.4	59.7	60.0	60.3	60.6	60.8	61.1	61.4	61.7	62.0	63.5	65.0	66.5	68.0	69.5	71.0	72.5	74.0
Beginning Stocks	94	113	119	121	122	122	120	119	119	119	118	118	117	116	116	114	113	112
Production	245	247	249	250	251	242	242	242	241	241	240	238	236	234	232	229	225	222
Imports	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Total Supply	419	440	448	451	453	444	442	441	440	440	438	436	434	431	427	423	419	414
Feed Use/Residual	177	191	197	198	200	193	191	189	189	188	185	181	177	173	169	164	159	153
Food/Ind/Seed	128	129	129	130	130	131	131	131	132	132	134	136	138	140	142	144	146	148
Ttl Domestic Use	305	320	326	328	330	323	321	321	320	320	319	317	316	313	311	308	305	301
Exports	**1**	**1**	**1**	**1**	**1**	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***	***1***
Total Disappearance	306	321	327	329	331	324	322	322	321	321	320	318	317	314	312	309	306	302
Ending Stocks	113	119	121	122	122	120	119	119	119	119	118	118	117	116	115	114	113	112
ES : Use Ratio	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Exp/prod	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Per cap dom use	0.0011	0.0011	0.0012	0.0012	0.0012	0.0011	0.0011	0.0011	0.0011	0.0011	0.0010	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008

Harvested area = mil. acres
Yield = bushels/acre
Use = mil. bushels

jfcnbal.xls

	US	CORN		SORGHUM		BARLEY		WHEAT		SOYBEANS	
	Population	dom. use	per capita	dom. use	per capita	dom. use	per capita	dom. use	per capita	dom. use	per capita
1970	205.1	3996	19.5	694	3.4	429	2.1	771	3.8	611	3.0
1971	207.7	4406	21.2	694	3.3	412	2.0	857	4.1	583	2.8
1972	209.9	4761	22.7	659	3.1	389	1.9	818	3.9	596	2.8
1973	211.9	4670	22.0	702	3.3	382	1.8	753	3.6	665	3.1
1974	213.9	3483	16.3	407	1.9	331	1.5	671	3.1	577	2.7
1975	216.0	4106	19.0	506	2.3	333	1.5	724	3.4	694	3.2
1976	218.0	4147	19.0	422	1.9	329	1.5	754	3.5	643	2.9
1977	220.2	4314	19.6	459	2.1	332	1.5	858	3.9	748	3.4
1978	222.6	4886	22.0	550	2.5	382	1.7	836	3.8	827	3.7
1979	225.1	5207	23.1	508	2.3	373	1.7	782	3.5	892	4.0
1980	227.7	4895	21.5	334	1.5	346	1.5	782	3.4	830	3.6
1981	230.0	4982	21.7	428	1.9	377	1.6	847	3.7	830	3.6
1982	232.2	5432	23.4	505	2.2	411	1.8	906	3.9	886	3.8
1983	234.3	4810	20.5	395	1.7	452	1.9	1110	4.7	787	3.4
1984	236.4	5186	21.9	557	2.4	476	2.0	1152	4.9	832	3.5
1985	238.5	5271	22.1	692	2.9	497	2.1	1050	4.4	1138	4.8
1986	240.7	5893	24.5	536	2.2	473	2.0	1197	5.0	1291	5.4
1987	242.8	6041	24.9	555	2.3	426	1.8	1096	4.5	1276	5.3
1988	245.1	5235	21.4	466	1.9	346	1.4	979	4.0	1133	4.6
1989	247.3	5752	23.3	517	2.1	369	1.5	992	4.0	1252	5.1
1990	249.9	6036	24.2	410	1.6	380	1.5	1365	5.5	1278	5.1
1991	252.7	6331	25.1	374	1.5	401	1.6	1132	4.5	1354	5.4
1992	254.9	6808	26.7	469	1.8	364	1.4	1128	4.4	1401	5.5
1993	257.6	6292	24.4	453	1.8	416	1.6	1240	4.8	1353	5.3
1994	260.2	7310	28.1	395	1.5	401	1.5	1269	4.9	1549	6.0
1995	262.8	6585	25.1	370	1.4	395	1.5	1175	4.5	1490	5.7
1996	**265.2**	**7075**	**26.7**	**400**	**1.5**	**390**	**1.5**	**1176**	**4.4**	**1500**	**5.7**
1997	**267.6**	**7250**	**27.1**	**425**	**1.6**	**390**	**1.5**	**1211**	**4.5**	**1524**	**5.7**
1998	**270.0**	**7425**	**27.5**	**455**	**1.7**	**395**	**1.5**	**1267**	**4.7**	**1550**	**5.7**
1999	**272.4**	**7550**	**27.7**	**480**	**1.8**	**400**	**1.5**	**1288**	**4.7**	**1566**	**5.7**
2000	**274.8**	**7625**	**27.7**	**485**	**1.8**	**405**	**1.5**	**1310**	**4.8**	**1578**	**5.7**
2001	**277.1**	**7721**	**27.9**	**492**	**1.8**	**410**	**1.5**	**1322**	**4.8**	**1595**	**5.8**
2002	**279.4**	**7817**	**28.0**	**499**	**1.8**	**415**	**1.5**	**1335**	**4.8**	**1613**	**5.8**
2003	**281.7**	**7914**	**28.1**	**506**	**1.8**	**419**	**1.5**	**1347**	**4.8**	**1630**	**5.8**
2004	**284.0**	**8011**	**28.2**	**513**	**1.8**	**424**	**1.5**	**1359**	**4.8**	**1647**	**5.8**
2005	**286.3**	**8109**	**28.3**	**520**	**1.8**	**429**	**1.5**	**1372**	**4.8**	**1665**	**5.8**
2006	**288.7**	**8209**	**28.4**	**527**	**1.8**	**434**	**1.5**	**1384**	**4.8**	**1683**	**5.8**
2007	**291.0**	**8310**	**28.6**	**534**	**1.8**	**439**	**1.5**	**1397**	**4.8**	**1701**	**5.8**
2008	**293.4**	**8411**	**28.7**	**541**	**1.8**	**444**	**1.5**	**1410**	**4.8**	**1719**	**5.9**
2009	**295.8**	**8512**	**28.8**	**549**	**1.9**	**449**	**1.5**	**1422**	**4.8**	**1737**	**5.9**
2010	**298.1**	**8614**	**28.9**	**556**	**1.9**	**454**	**1.5**	**1435**	**4.8**	**1755**	**5.9**
2015	**310.4**	**9147**	**29.5**	**594**	**1.9**	**481**	**1.5**	**1501**	**4.8**	**1850**	**6.0**
2020	**322.6**	**9693**	**30.0**	**634**	**2.0**	**508**	**1.6**	**1568**	**4.9**	**1946**	**6.0**
2025	**334.2**	**10235**	**30.6**	**673**	**2.0**	**535**	**1.6**	**1632**	**4.9**	**2041**	**6.1**
2030	**345.0**	**10762**	**31.2**	**712**	**2.1**	**560**	**1.6**	**1693**	**4.9**	**2131**	**6.2**
2035	**354.9**	**11277**	**31.8**	**750**	**2.1**	**585**	**1.6**	**1750**	**4.9**	**2219**	**6.3**
2040	**364.3**	**11786**	**32.3**	**788**	**2.2**	**610**	**1.7**	**1805**	**5.0**	**2304**	**6.3**
2045	**373.5**	**12297**	**32.9**	**826**	**2.2**	**635**	**1.7**	**1859**	**5.0**	**2389**	**6.4**
2050	**382.7**	**12820**	**33.5**	**865**	**2.3**	**660**	**1.7**	**1913**	**5.0**	**2476**	**6.5**

population = millions
use = bushels per person

12/26/95
JWFPC.XLS

APPENDIX B

State Production Forecasts

Date	Harvested Acreage, Corn For Grain, Illinois	Harvested Acreage, Corn For Grain, Wisconsin	Harvested Acreage, Corn For Grain, Minnesota	Harvested Acreage, Corn For Grain, Iowa	Harvested Acreage, Corn For Grain, Missouri	Harvested Acreage, Corn For Grain, 5 State Total
1970	9940	1858	4521	10077	2837	29233
1971	10070	2304	5725	11550	3092	32741
1972	9225	2143	4899	10600	2500	29367
1973	9530	2090	5520	11280	2600	31020
1974	9900	2270	5900	12100	2710	32880
1975	10810	2390	5820	12420	2700	34140
1976	11590	2220	5600	12900	2850	35160
1977	11280	3050	6000	12700	2650	35680
1978	11170	3000	6190	12850	2300	35510
1979	11050	3080	6060	13100	2330	35620
1980	11440	3350	6290	13300	2070	36450
1981	11320	3500	6770	13850	1940	37380
1982	11440	3350	6500	13150	1970	36410
1983	7900	2300	4370	8550	1430	24550
1984	10940	3250	6440	12900	1930	35460
1985	11370	3350	6300	13550	2480	37050
1986	10400	3100	5600	12050	2420	33570
1987	9200	2800	4800	10150	2150	29100
1988	9600	1950	4700	10700	2020	28970
1989	10750	2800	5600	12250	2290	33690
1990	10400	3000	6150	12400	1960	33910
1991	11000	3200	6000	12200	2200	34600
1992	11050	2950	6500	12950	2400	35850
1993	10000	2350	4600	11000	1850	29800
1994	11450	3100	6450	12700	2300	36000
1995	**10000**	**2900**	**6100**	**11400**	**1450**	**31850**
1996	**11450**	**3150**	**6600**	**13200**	**2300**	**36700**
1997	**11400**	**3100**	**6500**	**13100**	**2250**	**36350**
1998	**11450**	**3150**	**6700**	**13350**	**2250**	**36900**
1999	**11450**	**3150**	**6700**	**13400**	**2250**	**36950**
2000	**11450**	**3150**	**6700**	**13400**	**2250**	**36950**
2001	**11449**	**3163**	**6706**	**13398**	**2249**	**36965**
2002	**11448**	**3176**	**6712**	**13396**	**2248**	**36980**
2003	**11447**	**3189**	**6718**	**13394**	**2247**	**36995**
2004	**11446**	**3202**	**6724**	**13392**	**2246**	**37010**
2005	**11445**	**3215**	**6730**	**13390**	**2245**	**37025**
2006	**11444**	**3228**	**6736**	**13388**	**2244**	**37040**
2007	**11443**	**3241**	**6742**	**13386**	**2243**	**37055**
2008	**11442**	**3254**	**6748**	**13384**	**2242**	**37070**
2009	**11441**	**3267**	**6754**	**13382**	**2241**	**37085**
2010	**11440**	**3280**	**6760**	**13380**	**2240**	**37100**
2015	**11435**	**3345**	**6790**	**13370**	**2235**	**37175**
2020	**11430**	**3410**	**6820**	**13360**	**2230**	**37250**
2025	**11425**	**3475**	**6850**	**13350**	**2225**	**37325**
2030	**11420**	**3540**	**6880**	**13340**	**2220**	**37400**
2035	**11415**	**3605**	**6910**	**13330**	**2215**	**37475**
2040	**11410**	**3670**	**6940**	**13320**	**2210**	**37550**
2045	**11405**	**3735**	**6970**	**13310**	**2205**	**37625**
2050	**11400**	**3775**	**7000**	**13300**	**2200**	**37675**

Harvested Acreage = Thousand Acres

Date	Harvested Acreage, Soybeans, Illinois	Harvested Acreage, Soybeans, Wisconsin	Harvested Acreage, Soybeans, Minnesota	Harvested Acreage, Soybeans, Iowa	Harvested Acreage, Soybeans, Missouri	Harvested Acreage, Soybeans, 5 State Total
1970	6800	153	3030	5680	3465	19128
1971	7150	128	2780	5500	3605	19163
1972	7520	145	3225	6000	3960	20850
1973	9130	241	4290	7650	4700	26011
1974	8440	217	3860	7110	4250	23877
1975	8320	207	3650	6970	4370	23517
1976	7560	152	3020	6450	4200	21382
1977	8850	192	3770	7080	4650	24542
1978	9240	215	4060	7550	5440	26505
1979	9720	295	5080	8170	5830	29095
1980	9350	330	4760	8270	5530	28240
1981	9150	375	4350	8050	5000	26925
1982	9200	440	4830	8400	5700	28570
1983	9050	395	4600	7960	5150	27155
1984	9020	450	5240	8400	5300	28410
1985	9000	300	5000	8150	5230	27680
1986	9000	320	4650	8450	5250	27670
1987	8700	320	4650	7900	4930	26500
1988	8700	390	4800	8100	4230	26220
1989	8850	410	5000	8280	4350	26890
1990	9100	430	4600	7900	4150	26180
1991	9100	550	5350	8630	4430	28060
1992	9430	690	5400	8170	4250	27940
1993	9000	590	5000	8300	3600	26490
1994	9530	830	5600	8770	4560	29290
1995	9650	800	5800	9250	4550	30050
1996	9250	770	5550	8570	4500	28640
1997	9500	810	5850	8970	4700	29830
1998	9500	810	5800	8750	4600	29460
1999	9450	810	5750	8750	4540	29300
2000	9400	810	5750	8750	4590	29300
2001	9398	810	5751	8753	4601	29313
2002	9396	810	5752	8756	4612	29326
2003	9394	810	5753	8759	4623	29339
2004	9392	810	5754	8762	4634	29352
2005	9390	810	5755	8765	4645	29365
2006	9388	810	5756	8768	4656	29378
2007	9386	810	5757	8771	4667	29391
2008	9384	810	5758	8774	4678	29404
2009	9382	810	5759	8777	4689	29417
2010	9380	810	5760	8780	4700	29430
2015	9370	810	5765	8795	4755	29495
2020	9360	810	5770	8810	4810	29560
2025	9350	810	5775	8825	4865	29625
2030	9340	810	5780	8840	4920	29690
2035	9330	810	5785	8855	4975	29755
2040	9320	810	5790	8870	5030	29820
2045	9310	810	5795	8885	5085	29885
2050	9300	810	5800	8900	5150	29960

Harvested Acreage = Thousand Acres

Date	Harvested Acreage, Wheat, All, Illinois	Harvested Acreage, Wheat, All, Wisconsin	Harvested Acreage, Wheat, All, Minnesota	Harvested Acreage, Wheat, All, Iowa	Harvested Acreage, Wheat, All, Missouri	Harvested Acreage, Wheat, All, 5 State Total
1970	1030	31	849	40	855	2805
1971	1000	35	1574	36	775	3420
1972	1200	29	1498	33	925	3685
1973	1300	27	2010	34	850	4221
1974	1730	78	2794	62	1310	5974
1975	1730	93	2867	100	1520	6310
1976	1850	93	4056	130	1840	7969
1977	1570	75	3327	109	1850	6931
1978	880	45	2776	45	840	4586
1979	1250	54	2578	60	1600	5542
1980	1570	111	3169	92	2070	7012
1981	1950	121	3510	125	2750	8456
1982	1500	122	3184	100	2200	7106
1983	1400	128	2140	50	1850	5568
1984	1600	177	2553	100	2050	6480
1985	750	157	2683	112	1280	4982
1986	820	148	2814	60	570	4412
1987	950	88	2519	30	770	4357
1988	1250	133	2250	35	1550	5218
1989	1780	180	2699	70	1850	6579
1990	1850	192	2865	75	2000	6982
1991	1400	127	2155	50	1500	5232
1992	1150	66	2805	40	1350	5411
1993	1550	125	2298	40	1400	5413
1994	900	139	2572	45	1100	4756
1995	**1390**	**139**	**2193**	**45**	**1200**	**4967**
1996	**1500**	**150**	**2525**	**45**	**1450**	**5670**
1997	**1500**	**150**	**2550**	**45**	**1290**	**5535**
1998	**1500**	**150**	**2575**	**45**	**1290**	**5560**
1999	**1500**	**150**	**2600**	**45**	**1325**	**5620**
2000	**1500**	**150**	**2600**	**45**	**1325**	**5620**
2001	**1497**	**150**	**2606**	**45**	**1329**	**5627**
2002	**1494**	**150**	**2612**	**45**	**1333**	**5634**
2003	**1491**	**150**	**2618**	**45**	**1337**	**5641**
2004	**1488**	**150**	**2624**	**45**	**1341**	**5648**
2005	**1485**	**150**	**2630**	**45**	**1345**	**5655**
2006	**1482**	**150**	**2636**	**45**	**1349**	**5662**
2007	**1479**	**150**	**2642**	**45**	**1353**	**5669**
2008	**1476**	**150**	**2648**	**45**	**1357**	**5676**
2009	**1473**	**150**	**2654**	**45**	**1361**	**5683**
2010	**1470**	**150**	**2660**	**45**	**1365**	**5690**
2015	**1455**	**150**	**2690**	**45**	**1385**	**5725**
2020	**1440**	**150**	**2720**	**45**	**1405**	**5760**
2025	**1425**	**150**	**2750**	**45**	**1425**	**5795**
2030	**1410**	**150**	**2780**	**45**	**1445**	**5830**
2035	**1395**	**150**	**2810**	**45**	**1465**	**5865**
2040	**1380**	**150**	**2840**	**45**	**1485**	**5900**
2045	**1365**	**150**	**2870**	**45**	**1505**	**5935**
2050	**1350**	**150**	**2900**	**45**	**1530**	**5975**

Harvested Acreage = Thousand Acres

Date	Harvested Acreage, Other Grains, Illinois	Harvested Acreage, Other Grains, Wisconsin	Harvested Acreage, Other Grains, Minnesota	Harvested Acreage, Other Grains, Iowa	Harvested Acreage, Other Grains, Missouri	Harvested Acreage, Other Grains, 5 State Total
1970	632	1713	3936	1711	466	8458
1971	710	1563	3840	1550	876	8539
1972	506	1373	3230	1250	530	6889
1973	496	1392	3444	1300	481	7113
1974	515	1421	2760	1425	595	6716
1975	505	1385	2805	1425	615	6735
1976	447	1312	2920	1400	796	6875
1977	399	1199	3460	1350	1075	7483
1978	338	1147	2880	1050	882	6297
1979	330	1004	2260	1000	765	5359
1980	313	989	2265	1000	876	5443
1981	325	945	2460	960	980	5670
1982	311	978	2410	950	908	5557
1983	327	898	2170	750	744	4889
1984	450	910	2150	740	1363	5613
1985	630	833	2175	760	1515	5913
1986	400	935	1850	630	1240	5055
1987	330	888	1670	650	767	4305
1988	260	655	1600	500	510	3525
1989	340	775	1650	750	630	4145
1990	365	760	1530	600	562	3817
1991	293	602	1445	425	552	3317
1992	390	635	1175	375	685	3260
1993	300	595	1125	225	654	2899
1994	270	554	1050	430	584	2888
1995	**250**	**506**	**960**	**300**	**577**	**2593**
1996	**296**	**637**	**1174**	**420**	**693**	**3220**
1997	**287**	**604**	**1168**	**390**	**690**	**3139**
1998	**300**	**622**	**1200**	**400**	**698**	**3220**
1999	**300**	**626**	**1210**	**400**	**705**	**3241**
2000	**300**	**630**	**1220**	**400**	**705**	**3255**
2001	**310**	**630**	**1217**	**400**	**705**	**3262**
2002	**312**	**630**	**1214**	**400**	**712**	**3268**
2003	**312**	**630**	**1212**	**400**	**712**	**3266**
2004	**312**	**630**	**1209**	**400**	**712**	**3263**
2005	**312**	**631**	**1206**	**400**	**712**	**3261**
2006	**312**	**628**	**1201**	**398**	**716**	**3254**
2007	**313**	**625**	**1195**	**396**	**719**	**3248**
2008	**313**	**623**	**1190**	**393**	**723**	**3241**
2009	**314**	**620**	**1184**	**391**	**726**	**3235**
2010	**314**	**617**	**1179**	**389**	**730**	**3228**
2015	**316**	**604**	**1151**	**378**	**747**	**3196**
2020	**318**	**590**	**1124**	**367**	**765**	**3164**
2025	**320**	**577**	**1097**	**356**	**782**	**3131**
2030	**322**	**564**	**1069**	**344**	**800**	**3099**
2035	**324**	**550**	**1042**	**333**	**817**	**3067**
2040	**326**	**537**	**1015**	**322**	**835**	**3035**
2045	**328**	**523**	**987**	**311**	**852**	**3002**
2050	**330**	**510**	**960**	**300**	**870**	**2970**

Harvested Acreage = Thousand Acres

Date	Yield Per Acre,Corn For Grain, Illinois	Yield Per Acre,Corn For Grain, Wisconsin	Yield Per Acre,Corn For Grain, Minnesota	Yield Per Acre,Corn For Grain, Iowa	Yield Per Acre,Corn For Grain, Missouri
1970	74.0	82.0	85.0	86.0	61.0
1971	106.0	98.0	83.0	102.0	88.0
1972	110.0	95.0	93.0	116.0	91.0
1973	103.0	83.0	93.0	107.0	88.0
1974	82.0	71.0	62.0	80.0	54.0
1975	116.0	83.0	70.0	90.0	63.0
1976	107.0	68.0	59.0	91.0	61.0
1977	105.0	104.0	100.0	86.0	76.0
1978	111.0	98.0	104.0	115.0	87.0
1979	127.0	103.0	100.0	127.0	103.0
1980	93.0	104.0	97.0	110.0	53.0
1981	126.0	108.0	110.0	125.0	107.0
1982	131.0	108.0	113.0	120.0	101.0
1983	79.0	97.0	84.0	87.0	51.0
1984	114.0	106.0	107.0	112.0	80.0
1985	135.0	107.0	115.0	126.0	110.0
1986	135.0	118.0	122.0	135.0	116.0
1987	132.0	118.0	127.0	130.0	113.0
1988	73.0	67.0	74.0	84.0	76.0
1989	123.0	111.0	125.0	118.0	96.0
1990	127.0	118.0	124.0	126.0	105.0
1991	107.0	119.0	120.0	117.0	97.0
1992	149.0	104.0	114.0	147.0	135.0
1993	130.0	92.0	70.0	80.0	90.0
1994	156.0	141.0	142.0	152.0	119.0
1995	113.0	115.0	119.0	121.0	104.0
1996	137.0	119.3	123.5	129.4	113.5
1997	138.6	120.6	125.2	130.8	115.2
1998	140.2	122.0	126.9	132.1	117.0
1999	141.9	123.4	128.6	133.4	118.8
2000	143.5	124.7	130.3	134.8	120.5
2001	145.2	126.1	132.0	136.1	122.3
2002	146.8	127.5	133.7	137.5	124.0
2003	148.4	128.8	135.4	138.8	125.8
2004	150.1	130.2	137.1	140.1	127.6
2005	151.7	131.6	138.8	141.5	129.3
2006	153.3	132.9	140.5	142.8	131.1
2007	155.0	134.3	142.2	144.1	132.8
2008	156.6	135.7	143.9	145.5	134.6
2009	158.3	137.0	145.6	146.8	136.4
2010	159.9	138.4	147.3	148.1	138.1
2015	168.1	145.2	155.8	154.8	146.9
2020	176.3	152.1	164.3	161.5	155.7
2025	184.5	158.9	172.9	168.1	164.5
2030	192.6	165.7	181.4	174.8	173.3
2035	200.8	172.6	189.9	181.5	182.1
2040	209.0	179.4	198.4	188.2	190.9
2045	217.2	186.2	206.9	194.8	199.7
2050	225.4	193.1	215.4	201.5	208.5

Yield = Bushels per Acre

JFDATA3.XLS
12/20/95

Date	Yield Per Acre, Soybeans, Illinois	Yield Per Acre, Soybeans, Wisconsin	Yield Per Acre, Soybeans, Minnesota	Yield Per Acre, Soybeans, Iowa	Yield Per Acre, Soybeans, Missouri
1970	31.0	24.0	26.0	32.5	25.5
1971	33.0	23.5	23.0	32.5	27.0
1972	34.5	28.0	28.0	36.0	27.5
1973	31.5	25.0	31.5	34.0	27.0
1974	25.0	20.0	25.0	28.0	21.5
1975	36.0	25.5	27.0	34.0	26.0
1976	33.0	22.0	22.0	31.0	20.0
1977	38.0	35.0	35.5	35.5	32.0
1978	33.5	32.0	36.0	37.5	28.5
1979	39.0	34.0	32.0	37.5	31.5
1980	33.5	33.0	31.5	38.5	24.5
1981	38.0	33.0	32.0	40.0	30.0
1982	38.5	31.0	35.0	36.5	30.0
1983	29.5	35.0	33.0	35.0	20.0
1984	31.5	31.0	33.0	31.5	20.5
1985	42.5	32.0	32.0	38.0	34.5
1986	40.0	36.0	35.0	41.5	32.5
1987	38.0	38.0	39.0	43.5	32.0
1988	27.0	23.0	26.0	31.0	26.5
1989	40.0	37.0	37.0	39.0	28.0
1990	39.0	41.0	39.0	41.5	30.0
1991	37.5	42.0	36.5	40.5	30.5
1992	43.0	32.0	32.0	44.0	38.0
1993	43.0	35.0	23.0	31.0	33.0
1994	46.0	44.0	41.0	51.0	38.0
1995	**40.0**	**43.0**	**39.0**	**44.0**	**30.0**
1996	**42.1**	**41.3**	**37.4**	**43.1**	**33.9**
1997	**42.5**	**42.0**	**37.8**	**43.5**	**34.2**
1998	**42.9**	**42.6**	**38.2**	**43.9**	**34.6**
1999	**43.3**	**43.3**	**38.5**	**44.4**	**34.9**
2000	**43.7**	**43.9**	**38.9**	**44.8**	**35.3**
2001	**44.1**	**44.6**	**39.3**	**45.2**	**35.7**
2002	**44.5**	**45.2**	**39.7**	**45.6**	**36.0**
2003	**44.9**	**45.8**	**40.1**	**46.0**	**36.4**
2004	**45.3**	**46.5**	**40.4**	**46.4**	**36.7**
2005	**45.7**	**47.1**	**40.8**	**46.9**	**37.1**
2006	**46.1**	**47.8**	**41.2**	**47.3**	**37.5**
2007	**46.5**	**48.4**	**41.6**	**47.7**	**37.8**
2008	**46.9**	**49.1**	**42.0**	**48.1**	**38.2**
2009	**47.3**	**49.7**	**42.3**	**48.5**	**38.6**
2010	**47.7**	**50.3**	**42.7**	**49.0**	**38.9**
2015	**49.7**	**53.6**	**44.6**	**51.0**	**40.7**
2020	**51.8**	**56.8**	**46.5**	**53.1**	**42.5**
2025	**53.8**	**60.0**	**48.4**	**55.2**	**44.3**
2030	**55.8**	**63.2**	**50.3**	**57.3**	**46.1**
2035	**57.8**	**66.4**	**52.2**	**59.4**	**47.9**
2040	**59.9**	**69.7**	**54.0**	**61.5**	**49.7**
2045	**61.9**	**72.9**	**55.9**	**63.6**	**51.6**
2050	**63.9**	**76.1**	**57.8**	**65.7**	**53.4**

Yield = Bushels per Acre

Date	Yield Per Acre, Wheat, All, Illinois	Yield Per Acre, Wheat, All, Wisconsin	Yield Per Acre, Wheat, All, Minnesota	Yield Per Acre, Wheat, All, Iowa	Yield Per Acre, Wheat, All, Missouri
1970	37.0	35.8	27.6	35.0	33.0
1971	46.0	37.5	37.9	38.5	40.0
1972	45.0	31.1	32.9	37.5	39.0
1973	30.0	33.0	38.9	32.0	30.0
1974	30.0	36.6	28.9	30.0	29.0
1975	39.0	30.3	30.8	34.0	33.0
1976	39.0	34.8	32.2	35.0	33.0
1977	43.0	41.0	39.6	37.0	39.0
1978	38.0	34.7	33.6	31.0	34.0
1979	43.0	40.0	35.1	37.0	44.0
1980	49.0	39.3	32.4	38.0	43.0
1981	50.0	45.6	39.9	39.0	42.0
1982	45.0	45.9	39.8	30.0	34.0
1983	46.0	45.4	36.9	38.0	38.0
1984	44.0	54.5	47.3	36.0	41.0
1985	49.0	56.1	53.1	48.0	39.0
1986	44.0	54.3	36.8	28.0	33.0
1987	59.0	47.3	40.7	38.0	46.0
1988	54.0	38.7	23.0	35.0	49.0
1989	59.0	51.8	38.0	47.0	47.0
1990	48.0	52.5	48.4	45.0	38.0
1991	32.0	48.2	31.1	34.0	32.0
1992	54.0	40.0	49.9	39.0	48.0
1993	44.0	37.3	31.0	25.0	38.0
1994	56.0	57.1	28.0	47.0	45.0
1995	**52.9**	**52.4**	**39.3**	**39.2**	**43.7**
1996	**53.5**	**53.2**	**39.6**	**39.4**	**44.1**
1997	**54.1**	**53.9**	**39.8**	**39.6**	**44.5**
1998	**54.7**	**54.7**	**40.0**	**39.8**	**44.9**
1999	**55.3**	**55.4**	**40.2**	**40.0**	**45.3**
2000	**55.9**	**56.2**	**40.4**	**40.2**	**45.7**
2001	**56.6**	**56.9**	**40.6**	**40.4**	**46.0**
2002	**57.2**	**57.7**	**40.8**	**40.6**	**46.4**
2003	**57.8**	**58.4**	**41.1**	**40.8**	**46.8**
2004	**58.4**	**59.1**	**41.3**	**41.0**	**47.2**
2005	**59.0**	**59.9**	**41.5**	**41.2**	**47.6**
2006	**59.6**	**60.6**	**41.7**	**41.4**	**48.0**
2007	**60.2**	**61.4**	**41.9**	**41.6**	**48.4**
2008	**60.8**	**62.1**	**42.1**	**41.8**	**48.8**
2009	**61.5**	**62.9**	**42.3**	**42.0**	**49.1**
2010	**62.1**	**63.6**	**42.6**	**42.2**	**49.5**
2015	**65.1**	**67.3**	**43.6**	**43.2**	**51.5**
2020	**68.2**	**71.1**	**44.7**	**44.2**	**53.4**
2025	**71.2**	**74.8**	**45.8**	**45.2**	**55.4**
2030	**74.3**	**78.5**	**46.9**	**46.2**	**57.3**
2035	**77.4**	**82.2**	**47.9**	**47.2**	**59.2**
2040	**80.4**	**86.0**	**49.0**	**48.2**	**61.2**
2045	**83.5**	**89.7**	**50.1**	**49.2**	**63.1**
2050	**86.6**	**93.4**	**51.1**	**50.2**	**65.0**

Yield = Bushels per Acre

Date	Yield Per Acre, Other Grains, Illinois	Yield Per Acre, Other Grains, Wisconsin	Yield Per Acre, Other Grains, Minnesota	Yield Per Acre, Other Grains, Iowa	Yield Per Acre, Other Grains, Missouri
1970	56.0	62.8	48.1	55.0	47.2
1971	62.7	61.9	56.7	59.0	67.3
1972	63.9	54.8	49.8	57.0	63.9
1973	48.0	40.9	54.1	51.5	66.9
1974	51.8	60.8	47.1	55.0	46.6
1975	57.4	54.7	48.0	53.0	51.1
1976	59.0	42.9	44.5	59.0	56.6
1977	61.5	64.7	62.7	61.0	69.9
1978	58.2	55.8	52.4	58.0	76.6
1979	61.7	56.9	55.6	63.0	77.9
1980	60.5	60.9	51.8	62.0	47.7
1981	64.9	57.7	60.1	62.0	75.6
1982	65.8	53.1	61.8	57.0	74.0
1983	58.6	52.7	55.5	51.0	57.2
1984	69.0	61.5	65.0	64.0	68.5
1985	77.3	65.5	68.0	76.0	81.1
1986	83.5	61.5	53.2	62.0	78.5
1987	76.2	54.0	57.0	57.0	80.6
1988	58.4	34.0	32.5	50.0	77.6
1989	81.2	65.2	55.0	72.0	77.2
1990	71.7	66.1	64.4	68.0	79.8
1991	69.8	49.5	46.1	50.0	70.8
1992	89.0	60.7	72.9	67.0	94.2
1993	73.4	46.0	54.6	40.0	72.5
1994	86.3	53.8	52.1	62.0	87.8
1995	**82.6**	**55.0**	**59.4**	**60.6**	**84.8**
1996	**80.9**	**55.1**	**59.6**	**60.7**	**85.3**
1997	**82.3**	**55.0**	**60.3**	**60.9**	**86.5**
1998	**83.5**	**55.0**	**60.8**	**61.0**	**87.5**
1999	**84.5**	**55.0**	**61.3**	**61.1**	**88.5**
2000	**85.4**	**54.9**	**61.8**	**61.2**	**89.5**
2001	**86.8**	**54.9**	**62.2**	**61.4**	**90.6**
2002	**87.9**	**54.9**	**62.7**	**61.5**	**91.6**
2003	**88.8**	**54.9**	**63.2**	**61.6**	**92.6**
2004	**89.8**	**54.9**	**63.7**	**61.8**	**93.7**
2005	**90.8**	**54.9**	**64.1**	**61.9**	**94.7**
2006	**91.9**	**54.8**	**64.6**	**62.0**	**95.7**
2007	**93.0**	**54.8**	**65.1**	**62.2**	**96.8**
2008	**94.0**	**54.8**	**65.6**	**62.3**	**97.8**
2009	**95.1**	**54.8**	**66.1**	**62.4**	**98.9**
2010	**96.2**	**54.8**	**66.6**	**62.6**	**99.9**
2015	**101.8**	**54.7**	**69.0**	**63.2**	**105.2**
2020	**107.5**	**54.7**	**71.5**	**63.9**	**110.4**
2025	**113.3**	**54.7**	**73.9**	**64.6**	**115.7**
2030	**119.3**	**54.7**	**76.4**	**65.2**	**120.9**
2035	**125.4**	**54.7**	**79.0**	**65.9**	**126.2**
2040	**131.5**	**54.7**	**81.5**	**66.6**	**131.5**
2045	**137.8**	**54.8**	**84.1**	**67.2**	**136.8**
2050	**144.3**	**54.8**	**86.7**	**67.9**	**142.0**

Yield = Bushels per Acre

Date	Production, Corn For Grain, Illinois	Production, Corn For Grain, Wisconsin	Production, Corn For Grain, Minnesota	Production, Corn For Grain, Iowa	Production, Corn For Grain, Missouri	Production, Corn For Grain, 5 State Total
1970	736	152	384	867	173	2312
1971	1067	226	475	1178	272	3219
1972	1015	204	456	1230	228	3131
1973	982	173	513	1207	229	3104
1974	812	161	366	968	146	2453
1975	1254	198	407	1118	170	3148
1976	1240	151	330	1174	174	3069
1977	1184	317	600	1092	201	3395
1978	1240	294	644	1478	200	3855
1979	1403	317	606	1664	240	4230
1980	1064	348	610	1463	110	3595
1981	1426	378	745	1731	208	4488
1982	1499	362	735	1578	199	4372
1983	624	223	367	744	73	2031
1984	1247	345	689	1445	154	3880
1985	1535	358	725	1707	273	4598
1986	1404	366	683	1627	281	4360
1987	1214	330	610	1320	243	3717
1988	701	131	348	899	154	2232
1989	1322	311	700	1446	220	3998
1990	1321	354	763	1562	206	4206
1991	1177	381	720	1427	213	3919
1992	1646	307	741	1904	324	4922
1993	1300	216	322	880	167	2885
1994	1786	437	916	1930	274	5343
1995	**1130**	**334**	**726**	**1379**	**151**	**3720**
1996	**1568**	**376**	**815**	**1709**	**261**	**4729**
1997	**1580**	**374**	**814**	**1713**	**259**	**4741**
1998	**1606**	**384**	**850**	**1764**	**263**	**4867**
1999	**1625**	**389**	**862**	**1788**	**267**	**4930**
2000	**1643**	**393**	**873**	**1806**	**271**	**4987**
2001	**1662**	**399**	**885**	**1824**	**275**	**5045**
2002	**1680**	**405**	**898**	**1841**	**279**	**5103**
2003	**1699**	**411**	**910**	**1859**	**283**	**5161**
2004	**1718**	**417**	**922**	**1877**	**286**	**5220**
2005	**1736**	**423**	**934**	**1894**	**290**	**5278**
2006	**1755**	**429**	**947**	**1912**	**294**	**5336**
2007	**1773**	**435**	**959**	**1929**	**298**	**5395**
2008	**1792**	**441**	**971**	**1947**	**302**	**5453**
2009	**1811**	**448**	**984**	**1964**	**306**	**5512**
2010	**1829**	**454**	**996**	**1982**	**309**	**5571**
2015	**1922**	**486**	**1058**	**2070**	**328**	**5864**
2020	**2015**	**519**	**1121**	**2157**	**347**	**6159**
2025	**2107**	**552**	**1184**	**2245**	**366**	**6455**
2030	**2200**	**587**	**1248**	**2332**	**385**	**6751**
2035	**2293**	**622**	**1312**	**2419**	**403**	**7049**
2040	**2385**	**658**	**1377**	**2506**	**422**	**7348**
2045	**2477**	**696**	**1442**	**2593**	**440**	**7649**
2050	**2570**	**729**	**1508**	**2680**	**459**	**7945**

