

# Iowa Farm Outlook

Department of Economics  
Ames, Iowa

June 2019

Econ. Info. 2110

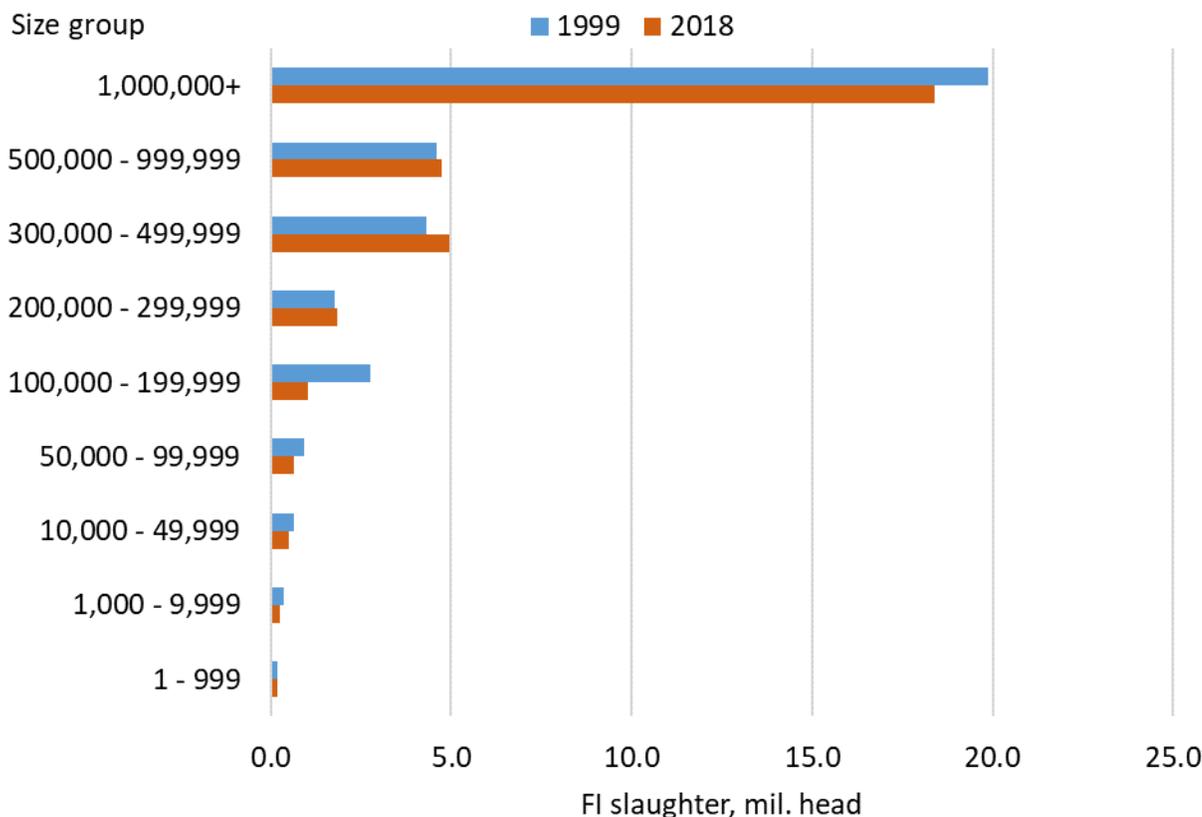
## Beef Packing Finding Capacity Balance

Coffee shop chatter suggests that the giants are taking over the beef packing business. The data say otherwise.

In 1999, packing plants that slaughtered more than 1,000,000 cattle per year slaughtered 19.9 million head or 56.1% of the federally inspected (FI) cattle slaughter (Figure 1). In 2018, plants with over 1,000,000 head per year capacity slaughtered 18.4 million head or 56.5% of the FI slaughter. Their volume is down and it's a stretch to characterize a 0.4% rise in market share over 20 years as a takeover.

