

Commodity Spotlight



Soybean Plantings to Expand, Corn to Recede in 2001

U.S. farmers encountered varying price signals among major field crops as spring planting time approached this year. Prices increased about 10 percent from last year for winter wheat and 3 percent for spring wheat (including durum), but declined 5 percent for corn, 15 percent for soybeans, and 16 percent for cotton. These expected farm price changes were based on new crop futures quotes for harvest-time delivery in mid-March for spring crops and mid-October for winter wheat.

Benefits from marketing loans continue to be important for planting decisions, particularly in upholding producer incentives (per-unit returns) for soybeans and cotton. Higher fertilizer and fuel costs also affected planting intentions.

Producers' net response was a 3-million-acre decrease in planting intentions for the eight major U.S. field crops (corn, soybeans, wheat, barley, sorghum, oats, cotton, and rice) from last year's planted acreage. However, acres harvested for hay crops are expected to expand by almost 4 million, more than offsetting the decrease for the major field crops.

Planting intentions for the eight major field crops total 251.5 million acres in 2001, down 1.3 percent from last year's planted area and 3.6 percent below the

most recent peak in 1996. Farmers intend to plant a record 76.7 million acres of soybeans, 3 percent higher than in 2000 and the tenth straight increase. Corn plantings are down 4 percent to 76.7 million, wheat plantings down by 4 percent to 60.3 million, while cotton area, 15.6 million acres, is the largest since 1995.

Trend yields, along with planting intentions, suggest a corn crop about 5 percent smaller than last year and a record U.S. soybean crop in 2001. For wheat, production prospects hinge on how much of the late-planted wheat in the Southern Plains is harvested for grain and on the magnitude of yields for the surviving wheat.

Farmers' planting intentions continue to show the effects of the 1996 Farm Act, which has allowed farmers more flexibility to respond to market signals by changing their enterprise mix. For example, with producers' participation in farm

programs no longer tied to base acreage planting requirements and acreage reduction restrictions, farmers are free to pursue soybeans' relatively high net returns that are due largely to higher expected loan deficiency payments (LDPs) compared with other crops. Soybean plantings grew by more than 12 million acres between 1996 and 2001 (assuming 2001 intentions are realized), and for the first time since 1983 match intended corn plantings.

Soybean acreage has expanded in the wheat-dominated Central and Northern Plains. Some wheat acreage in the Central and Northern Plains was also switched to minor oilseeds, such as canola and flaxseed. Sunflower plantings are expected down again this year to 2.7 million acres to make way for higher-net-return canola and flaxseed. As a result, U.S. farmers intend to plant a record 1.9 million acres of canola this year (nearly double the 1999 level), reflecting higher per-unit returns than sunflowers and fewer disease problems in canola production.

Soybeans. Intended soybean acreage for 2001 is 76.7 million acres—3 percent above last year's acreage. The key factor enticing producers to grow soybeans this year is the relatively high expected marketing loan benefits for soybeans compared with other crops. Soybean acreage in Iowa and Illinois—the two leading soybean producing states—is expected to increase 2-3 percent over last year's levels.

Unlike last year, the increase in intended soybean plantings in the Corn Belt outpaces gains in the Central and Northern Plains this year. Soybean plantings in the Corn Belt are expected to expand 1.5 million acres, with advances concentrated mostly in Minnesota (0.3 million), Iowa (0.3 million), Wisconsin (0.25 million), Illinois (0.2 million), and Ohio (0.2 million). Soybean plantings in the Central and Northern Plains are expected to be up

These estimates are based on farmer surveys conducted by USDA's National Agricultural Statistics Service during the first 2 weeks of March. USDA's *Prospective Plantings* report for 2001, released on March 30, provides the first indication of farmers' spring planting intentions for major field crops. With adverse weather or significant changes in crop prices, actual plantings could vary from intentions. For example, persistent wet conditions this spring could delay corn plantings and cause an even greater switch from corn to soybeans. USDA will release acreage estimates in its June 30 *Acreage* report, after crops have been planted or when planting intentions are more definite. The March *Prospective Plantings* report is available at <http://usda.mannlib.cornell.edu/>. The June *Acreage* report will be available at <http://usda.mannlib.cornell.edu/reports/nassr/field/pcp-bba/>.

