



## Soybean-to-Corn Price Ratios in Spring and Fall

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Both corn and soybean prices have fallen since last summer, with corn falling more than soybeans. Because corn prices have fallen more the soybean prices, the soybean-to-corn price ratio has increased, signaling that soybeans have become relatively more profitable than corn. This leads to speculation that corn acres will decrease in 2014, while soybean acres will increase. Acreage shifts may occur. However, high soybean-to-corn prices in the spring do not necessarily signal high soybean-to-corn price ratios at harvest. Therefore, relative returns between corn and soybeans may change.

### Spring Soybean-to-Corn Price Ratios

The soybean-to-corn price ratio equals the soybean price divided by the corn price. Higher soybean-to-corn price ratios mean that soybean prices are higher relative to corn prices, which lead to soybeans being relatively more profitable corn. Obviously, lower soybean-to-corn price ratios indicate higher corn returns relative to soybean returns.

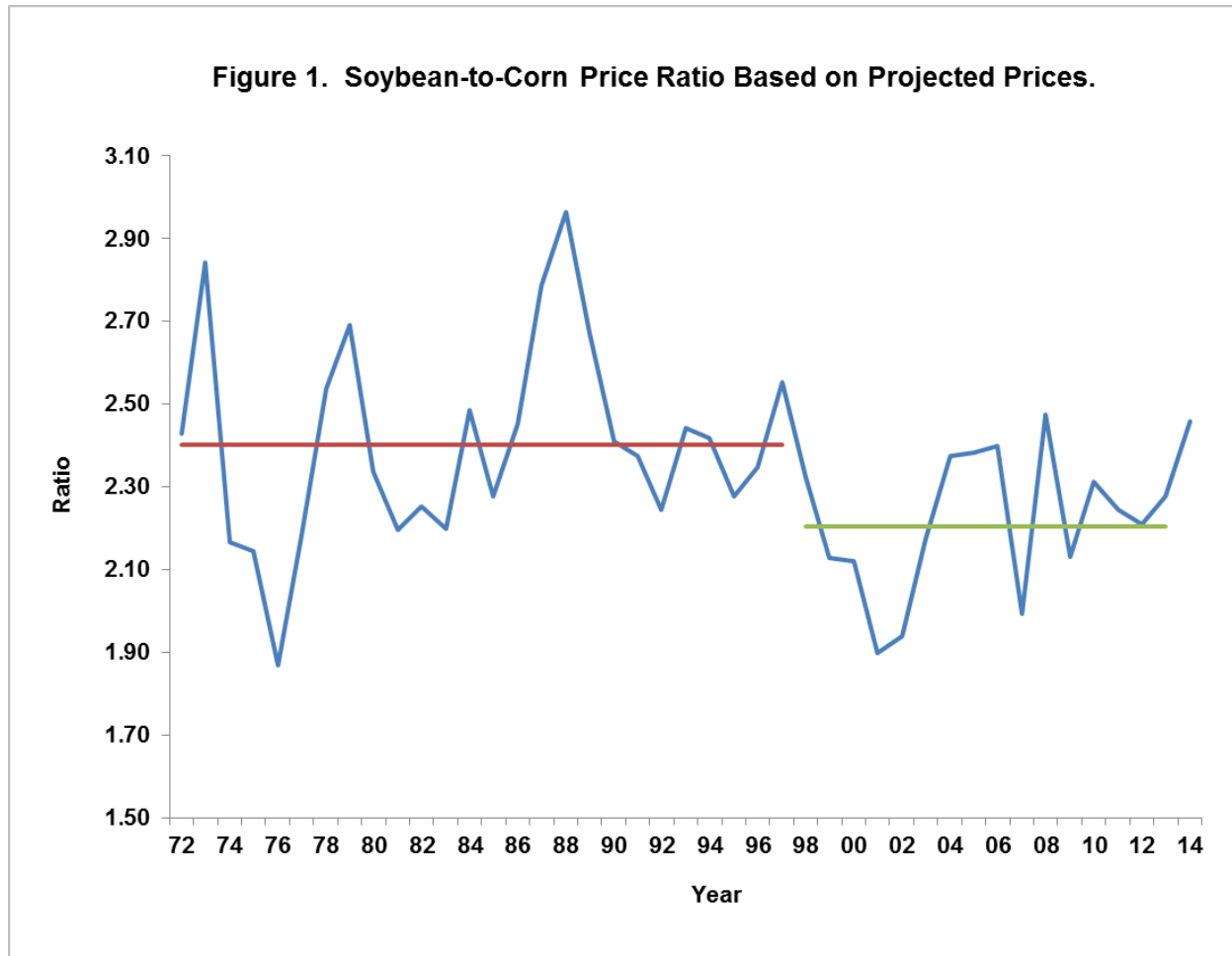
Herein, soybean-to-corn price ratios were calculated using projected prices, which are used to set crop insurance guarantees. Projected prices are average of settlement prices of Chicago Mercantile Exchange (CME) contract during the month of February. The December contract is used for corn and the November contract for soybeans. Use of these projected prices provides a good indication of relative prices in the spring prior to planting.