The relatively small rise in market share by the giants suggests that smaller slaughter facilities, in aggregate, are maintaining market share. In 2018, packing plants that slaughtered between 1 and 9,999 head slaughtered 427,300 head or 1.3% of the FI cattle slaughter, 3.5% for plants slaughtering between 10,000 and 99,999 head annually and 38.7% for plants slaughtering between 100,000 and 999,999 head annually. This compares to 1.5%, 4.4%, and 38.0%, respectively, in 1999.

**Figure 1. U.S. FI Cattle—Head Slaughtered by Plant Size**



Data source: USDA's National Agricultural Statistics Service.

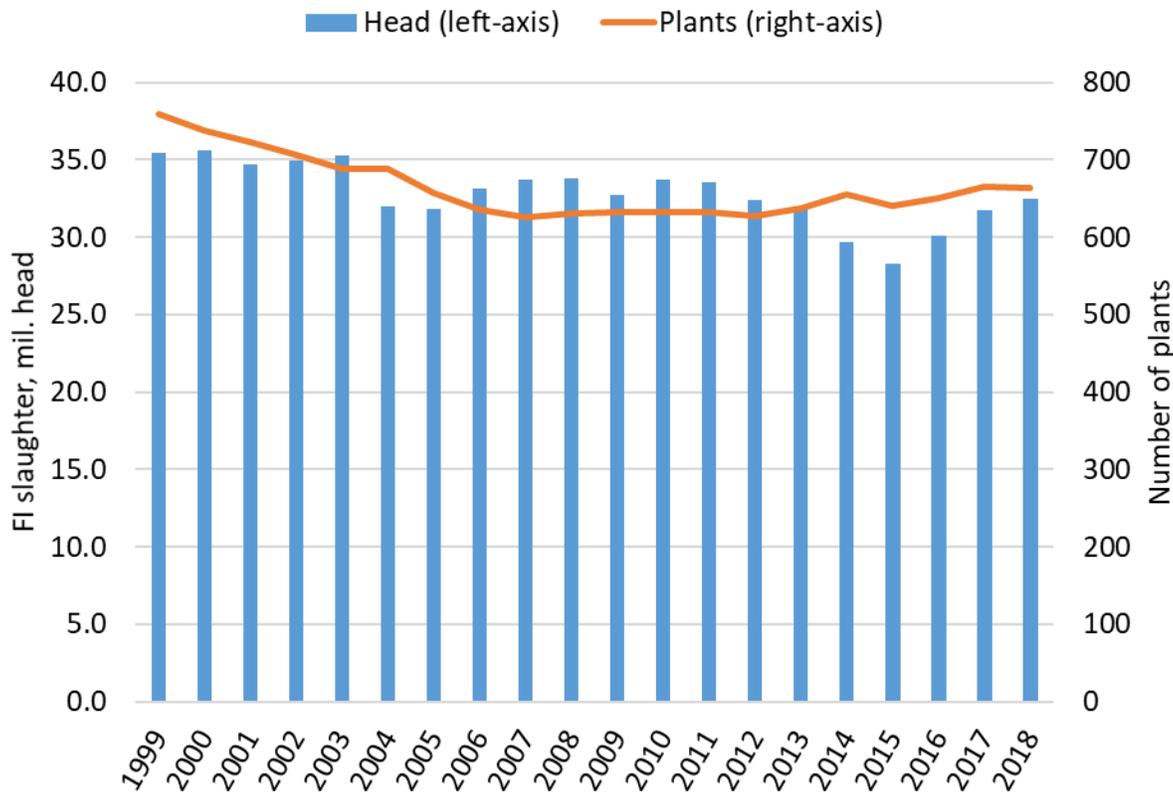
Packing plants of all sizes have important roles in the beef industry. Finding a role is all about responding to beef customer and consumer interests and providing a constant supply of consistent, high-quality beef at competitive prices.

Beef packing generates considerable contributions through its forward and backward linkages in the economy. For example, according to the Iowa State University Extension and Outreach study, [Economic Importance of Iowa's Beef Industry](#), Iowa's cattle slaughter and beef processing sector generated \$327.77 million in output and \$78.19 million in value added in 2016, of which \$57.61 million was labor income to 1,054 workers.