Production = Million Bushels

Date	Production, Soybeans, Illinois	Production, Soybeans, Wisconsin	Production, Soybeans, Minnesota	Production, Soybeans, Iowa	Production, Soybeans, Missouri	Production, Soybeans, 5 State Total
1970	211	4	79	185	88	566
1971	236	3	64	179	97	579
1972	259	4	90	216	109	679
1973	288	6	135	260	127	816
1974	211	4	97	199	91	602
1975	300	5	99	237	114	754
1976	249	3	66	200	84	603
1977	336	7	134	251	149	877
1978	310	7	146	283	155	901
1979	379	10	163	306	184	1042
1980	313	11	150	318	135	928
1981	348	12	139	322	150	971
1982	354	14	169	307	171	1014
1983	267	14	152	279	103	814
1984	284	14	173	265	109	844
1985	383	10	160	310	180	1042
1986	360	12	163	351	171	1056
1987	331	12	181	344	158	1026
1988	235	9	125	251	112	732
1989	354	15	185	323	122	999
1990	355	18	179	328	125	1004
1991	341	23	195	350	135	1044
1992	405	22	173	359	162	1121
1993	387	21	115	257	119	899
1994	438	37	230	447	173	1325
1995	386	34	226	407	137	1190
1996	389	32	208	369	152	1150
1997	403	34	221	390	161	1210
1998	407	35	221	385	159	1207
1999	409	35	222	388	159	1212
2000	410	36	224	392	162	1224
2001	414	36	226	396	164	1236
2002	418	37	228	399	166	1248
2003	422	37	230	403	168	1261
2004	425	38	233	407	170	1273
2005	429	38	235	411	172	1285
2006	433	39	237	415	174	1298
2007	436	39	239	418	177	1310
2008	440	40	242	422	179	1322
2009	444	40	244	426	181	1335
2010	448	41	246	430	183	1347
2015	466	43	257	449	194	1409
2020	485	46	268	468	205	1471
2025	503	49	279	487	216	1534
2030	521	51	291	507	227	1597
2035	540	54	302	526	239	1660
2040	558	56	313	545	250	1723
2045	576	59	324	565	262	1786
2050	594	62	335	584	275	1851

Production = Million Bushels

Date	Production, Wheat, All, Illinois	Production, Wheat, All, Wisconsin	Production, Wheat, All, Minnesota	Production, Wheat, All, Iowa	Production, Wheat, All, Missouri	Production, Wheat, All, 5 State Total
1970	38	1	23	1	28	92
1971	46	1	60	1	31	139
1972	54	1	49	1	36	141
1973	39	1	78	1	26	145
1974	52	3	81	2	38	175
1975	67	3	88	3	50	212
1976	72	3	131	5	61	271
1977	68	3	132	4	72	279
1978	33	2	93	1	29	158
1979	54	2	90	2	70	219
1980	77	4	103	3	89	276
1981	98	6	140	5	116	363
1982	68	6	127	3	75	278
1983	64	6	79	2	70	221
1984	70	10	121	4	84	288
1985	37	9	142	5	50	243
1986	36	8	104	2	19	168
1987	56	4	103	1	35	199
1988	68	5	52	1	76	202
1989	105	9	103	3	87	307
1990	89	10	139	3	76	317
1991	45	6	67	2	48	168
1992	62	3	140	2	65	271
1993	68	5	71	1	53	198
1994	50	8	72	2	50	182
1995	**74**	**7**	**86**	**2**	**52**	**221**
1996	**80**	**8**	**100**	**2**	**64**	**254**
1997	**81**	**8**	**101**	**2**	**57**	**250**
1998	**82**	**8**	**103**	**2**	**58**	**253**
1999	**83**	**8**	**105**	**2**	**60**	**258**
2000	**84**	**8**	**105**	**2**	**60**	**260**
2001	**85**	**9**	**106**	**2**	**61**	**262**
2002	**85**	**9**	**107**	**2**	**62**	**264**
2003	**86**	**9**	**107**	**2**	**63**	**267**
2004	**87**	**9**	**108**	**2**	**63**	**269**
2005	**88**	**9**	**109**	**2**	**64**	**272**
2006	**88**	**9**	**110**	**2**	**65**	**274**
2007	**89**	**9**	**111**	**2**	**65**	**276**
2008	**90**	**9**	**112**	**2**	**66**	**279**
2009	**91**	**9**	**112**	**2**	**67**	**281**
2010	**91**	**10**	**113**	**2**	**68**	**284**
2015	**95**	**10**	**117**	**2**	**71**	**295**
2020	**98**	**11**	**122**	**2**	**75**	**307**
2025	**102**	**11**	**126**	**2**	**79**	**320**
2030	**105**	**12**	**130**	**2**	**83**	**332**
2035	**108**	**12**	**135**	**2**	**87**	**344**
2040	**111**	**13**	**139**	**2**	**91**	**356**
2045	**114**	**13**	**144**	**2**	**95**	**368**
2050	**117**	**14**	**148**	**2**	**100**	**381**

Production = Million Bushels

Date	Production, Other Grains, Illinois	Production, Other Grains, Wisconsin	Production, Other Grains, Minnesota	Production, Other Grains, Iowa	Production, Other Grains, Missouri	Production, Other Grains, 5 State Total
1970	35	108	189	94	22	448
1971	45	97	218	91	59	509
1972	32	75	161	71	34	374
1973	24	57	186	67	32	366
1974	27	86	130	78	28	349
1975	29	76	135	76	31	346
1976	26	56	130	83	45	340
1977	25	78	217	82	75	477
1978	20	64	151	61	68	363
1979	20	57	126	63	60	326
1980	19	60	117	62	42	300
1981	21	55	148	60	74	357
1982	20	52	149	54	67	343
1983	19	47	120	38	43	268
1984	31	56	140	47	93	367
1985	49	55	148	58	123	432
1986	33	58	98	39	97	326
1987	25	48	95	37	62	267
1988	15	22	52	25	40	154
1989	28	51	91	54	49	272
1990	26	50	99	41	45	261
1991	20	30	67	21	39	177
1992	35	39	86	25	65	249
1993	22	27	61	9	47	167
1994	23	30	55	27	51	186
1995	**21**	**28**	**57**	**18**	**49**	**173**
1996	**24**	**35**	**70**	**26**	**59**	**214**
1997	**24**	**33**	**70**	**24**	**60**	**211**
1998	**25**	**34**	**73**	**24**	**61**	**218**
1999	**25**	**34**	**74**	**24**	**62**	**221**
2000	**26**	**35**	**75**	**24**	**63**	**223**
2001	**27**	**35**	**76**	**25**	**64**	**226**
2002	**27**	**35**	**76**	**25**	**65**	**228**
2003	**28**	**35**	**77**	**25**	**66**	**229**
2004	**28**	**35**	**77**	**25**	**67**	**231**
2005	**28**	**35**	**77**	**25**	**67**	**232**
2006	**29**	**34**	**78**	**25**	**68**	**234**
2007	**29**	**34**	**78**	**25**	**70**	**235**
2008	**29**	**34**	**78**	**25**	**71**	**237**
2009	**30**	**34**	**78**	**24**	**72**	**238**
2010	**30**	**34**	**78**	**24**	**73**	**240**
2015	**32**	**33**	**79**	**24**	**79**	**247**
2020	**34**	**32**	**80**	**23**	**84**	**255**
2025	**36**	**32**	**81**	**23**	**90**	**262**
2030	**38**	**31**	**82**	**22**	**97**	**270**
2035	**41**	**30**	**82**	**22**	**103**	**278**
2040	**43**	**29**	**83**	**21**	**110**	**286**
2045	**45**	**29**	**83**	**21**	**117**	**294**
2050	**48**	**28**	**83**	**20**	**124**	**303**

Production = Million Bushels

APPENDIX C

Regression Statistics for State Yield Forecasts

CORN ILLINOIS Linear Trend 1970-94

Regression Statistics	
Multiple R	0.546669861
R Square	0.298847937
Adjusted R Square	0.268363064
Standard Error	18.85910353
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	3486.646923	3486.646923	9.803155268	0.004689651
Residual	23	8180.313077	355.665786		
Total	24	11666.96			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	92.75	7.775807586	11.92802149	1.4155E-11	76.66453836	108.8354616	79.42327661	106.0767234
x1	1.637692308	0.523057421	3.130999085	0.004536691	0.555667065	2.71971755	0.741239882	2.534144734

ILLINOIS **SOYBEANS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.580103394
R Square	0.336519948
Adjusted R Square	0.307672989
Standard Error	4.275346414
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	213.2325	213.2325	11.66569935	0.002367801
Residual	23	420.4075	18.27858696		
Total	24	633.64			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	31.115	1.762770485	17.65119184	2.98792E-15	27.46843639	34.76156361	28.09384054	34.13615946
x1	0.405	0.118576775	3.415508652	0.002269371	0.159705586	0.650294414	0.201774822	0.608225178

ILLINOIS **WHEAT** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.559345265
R Square	0.312867126
Adjusted R Square	0.282991783
Standard Error	6.822096697
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	487.3969231	487.3969231	10.47241976	0.003649326
Residual	23	1070.443077	46.54100334		
Total	24	1557.84			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	36.96	2.812822527	13.13982651	1.8679E-12	31.14124119	42.77875881	32.13918784	41.78081216
x1	0.612307692	0.189210919	3.236111827	0.003518716	0.220895618	1.003719767	0.288024774	0.936590611

ILLINOIS **OATS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.299411536
R Square	0.089647268
Adjusted R Square	0.050066714
Standard Error	7.924450964
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	142.2307692	142.2307692	2.264932138	0.145942213
Residual	23	1444.329231	62.79692308		
Total	24	1586.56			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	56.94	3.267334835	17.42704769	3.97468E-15	50.18101213	63.69898787	51.34021283	62.53978717
x1	0.330769231	0.219784725	1.504969148	0.145380142	-0.123889495	0.785427956	-0.045913218	0.707451679

ILLINOIS **SORGHUM** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.729354884
R Square	0.531958547
Adjusted R Square	0.511608919
Standard Error	9.785977272
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	2503.396923	2503.396923	26.14094652	3.52758E-05
Residual	23	2202.603077	95.76535117		
Total	24	4706			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	54.56	4.034861794	13.52214841	1.01539E-12	46.21326381	62.90673619	47.64477139	61.47522861
x1	1.387692308	0.271414176	5.112821776	3.12407E-05	0.826230072	1.949154543	0.922523693	1.852860923

WISCONSIN CORN Linear Trend 1970-94

Regression Statistics

Multiple R	0.574223588
R Square	0.329732729
Adjusted R Square	0.300590673
Standard Error	14.65192923
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	2429.022308	2429.022308	11.31466966	0.002684125
Residual	23	4937.617692	214.6790301		
Total	24	7366.64			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	82.35	6.041145183	13.63152143	8.55005E-13	69.85295606	94.84704394	71.99626247	92.70373753
x1	1.366923077	0.406371401	3.363728535	0.002577147	0.52628093	2.207565224	0.670455322	2.063390832

WISCONSIN SOYBEANS Linear Trend 1970-94

Regression Statistics

Multiple R	0.733020812
R Square	0.537319511
Adjusted R Square	0.517202968
Standard Error	4.491735257
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	538.8992308	538.8992308	26.71033049	3.07643E-05
Residual	23	464.0407692	20.17568562		
Total	24	1002.94			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	23.95	1.851989891	12.93203603	2.6165E-12	20.11887223	27.78112777	20.77593008	27.12406992
x1	0.643846154	0.124578321	5.168203797	2.716E-05	0.386136612	0.901555696	0.430335105	0.857357202

WISCONSIN **WHEAT** **Linear Trend** 1970-94

Regression Statistics	
Multiple R	0.669225534
R Square	0.447862815
Adjusted R Square	0.42385685
Standard Error	6.220205048
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	721.8305308	721.8305308	18.65631408	0.000254052
Residual	23	889.8918692	38.69095084		
Total	24	1611.7224			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	33.065	2.564656242	12.89256605	2.79078E-12	27.75961157	38.37038843	28.66951259	37.46048741
x1	0.745153846	0.172517448	4.319295553	0.000234514	0.3882748	1.102032892	0.449481366	1.040826326

WISCONSIN **BARLEY** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.197050841
R Square	0.038829034
Adjusted R Square	-0.002961008
Standard Error	6.560263475
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	39.98769231	39.98769231	0.929145607	0.345111153
Residual	23	989.8523077	43.03705686		
Total	24	1029.84			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	47.8	2.704865924	17.67185559	2.9108E-15	42.20456614	53.39543386	43.16421142	52.43578858
x1	0.175384615	0.181948972	0.963921992	0.344697756	-0.201004997	0.551774228	-0.13645227	0.487221501

WISCONSIN **OATS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.04654383
R Square	0.002166328
Adjusted R Square	-0.041217745
Standard Error	8.564074844
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	3.662307692	3.662307692	0.04993372	0.825151482
Residual	23	1686.897692	73.34337793		
Total	24	1690.56			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	56.93	3.531058517	16.12264417	2.23245E-14	49.62545887	64.23454113	50.87822472	62.98177528
x1	-0.053076923	0.2375247	-0.223458542	0.825069771	-0.544433532	0.438279686	-0.460163382	0.354009536

MINNESOTA CORN Linear Trend 1970-94

Regression Statistics

Multiple R	0.564299635
R Square	0.318434078
Adjusted R Square	0.288800777
Standard Error	18.70670565
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	3760.400769	3760.400769	10.7458187	0.003299673
Residual	23	8048.639231	349.9408361		
Total	24	11809.04			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	77.61	7.712972329	10.06226869	4.3537E-10	61.65452282	93.5654772	64.39096807	90.8290319
x1	1.700769231	0.518830665	3.278081553	0.00317725	0.627487689	2.77405077	0.811560917	2.58997755

MINNESOTA SOYBEANS Linear Trend 1970-94

Regression Statistics

Multiple R	0.516473024
R Square	0.266744384
Adjusted R Square	0.234863705
Standard Error	4.712680361
Observations	25

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Significance F
Regression	1	185.8248077	185.8248077	8.36696058	0.008212251
Residual	23	510.8151923	22.20935619		
Total	24	696.64			

	Coefficients	Standard Error	t Statistic	P-value	Lower 95%	Upper 95%	Lower 90 %	Upper 90 %
Intercept	27.205	1.943087891	14.00091068	4.822E-13	23.18542192	31.2245781	23.87479994	30.5352001
x1	0.378076923	0.130706236	2.892569892	0.00799859	0.107690841	0.648463	0.154063426	0.60209042

MINNESOTA **WHEAT** Linear Trend 1970-94

Regression Statistics

Multiple R	0.213369789
R Square	0.045526667
Adjusted R Square	0.004027826
Standard Error	7.38784168
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	59.87769231	59.87769231	1.09705877	0.305795292
Residual	23	1255.344708	54.58020468		
Total	24	1315.2224			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	33.762	3.046085159	11.08373477	6.3523E-11	27.46070133	40.0632987	28.54140601	38.982594
x1	0.214615385	0.204901861	1.047405734	0.30534681	-0.209255833	0.6384866	-0.13655977	0.56579054

MINNESOTA BARLEY Linear Trend 1970-94

Regression Statistics

Multiple R	0.560545679
R Square	0.314211458
Adjusted R Square	0.284394565
Standard Error	8.599283921
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	779.2632692	779.2632692	10.5380348	0.00356185
Residual	23	1700.796731	73.94768395		
Total	24	2480.06			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	41.195	3.545575591	11.61870589	2.4315E-11	33.86042806	48.5295719	35.11834434	47.2716557
x1	0.774230769	0.238501224	3.246233946	0.00343325	0.280854069	1.26760747	0.365470675	1.18299086

MINNESOTA **OATS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.026088774
R Square	0.000680624
Adjusted R Square	-0.04276804
Standard Error	9.085456422
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	1.293076923	1.293076923	0.01566502	0.90148446
Residual	23	1898.546923	82.54551839		
Total	24	1899.84			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	55.51	3.746029648	14.81835576	1.4151E-13	47.76075781	63.2592422	49.08979214	61.9302079
x1	0.031538462	0.251985223	0.125159964	0.90143941	-0.489731978	0.5528089	-0.40033145	0.46340838

IOWA CORN Linear Trend 1970-94

Regression Statistics

Multiple R	0.470985468
R Square	0.221827311
Adjusted R Square	0.187993716
Standard Error	18.79292456
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	2315.557692	2315.557692	6.556421494	0.017483657
Residual	23	8123.002308	353.1740134		
Total	24	10438.56			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	93.41	7.748521296	12.05520336	1.13651E-11	77.38098427	109.4390157	80.13004176	106.6899582
x1	1.334615385	0.521221947	2.560551014	0.017164713	0.256387105	2.412843664	0.441308723	2.227922046

IOWA **SOYBEANS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.587971633
R Square	0.345710641
Adjusted R Square	0.317263277
Standard Error	4.320089959
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	226.8069231	226.8069231	12.1526426	0.001994651
Residual	23	429.2530769	18.66317726		
Total	24	656.06			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	31.83	1.781218721	17.86978748	2.26885E-15	28.14527335	35.51472665	28.77722266	34.88277734
x1	0.417692308	0.119817737	3.486064056	0.001906954	0.169830771	0.665553845	0.212340281	0.623044334

IOWA **WHEAT** **Linear Trend** **1970-94**

Regression Statistics	
Multiple R	0.254069815
R Square	0.064551471
Adjusted R Square	0.023879796
Standard Error	5.734941748
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	52.20019231	52.20019231	1.587135775	0.220369782
Residual	23	756.4598077	32.88955686		
Total	24	808.66			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	33.955	2.364577058	14.35986189	2.79536E-13	29.06350633	38.84649367	29.9024223	38.0075777
x1	0.200384615	0.159058666	1.25981577	0.219849352	-0.128652856	0.529422087	-0.072221261	0.472990492

IOWA **OATS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.127512603
R Square	0.016259464
Adjusted R Square	-0.026511864
Standard Error	7.759623974
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	22.88942308	22.88942308	0.380148686	0.543578857
Residual	23	1384.870577	60.21176421		
Total	24	1407.76			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	57.135	3.199374926	17.85817584	2.3021E-15	50.51659772	63.75340228	51.65168728	62.61831272
x1	0.132692308	0.215213247	0.616561989	0.543328494	-0.312509608	0.577894223	-0.236155221	0.501539837

MISSOURI CORN Linear Trend 1970-94

Regression Statistics

Multiple R	0.569101971
R Square	0.323877053
Adjusted R Square	0.294480403
Standard Error	19.11803155
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	4026.88	4026.88	11.01748175	0.00298831
Residual	23	8406.48	365.4991304		
Total	24	12433.36			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	65.96	7.882566344	8.367833155	1.41126E-08	49.65369134	82.26630866	52.45030597	79.46969403
x1	1.76	0.530238793	3.319259217	0.00287352	0.663118979	2.856881021	0.851239637	2.668760363

MISSOURI **SOYBEANS** **Linear Trend** **1970-94**

Regression Statistics

Multiple R	0.535863245
R Square	0.287149417
Adjusted R Square	0.256155913
Standard Error	4.278044399
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	169.5617308	169.5617308	9.264825968	0.005764398
Residual	23	420.9382692	18.30166388		
Total	24	590.5			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	24.105	1.763882893	13.66587323	8.10242E-13	20.4561352	27.7538648	21.08193402	27.12806598
x1	0.361153846	0.118651603	3.043817663	0.005590855	0.115704638	0.606603054	0.157800422	0,56450727

MISSOURI **WHEAT** **Linear Trend** 1970-94

Regression Statistics

Multiple R	0.49132236
R Square	0.241397661
Adjusted R Square	0.208414951
Standard Error	5.166964784
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	195.3969231	195.3969231	7.318915235	0.012624722
Residual	23	614.0430769	26.69752508		
Total	24	809.44			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	33.64	2.130394157	15.79050519	3.52995E-14	29.23294991	38.04705009	29.98878135	37.29121865
x1	0.387692308	0.143305819	2.705349374	0.012354177	0.091242038	0.684142577	0.142084763	0.633299853

12/22/95
JFMOYLD.XLS

MISSOURI **OATS** **Linear Trend** **1970-94**

Regression Statistics	
Multiple R	0.593250943
R Square	0.351946681
Adjusted R Square	0.32377045
Standard Error	5.587420175
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	389.9569231	389.9569231	12.49090691	0.001773514
Residual	23	718.0430769	31.21926421		
Total	24	1108			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	38.88	2.303752356	16.876814	8.11776E-15	34.11433164	43.64566836	34.93166794	42.82833206
x1	0.547692308	0.154967153	3.534247715	0.001692571	0.227118763	0.868265852	0.282098752	0.813285864

MISSOURI SORGHUM Linear Trend 1970-94

Regression Statistics

Multiple R	0.611213377
R Square	0.373581792
Adjusted R Square	0.346346218
Standard Error	10.23698946
Observations	25

Analysis of Variance

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	1	1437.453077	1437.453077	13.71668498	0.001170867
Residual	23	2410.306923	104.7959532		
Total	24	3847.76			

	Coefficients	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90 %*	*Upper 90 %*
Intercept	58.97	4.220818883	13.97122256	5.04692E-13	50.23858278	67.70141722	51.73606512	66.20393488
x1	1.051538462	0.283923003	3.703604323	0.001110254	0.46419978	1.638877143	0.564931343	1,53814558

APPENDIX D

Forecasts of US Grain Exports by Foreign Destination

CORN

US Exports To:	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
(Million Bushels)																
Canada	34	76	59	25	29	48	24	57	39	38	38	37	34	30	30	30
Mexico	115	114	184	76	31	11	43	106	118	119	119	121	126	135	144	149
Brazil	0	1	0	16	6	3	1	14	4	5	5	6	9	15	19	21
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	73	51	80	96	108	126	139	188	191	192	192	194	200	210	217	221
E.U. - 15	127	121	143	112	57	52	65	111	91	90	90	87	80	70	72	73
Other W. Europe	3	3	6	11	8	9	5	11	10	10	10	10	10	10	10	10
Central Europe	48	48	56	59	4	45	2	4	4	4	4	4	3	0	0	0
Russia	0	0	0	0	48	127	96	5								
Ukraine	0	0	0	0	10	40	6	1								
Other FSU	0	0	0	0	12	16	6	3								
FSU 15	204	656	648	334	290	182	108	9	8	12	12	19	37	65	60	57
Japan	592	519	565	542	540	570	481	627	614	616	616	620	630	645	650	653
Taiwan	157	162	198	202	193	210	200	246	217	221	221	228	246	275	291	300
South Korea	200	172	226	83	61	40	20	313	362	369	369	384	421	480	505	519
China	11	0	16	0	0	0	0	129	128	131	131	136	149	170	184	192
Thailand	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
India	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	9	1	1	0	0	0	0	19	59	63	63	71	92	125	134	139
Turkey	8	8	15	4	4	4	0	15	0	0	0	0	0	0	0	0
Other Asia	16	1	2	1	0	1	1	30	81	77	77	68	46	10	12	13
Australia	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
South Africa	0	0	0	1	66	102	0	7	7	0	0	0	0	0	0	0
North Africa (Inc. Mid East)	168	168	197	189	170	210	189	293	211	214	214	221	238	265	277	284
Other Africa	7	8	12	10	51	90	16	18	31	33	33	38	50	70	72	73
TOTAL	1779	2114	2409	1762	1616	1704	1293	2206	2175	2194	2194	2244	2371	2575	2677	2734

12/27/95
JWF-EXD.XLS

CORN

US Exports To:	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
(Million Bushels)																
Canada	30	30	30	30	30	30	30	30	33	35	37	40	42	45	48	50
Mexico	154	157	160	162	164	166	168	170	188	205	222	240	258	277	296	315
Brazil	23	24	25	26	27	28	29	28	32	35	40	45	50	55	60	65
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	225	228	230	233	236	239	242	245	253	260	277	295	311	327	344	360
E.U. - 15	74	75	75	76	77	78	79	80	88	95	97	100	102	105	108	110
Other W. Europe	10	10	10	10	10	10	10	10	11	12	12	12	12	12	12	13
Central Europe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia																
Ukraine																
Other FSU																
FSU 15	54	52	50	48	46	44	42	40	37	35	36	37	33	29	25	20
Japan	656	658	660	661	662	663	664	665	673	680	682	685	698	712	726	740
Taiwan	308	314	320	330	339	348	357	365	404	440	483	530	575	622	669	715
South Korea	532	541	550	568	585	602	618	635	676	715	746	780	829	879	930	980
China	199	204	210	213	216	219	222	225	243	260	279	300	324	349	375	400
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	144	147	150	154	158	162	166	170	185	200	214	230	248	267	286	305
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Asia	14	15	15	15	15	15	15	15	18	20	22	25	27	30	33	35
Australia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Africa (Inc. Mid East)	291	296	300	304	308	312	316	320	346	370	401	435	467	500	533	565
Other Africa	74	75	75	76	77	78	79	80	85	90	95	100	105	110	115	120
TOTAL	2788	2826	2860	2906	2950	2994	3037	3078	3272	3452	3643	3854	4081	4319	4560	4793

WHEAT

US Exports To:	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
(Million Bushels)																
Canada	9	21	25	22	34	51	20	51	30	30	37	37	39	35	38	38
Mexico	9	39	8	13	5	25	28	26	25	30	23	23	21	25	28	28
Brazil	3	0	5	0	26	6	6	0	30	40	62	62	69	55	58	58
Argentina	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Other Latin America	116	115	114	116	90	115	117	98	190	130	116	116	112	120	130	130
E.U. - 15	30	29	33	23	21	17	15	21	30	25	39	39	43	35	35	35
Other W. Europe	2	2	3	5	6	9	8	7	5	5	5	5	5	5	5	5
Central Europe	71	0	2	6	4	21	14	6	0	0	0	0	0	0	0	0
Russia	0	0	0	0	0	116	30	14								
Ukraine	0	0	0	0	0	16	0	0								
Other FSU	0	0	0	0	0	72	73	40								
FSU 15	451	182	158	104	259	207	103	55	60	25	11	11	7	15	12	12
Japan	120	105	120	116	116	128	125	129	125	130	130	130	130	130	137	137
Taiwan	33	30	27	26	31	31	34	31	30	30	37	37	39	35	38	38
South Korea	77	66	64	68	55	52	56	57	50	55	62	62	64	60	63	63
China	143	295	204	139	209	84	71	123	115	100	281	285	339	225	252	252
Thailand	4	5	6	7	7	9	13	9	12	10	17	17	19	15	15	15
India	0	78	0	0	0	38	1	0	0	0	0	0	0	0	0	0
Pakistan	16	68	49	28	50	64	65	52	50	40	62	62	69	55	58	58
Malaysia	2	1	2	2	3	2	3	4	7	4	5	5	5	5	5	5
Turkey	3	2	24	0	0	1	6	6	9	0	7	7	9	5	6	6
Other Asia	105	113	99	106	112	119	131	154	180	165	252	254	280	225	232	232
Australia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	0	0	0	4	1	20	11	17	13	2	21	21	27	15	15	15
North Africa (Inc. Mid East)	326	248	278	253	221	323	301	318	325	285	451	454	504	400	420	420
Other Africa	53	26	26	34	33	59	83	59	65	65	65	65	65	65	68	68
TOTAL	1574	1426	1248	1073	1284	1380	1212	1223	1351	1171	1683	1692	1846	1525	1615	1615

12/27/95
JWF-EXD.XLS

WHEAT

US Exports To:	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
(Million Bushels)																
Canada	39	40	40	40	40	40	40	40	42	45	47	50	52	54	57	60
Mexico	29	30	30	59	62	35	26	35	37	40	42	45	51	57	63	70
Brazil	59	60	60	89	92	83	74	65	70	75	73	70	80	90	100	110
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	132	134	135	164	167	158	149	140	155	170	187	205	224	244	264	285
E.U. - 15	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
Other W. Europe	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Central Europe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia																
Ukraine																
Other FSU																
FSU 15	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Japan	138	139	140	169	172	163	154	145	155	165	175	185	195	205	215	225
Taiwan	39	40	40	69	72	63	54	45	47	50	48	45	47	49	52	55
South Korea	64	65	65	94	97	88	79	70	75	80	82	85	89	93	97	100
China	257	261	265	294	297	288	279	270	275	280	282	285	289	293	297	300
Thailand	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	59	60	60	89	92	83	74	65	70	75	85	95	97	99	102	105
Malaysia	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Turkey	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5
Other Asia	233	234	235	323	333	305	277	250	272	295	317	340	369	399	430	460
Australia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
North Africa (Inc. Mid East)	424	427	430	548	561	524	487	450	467	485	492	500	510	520	530	540
Other Africa	69	70	70	99	102	93	84	75	77	80	87	95	103	112	121	130
TOTAL	1634	1651	1661	2128	2178	2014	1868	1741	1833	1930	2007	2090	2196	2305	2418	2530

12/27/95
JWF-EXD.XLS

SOYBEANS

US Exports To:	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
(Million Bushels)																
Canada	5	8	4	0	0	22	11	26	32	27	19	20	21	25	25	25
Mexico	35	49	34	59	77	71	65	67	60	67	78	76	75	70	70	71
Brazil	18	2	0	0	1	10	0	26	6	5	4	4	4	5	5	5
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	23	16	13	15	17	20	19	23	9	10	11	11	11	10	10	10
E.U. - 15	367	221	270	199	270	336	228	371	310	303	292	294	295	300	300	304
Other W. Europe	8	5	6	5	7	2	3	10	5	5	5	5	5	5	5	5
Central Europe	18	8	18	7	4	3	4	5	1	1	1	1	1	1	1	1
Russia	0	0	0	0	1	0	0	1								
Ukraine	0	0	0	0	0	0	0	0								
Other FSU	0	0	0	0	0	2	0	1								
FSU 15	31	11	13	15	24	2	0	2	6	9	13	12	12	10	10	10
Japan	142	118	126	130	141	144	134	141	153	122	74	82	86	110	110	111
Taiwan	70	55	79	69	73	89	69	92	70	84	106	102	100	90	90	92
South Korea	40	32	29	34	45	39	38	45	47	49	52	51	51	50	50	51
China	9	0	0	0	2	5	1	0	22	13	0	2	3	10	10	11
Thailand	0	0	0	0	2	4	0	5	5	5	5	5	5	5	0	0
India	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
Malaysia	1	0	5	0	3	11	4	14	20	13	2	4	5	10	10	10
Turkey	0	1	0	0	0	1	2	3	2	2	2	2	2	2	2	2
Other Asia	12	2	7	5	7	17	13	18	30	26	20	21	21	25	25	26
Australia	3	1	1	3	2	3	1	4	2	2	2	2	2	2	2	2
South Africa	0	0	0	0	0	3	0	4	3	4	5	5	5	4	4	4
North Africa (Inc. Mid East)	21	15	16	15	17	21	16	21	25	21	15	16	16	20	20	21
Other Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	803	545	620	558	694	802	609	880	809	769	707	716	721	755	750	762

12/27/95
JWF-EXD.XLS

SOYBEANS

US Exports To:	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
(Million Bushels)																
Canada	25	25	25	25	25	25	25	26	30	30	32	35	37	40	43	45
Mexico	75	77	80	82	85	88	91	95	105	115	127	140	156	172	189	205
Brazil	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	10	10	10	10	10	10	10	10	12	12	13	15	15	15	15	15
E.U. - 15	317	324	335	337	339	341	343	345	355	375	389	405	418	432	446	460
Other W. Europe	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Central Europe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Russia																
Ukraine																
Other FSU																
FSU 15	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Japan	115	117	120	121	122	123	124	125	130	140	147	155	164	173	182	190
Taiwan	97	100	105	106	107	108	109	110	115	115	120	125	132	140	148	155
South Korea	53	54	55	56	57	58	59	60	70	75	82	90	101	112	123	135
China	13	14	15	15	15	15	15	15	20	20	22	25	26	27	28	30
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Malaysia	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Turkey	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Other Asia	30	32	35	36	37	38	39	40	45	50	52	55	60	65	70	75
Australia	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
South Africa	4	4	4	4	4	4	4	4	4	4	5	6	6	6	6	5
North Africa (Inc. Mid East)	23	24	25	26	27	28	29	30	35	40	42	45	46	47	48	50
Other Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	798	817	845	854	864	874	884	896	957	1012	1067	1132	1197	1265	1334	1401

12/27/95
JWF-EXD.XLS

OTHER GRAINS 1/

US Exports To:	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
(Million Bushels)																
Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mexico	124	125	126	128	129	128	129	131	143	156	180	206	223	241	260	281
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Latin America	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.U. - 15	13	12	11	11	11	11	11	12	14	17	19	22	24	26	28	30
Other W. Europe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Central Europe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ukraine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other FSU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FSU 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	134	135	135	143	146	144	147	150	162	175	177	180	197	215	234	255
Taiwan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Korea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
China	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Asia	5	5	5	5	5	5	5	5	4	2	3	3	3	3	3	3
Australia	6	5	4	3	2	3	2	1	1	1	1	1	1	1	1	1
South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Africa (Inc. Mid East)	48	48	47	51	52	52	52	52	53	55	57	60	62	66	70	72
Other Africa	5	5	5	5	5	5	5	5	7	10	12	15	17	19	22	25
TOTAL	337	337	335	348	352	350	353	358	386	418	451	489	529	573	620	669

1/ barley, oats, and sorghu

12/27/95
JWF-EXD.XLS

APPENDIX E

Forecasts of US Grain Exports by US Port Areas

CORN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	51	3	89	144	72	324	395	946	53	998	103	0	103	2	11	14	0	*1654*
1977/78	82	47	104	233	79	305	384	977	97	1074	94	0	94	52	40	92	0	*1877*
1978/79	89	44	121	254	113	311	424	1056	79	1135	115	2	117	116	66	182	0	*2111*
1979/80	82	39	97	217	114	277	391	1208	124	1332	116	4	120	226	73	298	25	*2384*
1980/81	68	31	110	210	63	256	319	1185	68	1252	170	0	170	268	104	371	56	*2379*
1981/82	55	3	83	142	76	316	391	1249	19	1268	65	0	66	101	40	141	3	*2012*
1982/83	15	1	67	83	75	268	344	1253	4	1257	13	0	13	57	16	74	31	*1802*
1983/84	25	33	32	90	42	74	116	1055	5	1060	88	7	95	382	73	455	34	*1850*
1984/85	29	10	65	104	45	224	269	1083	39	1122	12	11	23	293	28	322	31	*1871*
1985/86	2	1	27	29	4	153	158	753	41	794	12	9	21	197	1	198	28	*1228*
1986/87	20	0	46	67	1	78	79	1040	71	1111	3	6	9	211	0	211	34	*1510*
1987/88	26	13	34	73	3	91	94	1137	6	1144	19	5	24	375	0	375	38	*1748*
1988/89	29	28	46	102	4	57	61	1346	14	1360	20	3	23	466	1	467	23	*2037*
1989/90	25	8	36	69	9	110	118	1563	5	1568	45	11	56	519	0	519	22	*2353*
1990/91	7	4	32	42	10	55	65	1329	2	1331	5	3	7	276	0	276	11	1732
1991/92	14	7	16	37	1	13	14	1212	2	1214	6	3	9	289	0	289	6	1569
1992/93	12	0	45	57	5	54	60	1281	17	1298	5	9	13	233	0	233	3	1664
1993/94	6	0	29	35	0	11	11	1045	1	1047	8	13	22	136	0	136	25	1276
1994/95	33	1	57	90	20	17	37	1439	16	1455	18	7	25	533	0	533	30	2171
1995/96	28	9	48	85	6	34	40	1494	12	1506	11	6	17	520	0	520	7	2175
1996/97				67			44			1555			24			484	26	2200
1997/98				67			44			1555			24			484	26	2200
1998/99				69			45			1590			25			495	27	2250
1999/00				73			47			1678			26			522	28	2375
2000/01				79			51			1820			28			566	31	2575
2001/02				82			53			1891			30			588	32	2676
2002/03				83			54			1930			30			601	33	2732
2003/04				85			56			1968			31			612	33	2785
2004/05				86			56			1994			31			620	34	2822
2005/06				87			57			2021			32			629	34	2860
2006/07				89			58			2054			32			639	35	2907
2007/08				90			59			2085			33			649	35	2951
2008/09				91			60			2116			33			658	36	2994
2009/10				93			61			2146			34			667	36	3036
2010/11				94			61			2175			34			677	37	3078
2015/16				100			65			2310			36			719	39	3270
2020/21				105			69			2439			38			759	41	3452
2025/26				111			73			2575			40			801	44	3644
2030/31				118			77			2724			43			847	46	3854
2035/36				125			81			2884			45			897	49	4082
2040/41				132			86			3052			48			949	52	4319
2045/46				139			91			3222			50			1002	55	4559
2050/51				146			96			3387			53			1054	57	4793

