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## Feed Year in Review (Domestic): Record Demand Drives U.S. Feed Grain Prices Higher in 2007/08

**Allen Baker and Heather Lutman**

An expected record utilization in 2007/08 has boosted prices for most feed grains to record levels and is expected to reduce ending stocks to below levels reached in 2006/07. U.S. corn prices in 2007/08 are forecast at a record-high \$4.10-\$4.50 per bushel, up sharply from prices in 2006/07. U.S. grain sorghum prices also are expected to hit record levels because of large exports. The 2007 barley crop is up year over year, but ending stocks are forecast lower than in the previous year. U.S. barley prices are forecast at a record \$4.00-\$4.10 per bushel, up from \$2.85 a year earlier. Season-average prices for oats are expected to be stronger in 2007/08 than in 2006/07 and just below record levels, despite larger supplies in Canada. Prices for all hay are up in 2007/08, despite higher production and larger December 1 stocks than in the previous year.

**Keywords:** Corn, grain sorghum, barley, oats, hay, ethanol, and corn sweeteners.

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# Feed Grain Supply and Use

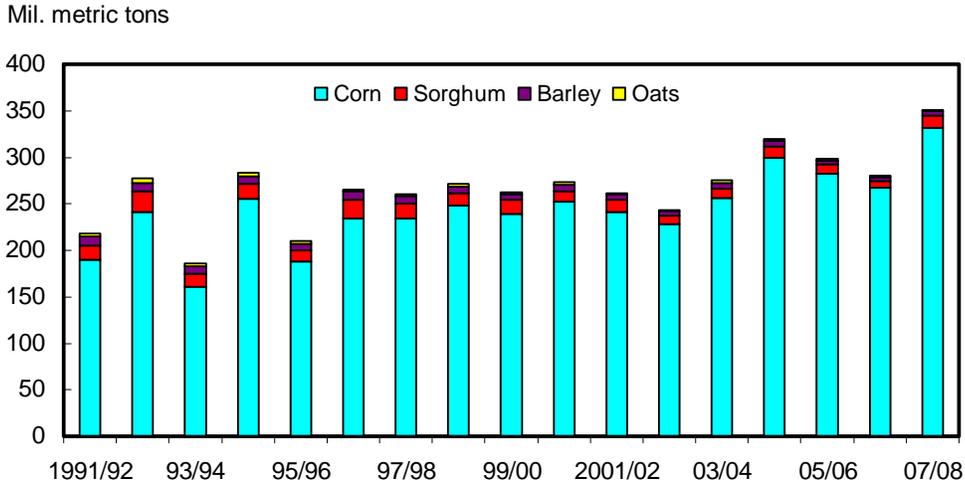
## *More Ethanol Use, Feed and Residual, and Exports Result in Higher Feed Grain Use in 2007/08*

Total feed grain disappearance in the United States is projected at 354 million tons in 2007/08, up from 301 million tons in 2006/07. The year-to-year increase stems from higher food, seed, and industrial use (FSI), feed and residual use, and exports. Record ethanol production is driving most of the increase in FSI. FSI in 2007/08 is projected at 118 million tons, up from 94 million tons in 2006/07. Feed and residual use in 2007/08 is projected at 164 million tons, up from 148 million the previous year. U.S. feed grain exports are projected at 72 million tons, up from 58 million tons in 2006/07.

Total U.S. feed grain supply in 2007/08 was up 53 million tons from the 337 million tons available in 2006/07. Beginning stocks were down year over year. Feed grain production in 2007/08 was up 71 million tons over the previous year, mainly because of the record-high corn crop. Imports are expected to total 3 million tons.

Despite increasing feed grain utilization, larger supplies leave projected ending stocks down fractionally from levels reached in 2006/07. Higher utilization and lower stocks in 2007/08 led to higher feed grain prices for the entire feed grain complex.

Figure 1  
**U.S. feed grain production**



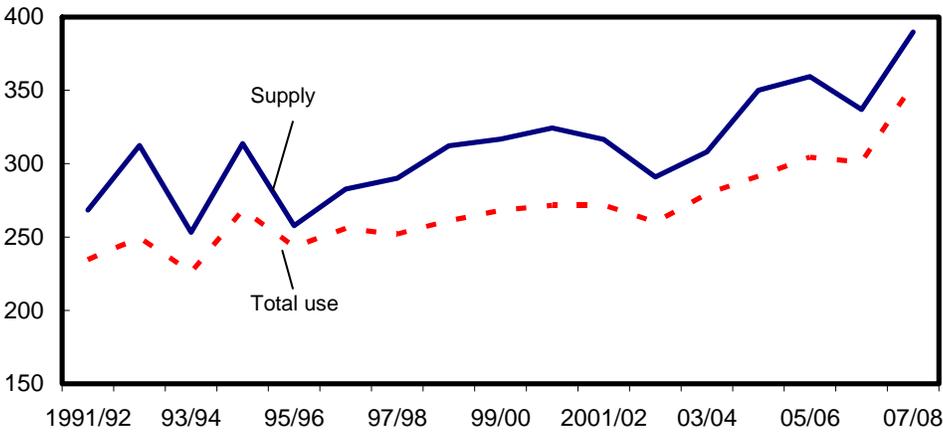
Source: USDA, *Grain: World Markets and Trade (Grain Circular)*.

In March, U.S. producers indicated that they intended to plant 86.0 million corn acres in 2008, down 8 percent from 2007. Prospective plantings for sorghum, barley, and oats in 2008 are 7.4 million acres, 4.1 million acres, and 3.4 million acres, respectively. U.S. barley planted area is up from the level of the previous year, but sorghum and oats planted area is down.

Figure 2

**U.S. feed grain supply and use**

Mil. metric tons

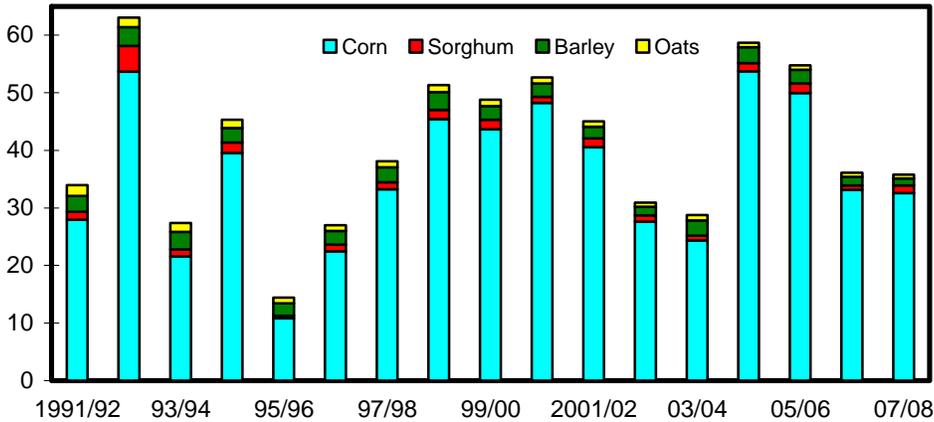


Source: USDA, World Agricultural Outlook Board, WASDE.

Figure 3

**U.S. ending stocks of feed grains**

Mil. metric tons



Sources: USDA, Foreign Agricultural Service, *Production, Supply and Distribution (PS&D)*, and USDA, *Grain, World Markets and Trade (Grain Circular)*.

## Corn Production Sets New Record in 2007

U.S. corn production in 2007 reached a record 13.1 billion bushels, up from 10.5 billion bushels in 2006/07. The year-to-year increase stems mostly from a 15.3-million-acre increase in planted area and a 15.9-million-acre increase in area harvested for grain. The 2007/08 yield was also up at 151.1 bushels per acre, compared with 149.1 bushels per acre in 2006/07. Beginning corn stocks in 2007/08 were 1,304 million bushels, down 664 million from the previous year. Projected total corn supply in the United States in 2007/08 is 14,393 million bushels, up 1,879 million bushels from 2006/07.

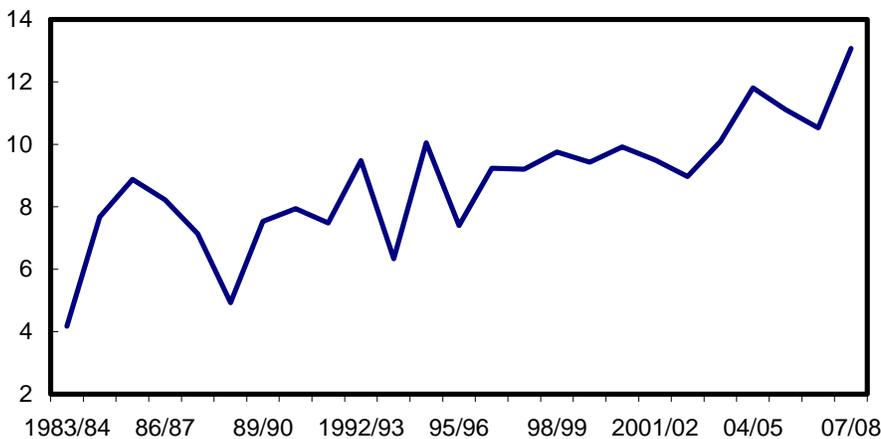
Regionally, estimated yields were higher than those of last year across the Great Plains, where frequent rainfall throughout much of the growing season provided abundant soil moisture for growth and development. Yield estimates were also higher in the middle Mississippi Valley, Delta, and Southeast, where timely rains in most areas were beneficial. Yields in the northern Corn Belt, Ohio Valley, Tennessee Valley, Mid-Atlantic, and Northeast were generally lower than yields a year ago as scarce precipitation and above normal temperatures during much of the growing season depleted soil moisture supplies and stressed the crop.