*Packing capacity trends*

The U.S. has fewer FI cattle slaughter plants than it had 20 years ago. But the number has held relatively stable in recent years. In 1999, the U.S. had 759 FI cattle slaughter plants. Plant numbers bottomed at 626 in 2007 and 627 in 2012, before settling up at 663 in 2018 (Figure 2).

**Figure 2. U.S. FI Cattle Slaughter—Plants and Head Slaughtered**



Data source: USDA's National Agricultural Statistics Service.

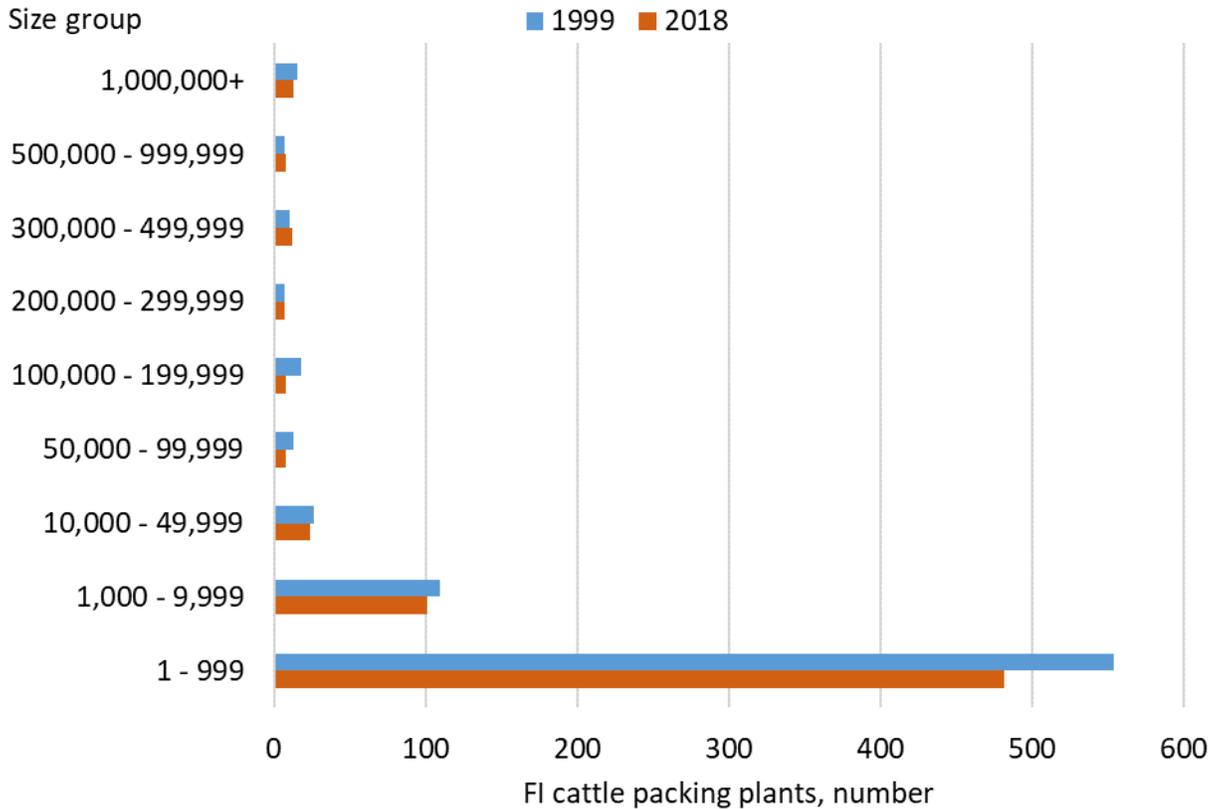
In 2018, 482 or 72.7% of FI slaughter plants each slaughtered between 1 and 999 head annually, 15.2% slaughtered between 1,000 and 9,999 head and 10.1% slaughtered between 10,000 and 999,999 head of cattle (Figure 3). Plants that each slaughtered over a million head only comprised 2% of the total number of U.S. FI cattle slaughter facilities. This compares to 73.0%, 14.4%, and 10.7%, respectively, in 1999.

