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Corn or Soybeans for 2009?

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Increased demand for corn by the ethanol industry has increased corn planted acreage from historical levels. From 2001 to 2006, an average of 79 million acres of corn was planted in the United States, with the highest acreage being 81.8 million acres in 2005. In 2007, corn acreage increased to 93.5 million acres. Figure 1 shows that a large proportion of the 2007 increase in corn acreage came from midwestern farmers reducing soybean acreage in favor of corn. Corn acreage declined by 7.5 million acres—to 86 million acres—in 2008 while soybean acreage increased by almost 11 million acres. Figure 2 shows that a large proportion of the soybean acreage increase came from a reduction in corn acreage. Other sources of soybean acreage in 2008 included switching from crops other than corn, loss of Conservation Reserve Program land, and an increase in soybean double cropping.

Because most corn grown in the Corn Belt is grown in rotation with soybeans, a large proportion of the expanded U.S. corn acreage has come about because some farmers have chosen to plant corn on land that was planted to corn in the previous year. But planting corn after corn instead of corn after soybeans can reduce yields and increase production costs. Production costs increase because of the need for additional nitrogen fertilizer, increased tillage, and increased pesticide costs to control corn rootworm. Corn rootworm control can be obtained by buying more expensive seed recently developed for that purpose. In addition, by planting corn after corn instead of planting corn after soybeans, a farmer gives up the benefits the following year of being able to plant corn after a crop of soybeans.

To induce farmers to plant adequate corn acreage to meet growing ethanol demand, the price of corn that a farmer should expect to receive must rise relative to the price of soybeans. If it doesn’t, then farmers will choose not to expand corn-on-corn acreage.

Calculating Planting Incentives
A simple equation can be used to calculate the incentive to plant corn after corn instead of soybeans after corn. It is simply the difference in expected return this year from planting corn after corn versus corn after soybeans minus the forgone benefits of planting corn after soybeans the following year. Because these forgone benefits exist in the future, they need to be discounted to today’s dollars.

The daily value of this incentive to plant corn after corn is graphed in Figure 3 for 2001 to 2006, 2007, 2008, and 2009. Because most farmers do not begin to worry about the following year’s crop until they harvest this year’s crop, only daily values...
after October 20 in the fall before planting are shown. May 20 is about the last day that farmers can choose to plant corn instead of soybeans. Daily values for new crop futures (December for corn and November for soybeans) adjusted for average midwestern basis are used in the calculations.

Figure 3 shows that there was no incentive to plant corn after corn from 2001 to 2006. Consequently, corn acreage averaged 79 million acres, varying from 75.7 in 2001 to 81.8 in 2005. There was no day during this period when the expected return to planting corn after corn exceeded the expected return from planting soybeans after corn.

Of course, some farmers chose to plant corn after corn. These farmers must have had some advantage not captured by the measure graphed in Figure 3. For example, access to abundant hog manure induces some farmers to plant continuous corn.

Recent Incentives and Outcomes

Early in January of 2007, the market created a positive incentive to plant corn after corn. This incentive lasted until the beginning of April before it disappeared. Notice also that for most of the period after the 2006 harvest, the disincentive for planting corn after corn was much less than it had been in previous years. This pattern of incentives in 2007 was evidently quite strong given the large movement of soybean acres to corn acres shown in Figure 1.

The incentives to plant corn after corn were negative and lower in 2008 than in 2007 until the second week in March. By that time many farmers who might have considered planting corn after corn had already decided to plant soybeans instead. The market likely responded to a fear of inadequate corn acreage and created a large incentive for farmers to switch their plans toward corn. The lateness of the signal probably prevented many farmers from responding.

The incentives for the 2009 crop started higher than in either 2007 or 2008 but they quickly fell in mid-December to become quite negative. After rebounding somewhat, the latest use data from USDA released on January 12 drove corn prices sharply down. Currently the disincentive to plant corn after corn is about the same as the average disincentive during 2001 to 2006. This suggests that corn acreage will have trouble exceeding 80 million acres in 2009. But projected demand for corn exceeds what can be grown on 80 million acres. Consequently, we should expect significant strengthening in corn prices relative to soybean prices before planting.

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