Million Bushels

12/27/95
JFEXP.XLS

CORN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	3.1	0.2	5.4	8.7	4.3	19.6	23.9	57.2	3.2	60.4	6.2	0.0	6.2	0.1	0.7	0.8	0.0	
1977/78	4.3	2.5	5.6	12.4	4.2	16.2	20.5	52.1	5.2	57.2	5.0	0.0	5.0	2.8	2.1	4.9	0.0	
1978/79	4.2	2.1	5.7	12.0	5.4	14.7	20.1	50.0	3.7	53.8	5.4	0.1	5.5	5.5	3.1	8.6	0.0	
1979/80	3.4	1.6	4.1	9.1	4.8	11.6	16.4	50.7	5.2	55.9	4.9	0.2	5.1	9.5	3.0	12.5	1.1	
1980/81	2.9	1.3	4.6	8.8	2.7	10.8	13.4	49.8	2.8	52.6	7.1	0.0	7.1	11.3	4.4	15.6	2.4	
1981/82	2.7	0.2	4.2	7.1	3.8	15.7	19.5	62.1	1.0	63.0	3.3	0.0	3.3	5.0	2.0	7.0	0.2	
1982/83	0.9	0.1	3.7	4.6	4.2	14.9	19.1	69.5	0.2	69.8	0.7	0.0	0.7	3.2	0.9	4.1	1.7	
1983/84	1.4	1.8	1.7	4.9	2.3	4.0	6.3	57.0	0.3	57.3	4.8	0.4	5.2	20.6	4.0	24.6	1.8	
1984/85	1.5	0.6	3.5	5.6	2.4	12.0	14.4	57.9	2.1	59.9	0.7	0.6	1.3	15.7	1.5	17.2	1.7	
1985/86	0.2	0.1	2.2	2.4	0.4	12.5	12.8	61.3	3.3	64.6	1.0	0.7	1.7	16.1	0.1	16.1	2.3	
1986/87	1.3	0.0	3.0	4.4	0.1	5.2	5.3	68.8	4.7	73.5	0.2	0.4	0.6	13.9	0.0	13.9	2.3	
1987/88	1.5	0.7	1.9	4.2	0.2	5.2	5.4	65.0	0.4	65.4	1.1	0.3	1.4	21.5	0.0	21.5	2.2	
1988/89	1.4	1.4	2.2	5.0	0.2	2.8	3.0	66.1	0.7	66.8	1.0	0.1	1.1	22.9	0.0	22.9	1.1	
1989/90	1.1	0.4	1.5	2.9	0.4	4.7	5.0	66.4	0.2	66.6	1.9	0.5	2.4	22.0	0.0	22.0	0.9	
1990/91	0.4	0.2	1.8	2.4	0.6	3.2	3.7	76.7	0.1	76.9	0.3	0.1	0.4	15.9	0.0	15.9	0.6	
1991/92	0.9	0.5	1.0	2.4	0.1	0.8	0.9	77.2	0.1	77.4	0.4	0.2	0.6	18.4	0.0	18.4	0.4	
1992/93	0.7	0.0	2.7	3.4	0.3	3.3	3.6	77.0	1.0	78.0	0.3	0.5	0.8	14.0	0.0	14.0	0.2	
1993/94	0.5	0.0	2.3	2.7	0.0	0.8	0.8	81.9	0.1	82.0	0.7	1.0	1.7	10.7	0.0	10.7	2.0	
1994/95	1.5	0.0	2.6	4.2	0.9	0.8	1.7	66.3	0.8	67.0	0.8	0.3	1.1	24.6	0.0	24.6	1.4	
1995/96	1.3	0.4	2.2	3.9	0.3	1.6	1.8	68.7	0.6	69.2	0.5	0.3	0.8	23.9	0.0	23.9	0.3	
1996/97				3.1			2.0			70.7			1.1			22.0	1.2	
1997/98				3.1			2.0			70.7			1.1			22.0	1.2	
1998/99				3.1			2.0			70.7			1.1			22.0	1.2	
1999/00				3.1			2.0			70.7			1.1			22.0	1.2	
2000/01				3.1			2.0			70.7			1.1			22.0	1.2	
2001/02				3.1			2.0			70.7			1.1			22.0	1.2	
2002/03				3.1			2.0			70.7			1.1			22.0	1.2	
2003/04				3.1			2.0			70.7			1.1			22.0	1.2	
2004/05				3.1			2.0			70.7			1.1			22.0	1.2	
2005/06				3.1			2.0			70.7			1.1			22.0	1.2	
2006/07				3.1			2.0			70.7			1.1			22.0	1.2	
2007/08				3.1			2.0			70.7			1.1			22.0	1.2	
2008/09				3.1			2.0			70.7			1.1			22.0	1.2	
2009/10				3.1			2.0			70.7			1.1			22.0	1.2	
2010/11				3.1			2.0			70.7			1.1			22.0	1.2	
2015/16				3.1			2.0			70.7			1.1			22.0	1.2	
2020/21				3.1			2.0			70.7			1.1			22.0	1.2	
2025/26				3.1			2.0			70.7			1.1			22.0	1.2	
2030/31				3.1			2.0			70.7			1.1			22.0	1.2	
2035/36				3.1			2.0			70.7			1.1			22.0	1.2	
2040/41				3.1			2.0			70.7			1.1			22.0	1.2	
2045/46				3.1			2.0			70.7			1.1			22.0	1.2	
2050/51				3.1			2.0			70.7			1.1			22.0	1.2	

Percent

WHEAT EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	2	54	12	68	20	28	47	164	12	176	250	33	283	276	22	299	0	*873*
1977/78	12	130	29	171	24	35	59	157	6	163	363	66	429	304	30	333	0	*1155*
1978/79	4	146	12	162	2	12	14	120	4	124	399	40	439	367	31	397	0	*1137*
1979/80	0	142	14	156	17	36	53	217	9	226	416	34	450	362	55	417	6	*1308*
1980/81	1	97	19	116	16	72	89	284	18	302	440	20	460	440	68	508	21	*1497*
1981/82	3	121	14	138	15	103	118	386	31	416	588	4	591	402	55	458	2	*1723*
1982/83	2	98	3	103	5	46	51	279	11	291	455	5	460	415	26	440	0	*1344*
1983/84	2	75	5	82	8	46	53	281	9	290	569	12	581	402	15	417	0	*1424*
1984/85	5	80	16	101	7	43	49	209	9	218	442	37	479	334	17	351	0	*1198*
1985/86	2	66	21	90	2	39	41	176	6	182	276	20	296	295	8	302	0	*911*
1986/87	2	63	4	69	1	20	21	151	3	154	438	9	447	322	8	331	2	*1024*
1987/88	0	67	0	67	1	36	37	239	9	248	614	38	653	481	14	495	6	*1505*
1988/89	1	60	9	70	1	58	59	399	12	411	434	7	442	414	24	438	4	*1423*
1989/90	0	59	3	61	0	57	57	316	5	321	248	8	257	392	9	400	0	*1096*
1990/91	0	49	1	51	2	22	25	299	6	304	236	18	254	398	4	402	2	1037
1991/92	0	52	0	52	0	23	23	388	9	397	367	10	376	406	13	420	4	1271
1992/93	1	72	9	81	4	26	31	358	8	366	384	24	408	431	7	438	10	1332
1993/94	0	50	1	51	0	19	19	208	2	210	311	17	328	511	9	520	14	1141
1994/95	0	62	32	93	1	36	38	267	2	269	289	14	303	486	10	496	10	1209
1995/96	0	71	10	81	0	36	36	321	5	326	394	16	410	482	8	490	11	1352
1996/97				71			28			269			335			455	10	1170
1997/98				86			35			327			407			553	13	1420
1998/99				86			35			328			408			555	13	1425
1999/00				87			35			332			413			561	13	1440
2000/01				89			36			337			420			570	13	1465
2001/02				94			38			356			443			602	14	1546
2002/03				92			37			350			435			591	13	1519
2003/04				93			37			355			441			599	14	1540
2004/05				95			38			359			447			608	14	1560
2005/06				96			38			364			453			616	14	1581
2006/07				97			39			368			458			622	14	1598
2007/08				98			39			373			464			630	14	1618
2008/09				99			40			377			469			638	14	1638
2009/10				101			40			382			475			646	15	1659
2010/11				102			41			387			481			654	15	1679
2015/16				108			43			410			510			693	16	1779
2020/21				114			46			433			538			732	17	1879
2025/26				120			48			456			568			771	18	1981
2030/31				127			51			481			598			813	18	2087
2035/36				133			53			506			630			855	19	2197
2040/41				140			56			532			662			899	20	2309
2045/46				147			59			558			694			943	21	2422
2050/51				154			62			584			726			987	22	2534

Million Bushels

WHEAT EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	0.2	6.2	1.4	7.8	2.2	3.2	5.4	18.8	1.4	20.2	28.6	3.8	32.4	31.7	2.5	34.2	0.0	
1977/78	1.0	11.3	2.5	14.8	2.1	3.1	5.1	13.6	0.5	14.1	31.4	5.7	37.1	26.3	2.6	28.9	0.0	
1978/79	0.3	12.8	1.1	14.2	0.2	1.1	1.2	10.6	0.4	10.9	35.1	3.5	38.6	32.3	2.7	35.0	0.0	
1979/80	0.0	10.8	1.1	11.9	1.3	2.8	4.1	16.6	0.7	17.3	31.8	2.6	34.4	27.6	4.2	31.9	0.5	
1980/81	0.1	6.5	1.2	7.8	1.1	4.8	5.9	19.0	1.2	20.2	29.4	1.4	30.8	29.4	4.5	33.9	1.4	
1981/82	0.2	7.0	0.8	8.0	0.9	6.0	6.8	22.4	1.8	24.2	34.1	0.2	34.3	23.4	3.2	26.6	0.1	
1982/83	0.1	7.3	0.2	7.6	0.3	3.4	3.8	20.8	0.8	21.6	33.8	0.4	34.2	30.8	1.9	32.8	0.0	
1983/84	0.2	5.3	0.4	5.8	0.5	3.2	3.7	19.7	0.6	20.4	40.0	0.8	40.8	28.2	1.1	29.3	0.0	
1984/85	0.4	6.7	1.4	8.5	0.6	3.5	4.1	17.4	0.7	18.2	36.9	3.1	40.0	27.9	1.4	29.3	0.0	
1985/86	0.3	7.3	2.3	9.8	0.2	4.3	4.5	19.3	0.7	20.0	30.3	2.2	32.5	32.3	0.8	33.2	0.0	
1986/87	0.2	6.1	0.4	6.7	0.1	2.0	2.1	14.8	0.3	15.0	42.7	0.9	43.6	31.5	0.8	32.3	0.2	
1987/88	0.0	4.4	0.0	4.4	0.0	2.4	2.4	15.9	0.6	16.5	40.8	2.5	43.4	31.9	0.9	32.9	0.4	
1988/89	0.1	4.2	0.6	4.9	0.1	4.1	4.1	28.0	0.9	28.9	30.5	0.5	31.0	29.1	1.7	30.8	0.3	
1989/90	0.0	5.4	0.2	5.6	0.0	5.2	5.2	28.8	0.4	29.3	22.7	0.7	23.4	35.7	0.8	36.5	0.0	
1990/91	0.0	4.8	0.1	4.9	0.2	2.1	2.4	28.8	0.6	29.4	22.8	1.7	24.5	38.4	0.4	38.8	0.1	
1991/92	0.0	4.1	0.0	4.1	0.0	1.8	1.8	30.5	0.7	31.3	28.8	0.8	29.6	32.0	1.0	33.0	0.3	
1992/93	0.0	5.4	0.7	6.1	0.3	2.0	2.3	26.9	0.6	27.4	28.8	1.8	30.6	32.3	0.5	32.9	0.7	
1993/94	0.0	4.4	0.1	4.5	0.0	1.7	1.7	18.2	0.1	18.4	27.3	1.4	28.7	44.8	0.8	45.6	1.2	
1994/95	0.0	5.1	2.6	7.7	0.1	3.0	3.1	22.1	0.1	22.2	23.9	1.1	25.0	40.2	0.9	41.0	0.8	
1995/96	0.0	5.3	0.7	6.0	0.0	2.7	2.7	23.7	0.3	24.1	29.1	1.1	30.3	35.7	0.6	36.2	0.8	
1996/97				6.1			2.4			23.0			28.7			38.9	0.9	
1997/98				6.1			2.4			23.0			28.7			38.9	0.9	
1998/99				6.1			2.4			23.0			28.7			38.9	0.9	
1999/00				6.1			2.4			23.0			28.7			38.9	0.9	
2000/01				6.1			2.4			23.0			28.7			38.9	0.9	
2001/02				6.1			2.4			23.0			28.7			38.9	0.9	
2002/03				6.1			2.4			23.0			28.7			38.9	0.9	
2003/04				6.1			2.4			23.0			28.7			38.9	0.9	
2004/05				6.1			2.4			23.0			28.7			38.9	0.9	
2005/06				6.1			2.4			23.0			28.7			38.9	0.9	
2006/07				6.1			2.4			23.0			28.7			38.9	0.9	
2007/08				6.1			2.4			23.0			28.7			38.9	0.9	
2008/09				6.1			2.4			23.0			28.7			38.9	0.9	
2009/10				6.1			2.4			23.0			28.7			38.9	0.9	
2010/11				6.1			2.4			23.0			28.7			38.9	0.9	
2015/16				6.1			2.4			23.0			28.7			38.9	0.9	
2020/21				6.1			2.4			23.0			28.7			38.9	0.9	
2025/26				6.1			2.4			23.0			28.7			38.9	0.9	
2030/31				6.1			2.4			23.0			28.7			38.9	0.9	
2035/36				6.1			2.4			23.0			28.7			38.9	0.9	
2040/41				6.1			2.4			23.0			28.7			38.9	0.9	
2045/46				6.1			2.4			23.0			28.7			38.9	0.9	
2050/51				6.1			2.4			23.0			28.7			38.9	0.9	

Percent

SOYBEAN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	20	0	42	62	12	47	59	357	64	421	23	0	23	0	0	0	0	*565*
1977/78	19	4	65	88	15	62	76	445	63	508	25	0	25	1	0	1	0	*698*
1978/79	16	1	56	73	18	75	93	479	68	548	38	0	38	0	0	0	0	*753*
1979/80	12	3	49	64	23	90	113	530	76	606	68	0	68	0	0	0	7	*859*
1980/81	7	1	55	63	16	56	72	460	51	510	45	0	45	0	0	1	13	*703*
1981/82	12	0	39	51	15	74	89	615	61	676	71	1	72	15	13	28	3	*919*
1982/83	2	0	35	37	13	80	94	653	38	691	29	0	29	19	10	29	6	*885*
1983/84	5	1	24	30	12	49	61	566	18	584	19	0	19	11	3	13	25	*733*
1984/85	2	0	27	30	10	56	66	413	32	445	10	0	10	22	0	22	30	*602*
1985/86	3	0	25	28	0	63	63	571	32	603	11	0	11	19	0	19	17	*740*
1986/87	12	1	33	46	0	23	23	584	66	650	9	0	9	17	0	17	24	*769*
1987/88	3	20	16	40	0	35	35	640	21	661	14	0	14	32	0	32	22	*803*
1988/89	5	15	9	28	0	35	35	392	14	405	7	0	7	35	0	35	29	*540*
1989/90	0	6	12	18	0	50	50	449	10	459	22	0	22	49	0	49	21	*619*
1990/91	0	4	5	9	0	30	30	457	2	459	3	0	3	20	0	20	36	*557*
1991/92	1	6	7	13	0	46	46	541	0	541	0	0	0	38	0	38	45	684
1992/93	11	4	21	36	0	55	55	573	7	580	6	0	6	50	0	50	51	*777*
1993/94	5	5	21	31	0	25	25	473	11	484	2	0	2	18	0	18	40	599
1994/95	11	22	27	60	0	27	27	609	17	626	30	0	30	69	0	69	42	853
1995/96	6	7	26	39	0	38	38	619	9	628	11	0	11	47	0	47	46	809
1996/97				38			37			594			11			45	46	770
1997/98				35			34			547			10			41	42	710
1998/99				35			34			555			11			42	43	720
1999/00				36			34			559			11			42	43	725
2000/01				37			36			582			11			44	45	755
2001/02				37			36			582			11			44	45	755
2002/03				38			36			591			11			45	46	766
2003/04				39			38			616			12			46	47	799
2004/05				40			39			629			12			47	48	**816**
2005/06				41			40			651			12			49	50	**845**
2006/07				42			41			658			13			50	51	**853**
2007/08				42			41			666			13			50	51	**864**
2008/09				43			42			675			13			51	52	**876**
2009/10				44			42			685			13			52	53	**888**
2010/11				44			43			694			13			52	53	**900**
2015/16				47			45			738			14			56	57	**957**
2020/21				50			48			780			15			59	60	**1012**
2025/26				53			51			825			16			62	64	**1070**
2030/31				56			54			873			17			66	67	**1132**
2035/36				59			57			923			18			70	71	**1197**
2040/41				62			60			975			19			74	75	**1265**
2045/46				66			63			1028			20			78	79	**1334**
2050/51				69			67			1080			21			82	83	**1401**

Million Bushels

SOYBEAN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	3.5	0.0	7.4	10.9	2.1	8.3	10.4	63.2	11.3	74.5	4.1	0.0	4.1	0.0	0.0	0.0	0.0	
1977/78	2.8	0.5	9.3	12.6	2.1	8.8	10.9	63.7	9.0	72.7	3.6	0.0	3.6	0.1	0.1	0.2	0.0	
1978/79	2.1	0.2	7.4	9.7	2.4	10.0	12.4	63.7	9.0	72.7	5.1	0.0	5.1	0.0	0.0	0.0	0.0	
1979/80	1.4	0.3	5.8	7.5	2.7	10.5	13.1	61.8	8.9	70.6	7.9	0.0	7.9	0.0	0.0	0.0	0.8	
1980/81	1.0	0.2	7.8	8.9	2.2	8.0	10.2	65.4	7.2	72.6	6.4	0.0	6.4	0.0	0.0	0.1	1.8	
1981/82	1.3	0.0	4.2	5.5	1.6	8.0	9.7	66.9	6.7	73.6	7.8	0.1	7.9	1.6	1.4	3.1	0.3	
1982/83	0.2	0.0	4.0	4.2	1.5	9.1	10.6	73.8	4.3	78.1	3.3	0.0	3.3	2.1	1.1	3.2	0.6	
1983/84	0.7	0.2	3.3	4.2	1.7	6.6	8.3	77.3	2.4	79.7	2.6	0.0	2.6	1.4	0.4	1.8	3.4	
1984/85	0.4	0.1	4.5	5.0	1.7	9.2	10.9	68.6	5.4	73.9	1.6	0.0	1.6	3.6	0.0	3.6	4.9	
1985/86	0.3	0.0	3.4	3.8	0.0	8.5	8.5	77.1	4.3	81.4	1.5	0.0	1.5	2.5	0.0	2.5	2.2	
1986/87	1.5	0.2	4.3	6.0	0.0	3.0	3.0	75.9	8.6	84.5	1.2	0.0	1.2	2.2	0.0	2.2	3.1	
1987/88	0.4	2.5	2.0	4.9	0.0	4.3	4.3	79.7	2.6	82.4	1.7	0.0	1.7	3.9	0.0	3.9	2.7	
1988/89	0.9	2.7	1.6	5.2	0.0	6.5	6.5	72.6	2.5	75.1	1.3	0.0	1.4	6.4	0.0	6.4	5.4	
1989/90	0.0	0.9	1.9	2.8	0.0	8.1	8.1	72.6	1.5	74.1	3.6	0.0	3.6	7.9	0.0	7.9	3.5	
1990/91	0.0	0.7	0.9	1.6	0.0	5.4	5.4	82.0	0.4	82.5	0.5	0.0	0.5	3.6	0.0	3.6	6.4	
1991/92	0.1	0.8	1.0	1.9	0.0	6.8	6.8	79.1	0.0	79.1	0.0	0.0	0.0	5.6	0.0	5.6	6.6	
1992/93	1.5	0.5	2.7	4.7	0.0	7.0	7.0	73.7	0.9	74.6	0.7	0.0	0.7	6.4	0.0	6.4	6.5	
1993/94	0.8	0.9	3.5	5.1	0.0	4.1	4.1	79.0	1.9	80.9	0.3	0.0	0.3	2.9	0.0	2.9	6.6	
1994/95	1.3	2.6	3.1	7.0	0.0	3.1	3.1	71.4	1.9	73.3	3.5	0.0	3.5	8.1	0.0	8.1	4.9	
1995/96	0.7	0.9	3.2	4.8	0.0	4.7	4.7	76.5	1.1	77.6	1.4	0.0	1.4	5.8	0.0	5.8	5.7	
1996/97				4.9			4.8			77.1			1.5			5.8	5.9	
1997/98				4.9			4.8			77.1			1.5			5.8	5.9	
1998/99				4.9			4.8			77.1			1.5			5.8	5.9	
1999/00				4.9			4.8			77.1			1.5			5.8	5.9	
2000/01				4.9			4.8			77.1			1.5			5.8	5.9	
2001/02				4.9			4.8			77.1			1.5			5.8	5.9	
2002/03				4.9			4.8			77.1			1.5			5.8	5.9	
2003/04				4.9			4.8			77.1			1.5			5.8	5.9	
2004/05				4.9			4.8			77.1			1.5			5.8	5.9	
2005/06				4.9			4.8			77.1			1.5			5.8	5.9	
2006/07				4.9			4.8			77.1			1.5			5.8	5.9	
2007/08				4.9			4.8			77.1			1.5			5.8	5.9	
2008/09				4.9			4.8			77.1			1.5			5.8	5.9	
2009/10				4.9			4.8			77.1			1.5			5.8	5.9	
2010/11				4.9			4.8			77.1			1.5			5.8	5.9	
2015/16				4.9			4.8			77.1			1.5			5.8	5.9	
2020/21				4.9			4.8			77.1			1.5			5.8	5.9	
2025/26				4.9			4.8			77.1			1.5			5.8	5.9	
2030/31				4.9			4.8			77.1			1.5			5.8	5.9	
2035/36				4.9			4.8			77.1			1.5			5.8	5.9	
2040/41				4.9			4.8			77.1			1.5			5.8	5.9	
2045/46				4.9			4.8			77.1			1.5			5.8	5.9	
2050/51				4.9			4.8			77.1			1.5			5.8	5.9	

Percent

SORGHUM EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calif	Total	Interior	
1976/77	0	0	0	0	0	0	0	11	0	11	128	107	235	0	2	2	0	*248*
1977/78	0	0	0	0	0	0	0	3	0	3	102	91	192	8	4	12	0	*207*
1978/79	0	0	0	0	0	0	0	4	0	4	62	92	154	12	11	23	0	*181*
1979/80	0	0	0	0	0	0	0	9	0	9	114	94	208	42	24	66	32	*315*
1980/81	0	0	0	0	0	0	0	15	0	15	68	72	141	37	23	60	40	*256*
1981/82	0	0	0	0	0	0	0	47	0	47	89	57	146	42	13	55	4	*253*
1982/83	0	0	0	0	0	0	0	58	2	60	44	32	76	7	16	23	36	*195*
1983/84	0	0	0	0	0	0	0	55	0	55	92	35	126	12	7	20	36	*237*
1984/85	0	0	0	0	0	0	0	138	2	139	50	37	87	27	8	35	26	*287*
1985/86	0	0	0	0	0	0	0	123	2	126	22	16	38	7	0	7	6	*176*
1986/87	0	0	0	0	0	0	0	85	13	98	42	23	65	17	0	17	14	*194*
1987/88	0	0	0	0	0	0	0	110	0	110	64	26	89	12	0	12	12	*223*
1988/89	0	0	0	0	0	0	0	95	1	96	105	28	133	38	0	38	27	*293*
1989/90	0	0	0	0	0	0	0	101	0	102	69	14	83	48	0	48	32	*265*
1990/91	0	0	0	0	0	0	0	93	1	93	61	12	73	12	0	12	26	*204*
1991/92	0	0	0	0	0	0	0	91	0	91	67	13	81	19	0	19	47	237
1992/93	0	0	0	0	0	0	0	105	0	105	48	19	67	13	0	13	47	232
1993/94	0	0	0	0	0	0	0	83	0	83	23	20	43	4	0	4	36	165
1994/95	0	0	0	0	0	0	0	95	0	95	34	8	42	14	0	14	29	180
1995/96	0	0	0	0	0	0	0	98	0	98	63	3	66	6	0	6	30	200
1996/97				0			0			99			56			9	36	200
1997/98				0			0			104			58			10	38	210
1998/99				0			0			104			58			10	38	210
1999/00				0			0			104			58			10	38	210
2000/01				0			0			109			61			10	40	220
2001/02				0			0			108			61			10	40	218
2002/03				0			0			109			62			10	40	221
2003/04				0			0			110			62			10	40	223
2004/05				0			0			111			62			10	41	**224**
2005/06				0			0			111			63			10	41	**225**
2006/07				0			0			114			64			11	42	**231**
2007/08				0			0			115			65			11	42	**234**
2008/09				0			0			114			64			11	42	**230**
2009/10				0			0			116			65			11	43	**235**
2010/11				0			0			119			67			11	44	**241**
2015/16				0			0			135			76			13	50	**273**
2020/21				0			0			151			85			14	56	**306**
2025/26				0			0			169			95			16	62	**342**
2030/31				0			0			188			106			18	69	**381**
2035/36				0			0			209			118			20	77	**423**
2040/41				0			0			231			130			22	85	**468**
2045/46				0			0			254			143			24	93	**515**
2050/51				0			0			278			157			26	102	**564**

Million Bushels

SORGHUM EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	4.5	51.5	43.1	94.5	0.0	1.0	1.0	0.0	
1977/78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3	49.0	43.9	92.8	3.9	2.0	5.9	0.0	
1978/79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	2.2	34.3	50.9	85.1	6.6	6.1	12.7	0.0	
1979/80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	3.0	36.2	29.7	65.9	13.3	7.6	20.9	10.2	
1980/81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	6.0	26.7	28.3	55.0	14.6	8.9	23.5	15.5	
1981/82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.1	18.5	35.4	22.5	58.0	16.5	5.3	21.9	1.7	
1982/83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.8	0.9	30.7	22.4	16.4	38.8	3.8	8.1	11.9	18.6	
1983/84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.0	0.1	23.1	38.7	14.6	53.3	5.2	3.1	8.4	15.2	
1984/85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0	0.7	48.6	17.4	13.0	30.3	9.3	2.7	12.1	8.9	
1985/86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.9	1.4	71.3	12.5	9.1	21.6	3.9	0.0	3.9	3.2	
1986/87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	6.6	50.5	21.4	12.0	33.4	8.9	0.0	8.9	7.2	
1987/88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.2	0.1	49.2	28.5	11.5	40.0	5.3	0.0	5.3	5.5	
1988/89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.3	0.3	32.6	35.9	9.5	45.4	12.9	0.0	12.9	9.0	
1989/90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.2	0.2	38.3	25.9	5.4	31.3	18.3	0.0	18.3	12.1	
1990/91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.3	0.4	45.7	29.8	6.1	35.8	5.7	0.0	5.7	12.8	
1991/92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.5	0.0	38.5	28.3	5.7	34.0	7.8	0.0	7.8	19.7	
1992/93	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.3	0.0	45.3	20.6	8.3	28.9	5.7	0.0	5.7	20.1	
1993/94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.2	0.0	50.2	14.1	11.9	26.0	2.2	0.0	2.2	21.6	
1994/95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.1	0.0	53.1	19.0	4.5	23.5	7.5	0.0	7.5	15.9	
1995/96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.0	0.0	49.0	31.5	1.5	33.0	3.0	0.0	3.0	15.0	
1996/97				0.0			0.0			49.4			27.9			4.6	18.1	
1997/98				0.0			0.0			49.4			27.9			4.6	18.1	
1998/99				0.0			0.0			49.4			27.9			4.6	18.1	
1999/00				0.0			0.0			49.4			27.9			4.6	18.1	
2000/01				0.0			0.0			49.4			27.9			4.6	18.1	
2001/02				0.0			0.0			49.4			27.9			4.6	18.1	
2002/03				0.0			0.0			49.4			27.9			4.6	18.1	
2003/04				0.0			0.0			49.4			27.9			4.6	18.1	
2004/05				0.0			0.0			49.4			27.9			4.6	18.1	
2005/06				0.0			0.0			49.4			27.9			4.6	18.1	
2006/07				0.0			0.0			49.4			27.9			4.6	18.1	
2007/08				0.0			0.0			49.4			27.9			4.6	18.1	
2008/09				0.0			0.0			49.4			27.9			4.6	18.1	
2009/10				0.0			0.0			49.4			27.9			4.6	18.1	
2010/11				0.0			0.0			49.4			27.9			4.6	18.1	
2015/16				0.0			0.0			49.4			27.9			4.6	18.1	
2020/21				0.0			0.0			49.4			27.9			4.6	18.1	
2025/26				0.0			0.0			49.4			27.9			4.6	18.1	
2030/31				0.0			0.0			49.4			27.9			4.6	18.1	
2035/36				0.0			0.0			49.4			27.9			4.6	18.1	
2040/41				0.0			0.0			49.4			27.9			4.6	18.1	
2045/46				0.0			0.0			49.4			27.9			4.6	18.1	
2050/51				0.0			0.0			49.4			27.9			4.6	18.1	

Percent

BARLEY EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	0	48	0	48	0	1	1	0	0	0	0	0	0	30	5	35	0	*83*
1977/78	0	26	0	26	0	3	3	0	0	0	0	0	0	13	2	15	0	*43*
1978/79	0	3	0	3	0	4	4	0	0	0	0	0	0	7	0	7	0	*14*
1979/80	0	34	0	34	0	2	2	0	0	0	0	0	0	18	0	18	5	*59*
1980/81	0	26	0	26	0	6	6	0	0	0	0	0	0	43	0	43	0	*75*
1981/82	0	37	0	37	0	8	8	0	0	0	0	0	0	47	0	47	2	*95*
1982/83	0	5	0	5	0	2	2	0	0	0	0	0	0	27	0	27	0	*35*
1983/84	0	41	2	43	0	9	9	2	0	2	0	0	0	44	0	44	0	*98*
1984/85	0	27	0	27	0	7	7	0	0	0	1	0	1	30	0	30	0	*65*
1985/86	0	6	0	6	0	2	2	0	0	0	0	0	0	17	0	17	0	*25*
1986/87	0	20	0	20	0	3	3	1	0	1	1	0	1	116	0	116	0	*141*
1987/88	0	35	0	35	0	2	2	5	1	6	19	0	19	60	0	60	0	*122*
1988/89	0	49	0	49	0	4	4	0	0	0	0	0	0	26	0	26	0	*79*
1989/90	0	40	0	40	0	4	4	0	0	0	7	0	7	25	0	25	1	*75*
1990/91	0	27	0	27	0	3	3	3	0	3	2	0	2	25	0	25	0	*60*
1991/92	0	42	0	42	0	8	8	12	0	12	0	0	0	36	0	36	0	99
1992/93	0	41	0	41	0	7	7	5	0	5	0	0	0	18	0	18	0	70
1993/94	0	42	0	42	0	7	7	3	0	3	0	0	0	15	0	15	0	67
1994/95	0	27	0	27	0	3	3	8	0	8	0	0	0	26	0	26	0	64
1995/96	0	31	0	31	0	3	3	8	0	8	0	0	0	17	0	17	0	59
1996/97				34			5			6			0			20		65
1997/98				42			6			7			0			25		80
1998/99				45			6			8			0			26		85
1999/00				45			6			8			0			26		85
2000/01				47			7			8			0			28		90
2001/02				62			9			11			0			36		117.6
2002/03				56			8			10			0			33		106.3
2003/04				56			8			10			0			33		106.4
2004/05				56			8			10			0			33		**106**
2005/06				55			8			10			0			32		**105**
2006/07				59			8			10			0			35		**113**
2007/08				60			9			11			0			35		**115**
2008/09				60			9			11			0			35		**115**
2009/10				60			9			11			0			35		**115**
2010/11				60			9			10			0			35		**115**
2015/16				59			8			10			0			35		**112**
2020/21				58			8			10			0			34		**110**
2025/26				56			8			10			0			33		**107**
2030/31				56			8			10			0			33		**106**
2035/36				55			8			10			0			32		**105**
2040/41				55			8			10			0			32		**105**
2045/46				55			8			10			0			32		**104**
2050/51				54			8			9			0			32		**103**

Million Bushels

12/27/95
JFEXP.XLS

BARLEY EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	0.0	57.1	0.0	57.1	0.0	0.6	0.6	0.0	0.0	0.0	0.4	0.0	0.4	35.8	6.0	41.9	0.0	
1977/78	0.0	59.3	0.0	59.3	0.0	6.9	6.9	0.0	0.0	0.0	0.0	0.0	0.0	28.9	4.9	33.8	0.0	
1978/79	0.0	23.1	0.0	23.1	0.0	28.9	28.9	0.0	0.0	0.0	0.0	0.0	0.0	48.0	0.0	48.0	0.0	
1979/80	0.0	57.5	0.0	57.5	0.0	3.3	3.3	0.0	0.0	0.0	0.1	0.0	0.1	30.7	0.0	30.7	8.4	
1980/81	0.0	34.7	0.0	34.7	0.0	7.4	7.4	0.0	0.0	0.0	0.3	0.0	0.3	57.3	0.0	57.3	0.3	
1981/82	0.0	39.2	0.0	39.2	0.0	8.3	8.3	0.1	0.0	0.1	0.0	0.0	0.0	50.0	0.0	50.0	2.4	
1982/83	0.0	14.7	0.0	14.7	0.0	6.6	6.6	0.0	0.0	0.0	0.0	0.0	0.0	78.7	0.0	78.7	0.0	
1983/84	0.0	41.6	1.8	43.3	0.0	9.4	9.4	2.2	0.0	2.2	0.0	0.0	0.0	45.1	0.0	45.1	0.0	
1984/85	0.0	41.3	0.0	41.3	0.0	10.2	10.2	0.0	0.0	0.0	2.3	0.0	2.3	46.2	0.0	46.2	0.0	
1985/86	0.0	24.4	0.0	24.4	0.0	7.1	7.1	0.7	0.0	0.7	0.0	0.0	0.0	67.8	0.0	67.8	0.0	
1986/87	0.0	14.0	0.0	14.0	0.0	2.0	2.0	1.0	0.0	1.0	0.8	0.0	0.8	82.2	0.0	82.2	0.0	
1987/88	0.0	28.7	0.0	28.7	0.0	1.9	1.9	4.0	0.9	4.9	15.3	0.0	15.3	49.2	0.0	49.2	0.0	
1988/89	0.0	62.1	0.0	62.1	0.0	4.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	33.2	0.0	33.2	0.0	
1989/90	0.0	52.6	0.0	52.6	0.0	4.6	4.6	0.0	0.0	0.0	9.0	0.0	9.0	33.1	0.0	33.1	0.7	
1990/91	0.0	44.7	0.0	44.7	0.0	5.4	5.4	5.2	0.0	5.2	2.5	0.0	2.5	41.7	0.0	41.7	0.5	
1991/92	0.0	42.7	0.0	42.7	0.0	8.4	8.4	12.3	0.0	12.3	0.0	0.0	0.0	36.6	0.0	36.6	0.1	
1992/93	0.0	58.7	0.0	58.7	0.0	9.3	9.3	6.7	0.0	6.7	0.0	0.0	0.0	25.0	0.0	25.0	0.3	
1993/94	0.0	62.4	0.0	62.4	0.0	10.3	10.3	4.3	0.0	4.3	0.0	0.0	0.0	23.0	0.0	23.0	0.0	
1994/95	0.0	42.7	0.0	42.7	0.0	5.3	5.3	12.0	0.0	12.0	0.0	0.0	0.0	39.9	0.0	39.9	0.0	
1995/96	0.0	52.5	0.0	52.5	0.0	5.1	5.1	13.6	0.0	13.6	0.0	0.0	0.0	28.8	0.0	28.8	0.0	
1996/97				52.5			7.5			9.2			0.0			30.8	0.1	
1997/98				52.5			7.5			9.2			0.0			30.8	0.1	
1998/99				52.5			7.5			9.2			0.0			30.8	0.1	
1999/00				52.5			7.5			9.2			0.0			30.8	0.1	
2000/01				52.5			7.5			9.2			0.0			30.8	0.1	
2001/02				52.5			7.5			9.2			0.0			30.8	0.1	
2002/03				52.5			7.5			9.2			0.0			30.8	0.1	
2003/04				52.5			7.5			9.2			0.0			30.8	0.1	
2004/05				52.5			7.5			9.2			0.0			30.8	0.1	
2005/06				52.5			7.5			9.2			0.0			30.8	0.1	
2006/07				52.5			7.5			9.2			0.0			30.8	0.1	
2007/08				52.5			7.5			9.2			0.0			30.8	0.1	
2008/09				52.5			7.5			9.2			0.0			30.8	0.1	
2009/10				52.5			7.5			9.2			0.0			30.8	0.1	
2010/11				52.5			7.5			9.2			0.0			30.8	0.1	
2015/16				52.5			7.5			9.2			0.0			30.8	0.1	
2020/21				52.5			7.5			9.2			0.0			30.8	0.1	
2025/26				52.5			7.5			9.2			0.0			30.8	0.1	
2030/31				52.5			7.5			9.2			0.0			30.8	0.1	
2035/36				52.5			7.5			9.2			0.0			30.8	0.1	
2040/41				52.5			7.5			9.2			0.0			30.8	0.1	
2045/46				52.5			7.5			9.2			0.0			30.8	0.1	
2050/51				52.5			7.5			9.2			0.0			30.8	0.1	