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Planting Intentions for Major Field Crops Are Down 3 Million Acres From Last Year's Plantings

Crop	2000			2001
	Intended acreage	Planted acreage	Harvested acreage	intended acreage
<i>Million acres</i>				
Corn	77.9	79.5	72.7	76.7
Soybeans	74.9	74.5	72.7	76.7
Wheat	61.7	62.5	53.0	60.3
Sorghum	9.0	9.2	7.7	9.4
Barley	5.7	5.8	5.2	5.3
Oats	4.4	4.5	2.3	4.4
Rice	3.4	3.1	3.0	3.1
Cotton	15.6	15.5	13.1	15.6
Total	252.6	254.7	229.7	251.5

Economic Research Service, USDA

1.1 million acres (up 0.5 million in North Dakota, 0.3 million in South Dakota, and 0.2 million in Nebraska) as wheat acreage switches to soybeans.

In contrast, farmers in the Delta and Southeast intend to decrease soybean plantings for the fourth year after a spike in 1997, especially in Mississippi (down 200,000 acres), Tennessee (130,000 acres), and Louisiana (110,000 acres). Poor soybean yields in these areas over the last few years have made cotton a more attractive alternative. Partially offsetting the decreases are increases in soybean plantings in Kentucky (50,000 acres) and South Carolina (30,000 acres).

Marketing loan provisions make soybean production attractive to many producers across the U.S. The relatively high loan rate and the potential for marketing loan gains (repayment of government loans below the original loan rate) and LDPs are expected to provide a higher per-bushel net return than for competing commodities when the market price falls below the commodity loan rate. Other factors in the record expansion of soybean acreage since 1996 include: 1) planting flexibility under the 1996 farm legislation; 2) adoption of the popular biotech herbicide-tolerant soybeans—reaching a 63-percent adoption rate (up from 54 percent last year), which reduces input costs for many farmers and increases profit potential; and 3) higher per-acre costs of fertilizer and energy inputs in corn production (see page 8).

Corn. Corn growers intend to plant 76.7 million acres in 2001, down nearly 4 percent from last year's planted acreage mainly because of 1) higher per-acre costs of fertilizer and fuel in corn production, and

2) a 5-percent-lower expected corn price as reflected in the new crop December futures price in mid-March, right after the intentions survey was taken by USDA's National Agricultural Statistics Service.

To many producers in Illinois and Iowa, corn net returns anticipated for the new crop appear less attractive than returns for soybeans. Like last year, marketing loan provisions entice producers to grow soybeans. In addition, higher fertilizer and fuel costs this year in corn production (relative to soybeans) induce more soybean plantings. These two factors combine to boost the soybeans-to-corn price ratio at active planting decision times (around mid-March) to around 2.62 to 1. This ratio suggests that soybeans will be more profitable than corn in these two states and others in the Corn Belt. Most of the 0.4-million-acre decline in corn plantings in Iowa, for example, probably indicates a switch from corn to soybeans—a pattern that is widespread throughout the entire Corn Belt region.

Intended corn plantings in the Corn Belt this year are down 1.5 million acres across the entire region. Iowa leads the decline (0.4 million), followed by Minnesota (0.3 million), Ohio (0.2 million), Indiana (0.2 million), and Illinois (0.2 million). Intended corn acreage is down throughout the Central and Northern Plains as well, a decrease of 0.8 million acres. Key states showing the largest decline are Colorado (0.2 million), South Dakota (0.2 million), Nebraska (0.2 million), and North Dakota (0.1 million). The expansion in soybean plantings in North Dakota—an increase of 0.5 million acres—is a shift not only from corn but also from durum wheat and sunflowers.