*Packing capacity in line with cattle supply*

After a prolonged and painful period of underutilization (overcapacity) in the mid-2010s, the industry has emerged with national, if not regional, packing plant capacity in much better balance with available cattle supplies. This balance has been accomplished by a combination of plant closures in primarily cattle deficit regions and by rising cattle inventories.

Getting packing capacity in line with expected cattle supplies should spread fixed costs of existing packing plants over a more optimum level of cattle slaughtered. That should decrease cost per head of cattle slaughtered.

**Figure 3. U.S. FI Cattle Slaughter—Number of Plants by Plant Size**



Data source: USDA's National Agricultural Statistics Service.

It is important to note that these data are not granular enough to clearly look at structural changes in meat packing. For example, slaughter level does not address changes in meat packing firm size from divestitures, internal growth, mergers and acquisitions, levels of concentration and packing plant efficiency gains. The data simply speak to the number of FI packing plants and plants by size.

*Lee Schulz*

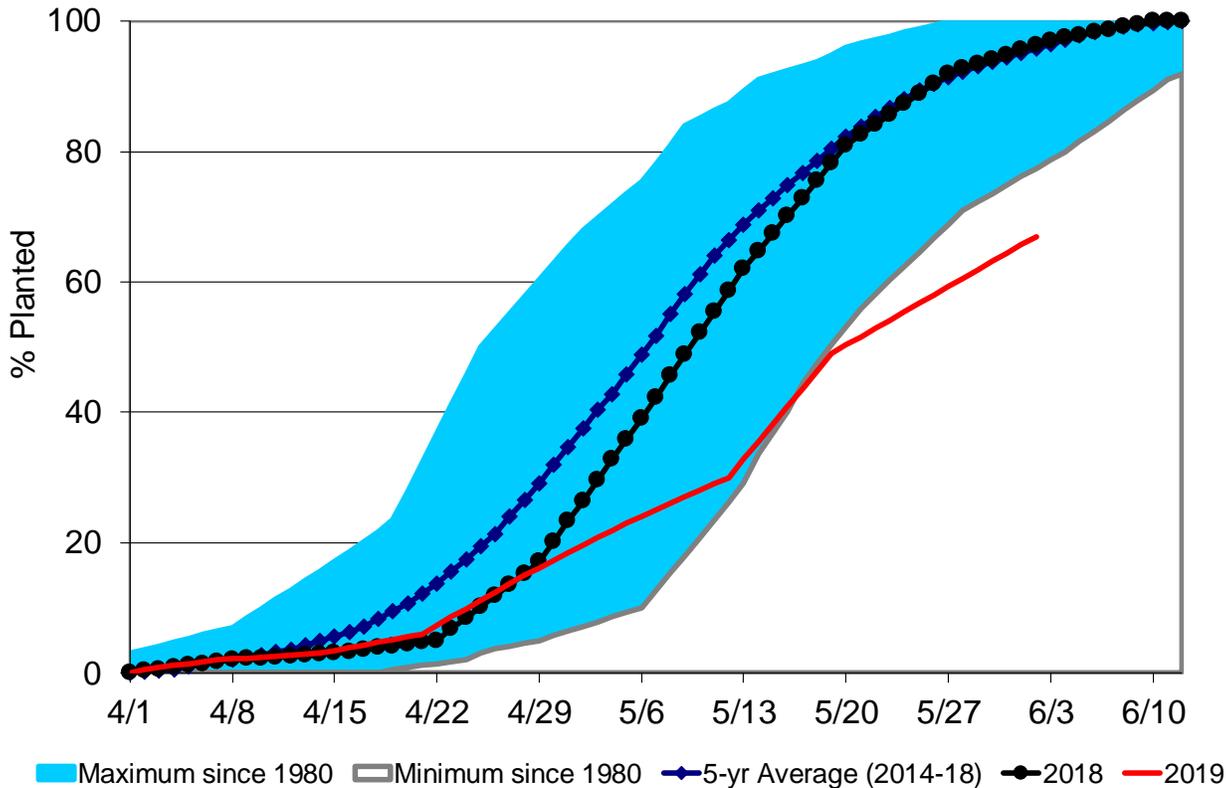
### **The Market Reaction to Lost Bushels**