Percent

GRAIN & SOYBEAN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	73	111	144	328	103	399	502	1478	129	1607	504	140	644	308	41	350	0	3431
1977/78	112	220	198	531	118	405	523	1583	165	1748	584	157	741	377	76	453	0	3996
1978/79	108	197	190	495	133	402	535	1660	151	1811	614	135	749	501	108	609	0	4199
1979/80	94	219	161	474	153	406	559	1965	209	2174	714	132	846	647	152	800	80	4934
1980/81	76	161	183	420	95	390	485	1944	137	2080	723	93	816	789	195	984	130	4916
1981/82	70	162	136	368	105	501	606	2296	112	2407	814	62	876	608	122	729	17	5003
1982/83	19	105	105	228	93	397	490	2244	55	2299	541	37	578	526	68	593	73	4262
1983/84	33	150	63	245	62	177	239	1959	32	1991	768	54	822	851	99	950	95	4342
1984/85	36	117	109	262	62	328	391	1842	82	1924	515	85	600	706	53	759	86	4022
1985/86	7	73	73	153	7	258	264	1624	81	1705	321	45	366	534	9	543	50	3081
1986/87	34	84	83	201	2	125	127	1861	153	2014	493	38	531	683	8	692	74	3639
1987/88	29	134	50	214	4	164	168	2131	38	2169	729	69	798	960	14	974	78	4401
1988/89	34	152	63	249	5	154	159	2231	41	2272	567	38	605	979	25	1004	83	4372
1989/90	25	112	50	188	9	220	229	2429	20	2449	391	34	425	1033	9	1041	76	4408
1990/91	7	84	38	129	12	110	123	2180	11	2191	306	33	339	731	4	735	74	3590
1991/92	14	107	23	144	1	90	91	2245	11	2256	440	26	466	789	13	802	102	3860
1992/93	24	117	75	215	10	142	151	2321	32	2353	442	51	493	744	7	751	110	4074
1993/94	11	97	51	159	0	61	61	1811	14	1826	345	49	394	684	9	693	114	3247
1994/95	44	112	115	271	22	84	105	2418	35	2453	370	29	399	1127	10	1137	111	4476
1995/96	34	118	84	236	6	111	117	2540	26	2566	479	25	504	1072	8	1080	94	4595
1996/97				210			114			2523			427			1013	119	4405
1997/98				230			118			2540			500			1112	119	4620
1998/99				235			120			2585			502			1127	120	4690
1999/00				240			123			2680			508			1161	122	4835
2000/01				252			130			2856			521			1218	129	5105
2001/02				274			136			2948			544			1280	130	5313
2002/03				269			136			2990			538			1279	132	5344
2003/04				274			139			3058			546			1301	135	5453
2004/05				277			141			3103			553			1318	137	5528
2005/06				280			144			3157			560			1336	139	5616
2006/07				287			146			3204			567			1356	142	5702
2007/08				291			148			3250			574			1375	143	5781
2008/09				294			150			3293			580			1393	144	5853
2009/10				297			152			3339			587			1411	146	5933
2010/11				300			154			3386			596			1429	149	6014
2015/16				314			162			3603			636			1514	161	6391
2020/21				327			171			3814			677			1597	174	6759
2025/26				340			180			4035			719			1683	187	7144
2030/31				355			189			4275			764			1776	201	7560
2035/36				372			200			4532			810			1874	216	8004
2040/41				389			210			4800			858			1976	232	8465
2045/46				406			221			5072			907			2078	249	8934
2050/51				423			232			5339			957			2180	265	9395

Million Bushels

GRAIN & SOYBEAN EXPORT INSPECTIONS

	LAKES				ATLANTIC			GULF			TEXAS			PACIFIC				TOTAL
	Chicago	Dul-Sup	Tol-Sag	Total	North	South	Total	Miss River	East	Total	North	South	Total	PNW	Calf	Total	Interior	
1976/77	2.1	3.2	4.2	9.6	3.0	11.6	14.6	43.1	3.8	46.9	14.7	4.1	18.8	9.0	1.2	10.2	0.0	
1977/78	2.8	5.5	5.0	13.3	2.9	10.1	13.1	39.6	4.1	43.7	14.6	3.9	18.5	9.4	1.9	11.3	0.0	
1978/79	2.6	4.7	4.5	11.8	3.2	9.6	12.7	39.5	3.6	43.1	14.6	3.2	17.8	11.9	2.6	14.5	0.0	
1979/80	1.9	4.4	3.3	9.6	3.1	8.2	11.3	39.8	4.2	44.1	14.5	2.7	17.1	13.1	3.1	16.2	1.6	
1980/81	1.5	3.3	3.7	8.6	1.9	7.9	9.9	39.5	2.8	42.3	14.7	1.9	16.6	16.0	4.0	20.0	2.6	
1981/82	1.4	3.2	2.7	7.4	2.1	10.0	12.1	45.9	2.2	48.1	16.3	1.2	17.5	12.1	2.4	14.6	0.3	
1982/83	0.4	2.5	2.5	5.4	2.2	9.3	11.5	52.6	1.3	53.9	12.7	0.9	13.6	12.3	1.6	13.9	1.7	
1983/84	0.8	3.4	1.4	5.7	1.4	4.1	5.5	45.1	0.7	45.9	17.7	1.2	18.9	19.6	2.3	21.9	2.2	
1984/85	0.9	2.9	2.7	6.5	1.5	8.2	9.7	45.8	2.0	47.8	12.8	2.1	14.9	17.5	1.3	18.9	2.1	
1985/86	0.2	2.4	2.4	5.0	0.2	8.4	8.6	52.7	2.6	55.3	10.4	1.5	11.9	17.3	0.3	17.6	1.6	
1986/87	0.9	2.3	2.3	5.5	0.1	3.4	3.5	51.2	4.2	55.4	13.5	1.1	14.6	18.8	0.2	19.0	2.0	
1987/88	0.7	3.0	1.1	4.9	0.1	3.7	3.8	48.4	0.9	49.3	16.6	1.6	18.1	21.8	0.3	22.1	1.8	
1988/89	0.8	3.5	1.4	5.7	0.1	3.5	3.6	51.0	0.9	52.0	13.0	0.9	13.8	22.4	0.6	23.0	1.9	
1989/90	0.6	2.5	1.1	4.3	0.2	5.0	5.2	55.1	0.4	55.6	8.9	0.8	9.6	23.4	0.2	23.6	1.7	
1990/91	0.2	2.3	1.1	3.6	0.3	3.1	3.4	60.7	0.3	61.0	8.5	0.9	9.4	20.4	0.1	20.5	2.1	
1991/92	0.4	2.8	0.6	3.7	0.0	2.3	2.3	58.1	0.3	58.4	11.4	0.7	12.1	20.4	0.3	20.8	2.6	
1992/93	0.6	2.9	1.8	5.3	0.2	3.5	3.7	57.0	0.8	57.7	10.8	1.3	12.1	18.3	0.2	18.4	2.7	
1993/94	0.3	3.0	1.6	4.9	0.0	1.9	1.9	55.8	0.4	56.2	10.6	1.5	12.1	21.1	0.3	21.3	3.5	
1994/95	1.0	2.5	2.6	6.1	0.5	1.9	2.3	54.0	0.8	54.8	8.3	0.6	8.9	25.2	0.2	25.4	2.5	
1995/96	0.7	2.6	1.8	5.1	0.1	2.4	2.5	55.3	0.6	55.8	10.4	0.5	11.0	23.3	0.2	23.5	2.0	
1996/97				4.8			2.6			57.3			9.7			23.0	2.7	
1997/98				5.0			2.6			55.0			10.8			24.1	2.6	
1998/99				5.0			2.6			55.1			10.7			24.0	2.6	
1999/00				5.0			2.5			55.4			10.5			24.0	2.5	
2000/01				4.9			2.5			55.9			10.2			23.9	2.5	
2001/02				5.2			2.6			55.5			10.2			24.1	2.5	
2002/03				5.0			2.5			55.9			10.1			23.9	2.5	
2003/04				5.0			2.5			56.1			10.0			23.9	2.5	
2004/05				5.0			2.5			56.1			10.0			23.8	2.5	
2005/06				5.0			2.6			56.2			10.0			23.8	2.5	
2006/07				5.0			2.6			56.2			9.9			23.8	2.5	
2007/08				5.0			2.6			56.2			9.9			23.8	2.5	
2008/09				5.0			2.6			56.3			9.9			23.8	2.5	
2009/10				5.0			2.6			56.3			9.9			23.8	2.5	
2010/11				5.0			2.6			56.3			9.9			23.8	2.5	
2015/16				4.9			2.5			56.4			10.0			23.7	2.5	
2020/21				4.8			2.5			56.4			10.0			23.6	2.6	
2025/26				4.8			2.5			56.5			10.1			23.6	2.6	
2030/31				4.7			2.5			56.5			10.1			23.5	2.7	
2035/36				4.6			2.5			56.6			10.1			23.4	2.7	
2040/41				4.6			2.5			56.7			10.1			23.3	2.7	
2045/46				4.5			2.5			56.8			10.2			23.3	2.8	
2050/51				4.5			2.5			56.8			10.2			23.2	2.8	

Percent

APPENDIX F

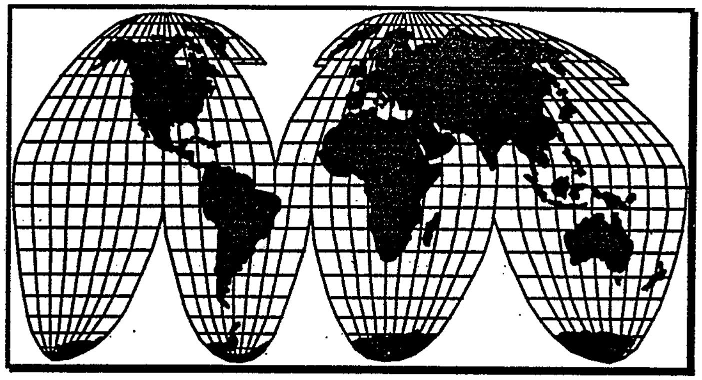
Sparks Companies, Inc.
World Grain and Oilseed Review

Sparks Companies, Inc.

World Grain and Oilseed Review: 1995-2000

November 6, 1995

Assumptions



- The world political situation will remain generally stable over the five-year time horizon for this forecast;
- World economic growth will maintain a moderate upward trend;
- The trade sector will continue to benefit and grow as accepted GATT/WTO policies and regulations increasingly influence trade activities; and
- Current tight grain supplies are bolstering a global push to expand supplies; this effort will be facilitated by fewer governmental restrictions than existed in the past ten to twenty years.

Political/Economic Environment

Over the next five years, the world's political situation is expected to be generally stable. At the present time, the only major conflict that could suddenly impact the global community is the ongoing civil war in the former Yugoslav Republics of Bosnia and Croatia. Less serious regional problems are noted in Chiapas (Mexico); in Punjab (India); and Chechnya (Russia). These potential hotspots remain localized, but do not look to be resolved quickly. For the most part, the political and social situation in most of the republics of the Former Soviet Union and in the Former Soviet Bloc nations of Eastern European remain stable although economic conditions present a more mixed picture. Chinese leaders recently approved the nation's ninth Five-Year Plan, which is designed to guide the economy through 2000. A major effort will be taken to equalize the rural poor conditions with urban wealth. Ongoing political and social changes since our April 1995 report continue to suggest that the actual leadership transition in China is proceeding smoothly. As usual, unstable political situations in the Middle East persist and tensions may be heightened by the recent assassination of Israeli Prime Minister Yitzhak Rabin, who was a major leader of that region's peace effort. Instability in Iraq and Iran also continues to offer potential threats to the outlook for global stability and growth.

World economic growth is expected to total 2.2% in 1995, a rate significantly under the 3.0% annual real growth experienced during 1994. The 1995 decline in world growth was exacerbated by the Mexican economic crisis, which resulted in sympathetic declines for Argentina and Brazil. Most of the world's major economic powers, including the US, Canada, Australia, Japan and the EU, show significantly slower rates of economic growth for 1995. The bright spot again was the Pacific Rim, particularly South Korea and Taiwan, where significantly higher rates of growth are being posted. The global economy is expected to recover in 1996, with a 2.6% gain in GDP. Significant recovery in Latin America, Japan and Canada will offset stable to slight declines in other areas. By 1997, global economic growth is projected to accelerate to 2.9%.

Strong economic growth in China, India, and Thailand continues to underpin the outlook for global economic gain. Significant recovery is expected in Brazil and Argentina, following the current slowdown. Both countries are maintaining economic programs that support the outlook for recovery and are continuing their efforts toward governmental reform. Mexico's current financial and economic problems have persisted longer than anticipated and have resulted in a deep recession. Economic and social programs announced in late October allowed the return of some stability to the financial sector and should provide the basis for a rebound in late 1995 and 1996. The EU and other Western Europe continue to move out the recent recessionary mode. However, the pace of growth is not forecast to improve until 1997. The US and Australia are now expected to undergo further near term contraction, but an upturn is anticipated in 1997. Major risks to the global outlook for growth remain the FSU and a select group of Central European and African countries. Several Latin American countries could be added to the risk list if the expected 1996 turnaround fails to materialize.

Over the near term, inflation and unemployment do not appear to pose major hazards for growth. Data for 1995 indicate a significant decline in the rate of increase in consumer prices. An annual rate of just over 10% for 1995 compares with almost 32% for the year prior. Prices should experience a modest pick-up in 1996, due in part to higher prices for food and fiber. Global unemployment, which has held at 6.1 to 6.2% for the past two years, looks to remain in that range during 1996 and 1997.

The global economy appears poised to resume its upward trend into the latter years of the five-year forecast. While current higher prices for grains and oilseeds may temper ongoing use in the short run, SCI does not foresee any significant long-term impact on overall food consumption. Long-term uptrends suggesting increased protein and meat consumption will be bolstered by the general economic outlook for growth. This growth, in turn, should increase consumer incomes and purchasing power.

Area and Production Overview

Below normal Northern Hemisphere food and feed grain production during the 1995 crop season will likely impact the global food outlook for the duration of the five-year forecast. The imminent stocks drawdown all but assures a full production scenario for the next two years. Mere trend increases in consumption will require this length of time to rejuvenate global reserve stocks. The agricultural policies of major grain and oilseed producers are currently being revamped along lines that would permit the world's farmers greater flexibility in planting decisions. The price of this enhanced flexibility appears to be an increased risk exposure, as more of the farmers' returns will come from the market rather than the government. One of the major provisions of the GATT/WTO accord impacting agricultural producers is the reduction of direct government production subsidies.

The current higher level of prices for grains and oilseeds forms the major basis for the projected strong recovery in 1996 world crop area. Global crop area is forecast to expand by 27 million hectares to 841 million by 2000. However, 17 million of the projected 27 million hectare increase during the forecast comes during the 1996 season as a result of expected recovery in wheat and coarse grains. Barring a weather-related reduction, the return to trend yields should bring a significant rebound in production. The materialization of larger supplies in 1996 and the expectation for continued improvement in the supply situation in 1997 should help to moderate gains in grain area and allow for some shift back to oilseeds which are likely to feel some encroachment over the near term.

The long-term pace of global crop area expansion (0.7% annually) is moderately above the flatter trend observed during the previous five-year interval, but reflects the impact of area restrictions imposed by the world's limited supply of arable land. There is, however, room for a significant amount of variation, as changes occur in the crop mix (resulting from the farmer's response to production economics). In its last report (April 1995), SCI attributed the bulk of area growth to the continued expansion of oilseeds in Brazil and Argentina. Economic growth in India will continue to stimulate internal demand and encourage crop area expansion. US crop area will be influenced by export demand, by new farm policy legislation, and the economic ramifications ensuing from the significant amount of rationing that must be done to manage the current season's supply shortfall. These factors are anticipated to bring almost 6 million hectares back into US production during the forecast interval.

Other key forces impacting the global area outlook include:

- Modifications in the EU's CAP program, as tight internal supplies and associated high prices have led the EU to reduce the level of set-aside for program participation.

- The outlook for China continues to key on the need to expand production to keep pace with demand.

- Production in Central Europe recovered enough in 1995 to allow the region to move into the role of an exporter of grain much sooner than originally anticipated.

- Production and area in the FSU-15 remains severely handicapped by a reduced supply of inputs and/ or poor economic conditions. While weather was the chief culprit in the steep decline in 1995 production, the lack of adequate supplies of fertilizer, seeds ,machinery, fuel and other inputs all took a toll. The projected rebound in area and production in the FSU-15 is important to the global outlook, as an improvement in economic conditions could quickly lead to rejuvenated demand.

Current high prices for wheat and coarse grains likely will encourage expansion of grain area at the expense of oilseed area for the next year or two. World area of rice is projected to trend only modestly higher, as improved yields allow production to keep pace with growing food demand. The pace of expansion for cotton is still expected to increase significantly given relatively high prices. Strong world vegetable oil demand underpins expected long-term growth for oilseeds.

Grain Overview

One major event, below normal production, will have significant bearing on the grain outlook for the short and potentially the longer term.

The 1995 season marks the second consecutive occurrence of reduced wheat production. Compared with SCI's April 1995 forecast, weather reduced US production is 9 million tonnes, (13% less). The shortfall at the world level swelled to 45 million tonnes, 8% less than was expected in April 1995 as production in non-US areas fell short of expectations by a total of 36 million tonnes. Although the 1995 world wheat crop of 526 million tonnes is significantly lower, consumption will not experience an equivalent reduction. The world domestic use forecast of 540 million tonnes is only 2% less than that of the previous year. The 1995 total use is well below the 548 to 558 million tonnes consumed annually in the past three years when supplies were not curtailed. Ending stocks of 99 million tonnes reflects the tightest supply/use ratio in many years.

The wheat outlook for 1996 indicates a return to a production level of over 570 million tonnes. The jump is a combination of a 3.6% increase in area over the levels of the past two years and a 5.6% recovery in average yields. Projections for use in 1996 point to a 2% expansion to 552 million tonnes. This occurrence would allow stocks to rebuild to 121 million tonnes, a more comfortable, yet still historically small number. In the latter years of the forecast, SCI expects to see a continued moderate expansion of wheat area. An accompanying uptrend in yields will boost production by almost 19% by 2000. With expansion in consumption trailing production by 6 to 12 million tonnes annually in the last four years of the forecast interval, buffer stocks would return to levels more commensurate with stocks/use relationships of the past five years and certainly more comfortable in absolute terms. The wheat trade scenario in this report reflects a slightly higher annual level of shipments, primarily the result of reduced trade barriers and the GATT accord. The EU likely will hold to its minimum allowable GATT level for subsidized shipments while limited internal use in the Ukraine is expected to free additional wheat for export.

The outlook for rice indicates a relatively stable situation. The 1995 crop shortfall was primarily concentrated in wheat and coarse grains (barley). Rice production, by contrast, held about even with our April 1995 expectations and was only fractionally lower than the prior year. The long-term forecast indicates that rice production and consumption will generally remain in balance with moderate recovery in reserve stocks by forecast end. The projected expansion in rice trade will largely center on Thailand's ability to supply a modest increase in global needs.

The coarse grain sector will be impacted by a variety of forces during the 1995 season. Production for 1995 at the world level is forecast to be 56 million tonnes below the level expected last April and 68 million tonnes below the 1994 total. The majority of the decline (33 million of the 56 million tonnes) is attributed to sharply reduced US corn and sorghum production. A significant drop in the FSU-15 barley crop accounted for 15 of the remaining 23-million-tonne shortfall. Corn and barley production in the EU-15 were also below earlier expectations, accounting for another 4 million tonnes of the 1995 decline. The outlook for the short term is also being impacted by reduced competition from wheat. The reduction is due, in part, to the wheat production shortfall and also moderated subsidies from the US and the EU, where wheat prices relative to feedgrains have been adjusted. The net result has been a sharp increase in coarse grain demand that is forecast to hold at just over 800 million tonnes in 1995, a decline of only 2.7%. In spite of supply-forced reductions in use, ending stocks are forecast to drop to 87 million tonnes, an extremely small reserve for the world. An analytical breakdown of 1995 coarse grain use indicates that the bulk of the 1995 rationing will take place in the US. Aggregate consumption outside the US is forecast to be about even with the previous season.

The outlook for 1996 indicates a sizable increase in coarse grain production, as producers respond to economic incentives. The current forecast for 1996 production of 851 million tonnes would allow a projected 4% use increase and a modest recovery in reserve stocks. In the latter years of the forecast, projected production continues to consistently exceed consumption, allowing stocks to return to levels comparable with those of the last five years. In total, consumption is expected to grow 2.8% annually over the next five years. The generally favorable outlook for the global economy and rising world population infer rising demand for food. Rising consumer incomes lead SCI to forecast continued increases in meat consumption which underpins the outlook for uptrending coarse grain consumption. Coarse grain trade is projected to increase by almost 3 million tonnes annually during the forecast.

World corn production is forecast to be lower in 1995 due to the small US crop. Production outside the US, however, is still 6% larger than last season. World corn consumption which had been forecast to increase by 1.0 to 1.5% in our last report, is now anticipated to drop 2%. Ending stocks of 62 million tonnes would be 28 million tonnes below the year prior. World production of barley, oats, sorghum and millet fell by 7.5% in 1995. The revised forecast now points to a decline of 4.5% in 1995 domestic use.

The China question remains one of the major unknowns in the world grain analysis. Continuing efforts by the Chinese government to hold food price inflation in check continue to aggravate efforts to stimulate food production. The recently announced long-term economic plan continues to emphasize agriculture and maintains the effort to achieve a production total of 500 million tonnes of grain by 2000. The current outlook continues to view China as a net importer of wheat and rice to cover food needs. In contrast to its April 1995 report, which indicated a neutral position for corn trade, SCI now believes that China will import moderate quantities of corn to supplement domestic feed supplies.

Oilseed and Product Overview

Growth in protein and vegetable oil demand continues to highlight the outlook. The 1995 world oilseed crop total of 241 million tonnes was 4% below last year, but only slightly lower than our April forecast. The reduction in the US soybean crop accounted for nearly all the decline, as production outside the US held steady with last year. Expanded crush will push world domestic use to 245 million tonnes in 1995, 1% over last season and about 4 million tonnes more than current production.

World ending stocks of 13 million tonnes are smaller, but do not reflect the same degree of tightness as either wheat or coarse grains. These fundamentals are expected to keep grain prices high relative to oilseeds and allow grain area to encroach on oilseed area during the 1996 season. The short-term outlook indicates that 1996 oilseed consumption will again exceed production and result in a stocks drawdown. At this time, the supply tightness in oilseeds is expected to return grain/oilseed ratios to more normal levels and thus increase incentives for oilseed producers to expand production.

The upward growth in world meal consumption is anticipated to be sustained in 1995 as supplies do not appear to pose significant constraints. World meal consumption is forecast to grow 3% in 1995. Use in the US will be up 2% while foreign consumption rises 3%. The upward trend in world livestock production (particularly poultry and pork) remains on track with earlier expectations. The relatively moderate use increases forecast for the US and the EU during 1995 reflect a slowdown due to higher grain prices. While a reduction in animal numbers would be expected to reduce feed use, high prices for grain and other feedstuffs might result in meal use which could prove to be offsetting. The long-term forecast points to an annual increase of 1.6% in domestic meal use.

The 1995 world vegetable oil outlook indicates an expected 4.5% increase in consumption to 61.9 million tonnes. US consumption is forecast to increase by 5.4% while foreign consumption expands by 4.5%. The pace of global economic growth thus far in 1995 and the projections for sustained up-trends in 1996 and 1997 suggest strength in food demand. In addition, normal population growth will bolster domestic use. Over the longer term, world vegetable oil consumption is projected to rise 3.4% annually. As in SCI's last outlook, foreign consumption is expected to outpace that in the US.

As in the case of global grains, China remains an unknown factor in the world oilseed outlook. Expanding use in China has been met by increased vegetable oil imports. With China's 1995 oilseed production only marginally above the previous season, the crop appears to fall short of needs. The present outlook suggests that China will again import moderate quantities of vegetable oil to supplement domestic supplies. Long-term projections indicate that China will remain an importer of 3 to 4 million tonnes of vegetable oil annually in the remaining years of the forecast interval. SCI is still of the opinion that the current forecast could be a conservative view and that demand could be significantly larger.

World

TABLE 1: Wheat Summary

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	496.0	495.0	533.2	588.0	542.1	561.8	559.3	522.5	526.0	573.5	593.0	607.5	615.6	623.9
USA	57.4	49.3	55.4	74.3	53.9	67.1	65.2	63.2	59.4	69.5	70.5	71.7	72.7	73.8
TOTAL FOREIGN	438.6	445.7	477.7	513.7	488.2	494.7	494.1	459.3	466.6	503.9	522.6	535.9	542.9	550.1
CANADA	25.9	15.9	24.8	32.1	31.9	29.9	27.2	23.1	24.1	28.9	27.9	28.3	28.7	29.1
ARGENTINA	8.8	8.4	10.2	10.9	9.9	9.8	9.7	11.0	8.0	10.9	10.5	10.3	10.4	10.5
AUSTRALIA	12.4	14.1	14.2	15.1	10.6	16.2	16.5	9.0	16.7	16.8	16.8	16.8	17.0	17.1
EU-15	78.8	81.5	85.7	89.1	93.7	87.7	82.9	85.1	85.9	90.5	94.2	93.8	93.4	92.8
CENTRAL EUROPE	35.8	41.2	40.8	41.3	38.5	26.4	30.6	34.0	35.5	36.3	37.1	37.8	38.3	38.8
RUSSIA	36.9	39.9	44.0	49.6	38.9	46.2	43.5	32.1	28.0	34.5	39.1	41.4	42.5	43.6
UKRAINE	19.7	21.7	27.4	30.4	21.2	19.5	21.8	13.9	15.0	17.0	20.0	22.8	23.1	23.5
FSU-15	77.3	78.8	87.2	101.9	72.0	89.7	83.3	60.1	57.1	69.4	79.2	86.0	87.9	89.7
CHINA	85.8	85.4	90.8	98.2	96.0	101.6	106.4	99.3	100.0	104.1	105.7	107.3	109.0	110.8
ALL OTHERS	113.7	120.4	124.2	125.2	135.6	133.4	137.5	137.6	139.2	147.0	151.2	155.4	158.3	161.3
DOMESTIC USE:														
WORLD TOTAL	525.9	521.7	528.3	557.4	554.1	548.3	558.5	550.6	540.3	551.7	580.8	595.5	606.2	617.8
USA	29.8	26.7	27.0	37.2	30.8	30.7	33.7	35.0	32.0	32.0	33.0	34.5	35.1	35.7
TOTAL FOREIGN	496.1	495.1	501.3	520.3	523.3	517.7	524.8	515.6	508.3	519.7	547.9	561.0	571.2	582.1
EU-15	65.4	66.7	64.3	65.1	67.1	65.3	72.2	75.0	73.0	75.0	77.4	78.2	78.7	79.2
CENTRAL EUROPE	37.0	38.1	39.0	40.0	36.4	30.9	31.0	31.9	32.1	32.7	34.7	36.6	37.1	37.6
RUSSIA	51.0	48.8	52.0	57.3	53.8	56.6	48.9	43.5	36.5	37.5	41.6	42.8	44.5	45.7
UKRAINE	21.3	21.3	24.7	28.0	23.0	21.8	20.2	16.0	15.5	16.0	17.6	18.0	18.2	18.3
FSU-15	98.5	94.8	100.7	111.1	98.4	102.0	90.1	78.0	70.4	72.8	80.1	82.5	85.0	87.1
CHINA	102.8	104.4	104.5	106.0	111.7	109.1	110.7	110.5	112.0	113.0	118.1	118.8	119.8	122.0
ALL OTHERS	192.3	191.0	192.8	198.1	209.7	210.4	220.8	220.2	220.8	226.2	237.6	244.9	250.6	256.3
ENDING STOCKS	147.7	118.4	118.9	145.4	132.8	144.9	140.7	115.1	99.6	121.4	133.5	145.6	155.0	161.1
TRADE SUMMATION	95.3	87.3	87.4	85.9	98.6	92.8	84.4	81.5	86.9	84.0	90.9	91.8	92.1	93.0
Net Trade (Exp - Imp)														
USA	42.8	37.9	32.9	28.1	33.8	34.9	30.5	29.8	33.9	28.6	36.5	36.6	37.0	37.1
CANADA	23.5	12.4	16.8	21.7	24.4	19.6	19.0	20.7	17.8	19.2	19.8	20.1	20.3	20.6
ARGENTINA	3.7	4.0	6.1	5.6	5.8	5.8	5.0	6.7	3.8	6.3	5.8	5.4	5.5	5.6
EU-15	14.9	19.0	20.6	20.2	20.5	22.4	18.6	16.2	15.4	13.7	16.8	15.7	14.7	13.6
AUSTRALIA	9.7	11.2	10.6	11.6	6.9	9.7	13.5	6.1	12.2	10.9	12.2	12.2	12.2	12.2
BRAZIL	-1.3	-1.1	-1.9	-4.4	-4.2	-5.8	-5.7	-6.0	-6.5	-6.7	-7.1	-7.5	-7.7	-8.0
RUSSIA	-14.1	-8.9	-8.0	-9.6	-13.1	-13.6	-4.5	-3.0	-5.4	-4.0	-2.5	-1.4	-2.0	-2.1
UKRAINE	-1.6	0.7	1.9	1.1	-0.9	-1.1	0.4	-0.1	0.0	0.0	2.4	4.8	5.0	5.2
FSU-15	-21.6	-15.4	-14.4	-14.6	-21.7	-17.3	-7.0	-4.3	-9.0	-5.0	-1.0	3.5	2.8	2.6
SOUTH KOREA	-4.5	-2.8	-2.0	-4.2	-4.4	-4.0	-5.9	-4.3	-2.5	-2.6	-2.6	-2.7	-2.7	-2.7
CHINA	-15.3	-15.4	-12.8	-9.4	-15.9	-6.6	-4.1	-10.4	-11.9	-9.6	-12.4	-11.5	-10.8	-11.2

Shaded area is SCI estimate.

6-Nov-95

SUM-SA1.XLS

TABLE 2: Rice Summary

(milled)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	313.5	329.7	343.1	350.5	349.5	352.4	352.6	360.0	357.2	368.6	372.2	378.3	384.0	388.3
CHINA	121.7	118.4	126.1	132.5	128.7	130.4	124.4	123.2	124.0	127.6	126.5	127.5	129.0	129.2
TOTAL Non-Chinese	191.8	211.3	217.0	218.0	220.8	222.0	228.2	236.8	233.2	241.0	245.7	250.8	255.0	259.1
USA	4.1	5.2	5.1	5.1	5.1	5.7	5.2	6.5	5.8	6.1	5.8	5.8	5.9	5.9
INDIA	56.9	70.5	73.6	74.3	74.7	72.9	79.0	81.6	79.0	81.1	83.2	85.2	86.7	88.2
THAILAND	12.2	14.0	13.3	11.3	13.5	13.1	12.7	14.1	13.9	14.4	15.0	15.5	15.8	16.1
ALL OTHERS	118.7	121.6	125.1	127.3	127.6	130.3	131.3	134.6	134.5	139.3	141.7	144.2	146.5	148.8
DOMESTIC USE:														
WORLD TOTAL	319.1	323.5	337.7	344.7	349.2	352.9	356.9	360.5	361.0	368.3	371.3	376.3	382.2	386.7
CHINA	123.4	121.4	122.9	126.7	128.5	127.0	128.0	129.0	127.5	127.6	126.5	127.5	129.0	129.2
TOTAL Non-Chinese	195.7	202.0	214.7	218.0	220.7	225.9	228.9	231.5	233.5	240.7	244.8	248.8	253.2	257.5
USA	2.6	2.6	2.7	3.0	3.1	3.0	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5
INDIA	59.3	65.7	71.2	73.3	75.0	75.4	76.0	77.7	80.0	81.3	83.0	84.6	86.2	87.7
THAILAND	8.5	8.1	8.4	8.4	8.5	8.5	8.5	8.5	8.6	8.8	8.8	8.9	9.0	9.1
ALL OTHERS	125.3	125.5	132.4	133.3	134.1	139.0	141.0	142.1	141.6	147.3	149.6	151.9	154.6	157.2
ENDING STOCKS	44.8	49.0	54.1	58.8	56.7	54.3	49.9	48.7	43.8	44.0	45.0	47.0	48.8	50.4
TRADE SUMMATION	8.5	9.4	8.0	8.5	9.9	10.8	10.9	13.9	11.0	10.5	10.7	11.5	11.9	12.3
Net Trade (Exp - Imp)														
USA	2.2	2.7	2.4	2.2	2.0	2.4	2.3	3.1	2.5	2.6	2.4	2.4	2.4	2.4
THAILAND	4.8	6.0	3.9	4.0	4.8	4.8	4.7	5.6	5.3	5.7	6.2	6.7	6.8	7.0
CHINA	0.3	-0.7	0.3	0.6	0.8	1.3	0.8	-1.9	-1.0	0.0	0.0	0.0	0.0	0.0
PAKISTAN	1.0	0.8	0.7	1.3	1.4	0.9	1.2	1.1	1.1	1.2	1.3	1.4	1.4	1.5
SOUTH AFRICA	-0.3	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5	-0.5	-0.5
N AFRICA & MIDDLE EAST	-2.2	-2.7	-2.6	-2.1	-2.8	-3.2	-2.2	-3.1	-2.7	-3.1	-3.3	-3.5	-3.6	-3.8
OTHER AFRICA	-3.0	-2.6	-2.4	-2.3	-2.2	-2.9	-2.5	-2.3	-2.5	-2.7	-2.9	-3.1	-3.4	-3.6

Shaded area is SCI estimate.

6-Nov-95

SUM-SA1.XLS

TABLE 3: Coarse Grain Summary 1/

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	746.6	684.7	749.6	776.4	768.4	829.1	754.9	829.0	761.3	850.9	866.4	893.0	908.3	924.8
USA	216.5	149.3	221.2	230.5	218.4	277.1	186.2	284.8	214.3	266.9	266.2	275.2	279.3	283.3
TOTAL FOREIGN	530.1	535.4	528.5	545.9	550.0	552.0	568.8	544.3	547.0	584.1	600.2	617.8	629.1	641.5
CANADA	23.9	18.7	21.6	23.2	20.8	18.6	23.0	22.4	22.7	23.4	21.7	21.6	21.9	22.1
ARGENTINA	13.0	7.2	8.3	10.7	14.4	14.0	12.8	13.3	13.7	14.2	14.6	14.8	15.2	15.7
EU-15	91.9	98.1	92.8	88.2	93.1	84.2	85.2	79.2	79.5	85.0	86.8	87.8	88.1	88.5
CENTRAL EUROPE	45.6	43.4	44.6	37.9	51.8	34.5	33.8	35.9	39.5	40.8	42.2	43.6	44.3	45.0
RUSSIA	44.6	35.6	41.7	44.0	35.6	41.9	41.7	39.3	31.2	36.0	39.1	42.3	43.2	44.2
UKRAINE	22.8	19.2	18.9	15.5	14.1	14.4	19.1	17.6	15.3	16.7	17.6	18.5	19.0	19.6
FSU-15	87.7	72.7	78.8	81.2	65.8	75.9	80.3	72.5	59.5	68.4	74.6	81.2	83.0	84.8
CHINA	93.6	92.1	91.3	111.7	112.3	108.4	116.7	112.9	121.6	124.8	127.7	130.6	134.3	138.9
ALL OTHERS	174.4	203.1	191.0	193.1	191.9	216.4	216.9	208.2	210.5	227.4	232.6	238.2	242.2	246.5
DOMESTIC USE:														
WORLD TOTAL	764.1	748.6	775.1	762.8	772.4	792.5	791.7	823.8	801.5	833.7	859.8	885.0	900.7	914.8
USA	184.0	157.3	173.3	178.3	184.7	198.3	184.6	205.9	182.7	195.3	203.4	209.1	211.5	214.4
TOTAL FOREIGN	580.1	591.2	601.7	584.5	587.7	594.2	607.1	618.0	618.8	638.4	656.4	675.8	689.3	700.4
EU-15	89.4	89.8	89.7	81.1	81.3	76.6	81.2	82.1	81.7	81.9	81.7	81.9	82.2	80.2
CENTRAL EUROPE	49.2	46.7	44.4	42.5	46.4	39.3	36.0	36.5	37.5	40.1	41.1	42.4	42.8	43.3
RUSSIA	49.7	52.0	55.5	50.7	47.4	47.3	44.4	37.8	37.2	36.2	38.7	42.6	43.7	44.8
UKRAINE	20.1	19.2	19.6	16.0	15.2	14.9	17.6	17.5	15.8	15.6	17.9	18.7	19.2	19.8
FSU-15	95.2	96.6	101.8	92.6	86.0	82.8	82.1	72.2	67.4	68.4	74.8	82.0	84.0	85.9
CHINA	90.2	89.7	90.0	95.7	96.5	99.4	108.1	115.3	122.8	127.4	131.7	136.0	140.1	144.5
ALL OTHERS	256.1	268.4	275.9	272.5	277.6	296.1	299.7	311.8	309.4	320.6	327.1	333.7	340.2	346.5
ENDING STOCKS	205.2	140.8	115.6	124.5	125.7	154.7	114.3	126.0	87.3	104.5	111.1	119.2	126.7	136.7
TRADE SUMMATION	72.0	82.9	90.9	75.4	85.6	77.2	71.5	74.4	76.6	76.7	79.7	83.0	86.5	90.9
Net Trade (Exp - Imp)														
USA	51.0	59.7	68.2	50.0	47.4	49.7	36.4	59.6	59.3	59.4	60.0	61.4	64.6	68.1
CANADA	4.8	2.4	4.4	4.7	4.4	2.2	4.7	3.6	3.4	3.6	2.5	2.8	3.2	3.3
ARGENTINA	6.2	2.4	4.2	5.6	7.5	6.0	4.8	6.3	6.5	6.2	6.5	6.6	6.8	7.0
EU-15	3.6	6.0	6.2	6.6	7.1	6.5	6.2	2.5	2.2	3.1	5.0	5.9	6.0	8.3
CHINA	4.0	4.9	2.4	6.2	9.3	12.4	10.8	-3.7	-5.2	-2.6	-4.0	-5.4	-5.8	-5.6
MEXICO	-3.8	-5.5	-8.1	-5.1	-6.1	-4.4	-4.8	-5.7	-6.8	-6.1	-6.4	-6.6	-6.8	-7.1
CENTRAL EUROPE	-2.0	-2.0	-2.4	-2.5	3.2	-1.7	-2.0	-0.3	1.6	0.8	1.1	1.3	1.5	1.7
RUSSIA	-6.8	-15.5	-14.2	-5.9	-10.8	-6.3	-3.4	0.8	-0.1	-0.1	0.4	-0.3	-0.5	-0.6
UKRAINE	2.6	-0.3	-0.7	-0.2	-0.8	-0.3	0.2	0.2	-0.2	1.1	-0.3	-0.2	-0.2	-0.2
FSU-15	-9.9	-22.9	-23.8	-11.3	-17.6	-8.3	-4.5	0.0	-0.8	0.0	-0.2	-0.8	-1.0	-1.1
JAPAN	-22.0	-21.4	-21.3	-21.6	-21.4	-21.8	-20.8	-20.6	-19.9	-20.7	-20.7	-20.8	-20.8	-20.9
TAIWAN	-5.0	-4.2	-5.6	-5.6	-5.5	-5.9	-5.8	-6.5	-6.3	-6.6	-6.7	-6.9	-7.1	-7.3
SOUTH KOREA	-5.0	-6.4	-6.3	-5.6	-6.4	-6.7	-5.8	-8.8	-9.3	-10.4	-10.8	-11.2	-11.6	-12.0

Shaded area is SCI estimate.