Intended corn acreage is also down throughout the entire South (the Delta, Southeast, and Southern Plains regions). Texas leads the decline (0.2 million) as planting was hampered by frequent rains during the spring, followed by Louisiana (0.1 million) and Georgia (0.1 million). In all, intended corn plantings are down 0.7 million acres in the South. Most of the land not being planted to corn in Texas will probably be switched to hay or other competing crops.

Intended adoption of biotech corn varieties is about 24 percent this year, down slightly from 25 percent last year. Plantings of insect-resistant (*Bt*) corn varieties (excluding stacked-gene varieties) are expected to reach 16 percent of all corn acres, down from 18 percent last year.

Other feed grains. Among "other feed grains," only sorghum planting intentions show an increase—2 percent above last year's planted acreage. Intended sorghum plantings are up 100,000 acres in Kansas, the largest producing state, followed by New Mexico (35,000), Colorado (20,000), Louisiana (20,000), and Oklahoma (20,000). Sorghum production requires less water relative to corn and thus saves on irrigation costs, which become a concern because of higher energy prices this year. The relatively strong sorghum prices also promote added acres from last year. In contrast, intended sorghum plantings in Texas are expected to be down 100,000 acres.

Intended barley plantings are down 300,000 acres in North Dakota, the leading barley producing state, due to lower expected prices. Much of the cropland not planted to barley could be switched to more profitable competing crops, such as soybeans and canola. Other states showing large declines are Washington (100,000 acres) and Montana (50,000 acres). Intended oat acreage is down 2 percent from last year's planted acreage, with most of the decline in North Dakota (50,000), Wisconsin (50,000), and Iowa (40,000). In contrast, oat plantings in Texas are expected to be up 100,000 acres.

Wheat. Wheat area intentions for 2001 total 60.3 million acres—down about 4 percent from last year's planted area. USDA's *Winter Wheat Seedings* report indicated in January that farmers had planted 41.3 million acres of winter wheat

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for harvest in 2001, down 5 percent from last year and the lowest since 1971. The March planting intentions survey confirms this level of winter wheat plantings.

The expected price of winter wheat facing producers at planting time last fall actually showed a 10-percent increase over a year earlier, based on new-crop futures prices at harvest time. The higher expected price would have induced more winter wheat plantings, under favorable weather conditions. However, dry soil conditions followed by prolonged wet conditions delayed and reduced seeding progress and even slowed emergence, leading to a decline in winter wheat plantings, mostly in the Southern Plains. Oklahoma and Texas led the decline, down 700,000 and 300,000 acres. In these two states, dry conditions were followed by excessive rainfall, which further hindered seeding progress. Much of the unseeded winter wheat acres in Texas are probably switched to hay. Area harvested for hay in Texas is expected to be up almost 2 million acres, nearly half of the increase in hay acres nationwide.

In Montana, winter wheat acreage was down 0.3 million acres from last year, chiefly due to dry conditions. Most of the unseeded winter wheat acres in this state will apparently be switched to hay, not spring wheat. Areas harvested for hay are expected to be up 0.5 million acres. Similarly, soft red winter (SRW) wheat area is down 6 percent from last year, at about 8.9 million acres, with declines mostly in Illinois (0.15 million), Missouri (0.15 million), and Kentucky (0.12 million). Excessive soil moisture in southern Illinois and dry conditions across most of the Southeast slowed planting progress.

