

Estimates of State-Level Losses on Corn Acres Resulting from COVID-19 on 2019 Production

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Prepared by Gary Schnitkey and Jonathan Coppess, IFAR

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We provide estimates of losses on corn for the 2019 crop on a state-level. These losses are associated with concerns over the Coronavirus and the associated COVID-19 control measures. These losses are for the 2019 crop and do not include losses that will be experienced on 2020 and following crops. We estimate price declines on a per state basis. Western Corn Belt states have had larger price declines than other states. We include increases in PLC payments from 2019 production. Our estimates of losses range from a state high of -\$52 per acre of corn in Minnesota to a low of -\$24 per acre in North Carolina. Estimated declines in revenue, even given PLC payment increases, exceed usual per acre profit from corn production.

Cash Price Declines

Cash prices have continued to decline throughout most of 2020, as illustrated in Figure 1. Figure 1 shows cash prices in Central Illinois reported by USDA's Agricultural Marketing Service. These cash prices would primarily be paid on 2019 production that was stored and sold in 2020. From January to February, cash corn prices averaged \$3.78 per bushel. With initial pandemic-related economic concerns largely arising in March, cash prices have been on a steady path of decline. In the first week of May, cash prices in central Illinois had fallen below \$3.00 per bushel, averaging \$2.94 per bushel. Cash prices have fallen 22% in central Illinois from the January-February period to the first week of May. Whether corn prices have reached the low for the 2019-2020 marketing year remains an open question.

Corn prices have fallen across the United States, but declines have been worse in the western Corn Belt. Figure 2 shows averaged prices from AMS. In producing Figure 2, locations within a state have been averaged. The January – February (JF) average and prices for the first week of May (M) are reported for states with AMS reporting. Also reported is the percent decline. In Minnesota, for example, the January-February prices averaged \$3.74 per bushel, the price average during the first week of May was \$2.69 per bushel, and the May price is 28% below the January-February average.

Minnesota and South Dakota have seen 28% declines. Nebraska's prices declined by 24%. In the middle of the Corn Belt, Iowa has seen a 22% decline, while Illinois had a 20% decline.

Importantly, large areas now face prices well below \$3.00 per bushel. These situations are pervasive in Minnesota, South Dakota, Nebraska, and Iowa. Illinois also has prices below \$3.00 per bushel in the first part of May.

Whether this trend continues is an open question. Continued reports from the ethanol and livestock industries remain the most concerning, with actual impacts unknowable at this point.

Declines in Revenue

The above price declines will cause declines in corn revenue on corn produced in 2019. We estimate these revenue declines on a state level by estimating changes in monthly state prices. Without COVID-19, we assume that from March to September prices would have followed the usual price pattern observed from 1990 to 2019. We then estimate a revised price pattern using the above AMS prices, NASS state-level prices from January and March, marketing weights published in ERS spreadsheets, and usual pricing patterns from 1990 to 2018. The price decline is based on average corn marketing from March to the through the last month of the marketing year in August; historically an average of 40% of the 2019 crop would be sold in those months.

Price changes are reported in the first column of Table 1. For each state, the price decline is multiplied by the 2019 average yield to arrive at revenue change per acre. For Colorado, the price change is $-\$0.29$ per bushel. In Colorado, $-\$35.67$ per acre revenue change is associated with a $-\$0.29$ price change times 123 bushel per acre yield.

PLC payments for 2019 crop likely will increase over pre-COVID-19 estimates. We estimate a PLC payment based on a $\$3.60$ market year average price as reported in the May WASDE Report. This is applied on base acres in corn as reported by Farm Service Agency, times average state yield from 2013 to 2018 times .82, times 75% (the average corn base acres enrolled in PLC across the U.S), divided by acres harvested in a state. For Colorado, the increase in PLC payments equals $\$8.69$ per acre. The revenue change due to price and PLC payment changes equals $-\$26.98$ per acre in Colorado.

As can be seen, revenue plus PLC change varies across states. Changes range from $-\$56.86$ per acre for Nebraska to $-\$24.64$ for North Carolina. Many of the Midwest states are in the $\$30$ to $\$50$ per acre range.

We also provide estimates of losses on revenue change in a state. Note that these will be averages. Individual farm acres will vary from these averages.