U.S. planted area, at 93.6 million acres, was up 19 percent year over year and reached the highest level since 1944. Corn planted acreage was up in nearly all States as favorable corn prices, driven by growing demand from ethanol producers and strong export sales, encouraged farmers to plant more acres to corn. The increase in corn planted acres was partially offset by fewer acres of soybeans in the Corn Belt and Great Plains and fewer acres of cotton in the Delta and Southeast. Record-high planted acres were reached in California, Idaho, Illinois, Indiana,

Figure 4

### U.S. corn production

Bil. bu

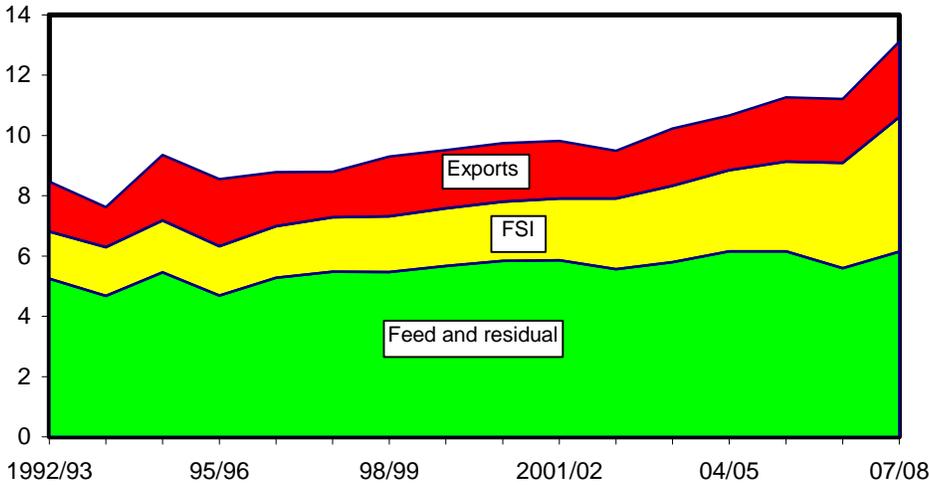


Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Figure 5

**U.S. corn disappearance by type of use**

Bil. bu

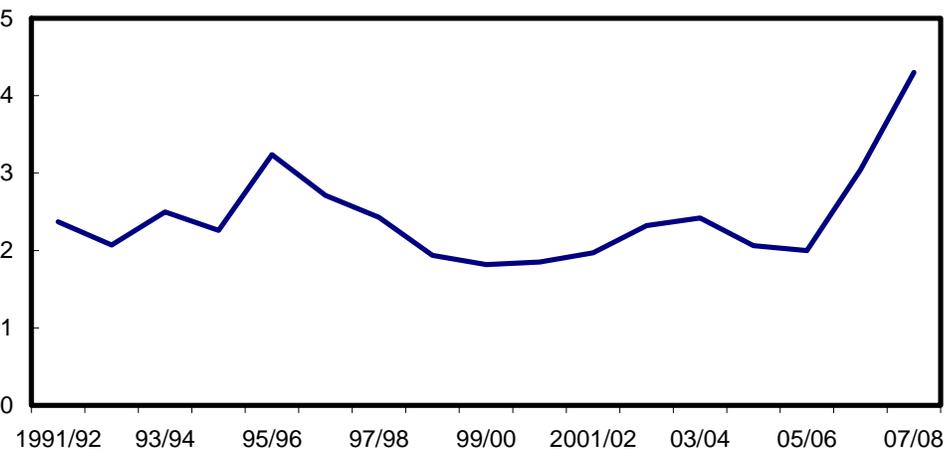


Source: USDA, World Agricultural Outlook Board, WASDE.

Figure 6

**Season-average corn prices received by U.S. farmers**

Dol./bu



Source: USDA, World Agricultural Outlook Board, WASDE.

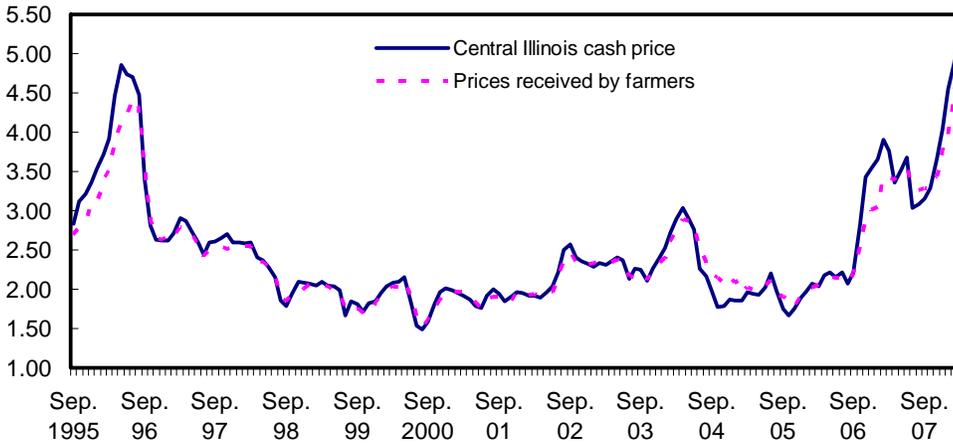
Minnesota, and North Dakota. Area harvested for grain, at 86.5 million acres, is up 22 percent from 2006 and reached the highest level since 1933. Illinois growers harvested a record-high 13.1 million acres, up 1.90 million acres year over year, while farmers in Iowa harvested a record-high 13.9 million acres, up 1.50 million acres from the level of a year ago. Record-high corn for grain acres were also harvested in Idaho, Indiana, Minnesota, North Dakota, and South Dakota.

The 2007 corn objective yield survey data indicated the highest number of ears per acre on record for the combined 10 objective yield States (Illinois, Indiana, Iowa,

Figure 7

**U.S. corn: Central Illinois cash and average farm price, monthly, September 1995-March 2008**

Dol./bu



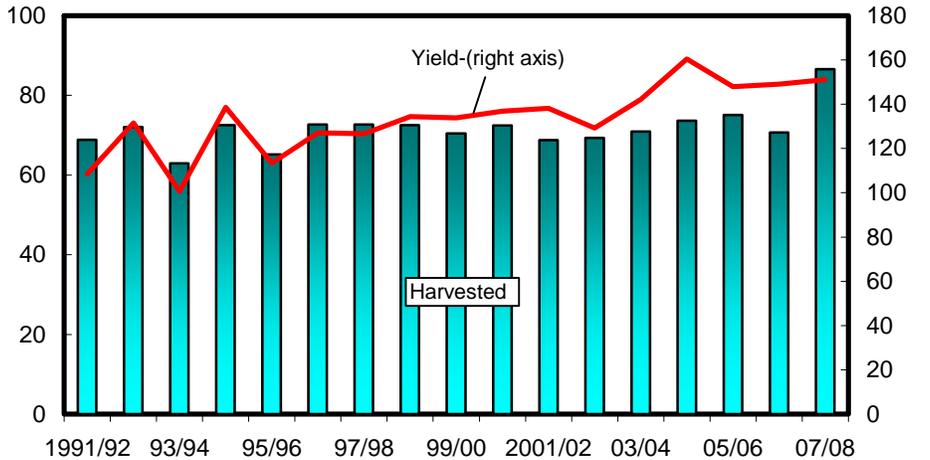
Sources: USDA, Agricultural Marketing Service, *Weekly Grain Market News Summary*, and USDA, Economic Research Service, *Feed Grains Database*.

Figure 8

**U.S. corn harvested acres and yields**

Mil. acres

Bu/acre



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Kansas, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin), surpassing the previous record set in 2004. Indicated ears per acre in 2007 were higher than in 2006 in all objective yield States, with record highs reached in Illinois, Indiana, Iowa, Nebraska, and Wisconsin.

***Total Utilization Rises to Record***

Total corn utilization in the United States in 2007/08 is projected at a record 13,110 million bushels, up from 11,210 million bushels in 2006/07. This year-to-year increase stems from increases in all the use categories. Feed and residual use is expected to total 6,150 million bushels, up from 5,598 million in 2006/07. Feed

and residual use during the first half of 2007/08 is estimated at 4,202 million bushels, up 13 percent from the same period in 2006/07. Use is expected to slow in the second half of the marketing year, as growth in livestock and poultry production slows with high feed prices. U.S. FSI use is projected at a record 4,460 million bushels in 2007/08, up from 3,488 million bushels in 2006/07. Record ethanol production is behind this year-to-year increase.

U.S. corn exports in 2007/08 are projected to increase to a record 2,500 million bushels, up 18 percent from the level reached in 2006/07 and 4 percent above the 1979/80 high. Reduced foreign competition, lower global feed-quality wheat supplies, and the weaker U.S. dollar, which lessens the price rise for some foreign buyers, have boosted U.S. corn exports and export sales during the first half of 2007/08. Corn exports are expected to remain strong during the second half of 2007/08 with record world corn trade as import demand remains strong despite high prices. World coarse grain consumption is expected to increase in 2007/08, as strong demand for feed is coupled with increasing use of coarse grains for biofuels. Increasing global consumption is expected to reduce world coarse grain ending stocks to their lowest level in 30 years.

### ***Corn Prices To Set New Records***

With utilization rising, corn ending stocks in 2007/08 are projected to decrease 21 million bushels year over year to 1,283 million bushels. Prospects for continued strong use have led to higher prices. The 2007/08 season average price of corn received by U.S. producers is projected at a record \$4.10-\$4.50 per bushel, up from \$3.04 per bushel in 2006/07. The benchmark Central Illinois cash corn price was \$5.15 per bushel in March 2008, up from \$4.91 per bushel in February 2008 but well above \$3.90 per bushel in March 2007. Year-to-date Central Illinois cash corn prices have averaged \$4.10 per bushel from September 2007 to March 2008, up from \$3.33 per bushel for the same period a year earlier. Central Illinois cash corn prices have also been well above the actual prices received by producers during 2007/08. The simple average of monthly prices received by producers during September 2007 through March 2008 was \$3.87 per bushel. The lower price received reflects the substantial portion of 2007 production forward priced at levels below prevailing cash market bids.