It took a while, but the markets have finally paid attention to the lack of planting progress across the majority of the country. The flooding that started in March continues to be a major issue in June and the abundance of moisture has created issues from North Dakota to Texas and from Colorado to Pennsylvania. As we enter June, corn and soybean planting is running well behind normal. Many producers are considering their planting options under crop insurance, including planting in the late planting window, switching to an alternative crop, or taking the “prevent planting” payment. In most years, the economics favors some form of planting. However, this year the planting is delayed enough and the insurance coverage is lucrative enough to be an attractive option. Based on an 80% coverage level for crop insurance, the average Iowa producer could receive a full prevent planting payment of roughly \$335 per acre for corn and \$255 per acre for soybeans. Given the rough cash flows from the last few years, these payments could definitely ease the pain of not planting.

Complicating the planting issues though are the recent announced trade aid payments. While the rules for the trade aid package are still being written, the general framework requires farmers to plant an eligible crop to receive aid. Unlike last year's aid, which was targeted at specific crops, the 2019 trade aid package is based on USDA's estimates of ag financial damage from the trade disputes at the county level. Producers in a given county will receive the same per-acre payment as long as they have planted one of the eligible crops (there are over 20 eligible crops) in 2019. So weather conditions and the prevent planting payments have favored not planting this year, while the trade aid creates an incentive to plant something.

In the meantime, rain has continued to fall and planting delays are at historic levels. Figures 1 and 2 show the national planting progress for corn and soybeans, using data from 1980 to the present. As the graphs show, while planting progress was slow in April, it was even more delayed in May. For corn, the delays entered uncharted territory after May 20. The latest Crop Progress report, from June 3, showed 67% of the nation's corn crop was in the ground. That is 10% below the slowest planting pace we've experienced since 1980; in 1995, we had 77% of the corn planted. Based on corn planting intentions, that implies roughly 31 million acres remain to be planted. And much of that land is in the heart of the Corn Belt.

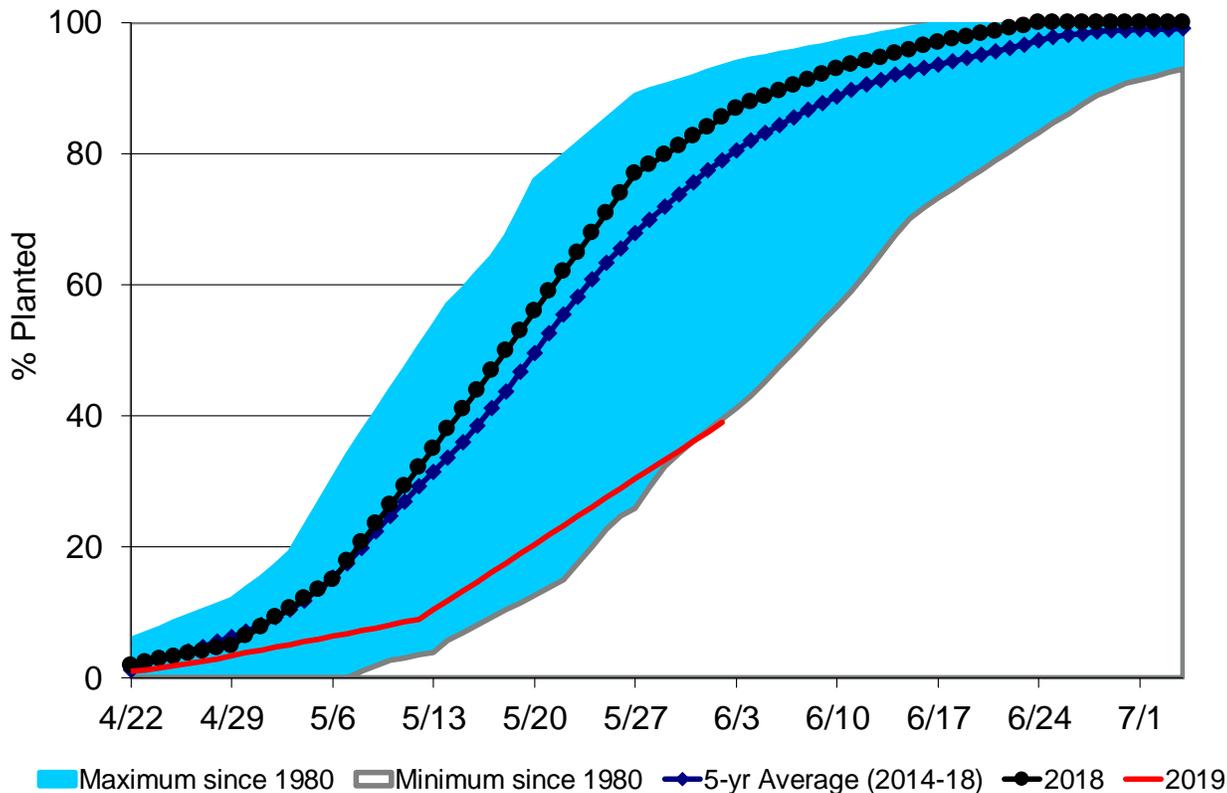
**Figure 1. U.S. corn planting progress (Source: USDA-NASS).**