The 2014 projected prices are \$4.62 for corn and \$11.36 for soybeans, leading to a soybean-to-corn price ratio of 2.46 (11.36/4.62). It is useful to compare the 2.46 ratio to historical ratios to gain a feel whether the 2014 ratio is high or low. Two distinct periods exist between 1972 through 2013 (see Figure 1). Between 1972 through 1998, the soybean-to-corn price ratio averaged 2.40. The 2.46 price ratio for 2014 is above the 1972-1998 average, but would not have been one of the highest ratios during the 1972 - 1998 period (see Figure 1). During this period, U.S. soybean acres increased more than corn acres. U.S. corn acres were 67 million acres in 1972 and 80 million in 1998. From 1972 to 1998, corn acres increased 19%. During the same time period soybeans acres increase 53% from 47 million acres in 1972 to 72 million acres in 1998.

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Soybean-to-corn price ratio averaged 2.20 during the 1999-2013 time period, considerably below the 2.40 average for the 1972-1998 time period. This lower soybean-to-corn price ratio signaled higher corn returns relative to soybean returns. Partially as a result, U.S. corn acres grew more than U.S. soybean acres. Corn acres increased from 77 million acres in 1999 to 95 million acres in 2013, an increase of 23%. In comparison, soybean acres increased 4%, from 74 million acres in 1999 to 77 million acres in 2013.