1/ Corn, Barley, Sorghum Oats, and Millet

6-Nov-95

SUM-SA1.XLS

TABLE 4: Corn Summary

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	450.5	400.6	460.7	477.9	487.3	534.6	471.0	550.0	502.8	568.0	575.5	592.7	604.4	617.2
USA	181.1	125.2	191.3	201.5	189.9	240.7	161.0	256.6	191.6	239.7	238.9	247.4	251.1	254.7
TOTAL FOREIGN	269.3	275.4	269.3	276.4	297.4	293.9	310.0	293.3	311.2	328.3	336.5	345.3	353.3	362.5
ARGENTINA	9.0	5.0	5.2	7.6	10.6	10.2	10.0	11.0	11.4	11.4	11.8	12.0	12.3	12.7
EU-15	27.7	30.3	28.4	23.5	28.3	30.2	30.5	28.3	28.8	29.9	30.6	31.3	31.4	31.5
CENTRAL EUROPE	30.1	26.7	26.9	20.1	34.0	20.7	20.2	22.4	24.6	25.5	26.5	27.5	28.0	28.5
CHINA	79.2	77.4	78.9	96.8	98.8	95.4	102.7	99.3	108.0	110.9	113.7	116.6	120.4	124.9
SOUTH AFRICA	7.1	12.4	8.9	8.3	3.1	10.0	12.9	4.7	9.0	9.9	10.3	10.7	10.9	11.5
ALL OTHERS	116.2	123.6	121.0	120.0	122.7	127.4	133.8	127.8	129.5	140.6	143.6	147.2	150.3	153.5
DOMESTIC USE:														
WORLD TOTAL	463.5	457.8	477.9	467.3	491.6	503.4	503.5	540.4	530.4	552.5	571.6	587.9	599.9	611.4
USA	153.4	133.0	146.1	153.3	160.8	172.9	159.8	183.0	161.9	172.7	181.0	186.1	188.0	190.5
TOTAL FOREIGN	310.1	324.8	331.8	313.9	330.8	330.5	343.7	357.4	368.4	379.7	390.6	401.8	411.9	420.9
MEXICO	13.0	13.4	14.0	15.2	16.4	18.4	20.5	21.5	20.7	21.4	21.8	22.2	22.3	22.4
BRAZIL	24.5	25.1	25.8	25.6	28.7	30.2	33.3	36.7	37.5	35.1	35.7	36.3	37.6	39.0
EU-15	30.3	31.4	31.8	27.2	29.6	28.4	32.2	32.3	32.3	32.2	32.0	32.1	32.4	31.8
FSU-15	21.3	33.0	33.0	18.4	22.5	13.3	12.9	6.1	8.0	9.8	11.0	12.5	13.0	13.6
JAPAN	16.6	16.0	15.7	16.4	16.5	16.9	16.5	16.4	16.4	16.3	16.4	16.5	16.5	16.5
SOUTH KOREA	5.0	5.8	6.5	5.6	6.1	6.6	5.8	8.8	9.3	10.4	10.8	11.2	11.6	12.0
CHINA	75.4	74.7	76.9	80.9	81.8	85.8	92.9	99.6	107.5	112.1	116.4	120.6	124.8	129.0
ALL OTHERS	124.1	125.2	128.1	124.7	129.1	131.0	129.6	136.1	136.7	142.5	146.5	150.5	153.7	156.6
ENDING STOCKS	146.8	89.2	73.3	80.9	81.7	107.4	72.3	90.1	62.0	77.5	81.4	86.2	90.7	96.5
TRADE SUMMATION	52.2	62.5	68.6	54.8	62.3	57.9	52.5	63.0	62.5	61.3	63.2	65.4	68.5	70.9
Net Trade (Exp - Imp)														
USA	43.5	51.4	60.1	43.7	39.7	42.1	33.2	55.6	55.6	55.6	55.6	56.9	60.1	63.2
ARGENTINA	4.3	1.8	2.8	4.0	6.1	4.7	4.2	5.8	6.0	5.5	5.8	6.1	6.2	6.5
CHINA	4.2	4.0	2.6	6.9	10.0	12.6	11.8	-2.3	-3.5	-1.2	-2.7	-4.0	-4.4	-4.1
SOUTH AFRICA	0.6	4.0	0.8	0.5	-4.0	1.2	4.4	-0.5	1.5	1.4	1.3	1.3	1.3	1.7
MEXICO	-2.9	-3.1	-5.0	-1.9	-1.0	-0.4	-1.6	-3.0	-3.7	-2.8	-3.1	-3.4	-3.5	-3.6
RUSSIA	-3.9	-13.0	-11.4	-2.9	-7.9	-4.1	-3.2	-0.2	-0.3	-0.2	-0.9	-1.6	-1.6	-1.6
UKRAINE	1.2	-0.5	-1.2	-0.1	-0.7	-0.2	-0.1	0.0	0.4	0.5	0.6	0.7	0.8	0.9
FSU-15	-7.3	-18.6	-18.6	-7.3	-12.2	-5.9	-4.0	-0.6	0.0	0.0	-0.3	-0.9	-0.8	-0.8
JAPAN	-16.7	-15.9	-16.0	-16.3	-16.5	-16.8	-16.2	-16.8	-16.0	-16.3	-16.4	-16.5	-16.5	-16.5
TAIWAN	-4.4	-3.8	-5.3	-5.3	-5.2	-5.6	-5.3	-6.1	-6.0	-6.2	-6.4	-6.6	-6.8	-6.9
SOUTH KOREA	-5.0	-5.7	-6.1	-5.6	-6.2	-6.5	-5.7	-8.7	-9.2	-10.3	-10.7	-11.1	-11.5	-11.9

Shaded area is SCI estimate.

6-Nov-95

SUM-SA1.XLS

TABLE 5: Oilseeds Summary 1/

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	200.1	194.5	203.9	207.6	216.3	218.6	218.4	250.0	240.5	247.5	257.3	260.1	263.9	268.5
USA	60.8	50.3	59.3	60.6	64.3	68.4	59.5	79.7	70.2	73.0	76.6	75.4	75.9	76.9
TOTAL FOREIGN	139.3	144.2	144.7	147.1	151.9	150.1	158.9	170.3	170.2	174.5	180.7	184.7	188.1	191.6
CANADA	5.0	5.4	4.5	4.6	5.8	5.4	7.4	9.6	8.8	7.4	8.8	9.1	9.5	9.9
BRAZIL	19.7	25.0	21.6	17.1	20.7	23.4	25.5	26.6	22.9	25.9	27.2	28.4	28.8	29.3
ARGENTINA	13.4	10.3	15.3	16.8	15.9	14.9	16.8	18.8	19.6	18.9	19.5	19.7	19.8	19.9
EU-15	13.2	12.4	12.1	13.6	14.0	12.4	11.4	13.0	13.5	13.6	13.5	13.2	13.2	13.2
CHINA	33.4	30.4	28.5	33.3	34.5	33.0	38.6	42.4	41.4	40.8	41.8	42.2	42.7	43.3
INDIA	14.0	19.0	19.1	20.1	20.6	22.7	22.6	23.2	23.3	25.4	26.3	27.3	28.2	29.1
ALL OTHERS	40.5	41.8	43.5	41.6	40.4	38.3	36.5	36.8	40.9	42.6	43.7	44.9	45.8	46.8
DOMESTIC USE:														
WORLD TOTAL	200.2	197.6	202.4	208.3	219.1	219.1	222.3	243.0	245.3	248.8	253.9	258.2	262.5	266.2
USA	38.1	35.1	36.8	38.3	41.1	41.4	41.1	45.8	46.1	46.8	47.3	48.0	48.5	48.9
TOTAL FOREIGN	162.1	162.5	165.7	170.1	177.9	177.7	181.1	197.3	199.2	202.0	206.6	210.3	214.0	217.3
BRAZIL	16.8	18.9	18.0	15.7	17.4	19.2	20.7	22.4	20.9	21.2	21.4	21.6	21.9	22.3
ARGENTINA	10.8	9.9	11.1	12.6	12.7	12.4	13.1	14.8	15.0	15.6	16.2	16.4	16.5	16.6
EU-15	26.7	25.1	27.0	27.5	29.0	28.5	27.0	31.3	32.5	30.8	31.5	31.8	32.3	32.3
FSU-15	13.2	13.1	14.1	12.9	11.6	10.1	9.4	8.2	8.8	10.2	10.5	10.9	11.1	11.3
CHINA	31.7	28.9	27.0	31.6	33.2	32.5	37.0	41.1	40.9	40.0	41.1	41.5	42.2	42.9
INDIA	14.1	18.9	19.0	20.1	20.6	22.6	22.5	23.0	23.4	25.3	26.2	27.2	28.1	29.0
ALL OTHERS	49.0	47.7	49.5	49.8	53.3	52.4	51.4	56.4	57.7	58.9	59.7	60.8	61.9	62.9
ENDING STOCKS	15.9	13.5	14.1	15.9	14.5	14.2	11.7	16.7	13.0	11.7	15.1	17.0	18.5	20.7
TRADE SUMMATION	30.8	25.6	29.8	27.1	30.8	32.0	31.5	37.2	37.1	35.8	37.2	38.2	39.2	39.5
Net Trade (Exp - Imp)														
USA	22.4	14.6	17.3	15.4	19.2	21.6	16.0	22.9	21.7	22.2	21.7	21.7	22.4	22.4
CANADA	1.7	2.0	1.8	1.8	2.0	1.7	3.6	4.4	3.9	2.9	4.1	4.4	4.7	5.0
BRAZIL	3.0	5.0	4.2	1.3	3.4	4.2	4.5	3.3	3.0	4.7	5.7	6.7	6.9	7.1
ARGENTINA	2.3	0.7	4.0	4.6	3.5	2.6	3.6	4.0	4.6	3.2	3.3	3.3	3.3	3.3
CHINA	1.7	1.5	1.5	1.8	1.3	0.5	1.6	1.3	0.5	0.9	0.7	0.6	0.5	0.5
EU-15	-14.1	-12.3	-14.8	-13.7	-15.0	-15.9	-15.5	-18.5	-19.0	-17.3	-18.0	-18.7	-19.2	-19.1
JAPAN	-6.7	-6.3	-6.8	-6.6	-6.9	-7.0	-7.0	-7.0	-6.9	-7.1	-7.1	-7.1	-7.1	-7.1
TAIWAN	-2.1	-2.3	-2.3	-2.2	-2.5	-2.5	-2.5	-2.6	-2.6	-2.7	-2.7	-2.8	-2.8	-2.8

Shaded area is SCI estimate.

1/ Soya, Cotton, Rape, Sun, and Peanut

6-Nov-95

SUM-SA1.XLS

TABLE 6: Soybean Summary

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	103.5	96.1	107.4	104.1	107.4	117.2	117.3	136.6	122.9	128.9	135.3	136.2	138.1	140.5
USA	52.7	42.2	52.4	52.4	54.1	59.6	50.9	68.5	59.6	61.1	64.7	63.5	63.7	64.5
TOTAL FOREIGN	50.8	53.9	55.0	51.7	53.3	57.6	66.4	68.1	63.3	67.9	70.6	72.7	74.3	75.9
BRAZIL	18.0	23.6	20.3	15.8	19.3	22.5	24.7	25.6	21.7	24.7	25.8	26.9	27.3	27.8
ARGENTINA	9.7	6.5	10.8	11.5	11.2	11.4	12.3	12.2	12.7	12.6	13.0	13.0	13.0	13.1
CHINA	12.2	11.6	10.2	11.0	9.7	10.3	15.3	16.0	14.0	14.6	14.8	14.9	15.0	15.2
INDIA	0.9	1.5	1.8	2.6	2.5	3.1	4.0	3.3	4.0	4.3	4.7	5.0	5.4	5.8
ALL OTHERS	10.0	10.6	11.9	10.9	10.7	10.4	10.1	11.0	10.9	11.7	12.4	13.1	13.5	14.1
DOMESTIC USE														
WORLD TOTAL	104.6	99.3	104.5	104.2	110.3	117.4	120.5	130.4	126.8	130.5	132.8	134.7	136.9	138.5
USA	34.5	31.2	33.9	34.9	36.9	38.3	37.3	42.1	40.6	41.1	41.5	42.2	42.6	43.0
TOTAL FOREIGN	70.1	68.2	70.6	69.3	73.4	79.1	83.2	88.3	86.2	89.4	91.3	92.5	94.3	95.6
BRAZIL	15.0	17.6	16.6	14.4	16.1	18.3	19.9	21.4	19.8	20.0	20.1	20.2	20.4	20.7
ARGENTINA	7.5	5.9	7.0	7.9	8.4	9.1	9.2	9.5	9.4	9.8	10.1	10.1	10.1	10.2
CHINA	10.9	10.5	9.1	9.7	8.8	10.2	14.3	15.1	13.8	14.1	14.4	14.6	14.8	15.0
INDIA	0.9	1.5	1.8	2.6	2.5	3.1	4.0	3.2	4.2	4.3	4.7	5.0	5.4	5.8
EU-15	15.0	13.0	15.1	14.5	15.2	16.1	13.7	15.9	15.7	17.0	17.4	17.6	18.0	17.9
JAPAN	5.0	4.7	5.0	4.6	4.8	5.1	5.0	5.0	4.9	5.0	4.9	4.9	4.9	4.9
ALL OTHERS	15.7	14.9	16.0	15.6	17.7	17.2	17.2	18.2	18.5	19.2	19.7	20.3	20.7	21.1
ENDING STOCKS	12.4	9.6	11.3	13.2	11.4	11.3	9.0	13.5	9.3	7.7	10.3	11.7	12.9	14.8
TRADE SUMMATION	27.6	22.3	26.1	23.4	26.9	28.3	26.5	30.3	29.3	30.7	31.4	31.9	32.7	32.9
Net Trade (Exp - Imp)														
USA	21.8	14.3	16.9	15.1	18.5	20.9	15.9	22.3	22.4	21.5	21.1	21.1	21.8	21.8
BRAZIL	3.0	5.0	4.2	1.3	3.4	4.2	5.5	4.0	2.1	4.7	5.7	6.7	6.9	7.1
ARGENTINA	2.1	0.5	3.5	4.1	3.1	2.3	3.1	2.8	3.3	2.8	2.9	2.9	2.9	2.9
CHINA	1.3	1.2	1.1	1.3	1.0	0.2	1.0	0.9	0.3	0.5	0.4	0.3	0.2	0.2
INDIA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
EU-15	-13.5	-11.1	-13.1	-12.4	-13.6	-14.8	-12.7	-14.9	-14.7	-16.0	-16.4	-16.4	-16.8	-16.8
JAPAN	-4.8	-4.3	-4.7	-4.4	-4.7	-4.9	-4.9	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.7
FSU-15	-1.4	-0.7	-0.7	-0.5	-0.6	-0.2	-0.2	-0.1	-0.1	-0.3	-0.2	-0.2	-0.2	-0.2

Shaded area is SCI estimate.

6-Nov-95

SUM-SA1.XLS

TABLE 7: Major Meal Summary 1/

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	105.70	102.23	107.13	109.40	115.56	116.10	119.35	129.56	131.72	133.91	137.05	139.47	141.87	143.98
USA	27.50	24.66	26.83	27.68	29.39	29.59	29.85	32.88	33.11	33.45	33.86	34.41	34.79	35.11
TOTAL FOREIGN	78.20	77.57	80.30	81.72	86.17	86.51	89.50	96.67	98.61	100.46	103.19	105.06	107.08	108.86
BRAZIL	11.45	13.20	12.63	10.78	12.11	13.51	14.42	15.61	14.66	14.88	14.98	15.13	15.29	15.51
ARGENTINA	6.90	5.95	7.01	7.83	8.20	8.29	8.73	9.60	9.59	9.98	10.31	10.36	10.42	10.48
EU-15	16.50	15.23	16.62	16.45	17.46	16.75	16.05	18.88	19.58	18.66	19.15	19.36	19.73	19.79
FSU-15	5.18	4.98	5.32	4.83	4.48	3.62	3.47	3.08	3.25	3.76	3.94	4.11	4.20	4.30
CHINA	11.84	10.45	9.74	11.76	12.45	12.50	14.56	16.03	16.42	16.57	17.14	17.33	17.63	17.93
INDIA	5.88	8.07	8.18	9.26	9.60	10.33	10.71	10.58	11.24	12.09	12.67	13.26	13.82	14.39
ALL OTHERS	20.45	19.68	20.80	20.83	21.87	21.50	21.55	22.89	23.87	24.51	25.00	25.51	25.99	26.47
DOMESTIC USE:														
WORLD TOTAL	104.28	104.11	106.86	111.41	116.39	115.21	120.27	129.18	133.02	133.81	136.31	139.15	142.06	144.21
USA	21.49	19.95	22.16	23.04	23.65	24.44	25.62	27.70	28.26	28.63	29.27	29.97	30.63	31.23
TOTAL FOREIGN	82.79	84.17	84.70	88.37	92.74	90.78	94.65	101.48	104.76	105.18	107.04	109.18	111.43	112.97
BRAZIL	2.88	3.42	3.31	3.65	3.84	4.11	4.48	4.70	4.82	5.17	5.42	5.69	5.96	6.41
ARGENTINA	0.19	0.19	0.18	0.19	0.28	0.22	0.23	0.37	0.39	0.40	0.41	0.42	0.43	0.45
EU-15	28.17	27.58	29.54	30.13	31.38	31.45	31.88	35.06	35.68	33.94	33.54	33.41	33.34	32.35
FSU-15	8.97	9.90	8.97	8.83	8.29	5.54	5.20	4.30	4.58	4.91	5.06	5.24	5.31	5.39
CHINA	8.50	7.45	6.80	8.17	9.72	10.22	12.34	13.60	14.37	14.99	15.64	16.31	17.01	17.74
INDIA	5.18	6.24	6.07	7.03	7.36	7.02	7.25	7.76	7.60	7.90	8.01	8.05	8.22	8.40
ALL OTHERS	28.91	29.39	29.82	30.38	31.87	32.22	33.27	35.69	37.31	37.88	38.95	40.06	41.15	42.25
ENDING STOCKS	3.93	3.70	4.64	3.77	3.84	4.37	4.15	4.24	4.19	4.29	5.03	5.35	5.16	4.93
TRADE SUMMATION	25.30	26.16	25.89	26.79	27.83	28.50	29.25	30.78	30.89	30.43	30.46	30.52	30.40	29.90
Net Trade (Exp - Imp)														
USA	6.07	4.66	4.57	4.63	5.84	5.19	4.26	5.08	4.78	4.84	4.61	4.45	4.16	3.88
BRAZIL	8.54	9.64	9.08	7.42	8.20	9.33	9.91	10.81	9.92	9.71	9.56	9.45	9.34	9.10
ARGENTINA	6.58	5.76	6.46	8.02	7.92	8.03	8.51	9.23	9.21	9.58	9.90	9.94	9.98	10.03
CHINA	3.33	3.01	2.94	3.59	2.74	2.29	2.22	2.43	2.05	1.58	1.50	1.02	0.62	0.19
INDIA	0.70	1.84	2.11	2.24	2.24	3.31	3.47	2.83	3.64	4.19	4.66	5.21	5.59	5.99
EU-15	-11.86	-12.14	-13.27	-13.56	-13.81	-14.88	-15.59	-16.01	-16.26	-15.27	-14.39	-14.05	-13.61	-12.56
SOUTH KOREA	-0.62	-1.03	-1.08	-1.20	-1.27	-1.65	-1.48	-1.45	-1.50	-1.70	-1.83	-1.95	-2.06	-2.17
N AFRICA & MIDDLE EAST	-1.77	-1.75	-2.11	-1.84	-2.06	-2.13	-2.71	-3.08	-3.11	-2.84	-2.93	-3.02	-3.16	-3.31

Shaded area is SCI estimate.

1/ Soya, Cotton, Rape, Sun, and Peanut

6-Nov-95

SUM-SA1.XLS

TABLE 8: Major Oil Summary 1/

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							(mil MT)							
PRODUCTION:														
WORLD TOTAL	45.56	46.62	49.27	50.57	52.92	53.40	54.44	59.83	62.16	64.18	66.38	68.27	70.11	71.91
USA	6.89	6.26	6.74	6.96	7.68	7.25	7.38	8.48	8.69	8.79	8.93	9.07	9.18	9.27
TOTAL FOREIGN	38.67	40.35	42.53	43.61	45.25	46.15	47.06	51.34	53.48	55.38	57.45	59.19	60.93	62.64
BRAZIL	2.81	3.26	3.14	2.68	3.00	3.33	3.58	3.88	3.66	3.69	3.72	3.76	3.81	3.87
ARGENTINA	2.33	2.35	2.60	2.78	2.82	2.64	2.86	3.45	3.45	3.67	3.81	3.90	3.92	3.95
EU-15	6.53	6.49	6.68	6.81	7.23	6.66	6.65	7.82	8.37	7.42	7.60	7.69	7.80	7.84
FSU-15	3.05	3.05	3.29	3.08	2.68	2.45	2.13	1.72	1.97	2.36	2.45	2.54	2.60	2.67
CHINA	4.30	3.68	3.57	4.45	4.87	4.79	5.21	5.86	6.36	6.16	6.40	6.46	6.56	6.70
MALAYSIA	4.91	5.69	6.48	6.11	6.30	7.21	7.17	8.10	8.11	8.89	9.36	9.83	10.30	10.76
ALL OTHERS	14.73	15.83	16.78	17.70	18.34	19.08	19.47	20.51	21.57	23.19	24.10	25.02	25.93	26.85
DOMESTIC USE:														
WORLD TOTAL	44.63	46.56	49.01	51.00	52.12	53.13	55.38	59.18	61.85	63.60	65.95	68.36	70.51	72.45
USA	5.72	5.73	6.36	6.48	6.77	7.10	7.13	7.26	7.55	7.60	7.90	8.10	8.25	8.40
TOTAL FOREIGN	38.91	40.83	42.65	44.53	45.35	46.02	48.24	51.93	54.30	56.00	58.04	60.27	62.26	64.05
BRAZIL	2.07	2.34	2.14	2.32	2.32	2.50	2.44	2.53	2.62	2.77	2.87	2.97	3.06	3.14
ARGENTINA	0.46	0.42	0.30	0.41	0.41	0.43	0.42	0.42	0.40	0.43	0.43	0.43	0.44	0.44
EU-15	6.00	6.25	6.71	6.85	6.96	7.26	7.27	7.83	8.47	8.06	8.16	8.41	8.49	8.33
FSU-15	3.39	3.92	3.94	3.39	3.36	2.91	2.48	2.39	2.53	2.93	3.05	3.17	3.22	3.26
CHINA	4.93	5.33	5.35	6.48	6.10	5.67	7.16	8.91	9.07	9.37	9.68	10.00	10.33	10.66
INDIA	4.94	4.73	4.81	4.75	4.86	5.01	5.24	5.64	5.84	6.01	6.25	6.50	6.75	7.00
ALL OTHERS	17.11	17.84	19.40	20.33	21.35	22.26	23.23	24.21	25.37	26.42	27.59	28.78	29.98	31.20
ENDING STOCKS	4.73	4.68	4.68	4.51	4.75	4.70	3.60	4.10	3.94	4.52	4.95	4.86	4.46	3.92
TRADE SUMMATION	8.50	8.80	9.58	9.15	9.45	9.65	11.47	13.49	13.12	13.95	14.33	15.00	15.60	16.16
Net Trade (Exp - Imp)														
USA	0.95	0.75	0.62	0.21	0.68	0.48	0.45	1.28	1.15	1.20	0.94	0.88	0.82	0.88
CANADA	0.30	0.17	0.12	0.17	0.24	0.30	0.43	0.48	0.49	0.46	0.49	0.52	0.53	0.53
BRAZIL	0.72	0.93	0.98	0.34	0.72	0.67	1.56	1.56	1.23	0.91	0.85	0.79	0.75	0.73
ARGENTINA	1.82	1.85	2.26	2.45	2.45	2.24	2.47	3.04	3.05	3.24	3.38	3.47	3.48	3.50
MALAYSIA	4.17	4.71	5.55	5.28	5.42	5.54	6.32	6.56	6.78	7.26	7.60	7.93	8.28	8.61
EU-15	0.46	0.27	0.02	-0.06	0.20	-0.52	-0.58	-0.02	-0.11	-0.64	-0.56	-0.72	-0.69	-0.49
CHINA	-0.63	-1.65	-1.87	-1.93	-1.24	-0.88	-1.95	-3.50	-2.35	-3.21	-3.28	-3.54	-3.76	-3.96
N AFRICA & MIDDLE EAST	-2.21	-2.34	-2.63	-2.64	-2.64	-3.07	-3.33	-3.85	-3.83	-3.55	-3.70	-3.85	-4.08	-4.30

Shaded area is SCI estimate.

1/ Soya, Cotton, Rape, Sun, Peanut, and Palm

6-Nov-95

SUM-SA1.XLS

TABLE 9: Wheat Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	22640	21525	25167	27965	23392	25399	25379	24998	24645	26364	26523	26636	26703	26767
CANADA	13458	12944	13718	14098	14160	13830	12377	10838	11233	13013	12525	12650	12704	12810
MEXICO	900	800	950	950	982	947	884	950	850	875	900	910	913	916
BRAZIL	3475	3450	3355	3280	2145	1997	1408	1450	1400	1397	1324	1250	1200	1150
ARGENTINA	4789	4700	5450	5700	4550	4200	4800	5100	4280	5000	4800	4700	4660	4620
OTHER LATIN AMERICA	1222	1202	1353	1202	1024	1004	1096	1155	1158	1064	1057	1050	1050	1050
EU-15	17414	16915	17682	17310	17519	17431	15742	15778	15849	16650	17052	16963	16824	16684
OTHER WEST EUROPE	165	150	147	148	153	155	168	190	191	170	170	170	170	170
CENTRAL EUROPE	9775	9986	9821	9775	9861	8152	9965	10060	9685	9838	9982	10125	10132	10139
RUSSIA	23974	24575	24376	24244	23152	24284	23518	22150	23000	23000	23000	23000	23100	23200
UKRAINE	5359	6461	6966	7577	7023	6329	5748	4507	5500	5833	6167	6500	6500	6500
OTHER FORMER USSR	17350	17020	16336	16359	15735	16506	15893	15568	15795	16026	16211	16396	16475	16554
FSU-15	46683	48056	47678	48180	45910	47119	45159	42225	44295	44859	45377	45896	46075	46254
JAPAN	271	282	284	260	239	215	184	152	160	163	157	150	145	140
TAIWAN	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SOUTH KOREA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CHINA	28798	28785	29841	30753	30948	30500	30240	28981	28900	29000	29000	29000	29000	29000
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	23131	23063	24109	23502	24167	23260	24589	24915	24900	25017	25133	25250	25300	25350
PAKISTAN	7706	7308	7730	7845	7911	7878	8300	8034	8160	8323	8487	8650	8740	8830
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	8700	8750	8700	8750	8800	8800	8850	8600	8550	8840	8870	8900	8920	8960
OTHER ASIA	3523	3527	3537	3552	3475	3464	3594	3583	3533	3579	3589	3600	3600	3600
AUSTRALIA	9063	8903	9004	9218	7183	9101	8383	8386	9851	9684	9517	9350	9320	9290
SOUTH AFRICA	1729	1985	1831	1550	1433	743	1065	1035	1300	1279	1390	1500	1500	1500
N AFRICA & MIDDLE EAST	15191	13875	14213	16009	17316	17605	17626	17153	16740	17245	17172	17100	17240	17380
OTHER AFRICA	1063	1183	1266	1328	1331	1265	1255	1247	1252	1271	1271	1275	1280	1285
						(mil hectares)								
TOTAL	219.7	217.4	225.8	231.4	222.5	223.1	221.1	214.8	216.9	223.6	224.3	225.1	225.5	225.9

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 10: Wheat Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	2.53	2.29	2.20	2.66	2.30	2.64	2.57	2.53	2.41	2.64	2.66	2.69	2.72	2.76
CANADA	1.93	1.23	1.81	2.28	2.26	2.16	2.20	2.13	2.15	2.22	2.23	2.24	2.26	2.27
MEXICO	4.11	4.00	4.21	4.11	3.29	3.30	4.07	4.21	4.24	4.26	4.29	4.31	4.33	4.35
BRAZIL	1.76	1.68	1.65	1.01	1.43	1.37	1.50	1.55	1.50	1.37	1.33	1.30	1.30	1.30
ARGENTINA	1.84	1.79	1.86	1.91	2.17	2.33	2.02	2.15	1.87	2.19	2.19	2.20	2.24	2.28
OTHER LATIN AMERICA	2.18	2.34	2.22	2.18	2.23	2.32	2.20	2.36	2.25	2.24	2.22	2.20	2.22	2.24
EU-15	4.52	4.82	4.84	5.15	5.35	5.03	5.27	5.39	5.42	5.44	5.52	5.53	5.55	5.56
OTHER WEST EUROPE	4.22	4.71	5.30	5.56	5.61	4.85	5.36	4.20	4.99	5.28	5.44	5.60	5.64	5.68
CENTRAL EUROPE	3.66	4.12	4.15	4.22	3.90	3.24	3.07	3.38	3.67	3.69	3.71	3.74	3.78	3.82
RUSSIA	1.54	1.62	1.81	2.05	1.68	1.90	1.85	1.45	1.22	1.50	1.70	1.80	1.84	1.88
UKRAINE	3.67	3.36	3.93	4.01	3.01	3.08	3.80	3.07	2.73	2.91	3.25	3.50	3.56	3.62
OTHER FORMER USSR	1.20	1.01	0.96	1.34	0.76	1.46	1.13	0.91	0.89	1.12	1.23	1.33	1.35	1.36
FSU-15	1.66	1.64	1.83	2.11	1.57	1.90	1.84	1.42	1.29	1.55	1.74	1.87	1.91	1.94
JAPAN	3.19	3.62	3.47	3.66	3.18	3.53	3.47	3.72	3.63	3.65	3.67	3.70	3.74	3.78
TAIWAN	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	4.60	4.80	5.00	5.00	5.00
SOUTH KOREA	4.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CHINA	2.98	2.97	3.04	3.19	3.10	3.33	3.52	3.43	3.46	3.59	3.64	3.70	3.76	3.82
THAILAND	---	---	---	---	---	---	---	---	---	---	---	---	---	---
INDIA	1.92	2.00	2.24	2.12	2.28	2.39	2.33	2.37	2.45	2.53	2.62	2.70	2.76	2.82
PAKISTAN	1.56	1.73	1.87	1.84	1.84	1.99	1.95	1.88	2.05	2.10	2.15	2.20	2.24	2.28
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	1.49	1.83	1.44	1.83	1.88	1.76	1.86	1.71	1.81	1.97	2.04	2.10	2.12	2.14
OTHER ASIA	1.39	1.37	1.33	1.29	1.33	1.32	1.33	1.32	1.33	1.33	1.33	1.33	1.33	1.34
AUSTRALIA	1.36	1.58	1.58	1.63	1.47	1.78	1.97	1.08	1.70	1.73	1.77	1.80	1.82	1.84
SOUTH AFRICA	1.81	1.78	1.11	1.10	1.49	1.77	1.85	1.77	1.69	1.92	1.96	2.00	2.03	2.09
N AFRICA & MIDDLE EAST	1.36	1.57	1.41	1.56	1.73	1.63	1.65	1.72	1.62	1.72	1.73	1.75	1.76	1.77
OTHER AFRICA	1.49	1.53	1.59	1.57	1.84	1.75	1.69	1.80	1.71	1.87	1.87	1.90	1.92	1.94
AVERAGE	2.26	2.28	2.36	2.54	2.44	2.52	2.53	2.43	2.42	2.56	2.64	2.70	2.73	2.76

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 11: Wheat Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	57362	49320	55428	74292	53891	67135	65220	63167	59423	69509	70456	71652	72728	73804
CANADA	25945	15913	24796	32098	31946	29871	27232	23122	24101	28936	27931	28336	28660	29104
MEXICO	3700	3200	4000	3900	3227	3127	3596	4000	3600	3728	3857	3922	3951	3981
BRAZIL	6100	5800	5550	3300	3078	2739	2107	2250	2100	1913	1767	1625	1560	1495
ARGENTINA	8800	8400	10150	10900	9880	9800	9700	10970	8000	10937	10530	10340	10438	10534
OTHER LATIN AMERICA	2665	2808	3002	2626	2284	2330	2412	2722	2610	2380	2345	2310	2331	2352
EU-15	78776	81516	85667	89095	93709	87719	82929	85104	85915	90541	94205	93830	93372	92751
OTHER WEST EUROPE	697	706	779	823	859	751	901	798	953	900	926	952	959	966
CENTRAL EUROPE	35825	41180	40796	41274	38483	26420	30620	34010	35520	36299	37055	37820	38293	38766
RUSSIA	36868	39864	44004	49596	38900	46170	43500	32100	28000	34500	39100	41400	42504	43616
UKRAINE	19655	21709	27400	30374	21155	19508	21831	13857	15000	17000	20042	22750	23140	23530
OTHER FORMER USSR	20798	17244	15747	21921	11973	24036	17958	14170	14080	17886	20012	21887	22223	22559
FSU-15	77321	78817	87151	101891	72028	89714	83289	60127	57080	69386	79154	86037	87867	89705
JAPAN	864	1021	985	952	759	759	638	565	580	596	576	555	542	529
TAIWAN	3	3	4	4	4	4	4	4	3	5	5	5	5	5
SOUTH KOREA	4	2	1	1	1	1	1	1	1	1	1	1	1	1
CHINA	85840	85432	90807	98229	96000	101590	106390	99300	100000	104100	105700	107300	109000	110800
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	44323	46169	54110	49850	55134	55690	57210	59130	61000	63372	65764	68175	69828	71487
PAKISTAN	12020	12675	14419	14429	14565	15684	16157	15114	16700	17460	18237	19030	19578	20132
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
TURKEY	13000	16000	12500	16000	16500	15500	16500	14700	15500	17427	18056	18690	18910	19174
OTHER ASIA	4905	4831	4703	4568	4626	4574	4773	4735	4705	4750	4769	4788	4802	4817
AUSTRALIA	12369	14060	14214	15066	10557	16184	16479	9046	16747	16786	16813	16830	16962	17094
SOUTH AFRICA	3135	3535	2026	1702	2132	1318	1975	1832	2200	2456	2723	3000	3045	3135
N AFRICA & MIDDLE EAST	20731	21838	20069	24924	30024	28663	29081	29509	27140	29599	29763	29925	30342	30763
OTHER AFRICA	1583	1808	2011	2083	2445	2220	2127	2248	2138	2377	2377	2423	2458	2493
						(mil metric tons)								
TOTAL	496.0	495.0	533.2	588.0	542.1	561.8	559.3	522.5	526.0	573.5	593.0	607.5	615.6	623.9

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 12: Rice Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	944	1174	1087	1142	1125	1267	1146	1342	1259	1313	1253	1253	1253	1253
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	150	120	140	75	70	70	50	60	50	55	53	50	50	50
BRAZIL	5961	5350	4180	4230	4614	4384	4375	4300	4300	4291	4271	4250	4200	4150
ARGENTINA	100	108	100	110	140	140	135	170	190	170	170	170	170	170
OTHER LATIN AMERICA	1819	1832	1799	1782	1853	1899	1942	2028	1983	1953	1951	1950	1955	1960
EU-15	329	347	331	373	367	364	346	363	350	365	350	345	347	348
OTHER WEST EUROPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL EUROPE	88	86	81	72	48	35	30	30	21	33	34	35	35	35
RUSSIA	306	306	301	286	267	265	260	200	200	217	233	250	248	246
UKRAINE	35	35	33	28	23	24	24	25	25	23	21	20	20	20
OTHER FORMER USSR	316	330	322	298	309	327	333	321	321	323	323	324	327	329
FSU-15	657	671	656	612	599	616	617	546	546	562	578	594	595	595
JAPAN	2146	2100	2097	2074	2049	2106	2139	2200	2110	2100	2100	2100	2090	2080
TAIWAN	501	471	475	454	429	397	403	366	372	365	358	350	340	330
SOUTH KOREA	1262	1260	1257	1244	1209	1157	1136	1115	1070	1063	1057	1050	1050	1050
CHINA	32139	31914	32700	33064	32590	32090	30360	30171	30700	30500	30000	30000	30000	29700
THAILAND	9237	9917	9986	8792	9053	9177	8676	9200	9200	9408	9617	9825	9930	10035
INDIA	38806	41736	42167	42687	42650	41775	42034	42500	42500	42400	42300	42200	42180	42160
PAKISTAN	1963	2042	2107	2114	2097	1974	2188	2107	2150	2183	2217	2250	2260	2270
MALAYSIA	629	655	612	662	650	660	668	665	660	668	669	670	673	676
TURKEY	65	70	75	75	50	65	45	41	80	65	70	75	75	75
OTHER ASIA	38824	39466	40549	41111	40195	41163	41780	41881	42288	42143	42322	42500	42800	43100
AUSTRALIA	107	98	105	89	127	125	132	128	137	138	139	140	141	142
SOUTH AFRICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N AFRICA & MIDDLE EAST	1029	880	947	1012	1084	1159	1184	1244	1087	1258	1279	1300	1320	1340
OTHER AFRICA	4934	5173	5186	4933	4987	5079	5193	5143	5207	5188	5188	5200	5220	5240
						(mil hectares)								
TOTAL	141.7	145.5	146.6	146.7	146.0	145.7	144.6	145.6	146.3	146.2	146.0	146.3	146.7	146.8