In 2001, U.S. farmers intend to plant only 2 percent more of other spring wheat than last year. The expected price for hard red spring (HRS) in mid-March was only 1 percent higher than last year, suggesting not much increase in HRS plantings this year. Intended plantings for durum wheat showed a 12-percent decrease from last year, reflecting cancellation of the durum Crop Revenue Coverage (CRC) program due to administrative difficulties. Anecdotal evidence suggests that final durum wheat plantings could differ from intentions because some farmers had returned their intention survey questionnaires before USDA announced the CRC cancel-

lation midway through the survey period. Durum plantings were particularly high last year due to the CRC revenue guarantee. Prospective durum wheat plantings are down 0.5 million acres, mostly in North Dakota, the leading durum producing state. In North Dakota, hard red spring (HRS) wheat intended plantings are up 0.3 million acres, continuing last year's shift from durum to HRS wheat. Some unseeded durum wheat acres will probably be switched to hay or soybeans.

Cotton. Planting intentions for cotton total 15.6 million acres, similar to last year's planted acreage. The expected producer incentive price (after accounting for marketing loan benefits) for growing cotton probably was down somewhat in mid-March from a year earlier. With the per-unit return expected down about 2 percent in 2001 (after adjusting for marketing loan gains and LDPs), cotton plantings are still attractive relative to competing crops such as corn, wheat, and sorghum.

Recent changes in the crop insurance program that have improved cotton's financial viability also help explain farmers' planting intentions. In some Southern and Delta counties of Mississippi, producers' net premium for 75-percent cotton insurance coverage dropped by as much as 20 percent for the 2001 crop year as a result of a general re-rating of the cotton program. Also, the Agricultural Risk Protection Act of 2000 (ARPA) made permanent the ad hoc premium subsidy increases of the past 2 years. Because the participation rate of cotton producers in the crop insurance program is already high, there is little room for growth. However, it is likely that growers will purchase higher coverage levels, which are now more affordable as a result of ARPA's increased subsidies for higher coverage levels.

With total cotton area anticipated marginally higher in 2001, offsetting changes were reported. The bulk of the increases are expected in four states: Mississippi, North Carolina, Arkansas, and Louisiana. However, high irrigation and fertilizer costs as well as uncertain water supplies have reduced incentives for growing cotton in Texas (down 400,000 acres) and California (down 70,000 acres).

The adoption of biotech cotton varieties increased to 64 percent of all cotton acres, up from 61 percent last year. Herbicide-

tolerant and stacked-gene varieties both show increases of 2-3 percentage points over last year. In contrast, *Bt* cotton is expected to account for 13 percent of total area, down from 15 percent last year.

Rice. Rice growers indicated plantings of nearly 3.1 million acres in 2001, up about 1 percent from a year earlier, with long grain plantings up 8 percent and combined medium/short plantings down 17 percent. Reduced plantings of medium grain rice in Arkansas, California, and Louisiana account for almost all of the intended reduction in U.S. rice acreage in 2001, a result of extremely low prices for medium grain rice this year. In contrast, growers across the South intend to expand long grain rice acreage, with Arkansas and Louisiana accounting for most of the acreage. Long grain prices have been supported by expectations of extremely tight supplies by the end of the 2000/01 marketing year, a result of a more than 13-percent drop in long grain production in 2000. Drought and salination problems reduced Louisiana's 2000 plantings.

Hay. U.S. farmers intended to greatly expand the area harvested for hay crops this year, up 7 percent from last year. This 4-million-acre increase in hay area would more than offset the 3-million-acre decrease in planting intentions for the eight major field crops. Key states showing the largest increases are Texas (up 1.8 million acres), Montana (up 0.5 million), North Dakota (up 0.35 million), as well as Colorado, Minnesota, South Dakota, Missouri, Oklahoma, Wyoming, and Kansas. Drought in the Southern Plains last year drew down hay stocks—important feed-stuffs for beef cattle and dairy operations—and raised hay prices. Much of the unseeded winter wheat acres in Texas and Montana and some corn acres in Texas will probably switch to hay. **AO**

*William Lin (202) 694-5303
wwlin@ers.usda.gov*

For further information, contact:

Gary Vocke, domestic wheat; Ed Allen, world wheat and feed grains; Allen Baker, domestic feed grains; Nathan Childs, rice; Mark Ash, oilseeds; Steve MacDonald, world cotton; Les Meyer, domestic cotton. All are at (202) 694-5300.