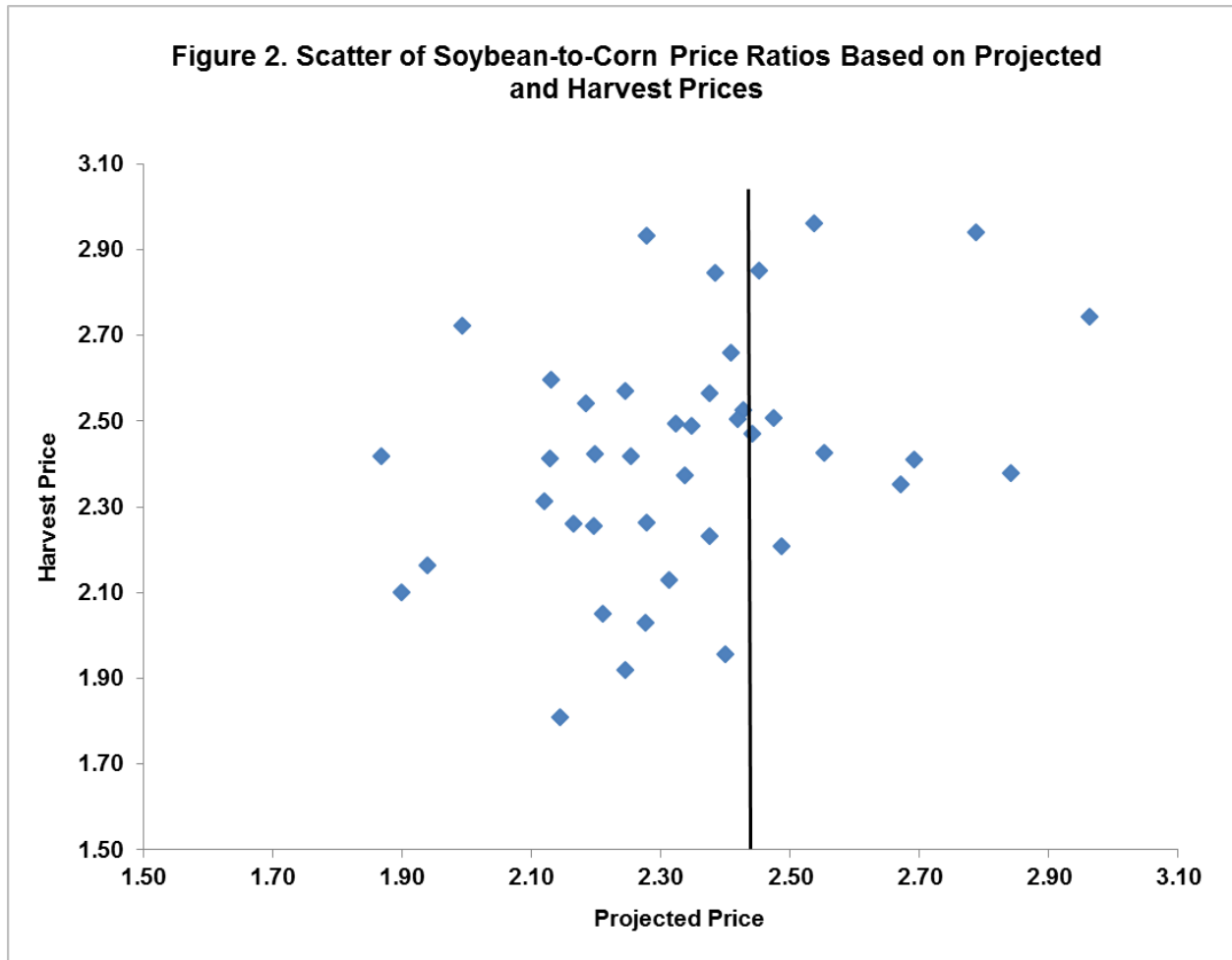
The 2014 soybean-to-corn price ratio of 2.46 is high for the 1999-2013 period. Only the 2008 ratio of 2.47 exceeds the 2014 ratio. From 2007 to 2008, U.S. corn acres decreased by 8% while soybean acres increased by 17%. This acreage switch lends support for reductions in corn acres in 2014.

### Relationship between Projected and Harvest Soybean-to-Corn Price Ratios

Relative corn and soybean profitability in 2014 will be influenced by how long price ratios persist. In particular, the relationship at harvest will be important in the final determination of relative returns. To see if high or low soybean-to-corn price ratios has historically persisted till harvest, a harvest soybean-to-price ratio was calculated using harvest prices used to determine revenue for crop insurance. Harvest prices are the average settlement prices of October CME futures prices (December contract for corn, November contract for soybeans).

Figure 2 shows a scatter of projected and harvest soybean-to-corn price ratios from 1972 through 2013. Each dot gives a year's pair. As can be seen in the figure, there is some correlation between projected and harvest soybean-to-corn price ratios (.28 correlation coefficient). Higher harvest price ratios tend to be associated with higher projected ratios; however, there is considerable variability. The solid line in

Figure 2 located at 2.46 gives the 2014 projected soybean-to-corn price ratio. As can be seen, a wide range of harvest ratios occur near 2.46, suggests that harvest ratios can vary from projected ratios.



### Summary

Acreage decisions will be impacted by relative prices being offered by the market; however, relative prices at harvest could differ from those in the spring. This suggests that farmers switching acres this spring should consider locking in some of the return difference through marketing contracts. It also suggests making acreage changes based strictly on relative prices may not result in the acreage mix that optimizes profits. Longer run rotational and yield considerations should enter into planting decisions.