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 13: Rice Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	4.35	4.42	4.68	4.46	4.53	4.50	4.57	4.88	4.61	4.63	4.65	4.67	4.69	4.71
CANADA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEXICO	2.53	2.22	2.57	2.67	2.71	2.86	2.80	2.83	3.00	2.87	2.89	2.91	2.93	2.95
BRAZIL	1.35	1.41	1.30	1.61	1.49	1.54	1.63	1.60	1.65	1.69	1.72	1.75	1.78	1.81
ARGENTINA	2.47	2.69	2.15	2.72	3.04	2.84	2.61	3.32	3.16	3.12	3.18	3.25	3.32	3.39
OTHER LATIN AMERICA	2.35	2.50	2.36	2.37	2.45	2.42	2.41	2.55	2.42	2.56	2.59	2.62	2.65	2.68
EU-15	3.92	3.79	4.19	4.31	4.05	3.84	3.69	3.70	3.70	3.87	4.05	4.23	4.27	4.31
OTHER WEST EUROPE	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CENTRAL EUROPE	2.38	2.41	1.33	1.47	1.48	1.77	1.67	1.83	2.05	2.03	2.12	2.20	2.23	2.26
RUSSIA	2.28	2.43	2.13	2.03	1.88	1.85	1.92	1.75	1.75	1.90	2.05	2.20	2.21	2.22
UKRAINE	3.17	3.03	3.00	2.71	2.87	2.50	2.92	2.80	2.80	2.90	2.95	3.00	3.00	3.00
OTHER FORMER USSR	2.44	2.54	2.25	2.51	2.36	2.06	2.09	1.80	1.77	1.95	2.12	2.30	2.30	2.29
FSU-15	2.40	2.52	2.23	2.30	2.16	1.99	2.05	1.83	1.81	1.97	2.12	2.28	2.28	2.29
JAPAN	4.51	4.31	4.49	4.61	4.27	4.57	3.33	4.95	4.66	4.66	4.68	4.70	4.72	4.74
TAIWAN	3.49	3.60	3.61	3.66	3.90	3.77	4.06	4.13	4.03	4.14	4.20	4.25	4.32	4.39
SOUTH KOREA	4.35	4.80	4.69	4.51	4.45	4.61	4.18	4.54	4.49	4.60	4.60	4.60	4.60	4.60
CHINA	3.79	3.71	3.86	4.01	3.95	4.06	4.10	4.08	4.04	4.18	4.22	4.25	4.30	4.35
THAILAND	1.32	1.42	1.33	1.29	1.49	1.43	1.46	1.53	1.51	1.53	1.56	1.58	1.59	1.61
INDIA	1.47	1.69	1.74	1.74	1.75	1.74	1.88	1.92	1.86	1.91	1.97	2.02	2.06	2.09
PAKISTAN	1.65	1.57	1.53	1.54	1.55	1.58	1.83	1.64	1.67	1.72	1.76	1.80	1.82	1.84
MALAYSIA	1.74	1.75	1.87	1.97	1.77	1.80	1.95	1.99	1.97	1.96	1.97	1.99	1.99	1.99
TURKEY	2.46	2.36	2.00	2.13	2.00	2.23	3.24	3.17	3.25	2.43	2.28	2.13	2.13	2.13
OTHER ASIA	1.89	1.94	2.03	2.00	2.07	2.07	2.09	2.06	2.09	2.18	2.22	2.25	2.28	2.31
AUSTRALIA	5.05	5.88	5.76	5.47	5.48	5.46	5.86	6.35	6.44	6.29	6.15	6.00	6.10	6.20
SOUTH AFRICA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
N AFRICA & MIDDLE EAST	2.83	2.83	2.97	3.55	3.54	3.46	3.65	3.80	3.65	3.64	3.65	3.65	3.67	3.69
OTHER AFRICA	0.90	0.89	0.90	0.95	0.94	0.94	0.97	0.98	0.98	0.98	0.98	0.99	0.99	0.99
AVERAGE	2.21	2.27	2.34	2.39	2.39	2.42	2.44	2.47	2.44	2.52	2.55	2.59	2.62	2.65

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 14: Rice Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	4109	5186	5087	5098	5096	5704	5240	6549	5802	6084	5824	5849	5873	5898
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	380	266	360	200	190	200	140	170	150	158	152	146	146	147
BRAZIL	8024	7540	5420	6800	6868	6733	7150	6900	7116	7238	7338	7438	7476	7512
ARGENTINA	247	291	215	299	425	398	352	564	600	530	541	553	564	576
OTHER LATIN AMERICA	4282	4582	4247	4218	4546	4595	4678	5179	4790	4991	5050	5109	5181	5253
EU-15	1289	1314	1386	1606	1487	1397	1278	1343	1295	1412	1417	1460	1480	1500
OTHER WEST EUROPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL EUROPE	209	207	108	106	71	62	50	55	43	66	72	77	78	79
RUSSIA	697	745	641	582	502	491	500	350	350	412	478	550	548	546
UKRAINE	111	106	99	76	66	60	70	70	70	65	63	60	60	60
OTHER FORMER USSR	771	838	724	748	728	674	695	578	568	627	686	744	750	755
FSU-15	1579	1689	1464	1406	1296	1225	1265	998	988	1104	1227	1354	1358	1361
JAPAN	9671	9041	9416	9554	8740	9621	7129	10900	9830	9786	9828	9870	9865	9859
TAIWAN	1748	1697	1716	1662	1673	1498	1636	1511	1500	1514	1501	1488	1469	1449
SOUTH KOREA	5493	6053	5898	5606	5385	5331	4750	5060	4800	4891	4861	4830	4830	4830
CHINA	121716	118377	126091	132532	128667	130354	124390	123151	124000	127600	126500	127500	129000	129200
THAILAND	12162	14034	13317	11347	13464	13145	12672	14100	13900	14432	14973	15524	15828	16136
INDIA	56862	70489	73573	74291	74680	72868	78970	81600	79000	81092	83173	85244	86722	88199
PAKISTAN	3241	3200	3220	3265	3243	3116	3995	3447	3600	3747	3897	4050	4115	4180
MALAYSIA	1092	1148	1147	1302	1150	1190	1300	1325	1300	1308	1321	1333	1341	1348
TURKEY	160	165	150	160	100	145	146	130	260	158	160	160	160	160
OTHER ASIA	73365	76709	82221	82342	83201	85363	87343	86384	88299	91883	93748	95625	97584	99561
AUSTRALIA	540	576	605	487	696	683	774	813	882	868	854	840	860	880
SOUTH AFRICA	0	0	0	0	0	0	0	0	0	---	---	0	---	0
N AFRICA & MIDDLE EAST	2908	2490	2811	3592	3832	4008	4316	4721	3971	4584	4664	4745	4844	4945
OTHER AFRICA	4463	4611	4679	4667	4663	4758	5044	5065	5080	5109	5109	5148	5178	5209
						(mil metric tons)								
TOTAL	313.5	329.7	343.1	350.5	349.5	352.4	352.6	360.0	357.2	368.6	372.2	378.3	384.0	388.3

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 15: Coarse Grains Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	35159	32560	36859	36227	37199	38812	33343	37459	33272	38063	37505	38212	38286	38351
CANADA	7247	6539	7344	6745	6164	5885	6486	6537	6535	6813	6199	6109	6150	6142
MEXICO	7775	7455	7500	8245	8774	8906	9939	9450	9250	9268	9126	8985	8882	8779
BRAZIL	13820	13389	12598	13990	14500	12820	14242	14260	13824	14300	14475	14650	14800	14950
ARGENTINA	4290	2860	3068	3137	3745	3792	3534	3403	3640	3635	3687	3690	3715	3740
OTHER LATIN AMERICA	6607	6657	6495	6118	6027	6097	6013	6236	6206	6379	6467	6555	6605	6655
EU-15	21231	21662	20667	19708	19549	18628	17120	16841	16467	17286	17110	17020	16961	16903
OTHER WEST EUROPE	423	444	460	466	454	466	443	451	441	451	452	453	454	456
CENTRAL EUROPE	11820	12024	11868	11285	11945	12660	12332	12010	11776	11967	12072	12177	12212	12248
RUSSIA	29841	28171	27047	25628	27043	25789	26098	26350	24800	24953	25107	25260	25268	25276
UKRAINE	7505	6858	5880	4660	5336	5313	6253	6522	5800	5792	5783	5775	5820	5865
OTHER FORMER USSR	12427	12683	12337	12221	12931	11884	12730	11735	9891	10631	11376	12121	12152	12183
FSU-15	49773	47712	45264	42509	45310	42986	45081	44607	40491	41376	42266	43156	43240	43324
JAPAN	117	120	117	111	98	87	77	63	64	60	56	53	51	49
TAIWAN	105	109	101	101	104	89	89	90	46	71	71	71	71	71
SOUTH KOREA	238	222	209	191	154	129	125	123	125	125	125	125	123	121
CHINA	26634	25822	26174	27014	26942	25997	25805	26302	27840	26980	27015	27050	27090	27230
THAILAND	1958	1770	1560	1540	1490	1370	1220	1360	1310	1323	1337	1350	1370	1390
INDIA	36636	38745	37742	36347	33702	34820	33186	34500	32900	33623	33726	33829	33633	33437
PAKISTAN	1682	1902	1974	1835	1659	1782	1853	1865	1835	1858	1877	1895	1902	1909
MALAYSIA	17	18	19	20	20	21	20	20	20	20	20	20	20	20
TURKEY	3955	4043	4112	4168	4178	4223	4333	4208	4238	4359	4393	4428	4441	4467
OTHER ASIA	10089	10419	10191	10446	10175	10153	9761	9903	9600	10098	10172	10245	10325	10405
AUSTRALIA	4558	4296	3866	4091	4568	4665	4992	4032	5159	5196	5233	5270	5295	5321
SOUTH AFRICA	4525	4609	4400	3951	4533	4803	4974	3963	4480	4499	4474	4450	4450	4450
N AFRICA & MIDDLE EAST	11747	11940	11272	12601	13433	13443	12554	12200	11855	13376	13590	13805	14019	14234
OTHER AFRICA	45263	50407	48395	45015	47433	49259	48282	51377	48648	49208	49208	49100	49220	49340
						(mil hectares)								
TOTAL	305.7	305.7	302.3	295.9	302.2	301.9	295.8	301.3	290.0	300.3	300.7	302.7	303.3	304.0

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 16: Coarse Grains Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	6.16	4.59	6.00	6.36	5.87	7.14	5.58	7.60	6.44	7.01	7.10	7.20	7.29	7.39
CANADA	3.30	2.86	2.94	3.44	3.38	3.16	3.55	3.42	3.47	3.43	3.49	3.54	3.56	3.59
MEXICO	1.87	1.85	1.88	2.23	2.24	2.50	2.28	2.31	2.29	2.44	2.51	2.58	2.61	2.65
BRAZIL	1.88	2.00	1.84	1.79	2.17	2.33	2.37	2.19	2.32	2.43	2.47	2.51	2.56	2.61
ARGENTINA	3.03	2.52	2.69	3.40	3.85	3.70	3.62	3.90	3.77	3.92	3.97	4.01	4.10	4.19
OTHER LATIN AMERICA	1.67	1.70	1.75	1.75	1.72	1.82	1.82	1.76	1.83	1.90	1.93	1.97	1.99	2.02
EU-15	4.33	4.53	4.49	4.48	4.76	4.52	4.97	4.70	4.83	4.92	5.07	5.16	5.20	5.24
OTHER WEST EUROPE	3.56	3.70	3.95	4.38	4.24	3.17	3.97	3.59	4.11	4.15	4.23	4.34	4.39	4.44
CENTRAL EUROPE	3.86	3.61	3.76	3.36	4.33	2.73	2.74	2.99	3.35	3.41	3.50	3.58	3.63	3.67
RUSSIA	1.50	1.26	1.54	1.72	1.31	1.62	1.60	1.49	1.26	1.44	1.56	1.67	1.71	1.75
UKRAINE	3.04	2.80	3.22	3.34	2.64	2.72	3.06	2.70	2.64	2.88	3.04	3.20	3.27	3.34
OTHER FORMER USSR	1.63	1.41	1.47	1.77	1.25	1.64	1.53	1.33	1.32	1.48	1.58	1.68	1.70	1.73
FSU-15	1.76	1.52	1.74	1.91	1.45	1.76	1.78	1.63	1.47	1.65	1.77	1.88	1.92	1.96
JAPAN	3.12	3.43	3.24	3.19	2.79	3.34	3.58	3.41	3.22	3.53	3.56	3.58	3.62	3.65
TAIWAN	4.09	4.11	4.67	4.85	4.82	4.48	4.46	4.47	4.70	4.78	4.88	4.99	5.10	5.22
SOUTH KOREA	2.73	4.02	4.03	3.68	3.68	4.08	3.90	3.82	3.97	4.17	4.21	4.25	4.29	4.33
CHINA	3.51	3.57	3.49	4.13	4.17	4.17	4.52	4.29	4.37	4.63	4.73	4.83	4.96	5.10
THAILAND	1.50	2.50	2.78	2.64	2.52	2.59	2.52	2.79	2.90	2.99	3.09	3.18	3.26	3.33
INDIA	0.65	0.81	0.92	0.90	0.77	1.07	0.94	0.97	0.95	1.03	1.06	1.09	1.11	1.13
PAKISTAN	0.99	0.94	0.90	0.95	0.95	0.93	0.95	1.01	1.00	1.01	1.02	1.03	1.03	1.04
MALAYSIA	1.76	1.78	1.79	1.75	1.75	1.71	1.90	2.00	2.00	1.98	2.01	2.05	2.05	2.05
TURKEY	2.21	2.35	1.72	2.16	2.22	2.14	2.33	2.09	2.14	2.34	2.39	2.45	2.47	2.50
OTHER ASIA	1.60	1.64	1.67	1.69	1.67	1.72	1.76	1.72	1.76	1.79	1.82	1.84	1.85	1.86
AUSTRALIA	1.57	1.56	1.82	1.65	1.78	1.76	1.97	1.24	1.73	1.82	1.90	1.99	2.02	2.04
SOUTH AFRICA	1.75	2.83	2.16	2.24	0.76	2.23	2.73	1.31	2.15	2.37	2.47	2.57	2.63	2.77
N AFRICA & MIDDLE EAST	1.16	1.53	1.36	1.36	1.38	1.28	1.39	1.70	1.47	1.52	1.54	1.56	1.58	1.61
OTHER AFRICA	0.84	0.90	0.87	0.84	0.84	0.92	0.88	0.88	0.91	0.93	0.93	0.94	0.94	0.95
AVERAGE	2.44	2.24	2.48	2.62	2.54	2.75	2.55	2.75	2.62	2.83	2.88	2.95	2.99	3.04

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 17: Coarse Grains Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	216484	149311	221175	230480	218373	277125	186190	284753	214290	266862	266211	275209	279259	283261
CANADA	23938	18718	21620	23200	20824	18625	23022	22371	22667	23398	21660	21612	21908	22079
MEXICO	14510	13755	14090	18355	19622	22269	22709	21800	21200	22641	22903	23152	23211	23262
BRAZIL	25931	26805	23118	25030	31420	29850	33754	31299	32043	34706	35749	36806	37892	38991
ARGENTINA	13010	7218	8263	10678	14406	14045	12792	13266	13706	14236	14630	14806	15234	15666
OTHER LATIN AMERICA	11042	11314	11342	10705	10369	11122	10941	10946	11351	12114	12497	12887	13169	13455
EU-15	91862	98111	92845	88219	93051	84182	85171	79160	79455	85023	86752	87757	88133	88504
OTHER WEST EUROPE	1504	1641	1816	2043	1923	1477	1760	1617	1812	1872	1911	1966	1994	2023
CENTRAL EUROPE	45645	43390	44642	37882	51757	34538	33768	35903	39486	40825	42215	43628	44299	44971
RUSSIA	44619	35590	41687	43958	35555	41900	41738	39250	31200	36039	39128	42265	43229	44198
UKRAINE	22844	19201	18937	15546	14077	14429	19109	17585	15300	16675	17571	18488	19042	19612
OTHER FORMER USSR	20202	17912	18169	21661	16124	19524	19502	15663	13032	15691	17928	20399	20716	21034
FSU-15	87665	72703	78793	81165	65756	75853	80349	72498	59532	68405	74626	81151	82987	84844
JAPAN	365	411	379	354	273	291	276	215	206	211	200	190	185	179
TAIWAN	429	448	472	490	501	399	397	402	216	339	347	354	362	371
SOUTH KOREA	650	892	842	702	566	526	487	470	496	523	527	531	527	524
CHINA	93569	92141	91309	111685	112280	108360	116740	112880	121640	124800	127700	130600	134300	138900
THAILAND	2946	4430	4330	4070	3750	3550	3080	3800	3800	3962	4127	4295	4461	4631
INDIA	23755	31329	34559	32553	25930	37230	31150	33600	31100	34724	35866	37020	37353	37685
PAKISTAN	1672	1794	1768	1751	1582	1658	1763	1878	1835	1878	1911	1944	1962	1981
MALAYSIA	30	32	34	35	35	36	38	40	40	40	40	41	41	41
TURKEY	8724	9515	7085	8985	9295	9020	10095	8815	9090	10210	10518	10831	10976	11158
OTHER ASIA	16128	17093	16981	17618	16980	17415	17133	17051	16883	18124	18474	18828	19087	19349
AUSTRALIA	7141	6712	7019	6756	8123	8226	9822	4997	8924	9442	9963	10489	10681	10875
SOUTH AFRICA	7898	13051	9521	8842	3433	10723	13587	5202	9630	10644	11033	11424	11719	12309
N AFRICA & MIDDLE EAST	13583	18326	15308	17114	18490	17203	17423	20793	17374	20266	20862	21469	22158	22860
OTHER AFRICA	38133	45571	42335	37692	39644	45397	42493	45293	44497	45697	45697	46021	46436	46852
						(mil metric tons)								
TOTAL	746.6	684.7	749.6	776.4	768.4	829.1	754.9	829.0	761.3	850.9	866.4	893.0	908.3	924.8

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 18: Corn Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	24081	23573	26217	27095	27851	29169	25463	29509	26176	30293	29782	30424	30461	30493
CANADA	1006	995	1035	1062	1105	857	986	955	990	1013	963	943	930	925
MEXICO	6000	6000	5800	6600	6995	7536	8557	8000	7500	7750	7625	7500	7400	7300
BRAZIL	13375	12970	12100	13490	14030	12400	13692	13710	13300	13767	13933	14100	14240	14380
ARGENTINA	2600	1700	1700	1950	2400	2450	2400	2500	2715	2625	2700	2725	2740	2755
OTHER LATIN AMERICA	5019	4944	4899	4633	4456	4541	4531	4832	4789	4794	4847	4900	4940	4980
EU-15	3918	4247	4040	3633	4037	3879	3787	3674	3693	3872	3866	3857	3856	3855
OTHER WEST EUROPE	20	25	28	27	27	26	26	30	25	26	27	28	28	29
CENTRAL EUROPE	7087	7062	6954	6440	6657	7724	7234	7072	6970	7117	7164	7211	7237	7263
RUSSIA	1424	1260	1428	869	733	810	805	500	1000	1000	1000	1000	1040	1080
UKRAINE	2423	2328	1856	1234	1461	1160	1331	651	1200	1300	1400	1500	1560	1620
OTHER FORMER USSR	726	839	825	739	788	730	851	778	808	817	826	835	837	840
FSU-15	4573	4427	4109	2842	2982	2700	2987	1929	3008	3117	3226	3335	3437	3540
JAPAN	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TAIWAN	82	81	82	74	77	62	62	63	30	50	50	50	50	50
SOUTH KOREA	26	22	25	26	22	21	20	18	20	20	20	20	20	20
CHINA	20212	19692	20353	21402	21574	21040	20690	21152	22700	22000	22100	22200	22300	22500
THAILAND	1754	1600	1400	1350	1350	1230	1070	1200	1150	1167	1183	1200	1220	1240
INDIA	5561	5897	5858	5904	5860	6020	5990	6100	6100	6117	6133	6150	6160	6170
PAKISTAN	856	866	863	845	820	800	878	886	850	858	867	875	880	885
MALAYSIA	17	18	19	20	20	21	20	20	20	20	20	20	20	20
TURKEY	590	580	600	610	620	625	630	450	430	605	618	630	634	642
OTHER ASIA	8854	9197	8941	9174	8912	8914	8561	8646	8378	8858	8929	9000	9080	9160
AUSTRALIA	59	54	52	52	52	47	44	56	57	58	59	60	60	61
SOUTH AFRICA	3657	3778	3475	3026	3452	3660	3900	3000	3500	3538	3544	3550	3550	3550
N AFRICA & MIDDLE EAST	1360	1423	1450	1434	1263	1486	1404	1523	1613	1458	1454	1450	1455	1460
OTHER AFRICA	15689	16547	16679	15742	15873	16060	16724	16873	16537	17110	17110	17250	17400	17550
						(mil hectares)								
TOTAL	126.4	125.7	126.7	127.4	130.4	131.3	129.7	132.2	130.6	136.2	136.2	137.5	138.1	138.8

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 19: Corn Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	7.52	5.31	7.30	7.44	6.82	8.25	6.32	8.70	7.32	7.91	8.02	8.13	8.24	8.35
CANADA	7.02	5.48	6.35	6.65	6.71	5.70	6.59	7.37	7.00	6.65	6.70	6.75	6.85	6.95
MEXICO	1.65	1.68	1.68	2.14	2.10	2.47	2.24	2.28	2.20	2.39	2.44	2.50	2.54	2.58
BRAZIL	1.89	2.03	1.84	1.80	2.20	2.35	2.41	2.23	2.35	2.46	2.51	2.55	2.60	2.65
ARGENTINA	3.46	2.94	3.06	3.90	4.42	4.16	4.17	4.40	4.19	4.34	4.37	4.40	4.50	4.60
OTHER LATIN AMERICA	1.65	1.69	1.72	1.74	1.70	1.81	1.85	1.80	1.87	1.93	1.96	2.00	2.03	2.06
EU-15	7.06	7.14	7.02	6.47	7.01	7.80	8.05	7.70	7.80	7.71	7.91	8.12	8.14	8.17
OTHER WEST EUROPE	7.20	9.48	9.25	8.63	8.37	8.08	8.08	8.67	9.20	9.30	9.40	9.50	9.70	9.90
CENTRAL EUROPE	4.25	3.78	3.87	3.13	5.10	2.68	2.79	3.16	3.52	3.59	3.70	3.82	3.87	3.92
RUSSIA	2.70	3.03	3.27	2.82	2.69	2.64	3.04	1.80	1.20	3.07	3.13	3.20	3.26	3.32
UKRAINE	3.43	3.71	3.79	3.84	3.25	2.46	2.84	2.36	2.33	3.00	3.25	3.50	3.64	3.78
OTHER FORMER USSR	3.68	4.24	4.29	3.62	3.89	2.91	3.28	2.34	3.13	3.44	3.57	3.70	3.74	3.78
FSU-15	3.24	3.62	3.71	3.47	3.28	2.63	3.02	2.21	2.17	3.14	3.30	3.46	3.55	3.64
JAPAN	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
TAIWAN	3.96	4.06	4.82	5.16	5.06	4.65	4.61	4.62	5.00	5.03	5.17	5.30	5.44	5.58
SOUTH KOREA	4.88	4.82	4.84	4.62	3.41	4.38	4.10	4.17	4.50	5.00	5.00	5.00	5.00	5.00
CHINA	3.92	3.93	3.88	4.52	4.58	4.53	4.96	4.69	4.76	5.04	5.14	5.25	5.40	5.55
THAILAND	1.56	2.63	2.93	2.81	2.67	2.76	2.71	3.00	3.13	3.22	3.31	3.40	3.48	3.56
INDIA	1.03	1.40	1.61	1.52	1.38	1.69	1.58	1.64	1.64	1.68	1.72	1.76	1.79	1.82
PAKISTAN	1.32	1.39	1.37	1.40	1.34	1.38	1.38	1.49	1.50	1.50	1.50	1.50	1.50	1.50
MALAYSIA	1.76	1.78	1.79	1.75	1.75	1.71	1.90	2.00	2.00	1.98	2.01	2.05	2.05	2.05
TURKEY	4.07	3.79	3.17	3.44	3.55	3.56	3.97	3.78	3.72	4.06	4.15	4.25	4.30	4.35
OTHER ASIA	1.64	1.68	1.72	1.73	1.72	1.78	1.81	1.78	1.82	1.86	1.88	1.90	1.91	1.92
AUSTRALIA	3.75	4.19	4.37	3.94	5.38	4.43	5.66	4.63	4.84	5.26	5.68	6.10	6.18	6.26
SOUTH AFRICA	1.93	3.28	2.56	2.74	0.91	2.73	3.30	1.55	2.57	2.81	2.91	3.00	3.08	3.24
N AFRICA & MIDDLE EAST	3.37	3.48	3.62	3.77	4.09	3.63	4.09	4.32	4.08	4.19	4.24	4.30	4.34	4.38
OTHER AFRICA	1.21	1.22	1.23	1.16	1.01	1.27	1.17	1.15	1.22	1.24	1.24	1.25	1.26	1.26
AVERAGE	3.56	3.19	3.64	3.75	3.74	4.07	3.63	4.16	3.85	4.17	4.22	4.31	4.38	4.45

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 20: Corn Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	181143	125194	191320	201534	189868	240719	160954	256629	191560	239712	238933	247430	251076	254691
CANADA	7065	5450	6571	7067	7413	4883	6501	7043	6930	6736	6452	6365	6371	6429
MEXICO	9900	10100	9750	14100	14689	18631	19141	18200	16500	18503	18634	18750	18796	18834
BRAZIL	25220	26270	22300	24330	30800	29200	32934	30549	31250	33891	34916	35955	37024	38107
ARGENTINA	9000	5000	5200	7600	10600	10200	10000	11000	11385	11385	11795	11990	12330	12673
OTHER LATIN AMERICA	8282	8370	8440	8079	7568	8229	8377	8698	8946	9243	9520	9800	10028	10259
EU-15	27671	30307	28371	23515	28290	30242	30487	28307	28790	29867	30598	31315	31398	31481
OTHER WEST EUROPE	144	237	259	233	226	210	210	260	230	242	254	266	275	285
CENTRAL EUROPE	30121	26715	26889	20142	33970	20708	20174	22354	24555	25539	26521	27513	27984	28457
RUSSIA	3844	3814	4663	2451	1969	2135	2447	900	1200	3067	3133	3200	3390	3586
UKRAINE	8308	8638	7026	4737	4747	2851	3786	1537	2800	3900	4550	5250	5678	6124
OTHER FORMER USSR	2675	3557	3536	2672	3063	2123	2789	1824	2525	2809	2949	3092	3133	3175
FSU-15	14827	16009	15225	9860	9779	7109	9022	4261	6525	9776	10633	11542	12202	12884
JAPAN	2	2	2	2	2	2	2	2	2	2	2	2	2	2
TAIWAN	325	329	395	382	390	288	286	291	150	252	258	265	272	279
SOUTH KOREA	127	106	121	120	75	92	82	75	90	99	100	100	100	100
CHINA	79240	77351	78928	96820	98770	95380	102700	99280	108000	110900	113700	116600	120400	124900
THAILAND	2736	4200	4100	3800	3600	3400	2900	3600	3600	3757	3917	4080	4246	4414
INDIA	5721	8229	9409	8962	8060	10200	9480	10000	10000	10273	10548	10824	11014	11205
PAKISTAN	1127	1204	1179	1185	1100	1100	1213	1318	1275	1288	1300	1313	1320	1328
MALAYSIA	30	32	34	35	35	36	38	40	40	40	40	41	41	41
TURKEY	2400	2200	1900	2100	2200	2225	2500	1700	1600	2456	2566	2678	2726	2793
OTHER ASIA	14549	15482	15359	15850	15323	15837	15524	15416	15230	16445	16771	17100	17343	17587
AUSTRALIA	221	226	227	205	280	208	249	259	276	305	335	366	373	381
SOUTH AFRICA	7075	12384	8900	8300	3125	9985	12875	4650	9000	9944	10296	10650	10934	11502
N AFRICA & MIDDLE EAST	4589	4949	5256	5403	5161	5401	5737	6578	6575	6104	6170	6235	6315	6395
OTHER AFRICA	18975	20205	20521	18265	15983	20350	19613	19460	20251	21209	21209	21563	21854	22148
						(mil metric tons)								
TOTAL	450.5	400.6	460.7	477.9	487.3	534.6	471.0	550.0	502.8	568.0	575.5	592.7	604.4	617.2

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 21: Barley Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	4029	3090	3364	3047	3405	2948	2733	2698	2540	2586	2667	2698	2718	2735
CANADA	4993	4191	4727	4529	4217	3790	4159	4092	4343	4430	3996	3928	3985	3982
MEXICO	300	255	290	240	220	240	250	250	200	218	201	185	182	179
BRAZIL	100	110	113	105	100	70	60	60	78	85	93	100	100	100
ARGENTINA	130	160	163	133	225	225	196	140	150	165	157	150	150	150
OTHER LATIN AMERICA	350	395	404	377	406	439	435	425	360	473	487	500	510	520
EU-15	14500	14535	13834	13583	13326	12611	11219	10986	10825	11342	11268	11215	11176	11137
OTHER WEST EUROPE	271	283	287	299	288	296	286	291	286	293	294	295	296	297
CENTRAL EUROPE	3406	3637	3592	3584	4045	3673	3749	3610	3630	3646	3663	3679	3686	3693
RUSSIA	16621	15866	14660	13723	15281	14564	15447	16400	15000	15120	15240	15360	15418	15476
UKRAINE	4077	3658	3234	2729	3190	3451	4215	5092	3900	3800	3700	3600	3580	3560
OTHER FORMER USSR	9956	10208	9752	9739	10180	9165	10322	9412	7850	8458	9067	9675	9690	9705
FSU-15	30654	29732	27646	26191	28651	27180	29984	30904	26750	27378	28007	28635	28688	28741
JAPAN	111	114	113	106	95	84	74	60	60	57	53	50	48	46
TAIWAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH KOREA	206	195	179	160	127	103	100	100	100	100	100	100	98	96
CHINA	1285	1252	1218	1208	1200	1250	1225	1200	1200	1210	1205	1200	1190	1180
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	1225	1143	1081	991	962	950	916	900	900	883	867	850	850	850
PAKISTAN	182	145	159	155	157	149	160	151	155	160	165	170	172	174
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	3200	3300	3350	3400	3400	3440	3550	3600	3650	3602	3626	3650	3660	3680
OTHER ASIA	383	374	373	384	375	360	371	372	347	372	374	375	375	375
AUSTRALIA	2384	2231	2310	2556	2744	2982	3424	2502	3200	3217	3233	3250	3250	3250
SOUTH AFRICA	100	80	97	110	135	138	112	120	120	124	125	125	125	125
N AFRICA & MIDDLE EAST	9334	9378	8675	10021	10930	10752	10044	9642	9143	10778	10989	11200	11410	11620
OTHER AFRICA	899	990	1020	1040	990	1015	1040	1040	1090	1086	1086	1100	1110	1120
						(mil hectares)								
TOTAL	78.0	75.6	73.0	72.2	76.0	72.7	74.1	73.1	69.1	72.2	72.7	73.5	73.8	74.1

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 22: Barley Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	2.82	2.04	2.62	3.02	2.97	3.36	3.17	3.03	3.10	3.17	3.19	3.22	3.25	3.28
CANADA	2.79	2.46	2.49	2.97	2.75	2.88	3.12	2.86	2.97	3.00	3.04	3.10	3.12	3.14
MEXICO	1.70	1.75	1.66	1.88	1.95	1.88	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.01
BRAZIL	1.85	1.27	2.19	2.00	1.10	2.14	1.83	3.33	2.30	2.23	2.17	2.10	2.12	2.14
ARGENTINA	2.15	1.98	2.10	2.28	2.51	2.22	2.32	2.50	2.33	2.44	2.47	2.50	2.54	2.58
OTHER LATIN AMERICA	1.45	1.37	1.54	1.44	1.47	1.66	1.42	1.38	1.44	1.52	1.54	1.55	1.57	1.59
EU-15	3.82	4.05	4.05	4.14	4.27	3.76	4.19	3.98	4.05	4.20	4.33	4.37	4.42	4.46
OTHER WEST EUROPE	3.11	3.44	3.75	3.96	3.83	3.03	3.64	3.44	3.77	3.80	3.87	4.00	4.05	4.10
CENTRAL EUROPE	3.55	3.67	4.05	4.02	3.67	3.11	2.89	3.04	3.37	3.43	3.49	3.56	3.60	3.64
RUSSIA	1.57	1.22	1.51	1.98	1.45	1.85	1.72	1.65	1.33	1.49	1.64	1.80	1.84	1.88
UKRAINE	2.99	2.39	3.12	3.36	2.52	2.93	3.21	2.85	2.82	2.96	3.11	3.25	3.30	3.35
OTHER FORMER USSR	1.51	1.21	1.29	1.66	1.11	1.67	1.41	1.25	1.18	1.29	1.41	1.54	1.56	1.59
FSU-15	1.74	1.36	1.62	2.01	1.45	1.93	1.83	1.73	1.50	1.63	1.76	1.90	1.93	1.96
JAPAN	3.18	3.50	3.28	3.26	2.82	3.40	3.66	3.50	3.33	3.63	3.66	3.70	3.74	3.78
TAIWAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SOUTH KOREA	2.50	4.00	3.99	3.60	3.82	4.16	4.00	3.90	4.00	4.16	4.20	4.25	4.30	4.35
CHINA	2.89	3.19	2.93	3.25	3.27	3.20	3.43	3.17	3.33	3.55	3.65	3.75	3.78	3.90
THAILAND	---	---	---	---	---	---	---	---	---	---	---	---	---	---
INDIA	1.36	1.38	1.59	1.50	1.70	1.79	1.65	1.78	1.78	1.80	1.83	1.85	1.87	1.89
PAKISTAN	0.74	0.77	0.77	0.85	0.90	0.94	0.99	0.97	0.97	0.98	0.99	1.00	1.00	1.00
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	1.88	2.12	1.46	1.94	2.00	1.89	2.06	1.89	1.97	2.07	2.11	2.15	2.17	2.19
OTHER ASIA	1.79	1.72	1.64	1.88	1.65	1.57	1.82	1.71	1.83	1.76	1.78	1.80	1.80	1.80
AUSTRALIA	1.46	1.48	1.78	1.64	1.68	1.83	2.03	1.12	1.69	1.79	1.90	2.00	2.03	2.06
SOUTH AFRICA	2.80	1.71	3.00	2.38	1.26	1.92	2.05	2.29	2.00	2.28	2.34	2.40	2.46	2.58
N AFRICA & MIDDLE EAST	0.80	1.26	0.97	1.00	1.05	0.94	0.99	1.30	1.00	1.15	1.18	1.20	1.23	1.26
OTHER AFRICA	1.27	1.23	1.24	1.26	1.19	1.40	1.27	1.26	1.26	1.29	1.29	1.28	1.29	1.31
AVERAGE	2.23	2.15	2.26	2.47	2.23	2.28	2.29	2.20	2.17	2.27	2.34	2.41	2.44	2.47

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 23: Barley Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	11354	6314	8800	9192	10110	9908	8666	8162	7868	8208	8500	8681	8824	8962
CANADA	13916	10326	11784	13441	11617	10919	12972	11690	12911	13290	12145	12177	12433	12503
MEXICO	510	445	480	450	430	450	450	500	400	435	403	370	365	359
BRAZIL	185	140	248	210	110	150	110	200	180	191	201	210	212	214
ARGENTINA	280	317	343	303	565	500	455	350	350	402	389	375	381	387
OTHER LATIN AMERICA	509	543	624	541	598	727	618	585	520	721	748	775	801	827
EU-15	55388	58872	55967	56206	56909	47457	47039	43775	43875	47666	48809	49055	49358	49657
OTHER WEST EUROPE	842	973	1077	1185	1103	896	1042	1002	1077	1115	1140	1180	1199	1218
CENTRAL EUROPE	12105	13353	14533	14405	14826	11436	10830	10982	12230	12507	12801	13113	13287	13461
RUSSIA	26101	19418	22201	27235	22174	26989	26628	27100	20000	22512	25061	27648	28369	29095
UKRAINE	12190	8751	10090	9168	8047	10106	13550	14508	11000	11262	11495	11700	11814	11926
OTHER FORMER USSR	15049	12376	12566	16132	11287	15311	14543	11728	9238	10914	12808	14921	15153	15386
FSU-15	53340	40545	44857	52535	41508	52406	54721	53336	40238	44688	49365	54269	55336	56407
JAPAN	353	399	371	346	268	286	271	210	200	206	195	185	180	174
TAIWAN	0	0	0	0	0	0	0	0	0	---	---	0	0	0
SOUTH KOREA	516	780	715	576	485	428	400	390	400	417	421	425	421	418
CHINA	3717	3990	3571	3930	3928	4000	4200	3800	4000	4300	4400	4500	4500	4600
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	1669	1577	1722	1486	1640	1700	1510	1600	1600	1592	1582	1573	1590	1607
PAKISTAN	134	112	123	131	142	140	158	146	150	157	163	170	172	174
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
TURKEY	6000	7000	4900	6600	6800	6500	7300	6800	7200	7449	7647	7848	7942	8059
OTHER ASIA	686	645	612	722	617	564	675	637	635	655	665	675	675	675
AUSTRALIA	3477	3306	4121	4184	4606	5460	6956	2791	5408	5769	6133	6500	6598	6695
SOUTH AFRICA	280	137	291	262	170	265	230	275	240	283	291	300	308	323
N AFRICA & MIDDLE EAST	7500	11831	8456	10043	11529	10068	9968	12551	9110	12403	12916	13440	14034	14641
OTHER AFRICA	1139	1218	1262	1308	1175	1420	1320	1315	1370	1397	1397	1408	1436	1465
						(mil metric tons)								
TOTAL	173.9	162.8	164.9	178.1	169.1	165.7	169.9	161.1	150.0	163.8	170.3	177.2	180.1	182.8