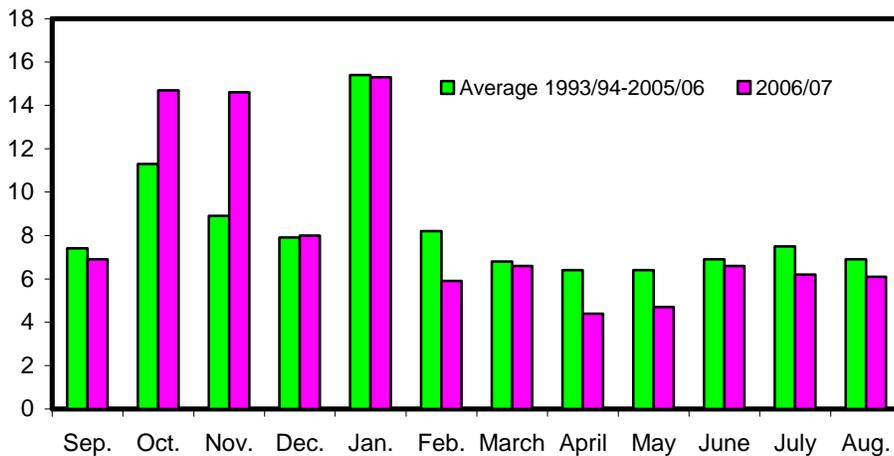
### ***Prospective Corn Plantings Down in 2008***

In March, U.S. producers indicated that they intended to plant 86.0 million corn acres in 2008, down 8 percent from 2007. Expected acreage is down from last year in most States as favorable prices for other crops, high input costs for corn, and crop rotation considerations are motivating some farmers to plant fewer acres to corn. Iowa recorded the largest reduction in expected corn acres as farmers intend to plant 13.2 million acres of corn this spring, down 1.0 million acres from the record-high 14.2 million acres in 2007. Indiana and Minnesota are expected to drop 800,000 acres each from their record highs established last year. Corn farmers in the 10 major corn-producing States (Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin) intend to plant 66.6 million acres in 2008, down 8 percent from the 72.0 million acres planted in 2007.

Figure 9

**Percent of U.S. corn marketed by month**

Percent



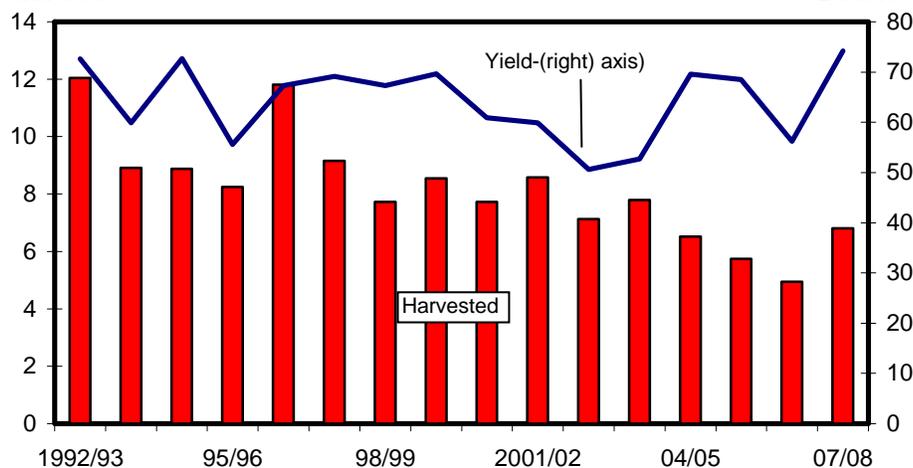
Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Figure 10

**U.S. sorghum harvested acres and yields**

Mil. acres

Bu/acre



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

***Sorghum Yields Rebound in 2007***

The U.S. sorghum crop was 505 million bushels in 2007/08, up from 278 million bushels in 2006/07. The numbers of acres planted in 2007 was 7.7 million, up 1.2 million acres from 2006. The average sorghum yield in 2007 was up 18 bushels per acre from that in 2006 and reached a record 74.2 bushels per acre, driven by favorable rains. U.S. harvested area in 2007/08 was 6.8 million acres, up 1.9 million acres from 2006/07. Beginning stocks were 32 million bushels, and total 2007/08 supply is 537 million bushels, up from 343 million in 2006/07.

Kansas led the Nation in area planted for all purposes and grain production, while Texas led the Nation for silage production. Area harvested for grain increased year over year in 16 of the 21 estimating States, with Texas showing the largest increase at 88 percent while Kansas increased 6 percent. Yields were at or above last year in all States, except California, Illinois, Pennsylvania, South Carolina, and Tennessee, with substantial increases experienced throughout the Great Plains. Yields in Kansas and Texas, the two largest sorghum-producing States, increased 22 and 18 bushels per acre, respectively, from 2006.

### ***Total Use Projected Higher***

Total sorghum utilization in 2007/08 is projected at 485 million bushels, up from 311 million in 2006/07. Feed and residual use is forecast at 165 million bushels, up from 109 million bushels year over year. Forecast FSI use is 35 million bushels, down 10 million bushels from 2006/07. Ethanol is the primary FSI category for sorghum. Corn is the dominant starch source used to produce ethanol in the United States, but sorghum is the primary grain used in some plants, particularly in the Central and Southern Plains. Some ethanol plants use either corn or sorghum, depending on price and availability.

Forecast sorghum exports are 285 million bushels in 2007/08, up from 157 million bushels in 2006/07. Traditionally, Mexico and Japan are the top two destinations for U.S. sorghum exports; however, the EU-27 has been the largest importer of U.S. sorghum this year. The EU-27 had a short feed wheat crop in 2007, and its preference for non-GMO feed sharply boosted export demand for U.S. sorghum. From September 2007 to January 2008, total U.S. sorghum exports were 155 million bushels; the EU-27 accounted for 72.6 percent of this total. Sorghum ending stocks in 2007/08 are expected to be 52 million bushels, up from 32 million in 2006/07.

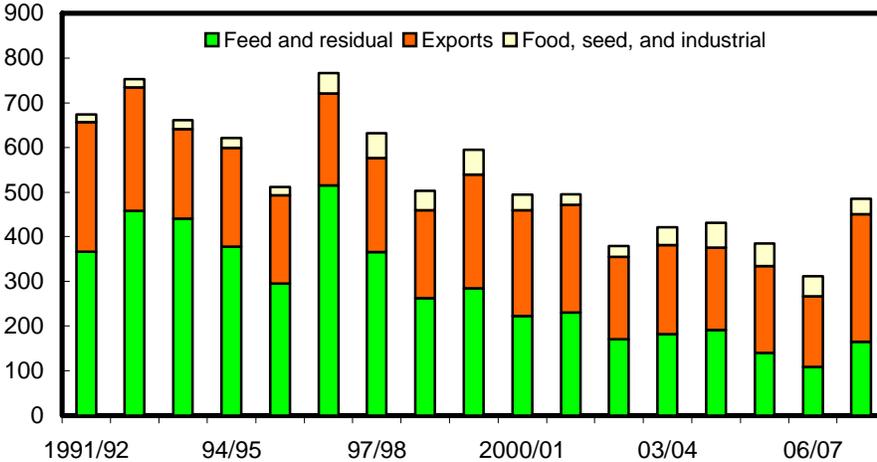
### ***Sorghum Prices Stronger***

The season average farm price for U.S. sorghum in 2007/08 is forecast at a record \$3.95 to \$4.35 per bushel, compared with \$3.29 per bushel in 2006/07. From September 2007 to March 2008, the simple average price received for sorghum was \$3.99 per bushel, compared with \$3.29 per bushel a year earlier. Traditionally, sorghum prices have averaged 92-93 percent of the corn price, but this is an unsteady relationship. For September 2007 through March 2008, sorghum prices have averaged \$0.13 per bushel higher than corn, or 103 percent of the corn price. Forward pricing opportunities are more limited for sorghum because there is no sorghum futures market. Thus, sorghum producers sell most of their production after harvest on the cash market. Even with the very strong export demand and high prices at Gulf ports, interior prices have been below those of corn, suggesting the season-average price received by farmers will be below that for corn in 2007/08.

Figure 11

**U.S. sorghum disappearance by use**

Mil. bu



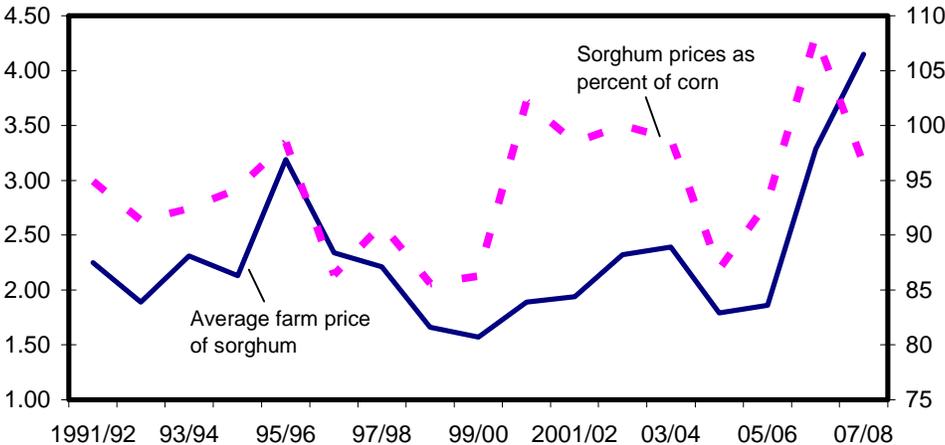
Source: USDA, World Agricultural Outlook Board, WASDE.

Figure 12

**Sorghum prices received by U.S. farmers and percent of corn price**

Dol./bu

Percent



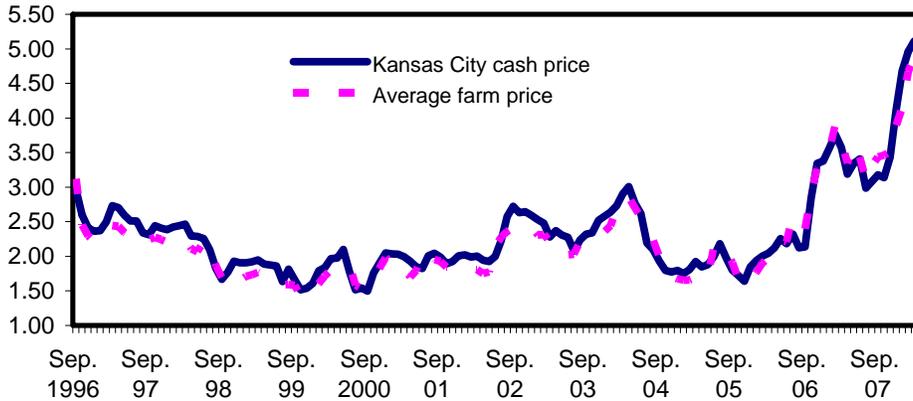
Sources: USDA, Economic Research Service, *Feed Grains Database*, and USDA, World Agricultural Outlook Board, WASDE.

