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Historic Fertilizer, Seed, and Chemical Costs with 2019 Projections

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Fertilizer, seed, and chemical costs represent a sizable portion of the total costs of producing corn. In this article, costs for these three inputs are reported for the years from 2000 to 2017. Since 2013, fertilizer costs decreased while seed costs remained stable. In recent years, pesticide costs increased. Looking forward into 2019, it seems reasonable to expect pesticide costs to be at higher levels while seed costs may remain stable. At this point, fertilizer costs are difficult to predict.

Total Fertilizer, Seed, and Pesticide Costs

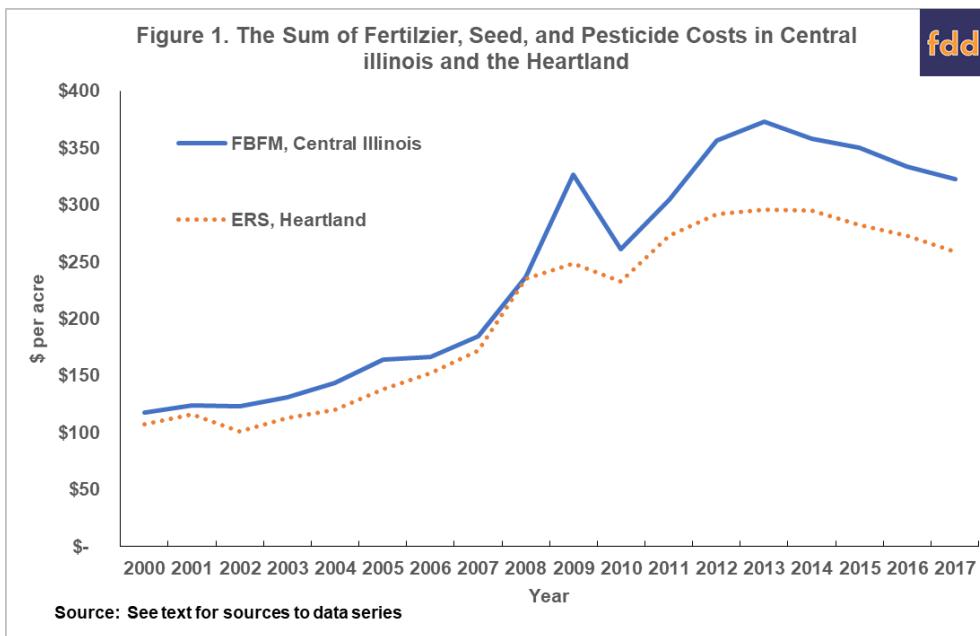
The sum of fertilizer, seed, and pesticide costs are shown in Figure 1 for:

1. Corn produced on high-productivity farmland in central Illinois (FBFM, Central Illinois). Central Illinois costs are obtained from Illinois Farm Business Farm Management (FBFM) as reported in a publication entitled [Revenue and Costs for Corn, Soybeans, Wheat, and Double-Crop Soybeans](#).
2. Corn produced in the Heartland region as reported by the Economic Research Service (ERS, Heartland), an agency of the U.S. Department of Agriculture. The Heartland region includes southern Minnesota, eastern South Dakota and Nebraska, Iowa, much of Missouri, Illinois, the western tip of Kentucky, Indiana, and western Ohio (see [ERS, Farm Resource Regions](#)). Data are reported on [ERS's website](#).

The two cost series follow each other tightly, having a correlation coefficient of .98. The high correlation of the series suggests that costs reported by FBFM are reflective of trends across the greater Midwest. Central Illinois costs are higher than Heartland costs, likely because yields are higher on high-productivity farmland in central Illinois. From 2015 to 2017, average corn yields were 218 bushels per acre in central Illinois compared to 191 bushels per acre in the Heartland.

The sum of the three costs increased dramatically from 2006 to 2013, increasing an average of 12% per year in central Illinois. The sum of fertilizer, seed, and pesticide costs were \$373 per acre in 2013. Between 2013 and 2016, the three costs decreased an average of 4% per year. The sum of the three costs were \$323 per acre in 2017, \$50 lower than the \$373 high in 2013, but still considerably above costs prior to 2009.