Figure 1. Central Illinois Cash Corn Price, January 2, 2020 to May 8, 2020



Figure 2. Average Cash Prices from January-February (JF) to May (M), Corn in 2020

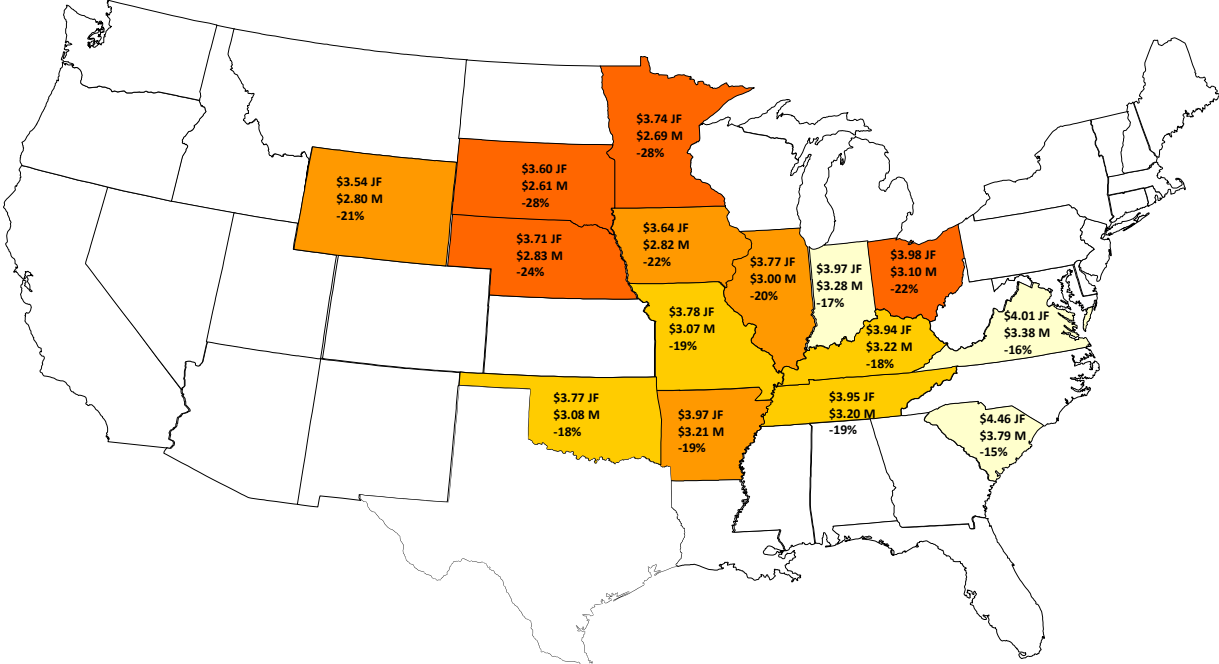


Table 1. Change in Revenue and PLC Payments By State for Corn Resulting from COVID-19 on 2019 Production.

State	Price Change 2019 Crop ¹	2019 Yield ²	Revenue Change ³	Increase in PLC Payment ⁴	Revenue and PLC Change ⁵	Acres Harvested ⁶	Revenue Change ⁷
	\$/bu.	Bu/acre	\$/acre	\$/acre	\$/acre	acres	Dollars
Colorado	-0.29	123	-35.67	8.69	-26.98	1,300,000	-35,074,000
Illinois	-0.28	181	-50.68	12.93	-37.75	10,200,000	-385,050,000
Indiana	-0.27	169	-45.63	12.85	-32.78	4,820,000	-157,999,600
Iowa	-0.31	198	-61.38	11.61	-49.77	13,050,000	-649,498,500
Kansas	-0.26	133	-34.58	5.46	-29.12	6,020,000	-175,302,400
Kentucky	-0.30	169	-50.70	10.76	-39.94	1,450,000	-57,913,000
Michigan	-0.37	147	-54.39	15.71	-38.68	1,610,000	-62,274,800
Minnesota	-0.37	173	-64.01	11.36	-52.65	7,250,000	-381,712,500
Missouri	-0.30	155	-46.50	9.91	-36.59	2,990,000	-109,404,100
Nebraska	-0.34	182	-61.88	10.02	-51.86	9,810,000	-508,746,600
North Carolina	-0.29	111	-32.19	7.55	-24.64	930,000	-22,915,200
North Dakota	-0.32	141	-45.12	6.55	-38.57	3,230,000	-124,581,100
Ohio	-0.35	164	-57.40	14.77	-42.63	2,570,000	-109,559,100
Pennsylvania	-0.32	153	-48.96	7.28	-41.68	1,060,000	-44,180,800
South Dakota	-0.36	144	-51.84	11.97	-39.87	3,870,000	-154,296,900
Tennessee	-0.31	177	-54.87	8.56	-46.31	910,000	-42,142,100
Texas	-0.34	133	-45.22	8.62	-36.60	2,150,000	-78,690,000
Wisconsin	-0.38	166	-63.08	13.93	-49.15	2,670,000	-131,230,500

¹ Equals the price change from March onward resulting from COVID-19 concerns. Calculated using information from NASS, AMS, and ERS.

² Taken from NASS.

³ Equals price change times yield per acre.

⁴ Estimate of PLC payment change based on a \$3.60 MYA price, average yield in state from 2013 to 2017 times .81, times average base acres in corn divided by 2019 harvested acres time .75 enrolled in PLC.

⁵ Sum of revenue and PLC change.

⁶ Acres harvested reported by NASS

⁷ Revenue and PLC change times acres harvested.