***Prospective Sorghum Plantings Down in 2008***

According to the March 2008 *Prospective Plantings* report, U.S. sorghum planted area for all purposes is expected to be 7.42 million acres in 2008, down 4 percent from the level reached in 2007. Producers are expected to plant more acres than a year ago in the southern Great Plains area but fewer acres in the northern Great Plains. Acreage for sorghum is also expected to decline in the southeast portion of the United States. The States expecting the largest decline in sorghum acreage are

Figure 13  
**U.S. sorghum: Kansas City cash and average farm price, September 1996 to March 2008**

Dol./bu

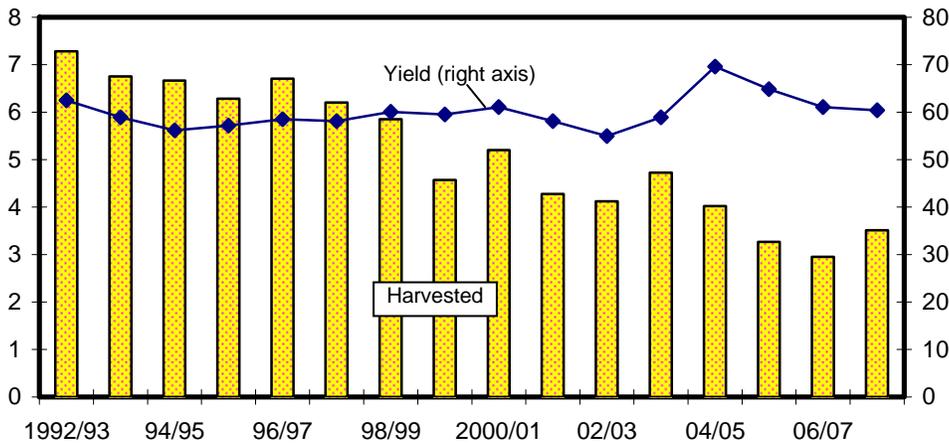


Sources: USDA, Agricultural Marketing Service, *Weekly Grain Market News Summary*, and USDA, Economic Research Service, *Feed Grains Database*.

Figure 14  
**U.S. barley harvested acres and yields**

Mil. acres

Bu/acre



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Kansas and Louisiana, where growers in each State intend to plant 100,000 fewer acres. The largest increase in sorghum acreage is expected to occur in Texas, with an increase of 50,000 acres, followed by Oklahoma, with an increase of 40,000 acres.

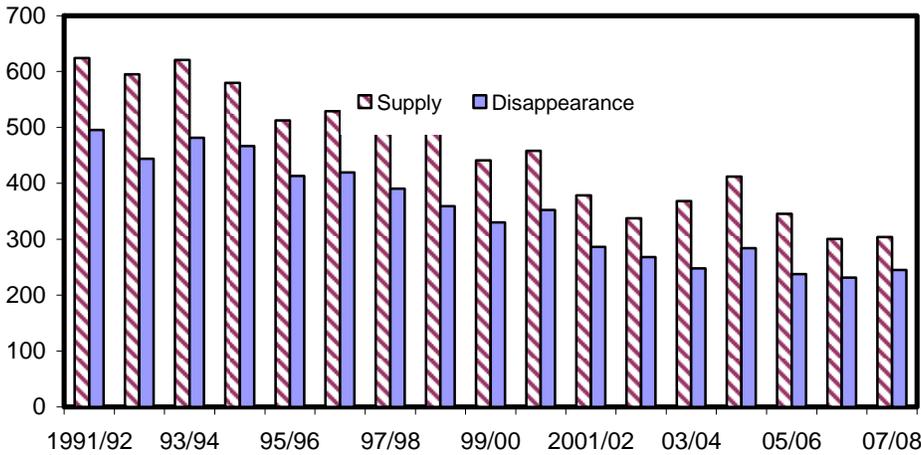
***Barley Production Increases in 2007***

U.S. barley production was 212 million bushels in 2007, up from 180 million bushels in 2006. Harvested area was 3.5 million acres, up 500,000 acres from last

Figure 15

**U.S. barley total supply and disappearance**

Mil. bu

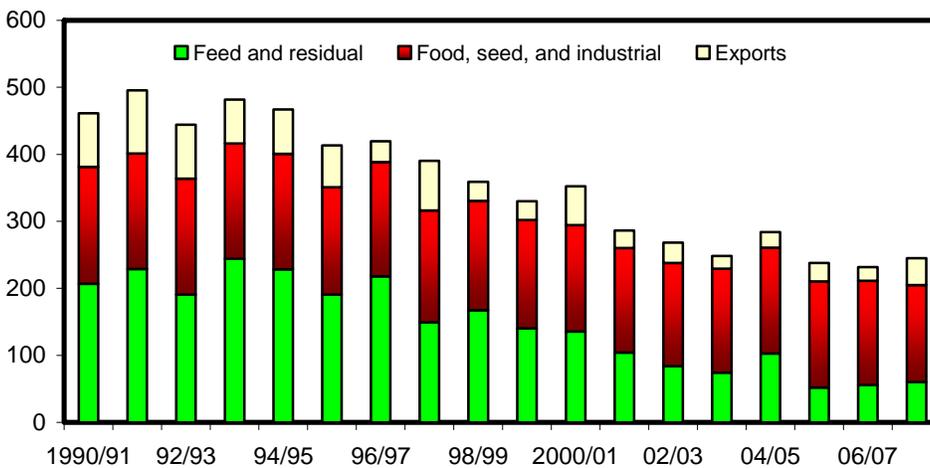


Source: USDA, World Agricultural Outlook Board, WASDE.

Figure 16

**U.S. barley disappearance by type of use**

Mil. bu



Source: USDA, World Agricultural Outlook Board, WASDE.

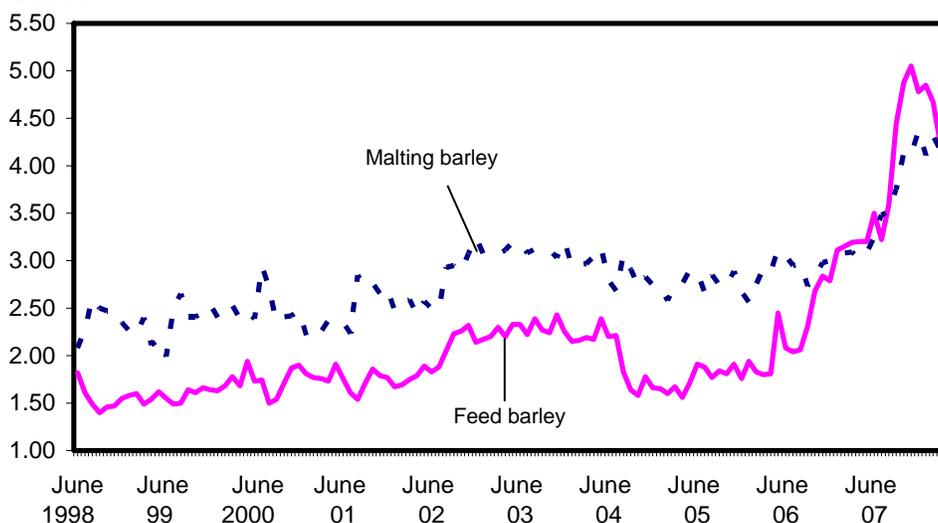
year. The average yield decreased from 61.1 bushels per acre in 2006 to 60.4 bushels per acre in 2007.

Harvested acreage in 2007 was up in the top four barley-producing States from the previous season. Harvested area was up 40,000 acres in Idaho, 100,000 acres in Montana, 395,000 acres in North Dakota, and 35,000 acres in Washington, resulting in higher production than that of the previous year. Production was down from 2006 throughout the Great Basin, Ohio Valley, and most of the Mid-Atlantic States. Lower yields due to low levels of precipitation during the growing season and lower acreage harvested contributed to the decrease in these areas. However, production

Figure 17

**Monthly prices received by U.S. farmers, June 1998-March 2008**

Dol./bu



Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

levels increased from last year across nearly the entire northern tier of the country, from the Pacific to Maine, as well as in Arizona, Colorado, and Maryland.

U.S. beginning barley stocks were 69 million bushels in 2007/08, down sharply from 108 million in 2006/07 due to low production in the previous year. Imports are forecast at 20 million bushels this year, up 8 million from last year. Total forecast barley supply in 2007/08 is 301 million bushels, nearly unchanged from 2006/07.

***Total Utilization Increases***

Total U.S. barley use is forecast at 245 million bushels in 2007/08, up from 231 million in 2006/07. Exports are forecast at 40 million bushels, up from 20 million last year. FSI is forecast at 145 million bushels in 2007/08, down 11 million from the level reached in 2006/07. Barley used for malt production is the main element of FSI. Barley ending stocks are forecast at 56 million bushels in 2007/08, down 13 million from 2006/07.

***Record Barley Prices in 2007/08***

The U.S. season average price received by barley producers is forecast at a record \$4.00-\$4.10 per bushel in 2007/08, compared with \$2.85 per bushel in 2006/07. Much of the malting barley is grown on contract, and malting barley usually sells at a premium to feed barley. With contract prices established before the more recent rise in feed grain prices, the normal price relationship between malting and feed barley has been disrupted. From June 2007 to March 2008, the simple average price received for malting barley was \$3.99 per bushel, compared with \$2.97 per bushel a year earlier; the simple average price for feed barley was \$4.34 per bushel,

compared with \$2.63 per bushel for the same time period a year earlier. For the marketing year to date, feed barley prices have averaged \$0.35 per bushel higher than malting barley prices; in most years, malting barley is priced substantially higher than feed barley.