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 24: Oats Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	2787	2238	2785	2407	1949	1819	1539	1623	1197	1637	1543	1551	1557	1563
CANADA	1248	1353	1582	1154	842	1238	1341	1490	1202	1370	1240	1238	1235	1235
MEXICO	100	100	110	105	100	100	100	100	100	100	100	100	100	100
BRAZIL	140	119	195	200	200	200	290	290	246	239	232	225	230	235
ARGENTINA	500	355	430	324	350	350	350	275	275	275	275	275	275	275
OTHER LATIN AMERICA	123	151	147	123	128	134	134	134	134	135	135	135	135	135
EU-15	2742	2797	2680	2377	2066	1991	1986	2066	1859	1927	1848	1819	1800	1782
OTHER WEST EUROPE	132	136	145	140	139	144	131	130	130	132	131	130	130	130
CENTRAL EUROPE	1262	1251	1244	1217	1203	1215	1303	1282	1125	1158	1200	1241	1243	1245
RUSSIA	10063	9407	9210	9100	9032	8540	8387	8350	8000	8000	8000	8000	7900	7800
UKRAINE	653	595	549	492	497	495	510	603	500	492	483	475	480	485
OTHER FORMER USSR	1068	937	986	962	1116	986	1030	1195	993	1029	1070	1111	1125	1138
FSU-15	11784	10939	10745	10554	10645	10021	9927	10148	9493	9520	9553	9586	9505	9423
JAPAN	5	5	3	4	2	2	2	2	3	2	2	2	2	2
TAIWAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHINA	585	581	577	580	550	540	540	500	540	500	500	500	500	500
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PAKISTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	157	155	154	150	150	150	145	150	150	143	142	140	139	137
OTHER ASIA	18	19	19	21	18	19	19	20	20	20	20	20	20	20
AUSTRALIA	1316	1332	1089	1044	1160	1167	996	937	1205	1203	1202	1200	1210	1220
SOUTH AFRICA	503	569	690	700	811	835	801	700	700	671	636	600	600	600
N AFRICA & MIDDLE EAST	197	162	154	123	189	153	143	44	130	117	119	120	119	119
OTHER AFRICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
						(mil hectares)								
TOTAL	23.6	22.3	22.7	21.2	20.5	20.1	19.7	19.9	18.5	19.2	18.9	18.9	18.8	18.7

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 25: Oats Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	1.95	1.41	1.95	2.16	1.82	2.35	1.95	2.05	1.98	2.20	2.21	2.22	2.23	2.24
CANADA	2.37	2.17	2.06	2.33	2.13	2.28	2.65	2.44	2.35	2.46	2.47	2.48	2.51	2.55
MEXICO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.02	1.02	1.02
BRAZIL	1.26	1.13	1.18	0.98	1.10	1.10	1.07	0.69	1.01	1.04	1.07	1.10	1.10	1.10
ARGENTINA	1.30	1.27	1.44	1.34	1.14	1.29	1.25	1.27	1.32	1.35	1.37	1.40	1.40	1.40
OTHER LATIN AMERICA	1.79	1.52	1.90	2.14	1.91	1.90	1.90	1.98	1.98	2.03	2.07	2.10	2.12	2.14
EU-15	3.08	3.02	2.97	3.37	3.48	2.83	3.47	3.15	3.38	3.46	3.57	3.65	3.68	3.71
OTHER WEST EUROPE	3.92	3.17	3.31	4.46	4.27	2.58	3.88	2.73	3.88	3.90	3.95	4.00	4.00	4.00
CENTRAL EUROPE	2.64	2.57	2.52	2.70	2.43	1.94	2.08	1.97	2.35	2.36	2.37	2.38	2.40	2.42
RUSSIA	1.22	1.13	1.30	1.35	1.15	1.32	1.38	1.29	1.19	1.23	1.26	1.30	1.32	1.34
UKRAINE	2.54	2.08	2.53	2.65	1.90	2.52	2.90	2.30	2.40	2.43	2.47	2.50	2.50	2.50
OTHER FORMER USSR	1.81	1.50	1.63	1.99	1.38	1.67	1.88	1.66	1.19	1.76	1.82	1.87	1.89	1.90
FSU-15	1.35	1.21	1.39	1.47	1.21	1.41	1.51	1.39	1.25	1.34	1.39	1.43	1.45	1.47
JAPAN	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.50	1.33	1.50	1.50	1.50	1.50	1.50
TAIWAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SOUTH KOREA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CHINA	1.10	1.19	1.08	1.18	1.18	1.19	1.19	1.20	1.19	1.20	1.20	1.20	1.20	1.20
THAILAND	---	---	---	---	---	---	---	---	---	---	---	---	---	---
INDIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
PAKISTAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	1.97	1.94	1.75	1.80	1.87	1.87	1.93	2.00	1.83	2.02	2.05	2.08	2.10	2.12
OTHER ASIA	3.61	3.74	3.74	3.76	3.83	3.74	3.74	3.75	3.75	3.75	3.75	3.75	3.75	3.75
AUSTRALIA	1.32	1.40	1.53	1.49	1.48	1.68	1.66	0.96	1.55	1.62	1.68	1.75	1.77	1.79
SOUTH AFRICA	0.13	0.08	0.06	0.06	0.05	0.05	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06
N AFRICA & MIDDLE EAST	0.55	0.50	0.70	0.72	1.07	0.81	0.55	0.68	0.54	0.75	0.78	0.80	0.80	0.80
OTHER AFRICA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
AVERAGE	1.72	1.59	1.73	1.84	1.60	1.68	1.80	1.67	1.65	1.76	1.79	1.83	1.85	1.87

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

ARGENTINA	650	451	620	434	400	450	437	350	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTHER LATIN AMERICA	220	230	280	263	244	255	255	265	265	273	278	284	286	289
EU-15	8440	8460	7963	8003	7188	5634	6888	6504	6285	6659	6595	6630	6618	6604
OTHER WEST EUROPE	518	431	480	625	594	371	508	355	505	515	517	520	520	520
CENTRAL EUROPE	3336	3218	3140	3287	2918	2354	2709	2521	2645	2734	2847	2956	2982	3007
RUSSIA	12289	10604	11977	123[illegible]6	10372	11241	11539	10750	9500	9800	10100	10400	10428	10452
UKRAINE	1658	1236	1387	1303	945	1246	1479	1385	1200	1196	1192	1188	1200	1213
OTHER FORMER USSR	1929	1402	1608	1917	1539	1643	1938	1981	1179	1808	1943	2081	2121	2161
FSU-15	15876	13242	14972	15546	12856	14130	14956	14116	11879	12804	13235	13668	13749	13825
JAPAN	10	10	6	6	3	3	3	3	4	3	3	3	3	3
TAIWAN	0	0	0	0	0	0	0	0	0	---	---	0	0	0
SOUTH KOREA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
CHINA	646	694	622	685	650	640	640	600	640	600	600	600	600	600
THAILAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PAKISTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
TURKEY	310	300	270	270	280	280	280	300	275	290	290	291	292	290
OTHER ASIA	65	71	71	79	69	71	71	75	75	74	74	75	75	75
AUSTRALIA	1738	1867	1670	1554	1722	1966	1651	897	1868	1945	2023	2100	2142	2184
SOUTH AFRICA	67	43	42	40	40	45	50	37	40	39	38	36	36	36
N AFRICA & MIDDLE EAST	108	81	108	88	203	124	79	30	70	88	92	96	96	95
OTHER AFRICA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
						(mil metric tons)								
TOTAL	40.6	35.4	39.3	39.1	32.8	33.7	35.5	33.3	30.5	33.7	33.8	34.5	34.7	34.9

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 27: Sorghum Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	4262	3659	4493	3678	3994	4876	3608	3629	3359	3547	3514	3538	3550	3560
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	1375	1100	1300	1300	1459	1030	1032	1100	1450	1200	1200	1200	1200	1200
BRAZIL	205	190	190	195	170	150	200	200	200	208	217	225	230	235
ARGENTINA	1000	600	700	675	720	717	538	438	450	526	513	500	510	520
OTHER LATIN AMERICA	1095	1147	1025	965	1017	963	893	825	903	957	979	1000	1000	1000
EU-15	65	78	108	110	115	142	124	110	85	140	123	124	124	124
OTHER WEST EUROPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL EUROPE	10	12	11	5	4	5	5	5	5	5	5	5	5	5
RUSSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UKRAINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER FORMER USSR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FSU-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAIWAN	22	27	18	26	26	26	26	26	15	20	20	20	20	20
SOUTH KOREA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CHINA	1864	1784	1630	1545	1388	1300	1340	1500	1400	1350	1300	1250	1200	1150
THAILAND	204	170	160	190	140	140	150	160	160	157	153	150	150	150
INDIA	15999	14599	14948	14357	12360	13110	12880	12800	12300	12433	12567	12700	12720	12740
PAKISTAN	320	431	440	416	382	383	365	398	400	400	400	400	400	400
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER ASIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUSTRALIA	765	645	380	401	569	434	493	502	662	683	704	725	740	755
SOUTH AFRICA	265	182	138	115	135	170	161	143	160	165	170	175	175	175
N AFRICA & MIDDLE EAST	776	892	908	938	966	968	879	912	890	938	944	950	950	950
OTHER AFRICA	13898	16428	15146	13678	14950	15901	14727	15884	15132	15301	15301	15250	15250	15250
						(mil hectares)								
TOTAL	42.1	41.9	41.6	38.6	38.4	40.3	37.4	38.6	37.6	38.0	38.1	38.2	38.2	38.2

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 28: Sorghum Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	4.36	4.00	3.48	3.96	3.72	4.56	3.76	4.58	3.72	4.33	4.38	4.43	4.48	4.53
CANADA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEXICO	2.91	2.83	2.88	2.85	3.02	3.00	2.92	2.73	2.90	3.00	3.14	3.28	3.29	3.31
BRAZIL	1.71	1.37	1.79	1.51	1.71	1.87	2.00	1.75	1.82	1.80	1.77	1.75	1.75	1.75
ARGENTINA	3.00	2.33	2.86	3.33	3.84	3.95	3.41	3.42	3.42	3.84	3.92	4.00	4.08	4.16
OTHER LATIN AMERICA	1.85	1.89	1.94	1.88	1.92	1.98	1.88	1.68	1.79	1.95	1.99	2.02	2.05	2.07
EU-15	5.34	5.86	4.90	4.36	5.64	5.87	6.00	5.04	5.76	5.79	5.95	5.95	5.97	5.98
OTHER WEST EUROPE	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CENTRAL EUROPE	2.00	2.50	0.73	0.80	0.75	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RUSSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
UKRAINE	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OTHER FORMER USSR	---	---	---	---	---	---	---	---	---	---	---	---	---	---
FSU-15	---	---	---	---	---	---	---	---	---	---	---	---	---	---
JAPAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TAIWAN	4.68	4.37	4.22	4.12	4.23	4.23	4.23	4.23	4.33	4.33	4.37	4.40	4.47	4.54
SOUTH KOREA	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
CHINA	2.91	3.14	2.72	3.67	3.55	3.65	3.73	3.47	3.57	3.70	3.77	3.84	3.92	4.00
THAILAND	1.03	1.35	1.44	1.42	1.07	1.07	1.20	1.25	1.25	1.31	1.37	1.43	1.44	1.45
INDIA	0.59	0.70	0.86	0.81	0.66	0.99	0.89	0.90	0.89	0.96	1.01	1.06	1.08	1.10
PAKISTAN	0.57	0.58	0.60	0.57	0.59	0.62	0.58	0.59	0.58	0.58	0.59	0.59	0.59	0.59
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OTHER ASIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
AUSTRALIA	2.19	1.99	2.56	1.93	2.59	1.28	1.89	2.02	2.02	2.03	2.04	2.05	2.07	2.09
SOUTH AFRICA	1.80	2.68	2.09	2.09	0.73	2.52	2.68	1.68	2.19	2.29	2.40	2.50	2.52	2.56
N AFRICA & MIDDLE EAST	1.64	1.52	1.52	1.56	1.53	1.55	1.73	1.70	1.72	1.67	1.67	1.68	1.69	1.71
OTHER AFRICA	0.66	0.79	0.69	0.68	0.78	0.83	0.76	0.81	0.79	0.80	0.80	0.80	0.80	0.81
AVERAGE	1.34	1.30	1.33	1.37	1.38	1.61	1.40	1.46	1.39	1.50	1.52	1.55	1.57	1.58

Shaded area is SCI estimate

6-Nov-95

TABLE 29: Sorghum Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
						(000 metric tons)							
USA	18563	14648	15632	14563	14856	22227	13569	16638	12493	15342	15375	15660	15891
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	4000	3110	3750	3700	4403	3088	3018	3000	4200	3601	3766	3930	3948
BRAZIL	350	260	340	295	290	280	400	350	365	375	384	394	403
ARGENTINA	3000	1400	2000	2250	2766	2830	1835	1500	1540	2018	2010	2000	2081
OTHER LATIN AMERICA	2023	2163	1990	1814	1951	1903	1683	1390	1612	1868	1943	2020	2046
EU-15	347	457	529	480	649	834	744	554	490	811	730	738	740
OTHER WEST EUROPE	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL EUROPE	20	30	8	4	3	4	4	5	5	5	5	5	5
RUSSIA	0	0	0	0	0	0	0	0	0	0	0	0	0
UKRAINE	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER FORMER USSR	0	0	0	0	0	0	0	0	0	0	0	0	0
FSU-15	0	0	0	0	0	0	0	0	0	0	0	0	0
JAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0
TAIWAN	103	118	76	107	110	110	110	110	65	87	87	88	89
SOUTH KOREA	2	2	2	2	2	2	1	1	2	2	2	2	2
CHINA	5428	5594	4435	5675	4932	4740	5000	5200	5000	5000	4900	4800	4700
THAILAND	210	230	230	270	150	150	180	200	200	205	210	215	216
INDIA	9500	10170	12914	11681	8100	12960	11520	11500	11000	11974	12712	13462	13738
PAKISTAN	181	248	262	239	225	238	212	234	230	232	234	236	237
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0
TURKEY	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER ASIA	0	0	0	0	0	0	0	0	0	0	0	0	0
AUSTRALIA	1677	1283	971	775	1472	557	931	1015	1337	1386	1436	1486	1532
SOUTH AFRICA	476	487	288	240	98	428	432	240	350	378	407	438	441
N AFRICA & MIDDLE EAST	1276	1353	1378	1465	1482	1496	1525	1550	1535	1565	1578	1591	1606
OTHER AFRICA	9231	12924	10457	9249	11673	13201	11207	12831	11987	12240	12240	12200	12261
						(mil metric tons)							
TOTAL	56.4	54.5	55.3	52.8	53.2	65.0	52.4	56.3	52.4	57.1	58.0	59.3	59.9

Shaded area is SCI estimate

6-Nov-95

SUM-AYG.XLS

TABLE 30: Oilseeds Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	28559	29507	29376	29130	30686	29633	30149	32203	33615	32678	33320	32431	32241	32255
CANADA	3514	4288	3511	3079	3821	3536	4901	6655	6216	4770	5658	5815	6028	6192
MEXICO	717	495	753	599	681	446	343	470	526	571	609	657	671	685
BRAZIL	12813	14619	13538	11827	11769	12201	12620	13254	12247	13301	13969	14607	14707	14808
ARGENTINA	7025	6851	8500	7900	8365	7630	8080	9290	9560	8998	9197	9170	9170	9170
OTHER LATIN AMERICA	2133	2604	2733	2594	2529	2132	2325	2376	2522	2672	2804	2935	3012	3089
EU-15	5441	5377	5233	6075	5924	6041	5952	6429	6071	5997	5902	5714	5691	5668
OTHER WEST EUROPE	25	26	26	26	27	27	27	27	27	26	25	25	25	24
CENTRAL EUROPE	2724	2639	2792	2326	2324	2631	2477	2478	3057	2942	2832	2721	2742	2762
RUSSIA	3254	3418	3541	3672	3438	3711	3662	3837	4840	3939	3989	4040	4122	4204
UKRAINE	1666	1737	1790	1794	1747	1781	1780	1790	1808	1818	1831	1845	1853	1861
OTHER FORMER USSR	3647	3919	3811	3614	3471	3510	3455	3350	3311	3405	3442	3478	3514	3549
FSU-15	8567	9074	9142	9080	8656	9002	8897	8977	9959	9161	9263	9363	9489	9614
JAPAN	187	184	172	165	159	127	103	77	96	96	95	95	94	93
TAIWAN	67	46	36	40	45	39	38	41	40	40	40	40	40	40
SOUTH KOREA	182	166	179	169	134	119	131	124	129	112	108	104	102	100
CHINA	22465	22398	21892	22272	23382	23825	23857	25891	25685	25560	25955	25950	25950	26050
THAILAND	485	580	683	602	531	514	484	492	489	531	568	605	628	650
INDIA	21128	23542	24453	25728	28215	27919	28534	28758	29600	30114	30522	30929	31373	31818
PAKISTAN	2949	2941	3013	3098	3303	3310	3271	3116	3311	3321	3329	3336	3349	3362
MALAYSIA	6	6	6	6	6	6	6	6	6	6	6	6	6	6
TURKEY	1506	1529	1655	1431	1231	1414	1215	1209	1387	1362	1389	1417	1436	1474
OTHER ASIA	3955	3958	3945	4017	4317	4318	4033	4269	4242	4488	4581	4675	4720	4765
AUSTRALIA	585	515	423	577	561	486	606	721	889	928	906	885	902	919
SOUTH AFRICA	864	815	833	875	819	663	630	779	810	729	742	755	762	775
N AFRICA & MIDDLE EAST	1178	1290	1296	1330	1235	1304	1241	1080	1305	1258	1274	1291	1297	1303
OTHER AFRICA	8725	8964	8371	8462	8472	8532	8056	8498	9070	8652	8652	8725	8755	8785
						(mil hectares)								
TOTAL	135.8	142.4	142.6	141.4	147.2	145.9	148.0	157.2	160.9	158.3	161.7	162.3	163.2	164.4

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 31: Oilseeds Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	2.13	1.70	2.02	2.08	2.10	2.31	1.97	2.48	2.09	2.23	2.30	2.33	2.35	2.38
CANADA	1.44	1.26	1.28	1.51	1.52	1.52	1.51	1.44	1.42	1.55	1.55	1.57	1.58	1.60
MEXICO	1.86	2.13	1.92	1.74	1.66	1.73	1.87	1.62	1.68	1.76	1.83	1.90	1.92	1.95
BRAZIL	1.54	1.71	1.60	1.44	1.76	1.92	2.02	2.01	1.87	1.95	1.94	1.94	1.96	1.98
ARGENTINA	1.91	1.50	1.80	2.12	1.90	1.95	2.08	2.03	2.05	2.10	2.12	2.14	2.16	2.17
OTHER LATIN AMERICA	1.34	1.38	1.23	1.28	1.21	1.50	1.42	1.58	1.46	1.48	1.48	1.48	1.50	1.52
EU-15	2.42	2.30	2.30	2.24	2.37	2.06	1.92	2.02	2.22	2.26	2.28	2.30	2.32	2.33
OTHER WEST EUROPE	2.36	2.35	2.50	2.12	2.37	2.19	2.22	2.22	2.22	2.38	2.43	2.49	2.52	2.55
CENTRAL EUROPE	1.79	1.74	1.84	1.82	1.91	1.50	1.47	1.59	1.83	1.85	1.89	1.92	1.93	1.95
RUSSIA	1.17	1.14	1.35	1.20	1.08	1.01	0.92	0.81	0.68	0.95	1.02	1.10	1.10	1.10
UKRAINE	1.71	1.70	1.72	1.62	1.52	1.36	1.33	0.99	1.03	1.38	1.38	1.38	1.38	1.38
OTHER FORMER USSR	1.37	1.44	1.49	1.47	1.39	1.19	1.25	1.22	1.25	1.30	1.34	1.37	1.38	1.39
FSU-15	1.36	1.38	1.48	1.39	1.29	1.15	1.13	1.00	0.93	1.17	1.21	1.25	1.26	1.26
JAPAN	1.79	1.69	1.81	1.59	1.44	1.65	1.17	1.52	1.32	1.43	1.43	1.42	1.42	1.43
TAIWAN	1.72	1.85	1.83	2.03	2.02	2.31	2.26	2.24	2.29	2.35	2.37	2.40	2.44	2.49
SOUTH KOREA	1.46	1.78	1.72	1.60	1.63	1.80	1.56	1.65	1.66	1.81	1.86	1.92	1.95	1.99
CHINA	1.49	1.36	1.30	1.50	1.48	1.39	1.62	1.64	1.61	1.60	1.61	1.63	1.65	1.66
THAILAND	1.13	1.29	1.30	1.26	1.27	1.33	1.36	1.34	1.32	1.34	1.37	1.39	1.41	1.42
INDIA	0.66	0.81	0.78	0.78	0.73	0.81	0.79	0.81	0.79	0.84	0.86	0.88	0.90	0.91
PAKISTAN	1.10	1.09	1.08	1.18	1.44	1.05	0.97	1.09	1.16	1.07	1.06	1.05	1.06	1.07
MALAYSIA	2.33	2.33	2.33	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
TURKEY	1.30	1.48	1.38	1.45	1.37	1.43	1.36	1.46	1.49	1.50	1.54	1.57	1.58	1.59
OTHER ASIA	1.00	1.00	1.01	1.02	1.03	1.04	1.04	1.02	1.07	1.09	1.10	1.12	1.14	1.15
AUSTRALIA	1.40	1.55	1.75	1.78	1.93	1.73	1.67	1.35	1.51	1.72	1.81	1.91	1.95	2.00
SOUTH AFRICA	1.11	1.00	1.16	1.06	0.49	0.95	1.05	0.81	0.93	1.08	1.13	1.18	1.20	1.24
N AFRICA & MIDDLE EAST	1.32	1.29	1.25	1.31	1.30	1.37	1.42	1.39	1.28	1.38	1.38	1.37	1.38	1.39
OTHER AFRICA	0.69	0.65	0.67	0.64	0.63	0.65	0.65	0.66	0.67	0.66	0.66	0.66	0.66	0.66
AVERAGE	1.47	1.37	1.43	1.47	1.47	1.50	1.48	1.59	1.49	1.56	1.59	1.60	1.62	1.63

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 32: Oilseed Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	60815	50295	59257	60550	64316	68442	59497	79721	70244	72978	76600	75435	75884	76879
CANADA	5043	5421	4497	4639	5819	5382	7410	9601	8798	7383	8751	9121	9538	9893
MEXICO	1334	1054	1442	1045	1132	773	643	761	884	1002	1113	1246	1291	1336
BRAZIL	19747	24965	21648	17083	20656	23381	25528	26587	22882	25906	27162	28359	28847	29340
ARGENTINA	13417	10261	15326	16764	15856	14910	16845	18816	19575	18872	19514	19659	19773	19886
OTHER LATIN AMERICA	2850	3588	3375	3326	3051	3206	3293	3743	3687	3966	4154	4345	4522	4703
EU-15	13177	12361	12062	13588	14024	12425	11426	12962	13460	13552	13485	13162	13195	13226
OTHER WEST EUROPE	59	61	65	55	64	59	60	60	60	61	62	62	62	62
CENTRAL EUROPE	4882	4591	5128	4239	4429	3956	3642	3935	5585	5438	5338	5215	5303	5391
RUSSIA	3798	3902	4796	4402	3700	3742	3358	3096	3300	3747	4082	4424	4515	4606
UKRAINE	2850	2947	3079	2904	2664	2423	2375	1765	1865	2511	2529	2548	2562	2576
OTHER FORMER USSR	4979	5637	5661	5301	4837	4185	4329	4090	4126	4436	4603	4769	4848	4928
FSU-15	11627	12486	13536	12607	11201	10350	10062	8951	9291	10695	11215	11740	11925	12110
JAPAN	335	311	311	262	229	210	120	117	127	137	136	135	134	133
TAIWAN	115	85	66	81	91	90	86	92	92	93	95	96	98	99
SOUTH KOREA	266	296	308	270	219	214	204	204	214	204	202	199	199	199
CHINA	33417	30415	28531	33330	34526	33038	38610	42378	41380	40820	41790	42170	42690	43340
THAILAND	550	751	891	757	675	684	659	659	645	714	777	843	882	923
INDIA	14044	19006	19063	20118	20644	22682	22614	23181	23281	25363	26309	27280	28186	29112
PAKISTAN	3235	3213	3251	3648	4767	3489	3166	3387	3827	3540	3515	3490	3546	3603
MALAYSIA	14	14	14	15	15	15	15	15	15	15	15	15	15	15
TURKEY	1956	2257	2282	2076	1685	2018	1657	1765	2061	2049	2135	2223	2266	2341
OTHER ASIA	3951	3950	3983	4112	4447	4491	4198	4350	4529	4875	5058	5244	5369	5495
AUSTRALIA	819	800	740	1028	1080	841	1015	975	1339	1593	1643	1688	1763	1839
SOUTH AFRICA	962	816	970	927	398	627	664	629	751	789	840	892	913	957
N AFRICA & MIDDLE EAST	1552	1659	1614	1737	1610	1783	1765	1506	1665	1736	1753	1773	1792	1811
OTHER AFRICA	5979	5837	5572	5382	5329	5524	5261	5604	6090	5681	5681	5735	5756	5777
						(mil metric tons)								
TOTAL	200.1	194.5	203.9	207.6	216.3	218.6	218.4	250.0	240.5	247.5	257.3	260.1	263.9	268.5

Shaded area is SCI estimate

6-Nov-95

SUM-AY.XLS

TABLE 33: Soybean Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	23137	23218	24094	22870	23477	23566	23208	24629	24976	23879	24986	24193	23994	23994
CANADA	461	533	540	484	598	560	720	820	819	700	750	775	805	835
MEXICO	390	139	468	276	340	305	220	226	170	283	312	340	352	364
BRAZIL	10550	12150	11550	9750	9700	10625	11440	11758	10423	11470	12000	12500	12600	12700
ARGENTINA	4260	4000	4950	4750	4800	4895	5400	5700	5540	5400	5500	5400	5380	5360
OTHER LATIN AMERICA	874	1219	1389	1291	1250	1371	1475	1544	1580	1605	1653	1700	1770	1840
EU-15	564	541	643	674	501	469	283	351	316	333	339	347	346	345
OTHER WEST EUROPE	0	1	1	1	2	2	2	2	2	2	2	2	2	2
CENTRAL EUROPE	529	558	696	338	217	300	170	133	145	169	182	196	202	209
RUSSIA	619	598	651	675	664	645	629	577	600	609	624	640	652	664
UKRAINE	74	76	105	93	102	97	80	80	85	90	95	100	102	104
OTHER FORMER USSR	90	85	75	61	46	45	45	45	45	43	43	43	43	43
FSU-15	783	759	831	829	812	787	754	702	730	742	762	783	797	811
JAPAN	163	162	152	146	141	110	87	61	80	80	80	80	80	80
TAIWAN	8	6	4	4	4	5	6	6	6	5	5	5	5	5
SOUTH KOREA	154	145	157	152	119	105	117	110	115	98	94	90	88	86
CHINA	8445	8120	8034	7560	7041	7221	9454	10000	8750	9000	9000	9000	9000	9000
THAILAND	303	392	502	408	318	343	343	352	342	378	414	450	470	490
INDIA	1543	1734	2253	2564	3185	3627	4250	3950	4400	4600	4800	5000	5200	5400
PAKISTAN	2	2	1	2	4	8	6	6	6	6	6	6	6	6
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	112	60	100	60	50	50	40	50	60	55	57	60	64	72
OTHER ASIA	1621	1721	1748	1779	2066	2010	1950	2026	2058	2178	2239	2300	2340	2380
AUSTRALIA	46	71	49	40	29	32	39	17	59	59	60	60	62	64
SOUTH AFRICA	44	44	61	87	83	45	55	65	75	64	67	70	71	73
N AFRICA & MIDDLE EAST	104	112	99	101	108	82	75	77	74	82	84	85	86	87
OTHER AFRICA	135	158	174	172	166	149	169	177	185	181	181	185	185	185
						(mil hectares)								
TOTAL	54.2	55.8	58.5	54.3	55.0	56.7	60.3	62.8	60.9	61.4	63.6	63.6	63.9	64.4

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

TABLE 34: Soybean Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	2.28	1.82	2.17	2.29	2.30	2.53	2.19	2.78	2.39	2.56	2.59	2.62	2.66	2.69
CANADA	2.75	2.16	2.26	2.61	2.44	2.48	2.57	2.75	2.61	2.80	2.82	2.85	2.87	2.89
MEXICO	1.92	2.16	2.10	2.05	2.11	1.88	2.16	1.90	2.20	2.04	2.10	2.17	2.19	2.20
BRAZIL	1.71	1.94	1.76	1.62	1.99	2.12	2.16	2.18	2.08	2.15	2.15	2.15	2.17	2.19
ARGENTINA	2.28	1.63	2.17	2.42	2.32	2.32	2.28	2.14	2.30	2.34	2.37	2.40	2.42	2.44
OTHER LATIN AMERICA	1.77	1.87	1.59	1.57	1.55	1.82	1.77	1.95	1.81	1.88	1.89	1.90	1.92	1.94
EU-15	3.16	3.08	3.10	3.09	3.07	2.72	2.85	2.94	3.00	3.07	3.15	3.26	3.28	3.30
OTHER WEST EUROPE	---	2.00	2.00	3.00	2.00	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
CENTRAL EUROPE	1.31	1.20	0.97	1.06	1.97	1.06	1.26	1.47	1.74	1.72	1.72	1.74	1.75	1.77
RUSSIA	0.87	1.13	1.13	1.06	0.94	0.78	0.79	0.73	0.67	0.94	1.04	1.15	1.15	1.15
UKRAINE	1.15	1.33	1.18	1.06	1.32	0.78	1.25	1.13	1.06	1.14	1.14	1.15	1.18	1.21
OTHER FORMER USSR	1.10	1.29	1.27	1.05	1.13	1.18	1.11	1.00	1.11	1.11	1.16	1.21	1.22	1.23
FSU-15	0.93	1.17	1.15	1.06	1.00	0.81	0.86	0.79	0.74	0.97	1.06	1.15	1.16	1.16
JAPAN	1.76	1.71	1.79	1.51	1.40	1.71	1.16	1.62	1.38	1.50	1.50	1.50	1.50	1.50
TAIWAN	1.88	1.83	2.00	2.00	2.00	2.60	2.17	2.17	2.17	2.36	2.38	2.40	2.46	2.52
SOUTH KOREA	1.32	1.65	1.61	1.53	1.54	1.68	1.45	1.55	1.57	1.67	1.71	1.75	1.78	1.81
CHINA	1.44	1.43	1.27	1.46	1.38	1.43	1.62	1.60	1.60	1.62	1.64	1.65	1.67	1.69
THAILAND	1.12	1.32	1.34	1.30	1.37	1.40	1.40	1.36	1.35	1.37	1.40	1.43	1.44	1.46
INDIA	0.58	0.89	0.80	1.01	0.78	0.86	0.94	0.84	0.91	0.94	0.97	1.00	1.04	1.07
PAKISTAN	0.50	0.50	1.00	0.50	1.50	1.25	2.33	2.33	2.33	2.34	2.34	2.35	2.35	2.35
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	1.07	1.17	1.20	2.00	1.80	1.80	1.75	1.80	1.75	1.79	1.80	1.80	1.80	1.80
OTHER ASIA	1.03	1.10	1.10	1.11	1.13	1.12	1.09	1.07	1.11	1.16	1.18	1.20	1.22	1.24
AUSTRALIA	1.48	1.82	1.57	1.55	2.17	1.59	2.10	2.00	1.78	1.82	1.86	1.90	1.96	2.02
SOUTH AFRICA	1.91	1.59	1.77	1.45	0.82	1.36	1.31	0.89	1.33	1.49	1.60	1.70	1.72	1.76
N AFRICA & MIDDLE EAST	2.25	2.13	2.03	2.09	2.13	1.99	2.01	2.00	1.97	2.12	2.16	2.20	2.20	2.20
OTHER AFRICA	1.41	1.33	1.24	1.20	0.93	1.28	1.28	1.31	1.32	1.38	1.38	1.40	1.42	1.44
AVERAGE	1.91	1.72	1.84	1.92	1.95	2.07	1.95	2.18	2.02	2.10	2.13	2.14	2.16	2.18

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

TABLE 35: Soybean Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	52736	42152	52354	52416	54065	59612	50919	68493	59620	61072	64691	63451	63738	64545
CANADA	1270	1153	1219	1262	1460	1387	1851	2251	2139	1958	2118	2209	2310	2413
MEXICO	750	300	984	567	718	572	476	430	374	576	655	738	769	802
BRAZIL	18020	23600	20340	15750	19300	22500	24700	25600	21680	24667	25803	26875	27342	27813
ARGENTINA	9700	6500	10750	11500	11150	11350	12300	12200	12740	12627	13030	12960	13020	13078
OTHER LATIN AMERICA	1551	2282	2214	2028	1936	2495	2607	3011	2853	3015	3122	3230	3398	3570
EU-15	1783	1668	1993	2085	1538	1274	807	1031	949	1021	1069	1133	1136	1139
OTHER WEST EUROPE	0	2	2	3	4	5	5	5	5	5	5	5	5	5
CENTRAL EUROPE	691	669	675	359	428	319	214	196	253	290	314	340	355	369
RUSSIA	541	675	738	717	624	505	497	421	400	572	652	736	750	764
UKRAINE	85	101	124	99	135	76	100	90	90	102	109	115	120	126
OTHER FORMER USSR	99	110	95	64	52	53	50	45	50	48	50	52	53	53
FSU-15	725	886	957	880	811	634	647	556	540	722	811	903	923	942
JAPAN	287	277	272	220	197	188	101	99	110	120	120	120	120	120
TAIWAN	15	11	8	8	8	13	13	13	13	12	12	12	12	13
SOUTH KOREA	203	239	252	233	183	176	170	170	180	164	161	158	157	156
CHINA	12184	11645	10227	11000	9710	10300	15310	16000	14000	14580	14760	14850	15030	15210
THAILAND	338	517	672	530	435	480	480	480	460	519	580	644	679	714
INDIA	898	1547	1806	2602	2492	3106	4000	3300	4000	4321	4655	5000	5387	5789
PAKISTAN	1	1	1	1	6	10	14	14	14	14	14	14	15	15
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
TURKEY	120	70	120	120	90	90	70	90	105	98	103	108	115	130
OTHER ASIA	1671	1891	1921	1973	2336	2255	2123	2168	2288	2521	2639	2760	2855	2951
AUSTRALIA	68	129	77	62	63	51	82	34	105	108	111	114	122	129
SOUTH AFRICA	84	70	108	126	68	61	72	58	100	96	107	119	122	128
N AFRICA & MIDDLE EAST	234	238	201	211	230	163	151	154	146	174	181	187	189	191
OTHER AFRICA	191	210	216	207	154	190	216	232	245	249	249	259	263	266
						(mil metric tons)								
TOTAL	103.5	96.1	107.4	104.1	107.4	117.2	117.3	136.6	122.9	128.9	135.3	136.2	138.1	140.5

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

TABLE 36: Cotton Area

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 hectares)								
USA (harvested)	4061	4835	3860	4748	5245	4510	5173	5391	6427	6510	6030	5934	5942	5946
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	225	255	188	230	250	42	30	146	240	180	185	200	203	206
BRAZIL	2156	2367	1900	1977	1969	1485	1085	1400	1725	1729	1865	2000	2000	2000
ARGENTINA	515	501	570	630	580	325	480	650	700	675	650	600	600	600
OTHER LATIN AMERICA	997	1034	1056	1100	1066	581	660	642	752	851	926	1000	1000	1000
EU-15	282	394	347	367	310	353	383	419	461	453	478	486	489	492
OTHER WEST EUROPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CENTRAL EUROPE	41	41	24	26	17	13	9	12	12	12	12	12	12	13
RUSSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UKRAINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER FORMER USSR	3224	3432	3338	3171	3010	2888	2815	2730	2681	2765	2790	2815	2842	2869
FSU-15	3224	3432	3338	3171	3010	2888	2815	2730	2681	2765	2790	2815	2842	2869
JAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAIWAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH KOREA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CHINA	4844	5535	5203	5588	6539	6835	5000	5530	5400	5400	5400	5400	5400	5400
THAILAND	64	70	61	72	91	48	16	15	20	26	25	25	26	27
INDIA	6471	7343	7331	7440	7695	7543	7440	7608	7850	7809	7767	7726	7781	7836
PAKISTAN	2568	2508	2599	2662	2836	2836	2805	2650	2850	2858	2867	2875	2890	2905
MALAYSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TURKEY	586	737	725	641	599	637	568	582	700	583	579	575	580	590
OTHER ASIA	295	286	282	296	331	301	273	322	317	329	340	350	350	350
AUSTRALIA	247	194	240	279	282	262	264	209	226	293	297	300	305	310
SOUTH AFRICA	205	208	165	127	79	54	82	67	125	78	82	85	86	87
N AFRICA & MIDDLE EAST	902	960	958	955	866	897	839	798	887	833	829	825	815	805
OTHER AFRICA	2890	3063	2717	2859	3052	3019	2679	2883	3408	3052	3052	3100	3120	3140
						(mil hectares)								
TOTAL	30.6	33.8	31.6	33.2	34.8	32.6	30.6	32.1	34.8	34.4	34.2	34.3	34.4	34.6

