

## TUSCARAWAS COUNTY AGRICULTURE &amp; NATURAL RESOURCES

August 11, 2021

**CORN LIVE**...sponsored by OSU Extension, will air **Thursday, August 12, at 8am**. This week's segment will feature Matt Reese, Ohio's Country Journal, and several OSU Extension Educators discussing yield estimates for corn and soybean.

Soybean specialist Laura Lindsey will join to comment on the overall growing season and yield potential moving forward, along with corn and wheat pathologist Pierce Paul who will discuss disease pressure in corn and yield loss potential.

One hours of crop management CCA CEUs are available for attending this free online session. Register to attend at [www.go.osu.edu/cornlive](http://www.go.osu.edu/cornlive).

**ADJOINING LANDOWNERS**...may be responsible for clearing noxious weeds from fence rows. The [Ohio line fence](#) law does allow a township to step in and clear the fence row of noxious weeds, brush, briars and similar vegetation if a complaint is filed by one landowner against an adjacent landowner who refuses to clear the weeds. The costs for doing so are assessed back on the refusing landowner whose fence row was cleared. If the noxious weeds arise from both sides of the fence, are growing in the fence, and must be cleared from both sides of the fence, the township trustees would have the authority to assess the costs of removal back on both landowners. I've never heard of that happening, but it's certainly one of those "be careful what you wish for" situations. (Source: Peggy Hall, OSU Extension Ag & Resource Law Program)

**OHIO EXPERIENCED**...its 15<sup>th</sup> wettest July on record (1895-present). Even more interesting, daytime highs for July 2021 rank as the 33<sup>rd</sup> coolest, yet overnight lows rank as the 27<sup>th</sup> warmest, the 7<sup>th</sup> largest spread on record. Indeed, this was the result of numerous cloudy/rainy days that kept daytime temperature in check, not to mention, the occasional influx of wildfire smoke from active fires in the western states.

### Forecast

Hot and humid conditions are taking over this week. The sultry air will provide the opportunity for scattered showers and storms each day through Friday. Highs will range from the mid-80s to the mid-90s, with overnight lows in the upper 60s to low 70s through Friday. The weekend is looking drier and a little more comfortable, with highs in the low to mid 80s.

The [Climate Prediction Center's](#) 6–10-day outlook for the period of August 15 – 19 and the [16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center](#) indicate near to above average temperatures and below average precipitation (Figure 2). Climate averages for this period include a

high temperature range of 82-86°F, a low temperature range of 60-65°F, and average rainfall of 0.70-0.90 inches.

Additional information is available in this OSU Extension C.O.R.N. newsletter: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-26/weather-update-hot-and-humid-conditions-return>.

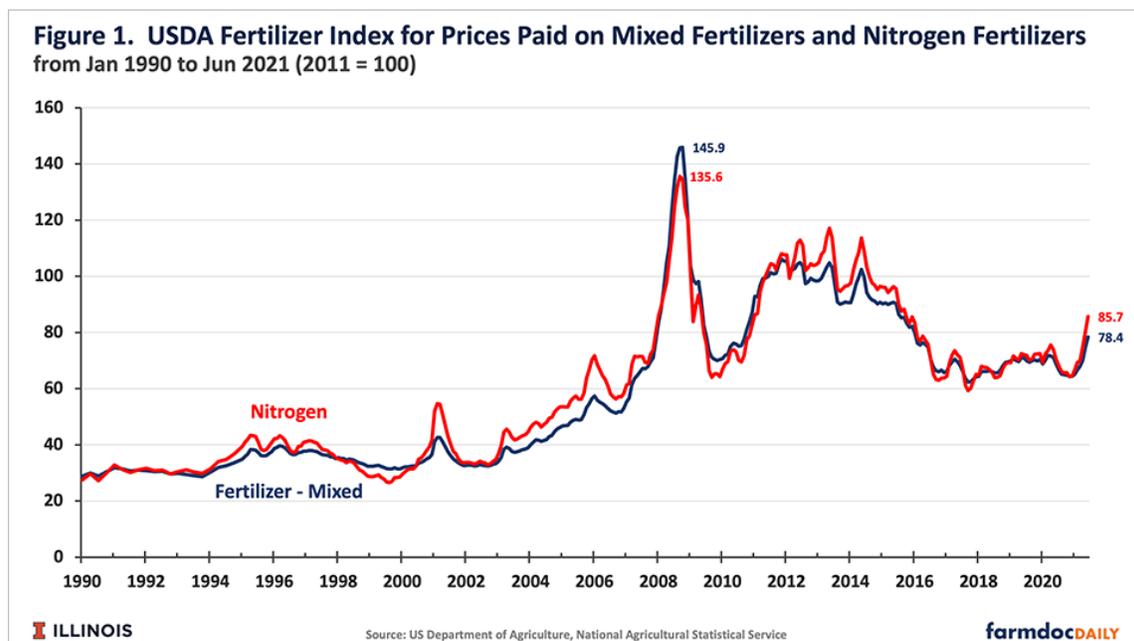
**FERTILIZER PRICES IN 2022**...are expected to increase, as discussed in this University of Illinois analysis: <https://farmdocdaily.illinois.edu/wp-content/uploads/2021/08/fdd060821.pdf>. High fertilizer prices lead to projections of near record-high fertilizer costs in 2022 for both corn and soybeans, though short of the all-time high levels set in 2008.