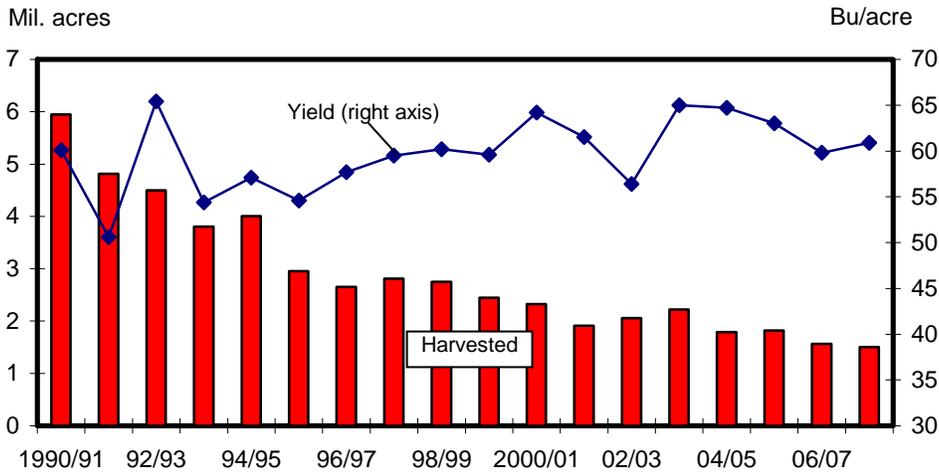
**Prospective Barley Plantings Up in 2008**

In March, U.S. barley growers indicated that they intended to plant 4.15 million acres for 2008, up 3 percent from 2007. If realized, this will be the fourth lowest barley planted acreage on record. In North Dakota, the largest barley-producing State, expected planted area is 1.55 million acres in 2008, up 5 percent from 2007. Growers in California, Wyoming, and Virginia intend to increase their acreage by 35 percent or more. In Michigan, New York, and Utah, acreage is expected to decline to record-low levels, and Nevada producers intend to match their lowest acreage on record, which was established in 2007.

**Oats Imports Projected Higher With Record Low Production**

Total U.S. oats supply is forecast at 262 million bushels in 2007/08, up from 252 million bushels in 2006/07. Production for 2007 was a record-low 92 million bushels, down 2 percent from 2006. Harvested oats area in 2007 was down 61,000 acres from 2006 to 1.5 million acres. U.S. area harvested and planted for grain were both at record lows. The average oats yield was up slightly at 60.9 bushels per acre, compared with 59.8 bushels per acre the previous year.

Figure 18  
**U.S. oats harvested acres and yields**

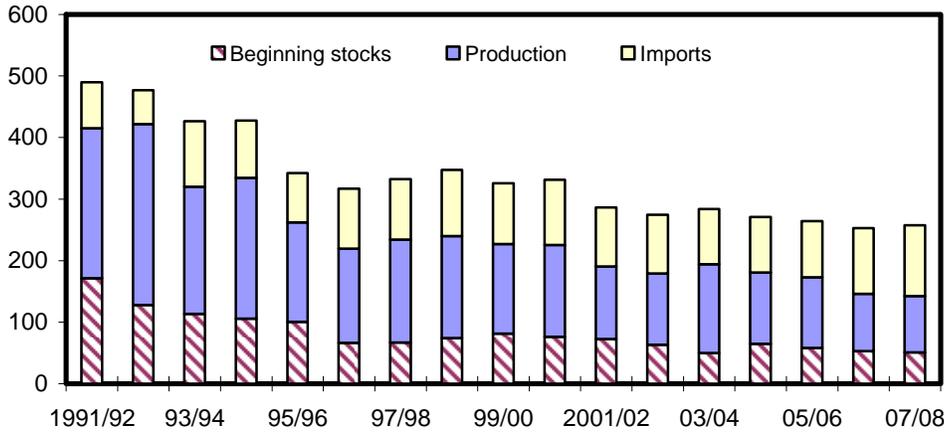


Source: USDA, National Agricultural Statistics Service, *Quick Stats*.

Figure 19

**U.S. oats supply**

Mil. bu

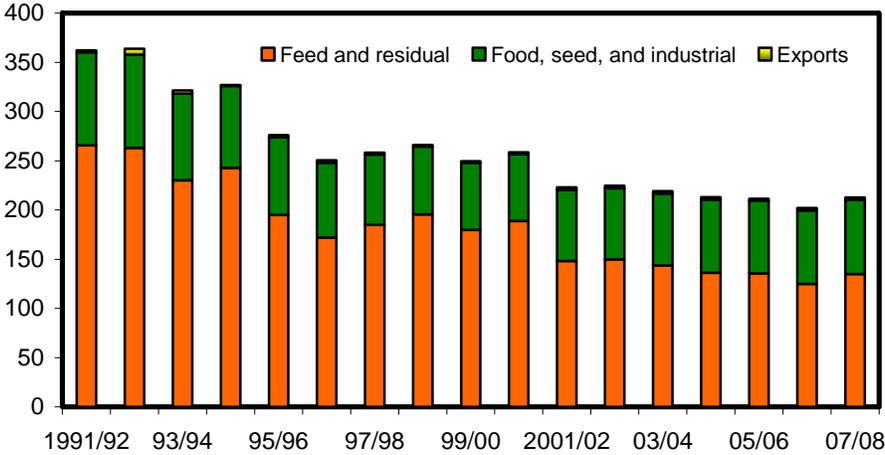


Sources: USDA, Economic Research Service, *Feed Grains Database*, and USDA, World Agricultural Outlook Board, *WASDE*.

Figure 20

**Total use of oats**

Mil. bu

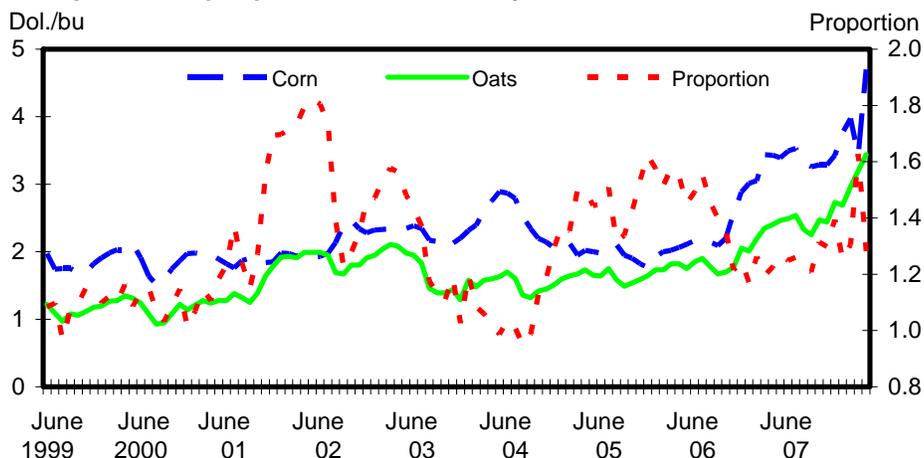


Source: USDA, World Agricultural Outlook Board, *WASDE*.

Year over year, oat yields increased in most States throughout the Great Plains and central Rocky Mountains. In Nebraska, North Dakota, and South Dakota, favorable growing conditions led to yield increases from last year of 17 bushels or more. Yields declined from 2006/07 in the Pacific Northwest, the Ohio Valley and adjacent areas, and the middle Mississippi Valley. The largest declines in oat yields occurred in Indiana and Washington, where hot, dry weather hampered crop development. Yields in Indiana and Washington declined 25 bushels from those of the previous year.

Figure 21

**U.S. average prices of oats and corn plus oat price as a proportion of the corn price on a per pound basis, monthly, June 1999-March 2008**



Source: USDA, Economic Research Service, *Feed Grains Database*.

Beginning oat stocks were 51 million bushels in 2007/08, down from 53 million in 2006/07. Oat imports for 2007/08 are forecast at 120 million bushels, up 14 million from last year. Imports are expected to be up due to the large Canadian oats crop in 2007.

***Total Utilization Projected Higher***

Total oats utilization in the United States is projected at 212 million bushels in 2007/08, up 10 million from the level in 2006/07, mostly due to increased feed and residual use. FSI uses are forecast at 75 million bushels, just 1 million bushels higher than in the previous year. Oat exports in 2007/08 are forecast at 2 million bushels, down slightly from 2006/07. Ending stocks in 2007/08 are forecast at 50 million bushels, down slightly from 2006/07.

***Prices Increase in 2007/08***

Average oats prices received by U.S. farmers are expected to be \$2.50-\$2.60 per bushel in 2008/07, up from \$1.87 per bushel in 2007/08 and just below the record level of \$2.62 per bushel in 1988/89. Projected oats prices are also above the 5-year average of \$1.65 per bushel.

### ***Oats Plantings To Decrease in 2008***

According to the 2007 *Prospective Plantings* report, U.S. oats growers intend to plant an estimated 3.42 million acres in 2008, down 9 percent from the 3.76 million acres planted in 2007 and the lowest level on record. Most of the decrease in acreage of oats is expected to be in the Great Plains States. The largest acreage decline is expected to occur in South Dakota, where growers intend to plant 200,000 acres this year, 130,000 fewer than were planted in 2007. Prospective oats acreage in North Dakota declined 110,000 acres. The largest expected increase in acreage from 2007 is in California, where an additional 50,000 acres of oats are expected to be sown.

## Hay Situation and Outlook

### *Hay Production Increases in 2007*

U.S. hay production for 2007 is estimated at 150 million tons, up from 142 million in 2006. Acreage harvested in 2007/08 was 61.6 million acres, up from 60.9 million a year earlier. Average 2007/08 yield was 2.44 tons per acre, up 0.10 ton from 2006/07. Texas was by far the largest producer of all hay in 2007, with production of 15.3 million tons, up 6.6 million tons from 2006. California, South Dakota, and Missouri were the second, third, and fourth largest U.S. hay producers in 2007.

U.S. alfalfa hay production in 2007 totaled 72.6 million tons, up slightly from 2006. Harvested area, at 21.7 million acres, was 1 percent above the previous year. Yields in 2007 averaged 3.35 tons per acre, down 0.01 tons from yields in 2006. South Dakota was the largest alfalfa-producing State in 2007, followed by Wisconsin, Montana, and North Dakota.