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How Did Soybean Plantings Catch Up with Corn?

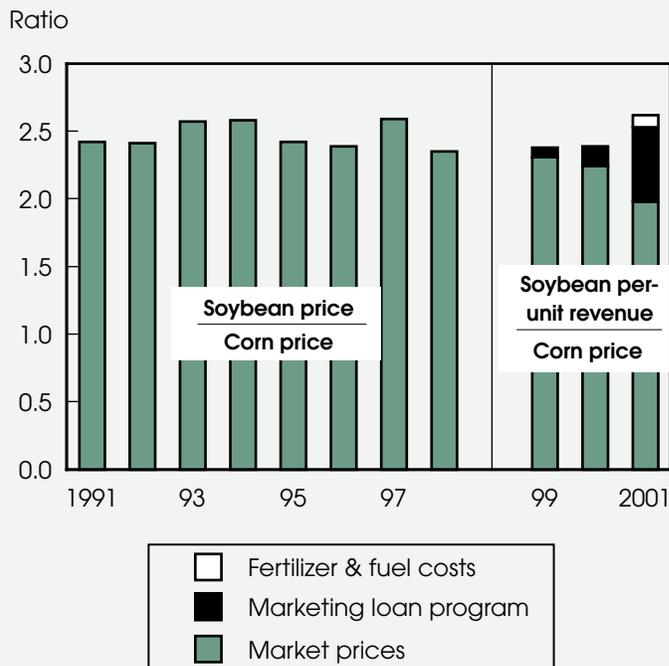
U.S. farmers this year intend to grow 76.7 million acres of soybeans, matching the level of corn planting intentions for the first time since 1983 when soybean plantings exceeded corn due to drought and the payment-in-kind program. This analysis illustrates how soybean planting intentions changed from last year as a result of changes this year in price-related factors, including benefits from marketing loans, prices of competing crops, and higher fertilizer and fuel costs in corn production.

Farmers can receive marketing loan benefits through loan deficiency payments and through marketing loan gains. Whenever the market price for an eligible field crop drops below its applicable commodity loan rate, farmers may opt for revenue-boosting *loan deficiency payments* (LDPs) in lieu of securing a commodity loan. (Commodity loans provide interim financing to producers of eligible commodities, regardless of market price levels—farmers pledge crops as collateral and receive loans at a specified rate—the loan rate—per unit of commodity.) The loan deficiency payment rate equals the difference between the commodity loan rate and the local, posted county price (PCP). Alternatively, eligible farmers realize a *marketing loan gain* by repaying outstanding commodity loans (per-unit) at the posted county price when the PCP is below the loan rate.

During 1999-2000, marketing loan benefits (LDPs and marketing loan gains) raised expected soybean per-unit returns by an average 4.8 percent over an average farm price of \$5.14 per bushel based on November new crop futures prices in mid-March. Benefits are based on the announced loan rate of \$5.26 per bushel. As a result, the program raised the soybeans-to-corn price ratio from an average of 2.33 in 1999 and 2000 to 2.38 during the same period. In 2001, marketing loan benefits raised per-unit soybean returns by 28 percent over the expected farm price, thereby raising the soybeans-to-corn price ratio from 1.98 (based on market prices) to 2.53. Thus, marketing loan benefits are a major factor enticing producers to grow soybeans this year, but with per-unit soybean returns (price plus LDP) unchanged from last year, the benefits do not cause soybean planting intentions to deviate from last year's levels.