Planting delays in corn often translate into increased area for soybeans. But this year, the combination of weather and trade issues may strain that relationship. The wet conditions have pushed soybean plantings back as well. The latest Crop Progress report also showed national soybean planting at its slowest pace since 1980, 1% behind the pace from 1995. Normally, 80% of the soybeans would be planted by now. The progress to this point means that roughly 51 million acres of soybeans are still to be planted, just based on the March planting intentions, not counting any additional land that could slip over from corn. Combined, that's a 80 million acre problem across the nation.

But the markets are not just staring at the loss of potential acres, it's also the loss in potential yields given the planting delays. The correlation between planting progress and crop yield is fairly noisy. Much like with rainfall, extremes tend to hurt, but generally, more is better. Drier conditions tend to lead to rapid planting progress. But if the drier conditions extend into a drought, crop yields fall. Rain does tend to make grain, but first you have to get the seed in the ground. And the years of 1993 and 1995 showed, too much rain can lead to too little grain. So the planting progress-crop yield relationship is better described in a non-linear way. Figures 3 and 4 show the best fitting relationships between planting progress and yield outcomes. In this case, I measured yield outcomes as the percentage change in yield from trend, estimating the trend yield as a simple linear trend on the yield data from 1980 to 2018. For example, for 2018, the trend yield using this technique