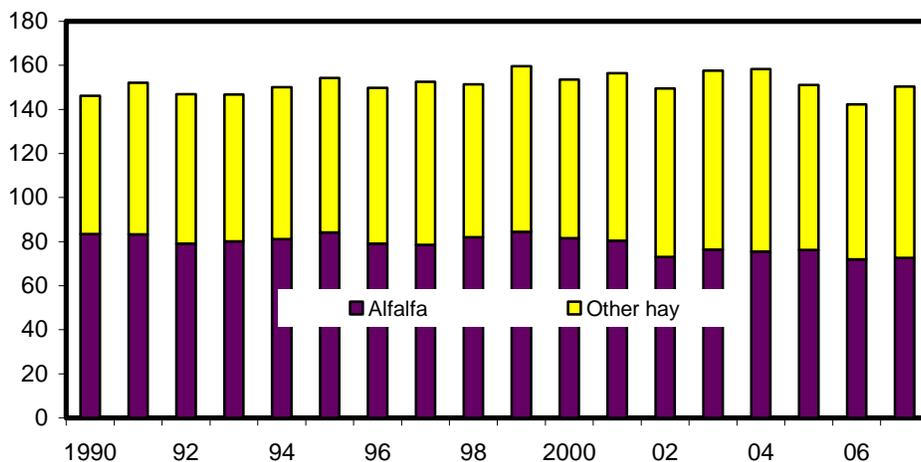
States in the northern Rocky Mountains and northern Great Plains showed the largest increase in harvested alfalfa acreage from 2006 to 2007. South Dakota showed the largest increase this year, up 450,000 acres from last year. Production in the Southeast decreased as drought throughout much of the growing season limited the number of cuttings and reduced yields. The largest year-to-year decrease occurred in Kentucky, where alfalfa yields were down 1.9 tons per acre from 2006.

U.S. growers seeded 2.83 million new acres to alfalfa and alfalfa mixtures during 2007, down from 3.18 million in 2006. The largest decrease occurred in Wisconsin, down 130,000 acres from 2006. Newly seeded acres of alfalfa and alfalfa mixtures will normally be harvested for dry hay for the first time in the year following the initial planting.

Figure 22

### **U.S. hay production**

Mil. tons



Sources: USDA, National Agricultural Statistics Service, *Crop Production and Quick Stats*.

U.S. production of all other hay totaled 77.7 million tons in 2007, up 11 percent from the total in 2006. Area for harvest, at 40.0 million acres, was up 1 percent from last year. The average yield is estimated at 1.95 tons per acre in 2007, up 0.17 tons from 2006.

Harvested acreage of all other hay increased across the northern Great Plains, except in North Dakota. Large acreage increases occurred in South Dakota, Texas, and Montana, with harvested area up 250,000 acres, 200,000 acres, and 190,000 acres, respectively. Yields in Kentucky, North Carolina, and Tennessee are all down 0.9 tons per acre as drought conditions for most of the growing season resulted in fewer cuttings and reduced yields. Texas had the greatest year-to-year increase in yield in 2007, up 1.2 tons per acre to 2.8 tons per acre. Yields increased in the northern Great Plains as timely precipitation allowed for multiple cuttings and good yields of other hay.

Corn silage production in the United States is estimated at 106 million tons in 2007, up 1 percent from 2006. The U.S. silage yield is estimated at 17.5 tons per acre in 2007, up 1.3 tons per acre from 2006. Area harvested for silage, at 6.1 million acres, was down 6 percent from a year ago. Sorghum silage production is estimated at 6.2 million tons, up 34 percent from 2006. Area cut for silage was 399,000 acres in 2006, 15 percent higher than the previous year. Silage yields averaged 15.6 tons per acre, up from 13.4 tons per acre a year ago.

Stocks of all hay stored on U.S. farms totaled 104 million tons on December 1, 2007, up 8 percent from the same date a year earlier. Disappearance of hay from May to December 2007 totaled 61.3 million tons, down from 67.1 million tons for the same period a year ago.

Compared with levels on December 1, 2006, hay stocks increased year over year in most of the Great Plains, eastern Rocky Mountain, Delta, and Southeast States. Meanwhile, stocks decreased over the same period throughout the upper Mississippi Valley, central Corn Belt, Ohio and Tennessee Valleys, Mid Atlantic, and the western Rocky Mountain regions.

Roughage-consuming animal units (RCAU) in 2007/08 are estimated at 72.24 million, down from 72.30 million in 2006/07. Hay stocks on farms per RCAU on December 1, 2007, were 1.44 tons, compared with 1.34 tons per RCAU a year earlier.

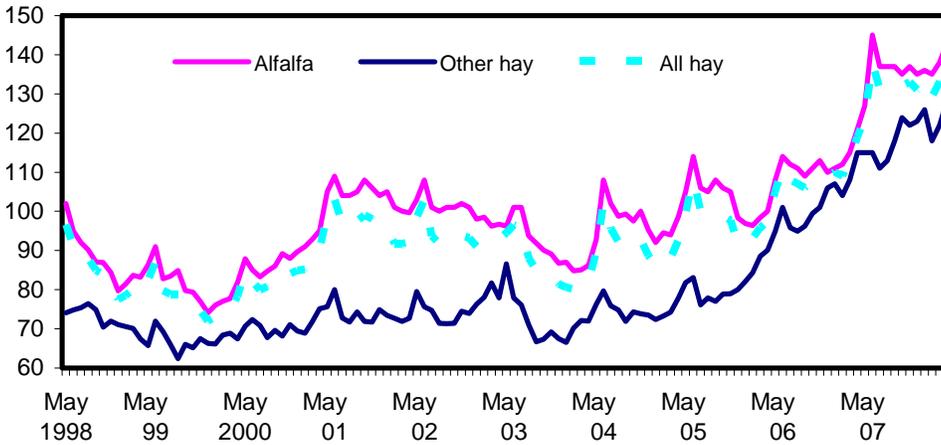
### ***Hay Prices Increase in 2007/08***

All hay prices received by U.S. farmers during May 2007 to March 2008 averaged a record \$132.91 per ton, up from \$109.91 per ton in the same period a year earlier. The season average farm price for all hay in the May-April 2006/07 marketing year was a record \$110.00 per ton, up from \$98.20 per ton in the previous marketing year.

Figure 23

**Hay prices received by U.S. farmers, May 1998-March 2008**

Dol./short ton



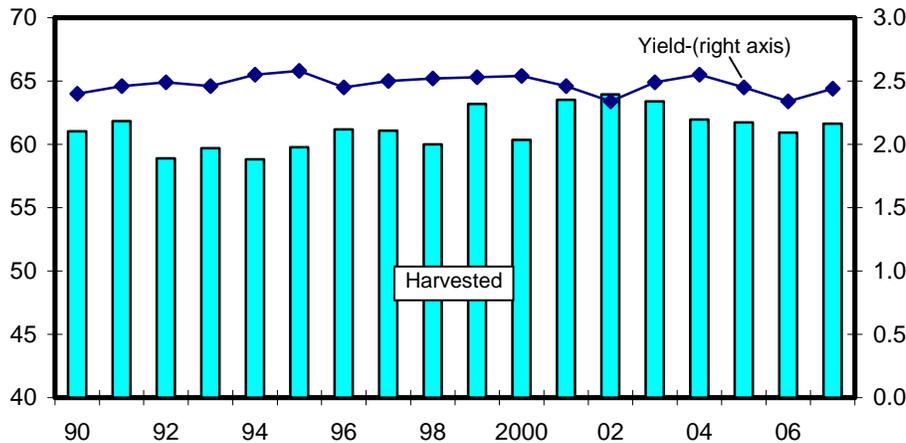
Sources: USDA, National Agricultural Statistics Service, *Crop Production and Quick Stats*.

Figure 24

**U.S. hay harvested acres and yields**

Mil. acres

Short tons/acre



Sources: USDA, National Agricultural Statistics Service, *Crop Production and Quick Stats*.

Alfalfa hay prices received by farmers averaged a record \$137.73 per ton during the period May 2007 to March 2008, up from \$112.64 per ton the same period in the 2006/07. The season average farm price for alfalfa was a record \$113.00 per ton in 2006/07, compared with \$104.00 per ton in 2005/06.

Hay-other-than-alfalfa had a weighted season average price of \$103.00 per ton in 2006/07, compared with \$81.40 per ton in 2005/06. In the first 11 months of the 2007/08 marketing year, the simple average was a record \$120.00 per ton, compared with \$102.58 in the first 11 months of the previous marketing year.

### *Prospective Harvested Acreage Down in 2008*

The March 2008 *Prospective Plantings* report indicated that U.S. producers expect to harvest 60.6 million acres of all hay in 2008, down 2 percent from 2007. Harvested area is expected to decrease from last year throughout most of the Great Plains, Southeast, and Southwest. The State with the largest expected decrease, Texas, is down 390,000 acres from 2007. South Dakota and Nebraska are expected to be down 300,000 acres and 150,000 acres, respectively. However, area for harvest in most States in the northern Great Plains, Western Mountain region, and Northeast is expected to increase from 2007. The States with the largest expected increases from the previous year are North Dakota, up 120,000 acres, and Montana, Wyoming, Kentucky, Ohio, and Pennsylvania, each up 50,000 acres. In the West, minor increases are expected in Oregon, Nevada, and California.

## Feed and Residual Use

### *Feed and Residual Use To Increase in 2008, Despite High Feed Prices*

Feed and residual use of the four feed grains plus wheat in September-August 2007/08 is expected to be up 9.91 million metric tons from the 154 million tons used in September-August 2006/07. Corn is expected to represent 95 percent of feed and residual use in 2007/08, up from 92 percent in 2006/07.

The index of grain-consuming animal units (GCAU) for 2007/08 is estimated to be up 3 percent from the 92.27 million in 2006/07. In the index components, GCAUs for dairy, cattle on feed, hogs, broilers, turkeys, and layers are up year to year. However, the grain used per GCAU in 2007/08 is 1.73 tons, compared with 1.67 tons in 2006/07.