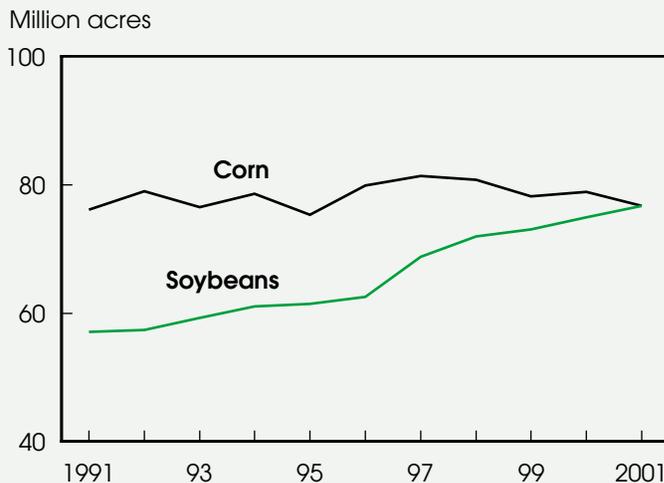
Among prices of competing crops, change in the expected farm price of corn had a larger effect on soybean plantings this year. Based on new crop December futures prices, the expected farm price of corn is estimated at \$2.178 per bushel, which is 5 percent lower than last year's level. According to estimates by USDA's Economic Research Service (ERS), a 1-percent decrease in the expected corn price would lead to a 0.145-percent increase in soybean plantings. ERS estimates that this increase would expand soybean plantings by 0.73 percent or 500,000 acres.

Relative Input Costs and Marketing Loan Program Benefits Make Soybeans More Attractive...



New-crop futures prices (November for soybeans and December for corn) in mid-March, adjusted to U.S. farm-level equivalent. Effects of marketing loan program and fertilizer and fuel costs are negligible before 1999.

...and Planting Intentions Converge for Soybeans and Corn



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Higher fertilizer and fuel costs in corn production, reflecting the effect of higher natural gas prices over the last year or so, represent another important factor in the expansion of soybean plantings this year, because corn production uses significantly more nitrogen fertilizer relative to soybeans. In March 2000, prices of natural gas averaged about \$6.82 per thousand cubic feet, up from \$6 in March 1999. By December 2000, natural gas prices climbed almost 50 percent to nearly \$10 per thousand cubic feet. Because natural gas accounts for up to 90 percent of the cost of producing fertilizer, higher natural gas prices have had a significant effect on commercial fertilizer prices, particularly nitrogen.

According to a cost budget prepared by the University of Illinois Extension Service, nitrogen costs in corn production will increase by \$7 per acre this year because of higher nitrogen fertilizer prices. In addition, higher fuel prices would increase fuel costs by about \$3 per acre. In contrast, higher nitrogen fertilizer and fuel prices have either very little or no impact on the cost of soybean production. Assuming that an increase of \$10 per acre in the cost of corn production (relative to soybeans) in Illinois is the same as in other major producing states, this per-acre cost increase is equivalent to a decrease of \$0.0735 per bushel in the farm price of corn (assuming a trend yield of about 136 bushels per acre). A

decrease of this amount is about 4.59 percent of the expected corn farm price (\$2.178 per bushel), based on new crop December futures prices in mid-March. An equivalent decrease in the corn price would lead to an increase in the soybeans-to-corn price ratio from 2.53 (adjusted for the marketing loan program) to 2.62. Given the response of soybean plantings to a 1-percent change in the corn farm price estimated at -0.145 percent, the equivalent price effect increases soybean plantings by 0.67 percent, or 500,000 acres of corn land that could be switched to soybean plantings.

Thus, both the lower expected corn price and higher per-acre costs of fertilizer and fuel in corn production appear to have a large effect in explaining the change in soybean planting intentions from last year's 74.9 million acres to this year's 76.7 million. Higher soybean plantings also result from shifts out of other crops. For example, soybeans replaced soft red winter (SRW) wheat areas in the Corn Belt, durum wheat and sunflower acres in North Dakota, and barley and oats in the northern-tier states. Crop rotation considerations and the limited supply of quality soybean seed (due to germination problems) may constrain a further switch from corn to soybeans in 2001. **AO**

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