**Figure 2. U.S. soybean planting progress (Source: USDA-NASS).**

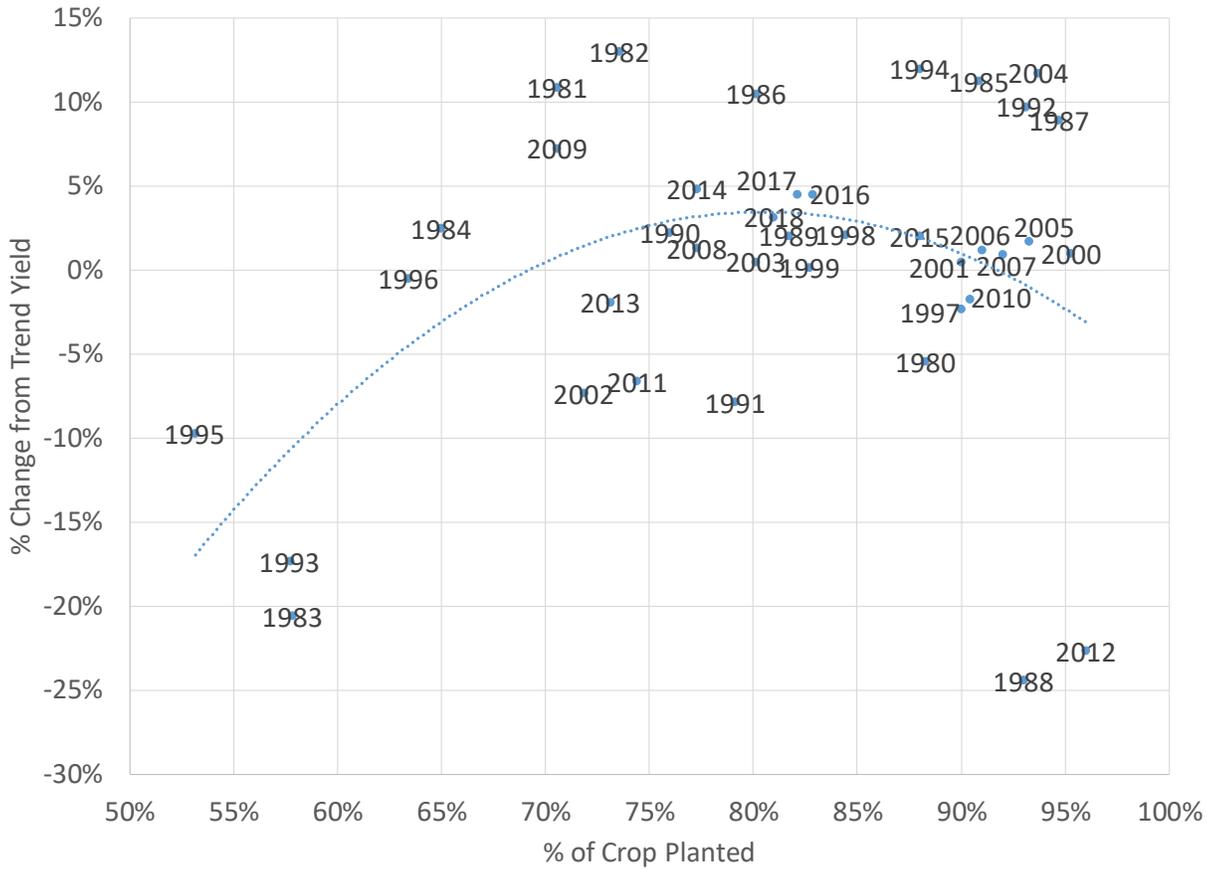


was 171 bushels per acre for corn. The realized national corn yield in 2018 was 176.4 bushels per acre. So the percentage change from trend yield was 3.4%. I then lined that data against the historical planting progress data to find the dates where the relationship has the best fit. As it turns those dates are May 18 for soybeans and May 20 for corn. In the figures, the blue dots mark the combination of the planting progress on those dates and the deviation from trend yield. To add context, I have added the year to each data point. The dotted line shows the estimated relationship. For corn, the years with the slowest planting progress were 1983, 1993, and 1995. In those years, yields were at least 10% below trend, and in the case of 1983, 20% below. Based on the estimated relationship, the 2019 national corn planting progress of 50% would point to a 21% decline in yield from trend. The simple linear trend yield for 2019 corn is 173 bushels per acre. The 21% decline would put the national yield in 135 bushels per acre range, with a yield loss similar to the drought of 2012.