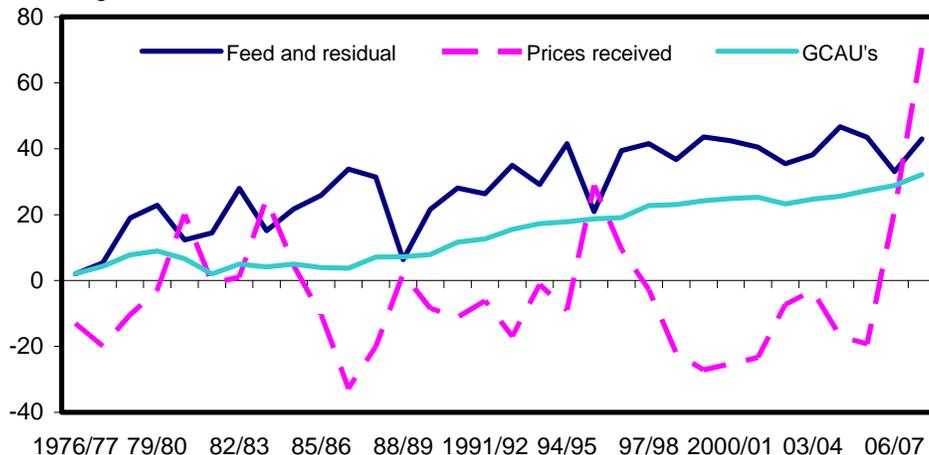
U.S. dairy cows on January 1, 2008, totaled 9.22 million head, up 105,000 head from the same period in 2007. Milk producers are reducing feeding intensity as a short-term response to higher feed prices; dairy cow numbers are expected to decline slightly as the year progresses. Dairy replacement heifers totaled 4.46 million head on January 1, up 3 percent from the same period a year earlier. With growth in output per cow, milk production in 2008 is expected to be about 190.7 billion pounds, up from 185.6 billion pounds in 2007. Thus, feed use by the U.S. dairy industry will stay strong.

Gains in feed needs for cattle on feed may be limited, as higher corn prices and improved forage availability lead to heavier cattle placed on feed. The number of cattle on feed on January 1, 2008, totaled 14.32 million head, up slightly from 14.27 million head for the same period a year earlier. Numbers of fed cattle slaughtered are expected to be up this year, and slaughter weights are up.

Figure 25

### **GCAU, prices, and feed and residual use of corn, 1976/77-2000/08**

% change from 1975/76

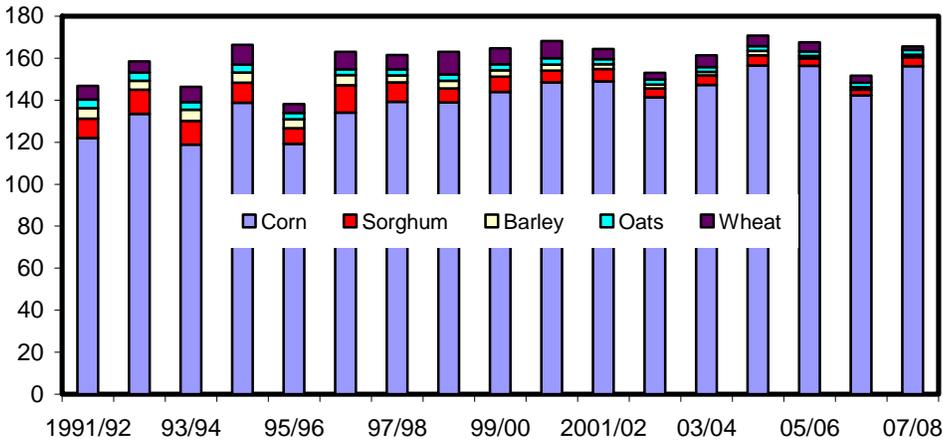


Source: USDA, World Agricultural Outlook Board, *WASDE* and USDA, Economic Research Service, *Feed Grains Database*.

Figure 26

**U.S. feed and residual use 1/**

Mil. metric tons



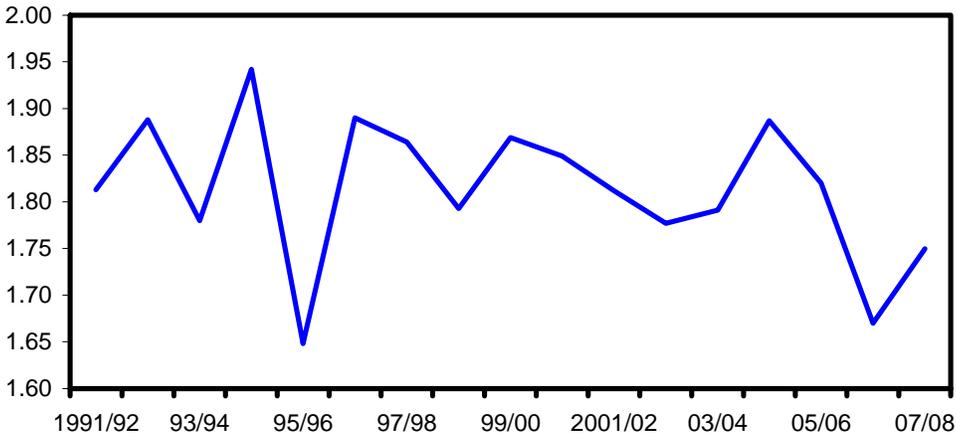
1/ All grains converted to September-August market year.

Source: USDA, Foreign Agricultural Service, *Grain: World Markets and Trade (Grain Circular)*.

Figure 27

**U.S. feed and residual use of corn, sorghum, barley, oats and wheat per GCAU**

Tons per GCAU



Source: USDA, Economic Research Service, *Feed Grains Database*.

U.S. broiler production in 2008 is expected to increase 774 million pounds from the level reached in 2007. Broiler prices are up 1.6-5.6 cents per pound in 2008 compared with prices in 2007. Egg producers are expected to produce 7.6 billion dozen eggs in 2008, up 63 million dozen from 2007 in response to higher egg prices. Egg prices in 2008 are expected to be up 11-18 cents per dozen from the level of 114.4 cents per dozen in 2007. In 2008, U.S. turkey production is forecast at 6.1 billion pounds, up 3 percent from 2007. Overall, feed demand by the poultry sector is expected to remain strong, but higher grain prices are expected to affect growth later in the year.

Pork production in 2008 is expected to be up 7 percent from the 22 billion pounds produced in 2007. Hog farmers responding to the March 1, 2008, hogs and pigs inventory survey indicated that they intended to increase slightly the number of sows farrowing this year from the level of a year earlier through March-May 2008; however, intended farrowings for June-August 2008 are down 2 percent from 2007. The December 2007-February 2008 pig crop was up 6 percent from 2007 and up 9 percent from 2006. The larger crop is expected to boost pork production in 2008. The forecast increase in pork production suggests feed needs for the pork sector will be strong in 2007/08; however, higher corn prices are expected to limit hog weights. After several years of profitable operation, the pork sector has begun losing money, with corn costs above \$5 per bushel.

# Food, Seed, and Industrial Use of Corn

## *Food, Seed, and Industrial Uses of Corn Increase in 2007/08*

U.S. food, seed, and industrial use of corn is expected to total 4,460 million bushels in 2007/08, up from 3,488 million in 2006/07. FSI use would represent 34 percent of total corn use, up from 31 percent in 2006/07 and 26 percent in 2005/06. Corn use in 2007/08 is expected to be up for ethanol, glucose and dextrose, and cereals and other products use categories.

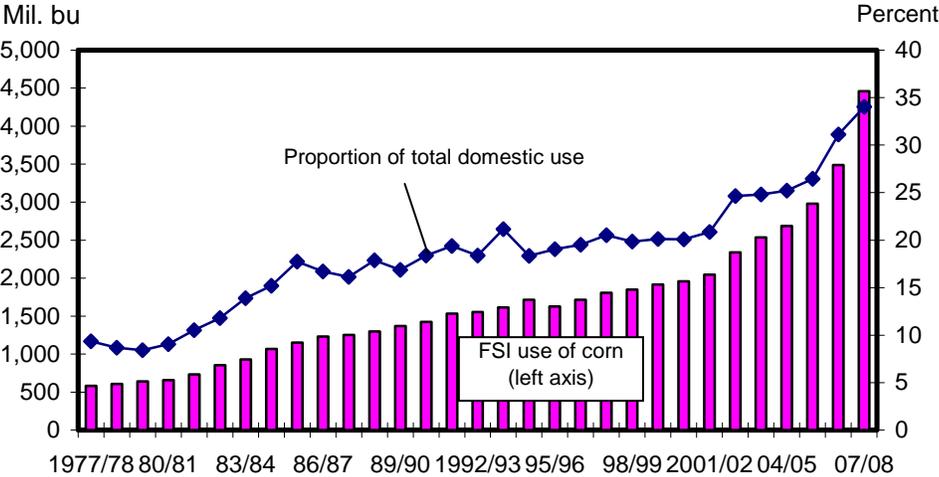
Corn used to make ethanol for 2007/08 is forecast at 3,100 million bushels, up 46 percent from 2006/07. In January 2008 (latest data available), ethanol production reported by the U.S. Department of Energy (DOE) was 510,000 barrels per day, up from 375,000 barrels in January 2007 as new plants have come on stream. This increase in ethanol production reflects new plants that have been added plus expansion of existing plant capacity in response to excellent returns in 2006. Stocks of ethanol in January, also reported by DOE, were 10.7 million barrels, up 24 percent from January 2007 and up 165,000 barrels from December 2007.

Ethanol use has continued to expand over the past 2 years. The passage of the Energy Policy Act of 2005 resulted in gasoline producers shifting from MTBE to ethanol in May 2006. This spurred the current and ongoing growth in ethanol demand. Compounding this were concerns about future availability of crude oil from politically sensitive areas that sharply boosted crude oil prices. Those price increases have continued to date, supporting demand for ethanol as a lower priced alternative to petroleum based fuel in gasoline blends.