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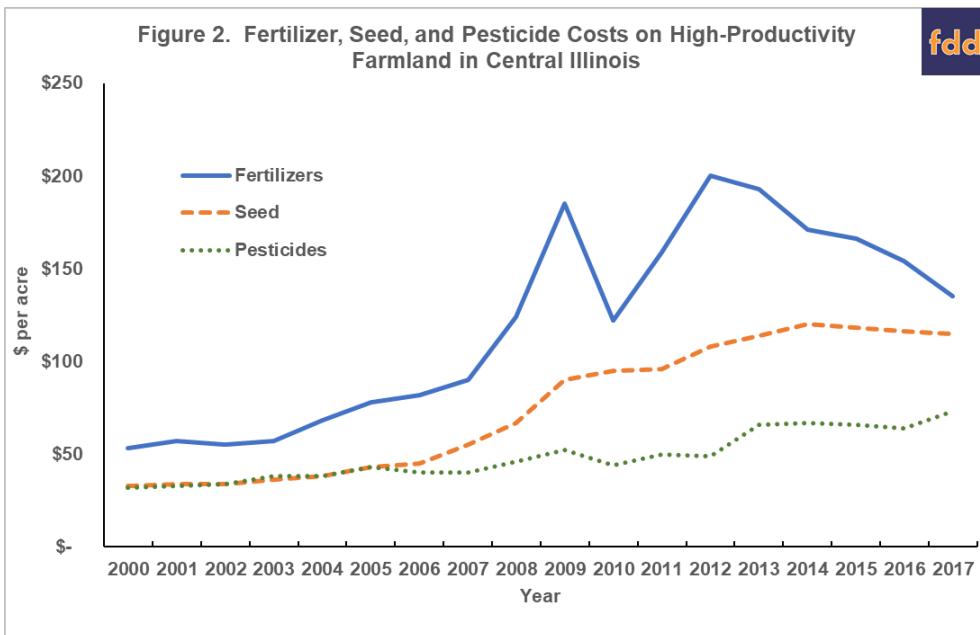


Fertilizer Costs

Of the three costs, only fertilizer costs have declined since 2013. All prices for major nutrients declined since 2013 (see *farmdoc daily*, July 11, 2017). Anhydrous ammonia prices declined from \$879 per ton in 2013 to \$509 per ton in 2017. Diammonium Phosphate (DAP) costs declined from \$611 per ton in 2013 to \$425 per ton in 2017, Potash prices decline from \$578 per ton in 2013 to \$318 per ton in 2018. These price declines then resulted in lower fertilizer costs.

For 2018 production, fertilizer prices began the major purchase period in the fall of 2017 with prices lower than 2017 crop year averages. Fertilizer prices increased throughout late 2017 and the first part of 2018. It is likely that average fertilizer costs for corn will be higher in 2018, but the timing of purchase will have a large impact on costs. Farmers purchasing fertilizer earlier will have lower costs than those purchasing later.

No bids for 2019 are publicly available at this point. It seems reasonable to expect roughly the same costs in 2019 as in 2018. Still, as illustrated in Figure 2, fertilizer costs can vary tremendously from year to year.



Seed Costs

Seed costs have remained stable in the years from 2014 to 2017. Seed costs were \$120 per acre in 2014, \$118 in 2015, \$116 in 2016, and \$115 in 2017. This stability in recent years comes after rapid rises in seed costs from 2006 to 2014. Seed costs were \$45 per acre in 2006, increasing to \$120 per acre in 2014, an average yearly increase of 13%. During the 2006-2014 period, seed costs increased on a per acre basis, on a per bushel of grain produced basis, and on a percent of corn revenue basis (*farmdoc daily*, November 17, 2015).

Seed costs are highly related to harvested acres in the world (*farmdoc daily*, July 18, 2017). U.S. acres are projected down in 2018 (USDA, *Prospective Plantings*). However, world acres are not projected down in 2018 (USDA, *Foreign Agricultural Service*). As a result, seed costs likely will remain the same in 2018 as in 2017. Similarly, stable seed costs in 2019 seem a reasonable projection.

Pesticide Costs

Pesticide costs increased steadily from 2000 to 2012 (see Figure 2). Pesticide costs were \$33 per acre in 2000, increasing to \$49 per acre in 2012, an average annual increase of 4%. There was a large increase in 2013 when pesticide costs increased from \$49 per acre to \$66 per acre in 2013. Pesticide costs then stayed in the \$60 range for the next three years: \$67 in 2015, \$66 in 2015, and \$64 in 2016. Pesticide costs further increased to \$73 per acre in 2017.

Many weeds are developing herbicide resistance ([Hager](#) and [three articles by Plewa and Bissonnette on the Bulletin](#)). Herbicide resistance leads to use of alternative pesticide combinations which are generally more expensive than pesticide packages used when herbicide-resistance is not a problem. Herbicide resistance likely will become more of a problem in the future. As a result, pesticide costs should be expected to increase. Continued costs over \$70 per acre seem reasonable for 2018 and 2019.

Summary

When developing 2019 crop budgets, having seed costs per acre remain stable and pesticide costs the same or higher than 2017 levels seems reasonable. Fertilizer costs will come into clearer perspective towards fall. At this point, it seems reasonable to expect the sum of fertilizer, seed, and chemical costs to remain stable or increase in 2019.

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