

Profitability Analysis of Late Planted Corn Compared to Soybeans

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Background:

Although new-crop corn and soybean prices are near record highs, planting conditions remain poor throughout Kentucky as of mid-May 2011. Nationally, it is estimated that around half of the corn crop has been planted. Grain farmers throughout the state are now worrying whether they will get their crops out in a timely manner this year. *An associated question being asked is at what point should they stop planting corn and switch to soybeans?* In order to answer this question, we need to estimate potential yield losses for late planted corn and compare the associated profitability against soybeans.

Assumptions:

New-crop prices used in the analysis are \$6.40/bu for corn and \$13.15/bu for soybeans. Corn prices have increased in value considerably in the last month relative to soybeans. This is likely because the market is trying to compensate for the poor corn planting conditions as is trying to prevent farmers from switching corn acres to soybeans. As a consequence, the profitability of corn is quite high compared to soybeans by historical standards. This will extend the corn planting season further into spring than would normally be expected.

Fertilizer prices are up considerably from last year. However, they have stabilized since early January. Nitrogen (N) price has the biggest impact on relative profitability between corn and soybeans because only corn uses this input. Anhydrous is assumed at \$800/ton or \$.49 per unit of N. DAP and Potash are assumed at \$690/ton (\$.56 per unit) and \$600/ton (\$.50 per unit) respectively. Custom rates are used to estimate machinery costs¹. Fuel is assumed at \$3.75 per gallon, and trucking is assumed to be 15 one-way miles.

Three soil productivity levels are used in this analysis seen in Table 1. This is important because better quality soils have higher profitability for corn relative to soybeans than poorer ground. Thus we would expect a planting date further out on the best ground before switching to soybeans compared to the worst ground.

Corn Yield	Soybean Yield	Corn/Soybean Yield Ratio
125 bu	39.0 bu	3.2
150 bu	45.5 bu	3.3
175 bu	51.5 bu	3.4

Three corn yield loss levels are evaluated: 10% loss, 15% loss, and 20% loss. Obviously, the further out corn is planted from the optimal date, the greater the expected loss. In most of western Kentucky, May 10 appears to be the point after which yields are expected to start dropping (see Table 2). Two soybean yield losses are also used: 0% loss, and 7.5% loss. The 7.5% loss for soybeans is included because most of the corn ground that would potentially be planted to soybeans would effectively be 2nd year soybeans. University of Kentucky research shows that in most cases there would be a yield loss associated with cropping soybeans two years in a row.

¹ See Custom Machinery Rates Applicable to Kentucky (2011)

<http://www.ca.uky.edu/cmsspubsclass/files/ghalich/CustomMachineryRatesKentucky2011.pdf>

Results:

Table 3 shows the profitability of late-planted corn compared to soybeans given the assumptions above. This table shows the gross return for corn at various yield losses and compares this to soybeans with no yield loss as well as soybeans with a 7.5% yield loss. Notice that at the 10% corn yield loss, all soil classes have higher profitability compared to soybeans at either the 0% or 7.5% yield losses. With a 15% corn yield loss, all soil classes have greater profitability than soybeans with a 7.5% yield loss. On the medium quality ground, a 20% corn yield loss has greater profitability than soybeans with a 7.5% yield loss. *On the best ground, a 20% corn yield loss still has greater profitability than soybeans with a 0% yield loss.*

Combining this information in Table 3 with the information in Table 2 gives us an estimate of the latest economic corn planting date before switching to soybeans given market conditions in 2011 (assuming a 7.5% yield loss for soybeans):

Fair Ground May 27
Good Ground June 1
Best Ground June 4

These dates are most applicable for western Kentucky east of the Purchase Area. Subtract approximately 5 days in the southwest Purchase Area, and add approximately 5 days for central Kentucky. Also, for areas with significantly higher trucking and N costs than the assumptions used here, subtract 1-4 days to account for improved soybean profitability relative to corn profitability.

Other Important Factors to Consider:

If planting conditions in the heart of the Corn Belt do not improve quickly, it is likely that the market will respond by further increasing the price of corn relative to soybeans. *Should this occur, the dates shown above will move out*

further into the planting season, and it would be likely that even on the fair ground, corn would still be more profitable than soybeans into early June.

The other important factor that needs to be considered is Preventative Planting with crop insurance. The Preventative Planting date for corn in Kentucky is May 31. If producers are unable to get corn planted by this date (for legitimate reasons), they can choose not to plant and still get 60% of their crop insurance base guarantee. However, corn can still be planted up to June 25 for “late planting” crop insurance purposes². Given current corn profitability, and the increase in corn prices from the March insurance price guarantee, planting beyond the May 31 date will likely be an attractive option this year. *However, producers need to talk with their crop insurance agent to assess their specific situation and options for this year.*

Planting Date	Est. Yield Loss
May 1-10	None
May 15	5%
May 20	10%
May 25	15%
May 30	20%

Notes: Dates centered around Princeton KY. Subtract approximately 5 days for southwest Purchase Area. Add approximately 5 days for Central KY. Estimates are general expectations based on long-term yield studies by Jim Herbek and Morris Bitzer, University of Kentucky. Results will vary by specific planting season.

Base Corn Yield	Gross Return Corn 10% Loss	Gross Return Corn 15% Loss	Gross Return Corn 20% Loss	Gross Return Soybeans 7.5% Loss	Gross Return Soybeans 0% Loss
125 bu	\$310	\$272	\$234	\$249	\$285
150 bu	\$432	\$386	\$346	\$320	\$361
175 bu	\$554	\$501	\$447	\$387	\$434

Note: Subtract land rent to get Net Return.

² Plantings after May 31 lose 1% of the base guarantee for each day planted beyond this date.