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

TABLE 37: Cotton Lint Yield

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(tons / hectare)								
USA	0.791	0.694	0.688	0.711	0.731	0.783	0.679	0.794	0.649	0.742	0.764	0.775	0.786	0.797
CANADA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEXICO	0.982	1.196	0.883	0.761	0.724	0.714	0.800	0.685	0.725	0.762	0.765	0.767	0.778	0.780
BRAZIL	0.355	0.311	0.347	0.354	0.381	0.310	0.373	0.407	0.379	0.385	0.393	0.400	0.405	0.410
ARGENTINA	0.548	0.389	0.486	0.468	0.431	0.446	0.490	0.469	0.467	0.487	0.494	0.500	0.510	0.520
OTHER LATIN AMERICA	0.568	0.557	0.509	0.525	0.451	0.527	0.429	0.481	0.487	0.492	0.496	0.500	0.500	0.500
EU-15	0.911	0.876	0.911	0.787	0.965	0.935	0.953	0.895	0.850	0.944	0.970	0.995	1.004	1.012
OTHER WEST EUROPE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CENTRAL EUROPE	0.512	0.488	1.250	1.077	1.059	0.923	0.556	0.833	0.833	0.836	0.837	0.838	0.840	0.841
RUSSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
UKRAINE	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OTHER FORMER USSR	0.981	0.805	0.796	0.818	0.814	0.704	0.744	0.734	0.747	0.771	0.789	0.806	0.810	0.814
FSU-15	0.981	0.805	0.796	0.818	0.814	0.704	0.744	0.734	0.747	0.771	0.789	0.806	0.810	0.814
JAPAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TAIWAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SOUTH KOREA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHINA	0.877	0.751	0.728	0.807	0.869	0.659	0.749	0.784	0.746	0.764	0.782	0.800	0.805	0.810
THAILAND	0.391	0.500	0.475	0.444	0.473	0.458	0.375	0.400	0.350	0.449	0.462	0.475	0.480	0.485
INDIA	0.240	0.245	0.315	0.267	0.267	0.316	0.281	0.300	0.291	0.297	0.302	0.307	0.311	0.314
PAKISTAN	0.572	0.569	0.560	0.615	0.768	0.543	0.488	0.558	0.550	0.583	0.617	0.650	0.676	0.702
MALAYSIA	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TURKEY	0.916	0.882	0.851	1.022	0.937	0.901	1.060	1.079	1.089	1.035	1.043	1.050	1.060	1.070
OTHER ASIA	0.292	0.294	0.230	0.240	0.233	0.229	0.227	0.220	0.252	0.273	0.289	0.305	0.309	0.313
AUSTRALIA	1.126	1.376	1.271	1.552	1.780	1.424	1.246	1.512	1.300	1.668	1.684	1.700	1.720	1.740
SOUTH AFRICA	0.380	0.375	0.370	0.386	0.253	0.278	0.329	0.343	0.264	0.352	0.363	0.375	0.375	0.375
N AFRICA & MIDDLE EAST	0.722	0.661	0.640	0.683	0.749	0.835	0.936	0.793	0.770	0.882	0.891	0.900	0.906	0.912
OTHER AFRICA	0.307	0.307	0.302	0.307	0.284	0.313	0.309	0.316	0.329	0.323	0.323	0.325	0.325	0.325
AVERAGE	0.599	0.544	0.550	0.571	0.600	0.552	0.548	0.581	0.545	0.581	0.592	0.603	0.610	0.617

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

TABLE 38: Cotton Lint Production

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						(000 metric tons)								
USA	3214	3355	2655	3376	3835	3531	3513	4281	4168	4831	4609	4600	4672	4741
CANADA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	221	305	166	175	181	30	24	100	174	137	142	153	158	161
BRAZIL	765	735	660	700	750	460	405	570	654	666	732	800	810	820
ARGENTINA	282	195	277	295	250	145	235	305	327	329	321	300	306	312
OTHER LATIN AMERICA	566	576	538	577	481	306	283	309	366	418	459	500	500	500
EU-15	257	345	316	289	299	330	365	375	392	427	463	484	491	498
OTHER WEST EUROPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL EUROPE	21	20	30	28	18	12	5	10	10	10	10	10	10	11
RUSSIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UKRAINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER FORMER USSR	3164	2762	2657	2593	2449	2032	2094	2003	2002	2131	2200	2269	2302	2336
FSU-15	3164	2762	2657	2593	2449	2032	2094	2003	2002	2131	2200	2269	2302	2336
JAPAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAIWAN	0	0	0	0	0	0	0	0	0	---	---	0	0	0
SOUTH KOREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHINA	4246	4159	3788	4507	5683	4507	3745	4333	4028	4125	4223	4320	4347	4374
THAILAND	25	35	29	32	43	22	6	6	7	11	12	12	12	13
INDIA	1555	1802	2608	1989	2053	2380	2091	2286	2286	2316	2345	2373	2418	2463
PAKISTAN	1468	1426	1456	1638	2177	1540	1368	1479	1568	1667	1768	1869	1954	2039
MALAYSIA	0	0	0	0	0	0	0	0	0	---	---	0	0	0
TURKEY	537	650	617	655	561	574	602	628	762	604	604	604	615	631
OTHER ASIA	86	84	65	71	77	69	62	71	80	90	98	107	108	110
AUSTRALIA	278	267	305	433	502	373	329	316	294	489	500	510	525	539
SOUTH AFRICA	78	78	61	49	20	15	27	23	33	27	30	32	32	33
N AFRICA & MIDDLE EAST	651	635	613	652	649	749	785	633	683	734	739	743	738	734
OTHER AFRICA	888	941	821	878	867	946	827	910	1120	984	984	1008	1014	1021
						(mil metric tons)								
TOTAL	18.3	18.4	17.4	18.9	20.9	18.0	16.8	18.6	19.0	20.0	20.2	20.7	21.0	21.3

Shaded area is SCI estimate

6-Nov-95

SUM-AYO.XLS

APPENDIX G

Waterway Traffic Forecasts by BEA Area

Waterway Traffic Projections of Corn for Chicago, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	6,719	NA	NA	0	NA	NA	6,719	NA
2000	6,704	9,861	13,018	0	0	0	6,704	9,861	13,018
2005	7,445	10,951	14,457	0	0	0	7,445	10,951	14,457
2010	8,015	11,788	15,562	0	0	0	8,015	11,788	15,562
2015	8,512	12,521	16,529	0	0	0	8,512	12,521	16,529
2020	8,987	13,219	17,451	0	0	0	8,987	13,219	17,451
2025	9,487	13,954	18,422	0	0	0	9,487	13,954	18,422
2030	10,035	14,760	19,486	0	0	0	10,035	14,760	19,486
2035	10,627	15,631	20,635	0	0	0	10,627	15,631	20,635
2040	11,245	16,540	21,835	0	0	0	11,245	16,540	21,835
2045	11,870	17,460	23,050	0	0	0	11,870	17,460	23,050
2050	12,479	18,356	24,232	0	0	0	12,479	18,356	24;232

Waterway Traffic Projections of Corn for Springfield/Decateur, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	914	NA	NA	10,677	NA	NA	11,591	NA
2000	882	1,298	1,713	11,159	16,413	21,668	12,041	17,711	23,381
2005	980	1,441	1,903	12,393	18,228	24,064	13,373	19,670	25,967
2010	1,055	1,552	2,048	13,340	19,622	25,903	14,395	21,173	27,952
2015	1,120	1,648	2,175	14,169	20,840	27,512	15,289	22,488	29,688
2020	1,183	1,740	2,297	14,959	22,004	29,048	16,142	23,743	31,345
2025	1,249	1,837	2,425	15,791	23,227	30,662	17,040	25,063	33,087
2030	1,321	1,943	2,565	16,703	24,569	32,434	18,024	26,511	34,998
2035	1,399	2,057	2,716	17,688	26,017	34,346	19,087	28,074	37,062
2040	1,480	2,177	2,874	18,717	27,530	36,344	20,197	29,707	39,217
2045	1,562	2,298	3,034	19,758	29,062	38,366	21,321	31,360	41,399
2050	1,642	2,416	3,189	20,772	30,553	40,333	22,414	32,968	43,523

Waterway Traffic Projections of Corn for Quincy, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	372	NA	NA	14,972	NA	NA	15,344	NA
2000	320	470	621	13,925	20,482	27,039	14,245	20,952	27,660
2005	355	522	689	15,465	22,747	30,029	15,820	23,269	30,719
2010	382	562	742	16,647	24,486	32,325	17,029	25,048	33,067
2015	406	597	788	17,681	26,007	34,333	18,087	26,604	35,120
2020	428	630	832	18,668	27,458	36,249	19,096	28,088	37,081
2025	452	665	878	19,706	28,985	38,264	20,158	29,650	39,142
2030	478	704	929	20,844	30,659	40,474	21,322	31,363	41,403
2035	507	745	984	22,073	32,467	42,861	22,580	33,212	43,844
2040	536	788	1,041	23,357	34,355	45,353	23,893	35,143	46,394
2045	566	832	1,099	24,656	36,267	47,877	25,222	37,099	48,976
2050	595	875	1,155	25,921	38,127	50,332	26,516	39,002	51,487

Waterway Traffic Projections of Corn for Peoria, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	3,957	NA	NA	6,719	NA	NA	10,677	NA
2000	4,455	6,552	8,650	6,704	9,861	13,018	11,159	16,413	21,668
2005	4,947	7,277	9,607	7,445	10,951	14,457	12,393	18,228	24,064
2010	5,326	7,833	10,341	8,015	11,788	15,562	13,340	19,622	25,903
2015	5,656	8,320	10,983	8,512	12,521	16,529	14,169	20,840	27,512
2020	5,972	8,784	11,596	8,987	13,219	17,451	14,959	22,004	29,048
2025	6,304	9,272	12,241	9,487	13,954	18,422	15,791	23,227	30,662
2030	6,668	9,808	12,948	10,035	14,760	19,486	16,703	24,569	32,434
2035	7,061	10,386	13,711	10,627	15,631	20,635	17,688	26,017	34,346
2040	7,472	10,990	14,509	11,245	16,540	21,835	18,717	27,530	36,344
2045	7,888	11,602	15,316	11,870	17,460	23,050	19,758	29,062	38,366
2050	8,292	12,197	16,102	12,479	18,356	24,232	20,772	30,553	40,333

Waterway Traffic Projections of Corn for La Crosse, Wisconsin (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	1,422	NA	NA	3,936	NA	NA	5,358	NA
2000	1,110	1,633	2,156	3,773	5,550	7,327	4,884	7,183	9,483
2005	1,233	1,814	2,394	4,191	6,164	8,137	5,424	7,978	10,532
2010	1,327	1,952	2,577	4,511	6,635	8,759	5,838	8,587	11,337
2015	1,410	2,074	2,737	4,791	7,047	9,303	6,201	9,121	12,041
2020	1,488	2,189	2,890	5,059	7,440	9,822	6,547	9,630	12,713
2025	1,571	2,311	3,051	5,340	7,854	10,368	6,911	10,165	13,419
2030	1,662	2,445	3,227	5,648	8,308	10,967	7,310	10,752	14,195
2035	1,760	2,589	3,417	5,981	8,798	11,614	7,741	11,386	15,032
2040	1,862	2,739	3,616	6,329	9,309	12,289	8,191	12,049	15,906
2045	1,966	2,892	3,817	6,681	9,827	12,973	8,647	12,719	16,791
2050	2,067	3,040	4,013	7,024	10,331	13,639	9,091	13,371	17,652

Waterway Traffic Projections of Corn for Minneapolis/St. Paul Minnesota (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	3,936	NA	NA	0	NA	NA	3,936	NA
2000	3,773	5,550	7,327	0	0	0	3,773	5,550	7,327
2005	4,191	6,164	8,137	0	0	0	4,191	6,164	8,137
2010	4,511	6,635	8,759	0	0	0	4,511	6,635	8,759
2015	4,791	7,047	9,303	0	0	0	4,791	7,047	9,303
2020	5,059	7,440	9,822	0	0	0	5,059	7,440	9,822
2025	5,340	7,854	10,368	0	0	0	5,340	7,854	10,368
2030	5,648	8,308	10,967	0	0	0	5,648	8,308	10,967
2035	5,981	8,798	11,614	0	0	0	5,981	8,798	11,614
2040	6,329	9,309	12,289	0	0	0	6,329	9,309	12,289
2045	6,681	9,827	12,973	0	0	0	6,681	9,827	12,973
2050	7,024	10,331	13,639	0	0	0	7,024	10,331	13,639

Waterway Traffic Projections of Corn for Dubuque, Iowa (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	3,869	NA	NA	5,358	NA	NA	9,227	NA
2000	3,161	4,650	6,139	4,884	7,183	9,483	8,045	11,833	15,622
2005	3,511	5,164	6,817	5,424	7,978	10,532	8,935	13,142	17,349
2010	3,779	5,559	7,339	5,838	8,587	11,337	9,618	14,146	18,675
2015	4,014	5,904	7,794	6,201	9,121	12,041	10,215	15,025	19,835
2020	4,238	6,234	8,229	6,547	9,630	12,713	10,785	15,864	20,942
2025	4,474	6,580	8,687	6,911	10,165	13,419	11,385	16,745	22,106
2030	4,732	6,960	9,189	7,310	10,752	14,195	12,042	17,713	23,383
2035	5,011	7,371	9,730	7,741	11,386	15,032	12,752	18,757	24,762
2040	5,303	7,799	10,296	8,191	12,049	15,906	13,494	19,848	26,202
2045	5,598	8,233	10,869	8,647	12,719	16,791	14,245	20,952	27,660
2050	5,885	8,656	11,427	9,091	13,371	17,652	14,975	22,027	29,079

Waterway Traffic Projections of Corn for Davenport/Rock Island (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	5,745	NA	NA	9,227	NA	NA	14,972	NA
2000	5,880	8,649	11,418	8,045	11,833	15,622	13,925	20,482	27,039
2005	6,530	9,605	12,680	8,935	13,142	17,349	15,465	22,747	30,029
2010	7,030	10,340	13,650	9,618	14,146	18,675	16,647	24,486	32,325
2015	7,466	10,982	14,498	10,215	15,025	19,835	17,681	26,007	34,333
2020	7,883	11,595	15,307	10,785	15,864	20,942	18,668	27,458	36,249
2025	8,321	12,239	16,158	11,385	16,745	22,106	19,706	28,985	38,264
2030	8,802	12,946	17,091	12,042	17,713	23,383	20,844	30,659	40,474
2035	9,321	13,710	18,099	12,752	18,757	24,762	22,073	32,467	42,861
2040	9,863	14,507	19,151	13,494	19,848	26,202	23,357	34,355	45,353
2045	10,412	15,314	20,217	14,245	20,952	27,660	24,656	36,267	47,877
2050	10,946	16,100	21,254	14,975	22,027	29,079	25,921	38,127	50,332

Waterway Traffic Projections of Corn for St. Louis, Missouri (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic*			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	2,251	NA	NA	30,221	NA	NA	32,472	NA
2000	2,246	3,304	4,361	26,344	38,749	51,153	28,590	42,052	55,515
2005	2,494	3,669	4,844	29,257	43,033	56,810	31,751	46,702	61,653
2010	2,685	3,949	5,214	31,493	46,323	61,152	34,178	50,272	66,366
2015	2,852	4,195	5,538	33,449	49,200	64,950	36,301	53,395	70,488
2020	3,011	4,429	5,847	35,316	51,946	68,575	38,327	56,375	74,422
2025	3,178	4,675	6,172	37,279	54,833	72,387	40,458	59,508	78,559
2030	3,362	4,945	6,528	39,433	58,001	76,569	42,795	62,946	83,097
2035	3,560	5,237	6,913	41,758	61,421	81,084	45,318	66,658	87,997
2040	3,767	5,541	7,315	44,186	64,993	85,799	47,954	70,534	93,115
2045	3,977	5,850	7,722	46,645	68,609	90,573	50,622	74,459	98,296
2050	4,181	6,150	8,118	49,037	72,128	95,219	53,218	78,278	103,337

*Includes Missouri River Traffic

Waterway Traffic Projections of Soybeans for Chicago, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	1,984	NA	NA	0	NA	NA	1,984	NA
2000	1,386	2,034	2,682	0	0	0	1,386	2,034	2,682
2005	1,551	2,276	3,001	0	0	0	1,551	2,276	3,001
2010	1,652	2,425	3,197	0	0	0	1,652	2,425	3,197
2015	1,756	2,577	3,398	0	0	0	1,756	2,577	3,398
2020	1,858	2,727	3,595	0	0	0	1,858	2,727	3,595
2025	1,964	2,882	3,800	0	0	0	1,964	2,882	3,800
2030	2,078	3,049	4,020	0	0	0	2,078	3,049	4,020
2035	2,198	3,225	4,253	0	0	0	2,198	3,225	4,253
2040	2,322	3,408	4,494	0	0	0	2,322	3,408	4,494
2045	2,448	3,593	4,737	0	0	0	2,448	3,593	4,737
2050	2,572	3,775	4,977	0	0	0	2,572	3,775	4,977

Waterway Traffic Projections of Soybeans for Springfield/Decateur, Illinois (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	326	NA	NA	3,480	NA	NA	3,806	NA
2000	207	304	400	2,445	3,588	4,730	2,652	3,891	5,131
2005	231	340	448	2,735	4,014	5,293	2,967	4,354	5,740
2010	247	362	477	2,915	4,277	5,639	3,161	4,639	6,117
2015	262	385	507	3,098	4,546	5,994	3,360	4,931	6,501
2020	277	407	537	3,277	4,809	6,341	3,555	5,216	6,878
2025	293	430	567	3,464	5,084	6,703	3,757	5,514	7,270
2030	310	455	600	3,665	5,378	7,091	3,975	5,833	7,691
2035	328	481	635	3,877	5,689	7,501	4,205	6,170	8,136
2040	347	509	671	4,096	6,011	7,926	4,443	6,520	8,596
2045	365	536	707	4,318	6,337	8,355	4,684	6,873	9,062
2050	384	563	743	4,537	6,658	8,778	4,921	7,221	9,521

Waterway Traffic Projections of Soybeans for Quincy, Illinois
(Thousands of Short Tons)

Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	778	NA	NA	8,353	NA	NA	9,131	NA
2000	270	397	523	6,204	9,104	12,004	6,475	9,501	12,527
2005	303	444	585	6,942	10,187	13,431	7,244	10,630	14,017
2010	322	473	624	7,397	10,854	14,311	7,719	11,327	14,935
2015	343	503	663	7,862	11,537	15,212	8,205	12,040	15,875
2020	362	532	701	8,317	12,205	16,093	8,680	12,737	16,794
2025	383	562	741	8,792	12,901	17,011	9,175	13,464	17,752
2030	405	595	784	9,300	13,647	17,995	9,706	14,242	18,779
2035	429	629	830	9,839	14,438	19,036	10,267	15,067	19,866
2040	453	665	877	10,396	15,255	20,114	10,849	15,920	20,990
2045	478	701	924	10,959	16,082	21,204	11,437	16,782	22,128
2050	502	736	971	11,514	16,896	22,278	12,016	17,632	23,248

Waterway Traffic Projections of Soybeans for Peoria, Illinois
(Thousands of Short Tons)

Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	1,496	NA	NA	1,984	NA	NA	3,480	NA
2000	1,059	1,554	2,048	1,386	2,034	2,682	2,445	3,588	4,730
2005	1,185	1,738	2,292	1,551	2,276	3,001	2,735	4,014	5,293
2010	1,262	1,852	2,442	1,652	2,425	3,197	2,915	4,277	5,639
2015	1,342	1,969	2,596	1,756	2,577	3,398	3,098	4,546	5,994
2020	1,419	2,083	2,746	1,858	2,727	3,595	3,277	4,809	6,341
2025	1,500	2,202	2,903	1,964	2,882	3,800	3,464	5,084	6,703
2030	1,587	2,329	3,071	2,078	3,049	4,020	3,665	5,378	7,091
2035	1,679	2,464	3,248	2,198	3,225	4,253	3,877	5,689	7,501
2040	1,774	2,603	3,432	2,322	3,408	4,494	4,096	6,011	7,926
2045	1,870	2,744	3,618	2,448	3,593	4,737	4,318	6,337	8,355
2050	1,965	2,883	3,802	2,572	3,775	4,977	4,537	6,658	8,778

Waterway Traffic Projections of Soybeans for La Crosse, Wisconsin (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	312	NA	NA	1,617	NA	NA	1,929	NA
2000	197	289	381	1,438	2,110	2,782	1,635	2,399	3,163
2005	220	323	426	1,609	2,361	3,113	1,829	2,684	3,539
2010	235	344	454	1,714	2,516	3,317	1,949	2,860	3,771
2015	249	366	483	1,822	2,674	3,526	2,072	3,040	4,008
2020	264	387	510	1,928	2,829	3,730	2,191	3,216	4,240
2025	279	409	540	2,038	2,990	3,943	2,316	3,399	4,482
2030	295	433	571	2,155	3,163	4,171	2,450	3,596	4,741
2035	312	458	604	2,280	3,346	4,412	2,592	3,804	5,016
2040	330	484	638	2,409	3,536	4,662	2,739	4,019	5,300
2045	348	510	673	2,540	3,727	4,914	2,888	4,237	5,587
2050	365	536	707	2,668	3,916	5,163	3,034	4,452	5,870

Waterway Traffic Projections of Soybeans for Minneapolis/St Paul Minnesota (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	1,617	NA	NA	0	NA	NA	1,617	NA
2000	1,438	2,110	2,782	0	0	0	1,438	2,110	2,782
2005	1,609	2,361	3,113	0	0	0	1,609	2,361	3,113
2010	1,714	2,516	3,317	0	0	0	1,714	2,516	3,317
2015	1,822	2,674	3,526	0	0	0	1,822	2,674	3,526
2020	1,928	2,829	3,730	0	0	0	1,928	2,829	3,730
2025	2,038	2,990	3,943	0	0	0	2,038	2,990	3,943
2030	2,155	3,163	4,171	0	0	0	2,155	3,163	4,171
2035	2,280	3,346	4,412	0	0	0	2,280	3,346	4,412
2040	2,409	3,536	4,662	0	0	0	2,409	3,536	4,662
2045	2,540	3,727	4,914	0	0	0	2,540	3,727	4,914
2050	2,668	3,916	5,163	0	0	0	2,668	3,916	5,163

Waterway Traffic Projections of Soybeans for Dubuque, Iowa (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	632	NA	NA	1,929	NA	NA	2,561	NA
2000	473	693	914	1,635	2,399	3,163	2,107	3,092	4,077
2005	529	776	1,023	1,829	2,684	3,539	2,358	3,460	4,562
2010	563	827	1,090	1,949	2,860	3,771	2,512	3,687	4,861
2015	599	879	1,159	2,072	3,040	4,008	2,670	3,918	5,167
2020	633	930	1,226	2,191	3,216	4,240	2,825	4,145	5,466
2025	670	983	1,296	2,316	3,399	4,482	2,986	4,382	5,778
2030	708	1,039	1,371	2,450	3,596	4,741	3,159	4,635	6,112
2035	749	1,100	1,450	2,592	3,804	5,016	3,342	4,904	6,466
2040	792	1,162	1,532	2,739	4,019	5,300	3,531	5,181	6,832
2045	835	1,225	1,615	2,888	4,237	5,587	3,722	5,462	7,202
2050	877	1,287	1,697	3,034	4,452	5,870	3,911	5,739	7,567

Waterway Traffic Projections of Soybeans for Davenport/Rock Island (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	1,986	NA	NA	2,561	NA	NA	4,547	NA
2000	1,445	2,121	2,797	2,107	3,092	4,077	3,553	5,213	6,874
2005	1,617	2,373	3,129	2,358	3,460	4,562	3,975	5,833	7,691
2010	1,723	2,529	3,334	2,512	3,687	4,861	4,235	6,215	8,195
2015	1,832	2,688	3,544	2,670	3,918	5,167	4,502	6,606	8,710
2020	1,938	2,843	3,749	2,825	4,145	5,466	4,762	6,989	9,215
2025	2,048	3,006	3,963	2,986	4,382	5,778	5,034	7,387	9,741
2030	2,167	3,179	4,192	3,159	4,635	6,112	5,325	7,815	10,304
2035	2,292	3,363	4,435	3,342	4,904	6,466	5,634	8,267	10,901
2040	2,422	3,554	4,686	3,531	5,181	6,832	5,953	8,735	11,518
2045	2,553	3,746	4,940	3,722	5,462	7,202	6,275	9,209	12,142
2050	2,682	3,936	5,190	3,911	5,739	7,567	6,593	9,675	12,756

Waterway Traffic Projections of Soybeans for St. Louis, Missouri (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic*			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 avg	NA	2,037	NA	NA	9,131	NA	NA	11,168	NA
2000	1,212	1,779	2,346	6,475	9,501	12,527	7,687	11,280	14,873
2005	1,356	1,990	2,624	7,244	10,630	14,017	8,601	12,621	16,641
2010	1,445	2,121	2,796	7,719	11,327	14,935	9,164	13,448	17,731
2015	1,536	2,254	2,972	8,205	12,040	15,875	9,741	14,294	18,847
2020	1,625	2,385	3,144	8,680	12,737	16,794	10,305	15,121	19,938
2025	1,718	2,521	3,324	9,175	13,464	17,752	10,893	15,984	21,076
2030	1,817	2,667	3,516	9,706	14,242	18,779	11,523	16,909	22,295
2035	1,922	2,821	3,720	10,267	15,067	19,866	12,190	17,888	23,586
2040	2,031	2,981	3,930	10,849	15,920	20,990	12,880	18,900	24,921
2045	2,141	3,142	4,143	11,437	16,782	22,128	13,578	19,925	26,271
2050	2,250	3,301	4,353	12,016	17,632	23,248	14,265	20,933	27,601

*Includes Missouri River Traffic

Waterway Traffic Projections of Wheat for Chicago, Illinois (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	107	NA	NA	0	NA	NA	107	NA
2000	90	185	279	0	0	0	90	185	279
2005	97	199	301	0	0	0	97	199	301
2010	103	212	320	0	0	0	103	212	320
2015	109	224	339	0	0	0	109	224	339
2020	115	237	358	0	0	0	115	237	358
2025	122	250	378	0	0	0	122	250	378
2030	128	263	398	0	0	0	128	263	398
2035	135	277	419	0	0	0	135	277	419
2040	142	291	440	0	0	0	142	291	440
2045	149	305	461	0	0	0	149	305	461
2050	156	319	483	0	0	0	156	319	483

Waterway Traffic Projections of Wheat for Springfield/Decateur, Illinois (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	31	NA	NA	257	NA	NA	288	NA
2000	25	52	78	223	458	693	248	510	771
2005	27	56	84	241	494	748	268	550	832
2010	29	59	89	256	525	794	285	584	884
2015	31	63	95	271	556	841	302	619	936
2020	32	66	100	286	587	889	318	654	989
2025	34	70	106	302	619	937	336	689	1,042
2030	36	74	111	318	652	987	354	726	1,098
2035	38	77	117	335	687	1,039	372	764	1,156
2040	40	81	123	352	722	1,092	391	803	1,215
2045	42	85	129	369	757	1,145	410	842	1,274
2050	43	89	135	386	792	1,198	429	881	1,333

Waterway Traffic Projections of Wheat for Quincy, Illinois (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	218	NA	NA	965	NA	NA	1,183	NA
2000	144	296	447	1,017	2,087	3,157	1,161	2,382	3,604
2005	155	319	483	1,098	2,253	3,408	1,253	2,572	3,890
2010	165	339	512	1,165	2,392	3,618	1,330	2,731	4,131
2015	175	359	543	1,235	2,534	3,834	1,410	2,893	4,377
2020	185	379	573	1,304	2,676	4,049	1,489	3,056	4,622
2025	195	400	605	1,375	2,822	4,269	1,570	3,222	4,874
2030	205	421	637	1,449	2,973	4,498	1,654	3,394	5,135
2035	216	443	670	1,525	3,129	4,734	1,741	3,573	5,405
2040	227	466	705	1,602	3,289	4,975	1,829	3,754	5,680
2045	238	489	739	1,681	3,449	5,218	1,919	3,938	5,957
2050	249	511	773	1,759	3,610	5,460	2,008	4,121	6,234

Waterway Traffic Projections of Wheat for Peoria, Illinois (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	150	NA	NA	107	NA	NA	257	NA
2000	133	273	414	90	185	279	223	458	693
2005	144	295	446	97	199	301	241	494	748
2010	153	313	474	103	212	320	256	525	794
2015	162	332	502	109	224	339	271	556	841
2020	171	351	530	115	237	358	286	587	889
2025	180	370	559	122	250	378	302	619	937
2030	190	390	589	128	263	398	318	652	987
2035	200	410	620	135	277	419	335	687	1,039
2040	210	431	652	142	291	440	352	722	1,092
2045	220	452	684	149	305	461	369	757	1,145
2050	230	473	715	156	319	483	386	792	1,198

Waterway Traffic Projections of Wheat for La Crosse, Wisconsin (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	46	NA	NA	865	NA	NA	910	NA
2000	20	40	61	944	1,937	2,931	964	1,978	2,992
2005	21	43	66	1,019	2,091	3,164	1,040	2,135	3,229
2010	22	46	70	1,082	2,221	3,360	1,104	2,267	3,429
2015	24	49	74	1,147	2,353	3,560	1,170	2,402	3,634
2020	25	52	78	1,211	2,485	3,759	1,236	2,537	3,837
2025	26	54	82	1,277	2,620	3,964	1,303	2,675	4,046
2030	28	57	87	1,345	2,761	4,176	1,373	2,818	4,263
2035	29	60	91	1,416	2,906	4,395	1,445	2,966	4,487
2040	31	63	96	1,488	3,053	4,619	1,519	3,117	4,715
2045	32	66	101	1,560	3,203	4,845	1,593	3,269	4,945
2050	34	70	105	1,633	3,351	5,070	1,667	3,421	5,175

Waterway Traffic Projections of Wheat for Minneapolis/St. Paul Minnesota (Thousands of Short Tons)									
Forecast Year	Originating Traffic			Through Traffic			Total Traffic		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	865	NA	NA	0	NA	NA	865	NA
2000	944	1,937	2,931	0	0	0	944	1,937	2,931
2005	1,019	2,091	3,164	0	0	0	1,019	2,091	3,164
2010	1,082	2,221	3,360	0	0	0	1,082	2,221	3,360
2015	1,147	2,353	3,560	0	0	0	1,147	2,353	3,560
2020	1,211	2,485	3,759	0	0	0	1,211	2,485	3,759
2025	1,277	2,620	3,964	0	0	0	1,277	2,620	3,964
2030	1,345	2,761	4,176	0	0	0	1,345	2,761	4,176
2035	1,416	2,906	4,395	0	0	0	1,416	2,906	4,395
2040	1,488	3,053	4,619	0	0	0	1,488	3,053	4,619
2045	1,560	3,203	4,845	0	0	0	1,560	3,203	4,845
2050	1,633	3,351	5,070	0	0	0	1,633	3,351	5,070

Waterway Traffic Projections of Wheat for Dubuque, Iowa (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	8	NA	NA	910	NA	NA	918	NA
2000	6	12	19	964	1,978	2,992	970	1,990	3,010
2005	7	13	20	1,040	2,135	3,229	1,047	2,148	3,250
2010	7	14	22	1,104	2,267	3,429	1,111	2,281	3,451
2015	7	15	23	1,170	2,402	3,634	1,178	2,417	3,657
2020	8	16	24	1,236	2,537	3,837	1,244	2,553	3,861
2025	8	17	26	1,303	2,675	4,046	1,311	2,692	4,072
2030	9	18	27	1,373	2,818	4,263	1,382	2,836	4,290
2035	9	19	28	1,445	2,966	4,487	1,454	2,985	4,515
2040	10	20	30	1,519	3,117	4,715	1,528	3,136	4,745
2045	10	21	31	1,593	3,269	4,945	1,603	3,290	4,977
2050	11	22	33	1,667	3,421	5,175	1,677	3,443	5,208

Waterway Traffic Projections of Wheat for Davenport/Rock Island (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	47	NA	NA	918	NA	NA	965	NA
2000	47	97	146	970	1,990	3,010	1,017	2,087	3,157
2005	51	104	158	1,047	2,148	3,250	1,098	2,253	3,408
2010	54	111	167	1,111	2,281	3,451	1,165	2,392	3,618
2015	57	117	177	1,178	2,417	3,657	1,235	2,534	3,834
2020	60	124	187	1,244	2,553	3,861	1,304	2,676	4,049
2025	64	131	198	1,311	2,692	4,072	1,375	2,822	4,269
2030	67	138	208	1,382	2,836	4,290	1,449	2,973	4,498
2035	71	145	219	1,454	2,985	4,515	1,525	3,129	4,734
2040	74	152	230	1,528	3,136	4,745	1,602	3,289	4,975
2045	78	160	242	1,603	3,290	4,977	1,681	3,449	5,218
2050	81	167	253	1,677	3,443	5,208	1,759	3,610	5,460

Waterway Traffic Projections of Wheat for St. Louis, Missouri (Thousands of Short Tons)									
Forecast	Originating Traffic			Through Traffic*			Total Traffic		
Year	Low	Medium	High	Low	Medium	High	Low	Medium	High
91-93 Av	NA	1,629	NA	NA	1,712	NA	NA	3,341	NA
2000	714	1,465	2,217	1,579	3,241	4,903	2,293	4,707	7,120
2005	771	1,582	2,393	1,705	3,499	5,293	2,476	5,081	7,686
2010	818	1,680	2,541	1,810	3,716	5,621	2,629	5,395	8,162
2015	867	1,780	2,693	1,918	3,937	5,956	2,785	5,717	8,648
2020	916	1,880	2,843	2,026	4,158	6,289	2,942	6,037	9,133
2025	966	1,982	2,998	2,136	4,384	6,632	3,102	6,366	9,630
2030	1,017	2,088	3,159	2,250	4,619	6,987	3,268	6,707	10,146
2035	1,071	2,198	3,325	2,369	4,861	7,354	3,439	7,059	10,679
2040	1,125	2,310	3,494	2,489	5,109	7,728	3,614	7,418	11,222
2045	1,180	2,422	3,665	2,611	5,358	8,106	3,791	7,781	11,771
2050	1,235	2,535	3,835	2,732	5,607	8,482	3,967	8,142	12,317

*Includes Missouri River Traffic

APPENDIX H

Waterway Traffic Forecasts by River Segment

Waterway Traffic Forecasts of Soybeans by River Segment (Thousands of Short Tons)						
Year	Twin Cities to Mouth of the Missouri River			Illinois Waterway		
	Originating	Through	Total	Originating	Through	Total
91-93 avg	5,325	3,806	9,131	3,806	0	3,806
2000	5,610	3,891	9,501	3,891	0	3,891
2005	6,277	4,354	10,630	4,354	0	4,354
2010	6,688	4,639	11,327	4,639	0	4,639
2015	7,109	4,931	12,040	4,931	0	4,931
2020	7,520	5,216	12,737	5,216	0	5,216
2025	7,950	5,514	13,464	5,514	0	5,514
2030	8,409	5,833	14,242	5,833	0	5,833
2035	8,896	6,170	15,067	6,170	0	6,170
2040	9,400	6,520	15,920	6,520	0	6,520
2045	9,909	6,873	16,782	6,873	0	6,873
2050	10,411	7,221	17,632	7,221	0	7,221

Waterway Traffic Forecasts of Wheat by River Segment
(Thousands of Short Tons)

Year	Twin Cities to Mouth of the Missouri River			Illinois Waterway		
	Originating	Through	Total	Originating	Through	Total
91-93 avg	1,183	288	1,472	288	0	288
2000	2,382	510	2,892	510	0	510
2005	2,572	550	3,122	550	0	550
2010	2,731	584	3,315	584	0	584
2015	2,893	619	3,512	619	0	619
2020	3,056	654	3,709	654	0	654
2025	3,222	689	3,911	689	0	689
2030	3,394	726	4,120	726	0	726
2035	3,573	764	4,337	764	0	764
2040	3,754	803	4,557	803	0	803
2045	3,938	842	4,780	842	0	842
2050	4,121	881	5,002	881	0	881

Waterway Traffic Forecasts of Corn by River Segment
(Thousands of Short Tons)

Year	Twin Cities to Mouth of the Missouri River			Illinois Waterway		
	Originating	Through	Total	Originating	Through	Total
91-93 avg	15,344	11,591	26,936	11,591	0	11,591
2000	20,952	17,711	38,664	17,711	0	17,711
2005	23,269	19,670	42,939	19,670	0	19,670
2010	25,048	21,173	46,221	21,173	0	21,173
2015	26,604	22,488	49,092	22,488	0	22,488
2020	28,088	23,743	51,832	23,743	0	23,743
2025	29,650	25,063	54,713	25,063	0	25,063
2030	31,363	26,511	57,874	26,511	0	26,511
2035	33,212	28,074	61,286	28,074	0	28,074
2040	35,143	29,707	64,851	29,707	0	29,707
2045	37,099	31,360	68,459	31,360	0	31,360
2050	39,002	32,968	71,970	32,968	0	32,968