Generally, ethanol prices strengthen as gasoline prices strengthen. However, in fall 2007, blending of ethanol was being done in almost all of the areas where it could

Figure 28

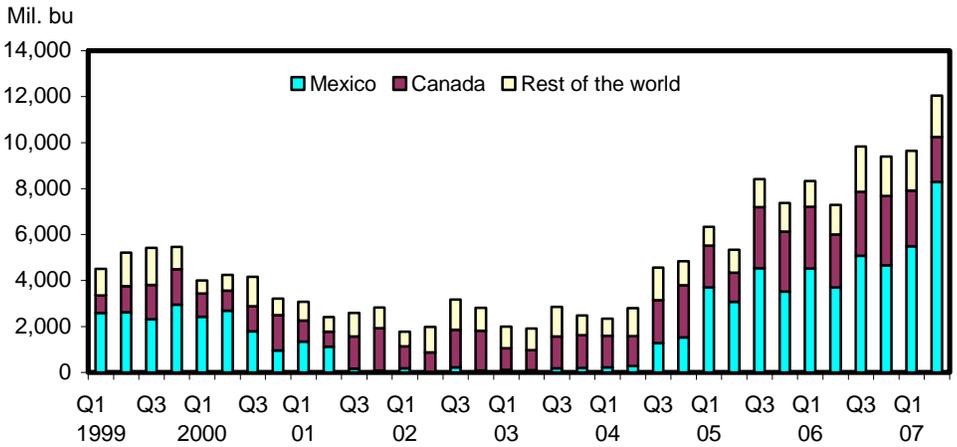
### U.S. FSI use of corn



Sources: USDA, Economic Research Service, *Feed Grains Database* and World Agricultural Outlook Board, *WASDE*.

Figure 29

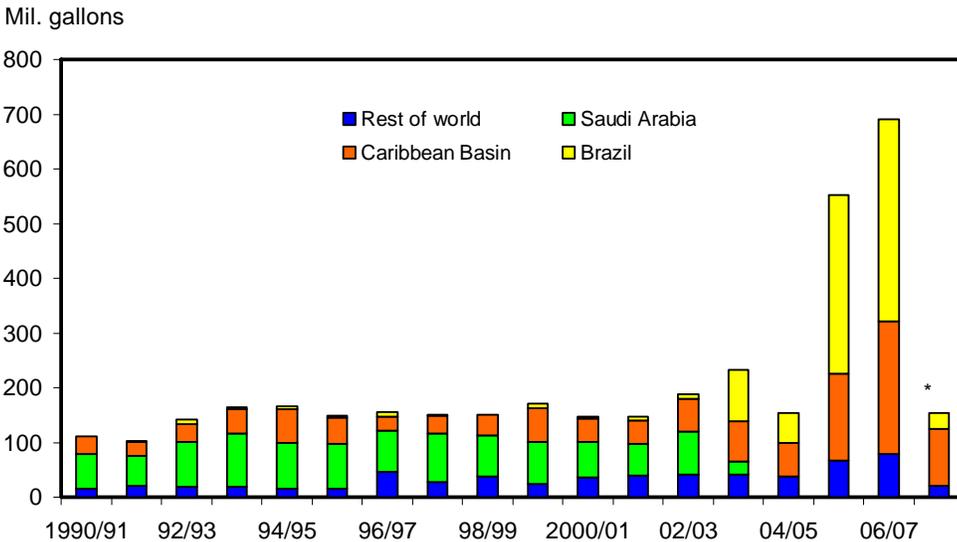
**U.S. HFCS-55 exports per quarter in bushel equivalents**



Source: USDC, Bureau of the Census, at <http://www.usatradeonline.gov/>.

Figure 30

**U.S. ethyl alcohol imports**



\*Year-to-date September-February.

Source: USDC, Bureau of the Census, at <http://www.usatradeonline.gov/>

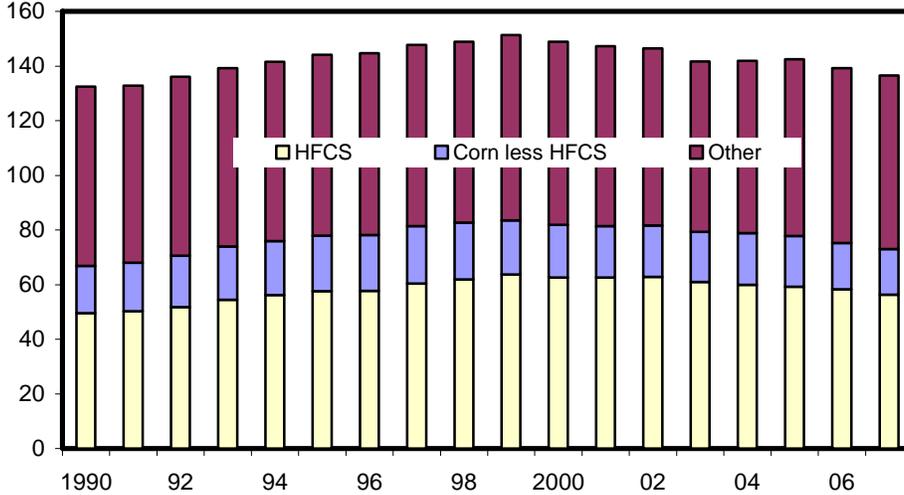
be, under existing State laws. At that time, ethanol prices weakened until some southern States passed emergency legislation allowing blending of ethanol. At the same time, some summer restrictions on blending ended seasonally. Since last fall, ethanol prices have strengthened again with rising gasoline prices.

The Energy Independence and Security Act of 2007 signed in December 2007, among other things, raised the amount of biofuels required to be blended in motor

Figure 31

**U.S. per capita sweetener consumption**

Pounds

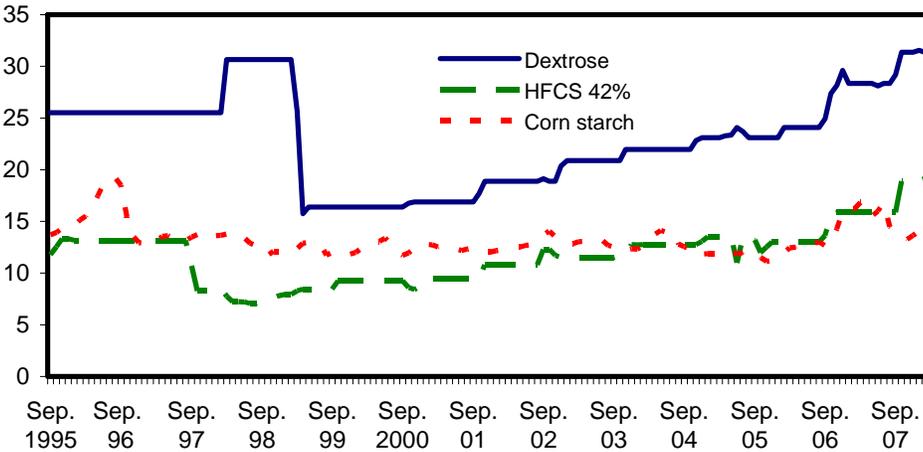


Source: USDA, Economic Research Service, *Sugar and Sweeteners Yearbook*.

Figure 32

**U.S. wet mill product prices, monthly, September 1995-March 2008**

Cents/bu



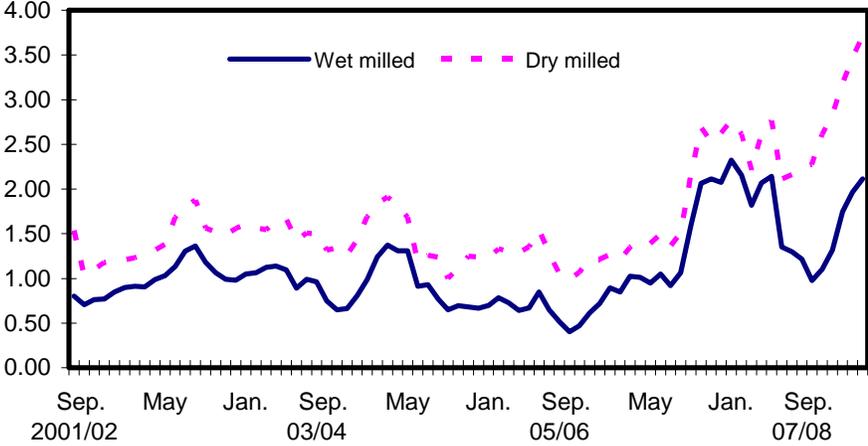
Sources: "Milling and Baking News," Sosland Companies, and USDA, Economic Research Service, *Feed Grains Database*.

fuel. In response to the higher ethanol use mandates and as result of favorable economic incentives to blend ethanol, the petroleum industry has invested in ethanol transportation, handling, and storage capacity in the Southeast. States in this region are also passing legislation to accommodate ethanol blending. The "blending wall" for ethanol in gasoline has been moved back and, even with increased production, ethanol prices are expected to continue following gasoline prices through the current corn marketing year, supporting positive returns for ethanol producers.

U.S. ethyl alcohol imports totaled 155 million gallons during September 2007-February 2008 for the census categories that would include ethanol, down from 388 million gallons during the same period in the previous year. Imports for fuel use must pay 54 cents per gallon duty unless the alcohol is produced in Caribbean Basin countries that can ship duty free to the United States. Almost all of the ethanol produced in the Caribbean Basin is further processed ethanol from Brazil. As more ethanol plants have opened in the United States, the need to import ethanol has lessened.

Corn used for HFCS in 2007/08 is projected at 500 million bushels, down 2 percent from that used in 2006/07. HFCS is primarily used in soft drinks. Demand for HFCS has slowed as consumers drink more bottled water and other alternative beverages. Efforts to encourage consumers to exercise more and limit calories to reduce obesity reinforce this trend. New popular diets stress low carbohydrates and sugars. Potentially offsetting this decline in domestic U.S. HFCS use are prospects for higher HFCS exports to Mexico. Beginning in January 2008 under the North American Free Trade Agreement, Mexico and the United States have free trade in sugar and HFCS. Estimated corn used for HFCS exports was up 39 percent in September 2007-February 2008, relative to the similar period a year earlier. In September 2007-February 2008, exports of HFCS in corn equivalents to Mexico were up 68 percent, but Canadian imports were down 21 percent from the same period a year earlier.

Figure 33  
**U.S. net corn costs for wet and dry milling, monthly**  
 Dol. per bu.



Sources: USDA, Economic Research Service calculations from various series available from USDA, Agricultural Marketing Service.

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The appendix tables are now available online at <http://www.ers.usda.gov/data/feedgrains/FeedYearbook.aspx>. They will be updated monthly as new data are added to the Feed Grains Data Base, <http://www.ers.usda.gov/data/feedgrains/>.

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