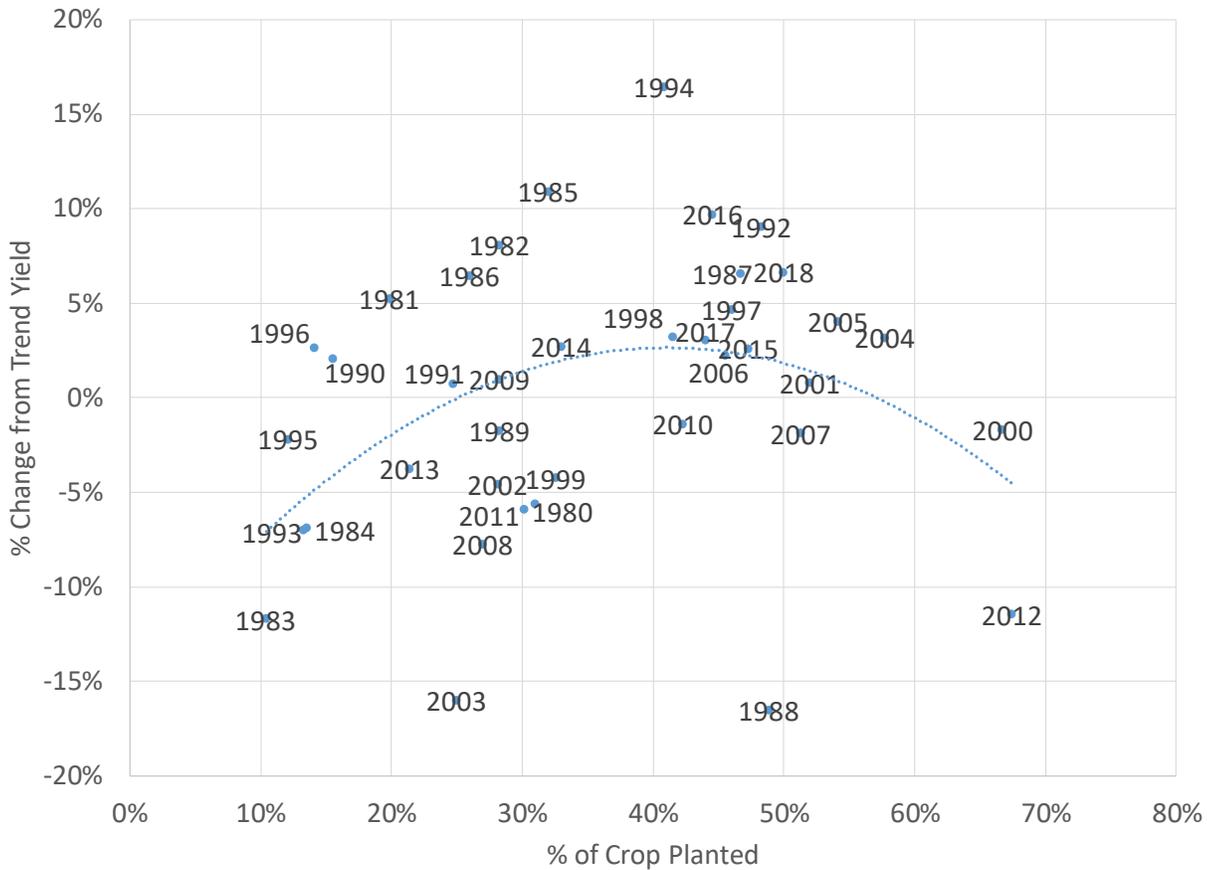
For soybeans, the projected loss is not nearly as dramatic, but the relationship is also less precise. By May 18, usually 45% of the soybean crop is planted. This year, the figure was 18%. As the graph shows, national soybean yields tend to be more forgiving for later plantings, as years where planting progress has lagged, such as 1990 and 1996, show yields can still exceed trend under those conditions. Based on the expected relationship (the dotted line), soybean yields would be 3% below trend, given the 2019 planting progress, so a much different story than corn.

With the planting delays in May, the corn market added 80 cents, while the soybean market added 90 cents. So the relative move was significantly stronger for corn. In fact, corn prices rose to levels we haven't seen in a few years. But soybean prices have only recovered to levels we haven't seen in a couple of months. Continued problems in June should translate into additional upward pressure for both crop prices, offsetting some of the impacts from the various trade disputes. But we will not know the extent of the damage from the wet conditions for a while. Planted area will likely still be questionable after the June Acreage report, as the delays could push planting deeper into summer. It is often said that the quickest way to a higher price is for someone to have a short crop, the problem is that we are the ones that are having it.

**Figure 3. Relationship between Corn Planting Progress and Yield Outcomes.**



**Figure 4. Relationship between Soybean Planting Progress and Yield Outcomes.**



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