### USDA Index Values from 1990 to 2021

The U.S. Department of Agriculture (USDA) regularly calculates index values of prices paid for fertilizers. Figure 1 shows those indices for:

1. fertilizers – mixed, hereafter referred to as mixed fertilizers. The mixed fertilizer index is for fertilizers including nitrogen, phosphorus, and potash.
2. nitrogen fertilizers. Nitrogen fertilizers primarily are used to supply nitrogen, including anhydrous ammonia, 28% and 32% nitrogen solutions, and urea.

Since the beginning of reporting in 1990, indices exhibited variability, as one would expect with commodities. Both indices began in 1990 with values in the high 20s and then exhibited upward trends through the mid-2000s. From 1990 to 2005, however, several periods of higher prices followed by declines do exist, with more than 10% decline happening in early-2001 and again in 2006 (see Figure 1).



Many commodities prices, including fertilizers, increased dramatically from mid-2006 until late 2008. Both fertilizer indices hit all-time highs in 2008: mixed fertilizer was 145.9 in October and nitrogen was 135.6 in September (see Figure 1). Rising demand in emerging markets and long-term supply concerns contributed to the record-setting commodity prices. Later in the year, the 2008 financial crisis disrupted all markets, leading to falling commodity prices, including fertilizers. From 2008 highs, fertilizer indices fell and reached lows in late 2009; 70.1 index value for mixed fertilizers in November and 64.0 value for nitrogen in September. Then, indices rose again and spiked several times. For example, the nitrogen index increased and then declined in late 2011, mid-2012, and mid-2013. From 2013 through 2017, fertilizer prices generally decreased, reaching and maintaining low values through 2020.

Both indices increased in 2021. The mixed fertilizers' index value was 65.1 in January, reaching 78.4 in June. The nitrogen index increased from 66.7 in January to 85.7 in June. The June values are much higher than year-earlier levels but are not at all-time highs. The last time these indices were at comparable levels was in December 2015. Historical prices suggest that continued price increases through 2021 and 2022 are possible. Of course, declines could occur as well.

## Summary

Fertilizer prices currently are at high levels, increasing substantially from year-ago levels, but have not reached all-time highs. Fertilizer prices were the highest in 2008, with those prices then declining during the severe phases of the 2008 financial crisis. Fertilizer costs for 2022 likely will be well above average, with much of the overall cost level depending on fertilizer prices moving forward, as well as farmer behavior. History suggests that fertilizer prices can change rapidly, likely bringing modifications to fertilizer cost projections. Further note that several periods of sharp declines have occurred in history.

**AGRONOMY UPDATE**...will be held **August 26** from 1pm to 4pm at Durbin Farms, 4227 Durbin Road SE., New Philadelphia. Program topics and speakers include:

- **Parts and Equipment Shortages are Real – Be Prepared: Thoughts on 2021 Harvest & 2022 Planting**
  - Dr. John Fulton, OSU Food, Agriculture, and Biological Engineering
- **Are You Ready for Carbon Markets?**
  - Mike Estadt, OSU Extension Educator, ANR, Pickaway County
- **OSU Extension Agronomy & Farm Management Resources**
  - Chris Zoller, OSU Extension Educator, ANR, Tuscarawas County
- **Lessons Learned from Building a Farm Shop**
  - Matt & Luke Durbin, Durbin Farms



**HAZY DAYS**...may impact corn and soybean yields, as described in this OSU Extension C.O.R.N. newsletter: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-26/hazy-days%E2%80%A6how-does-light-influence-corn-and-soybean>.

Capturing sunlight energy, which drives photosynthesis, is important to maximize crop yield. Typical plant canopy-level instantaneous light values (also known as photosynthetic photon flux density) on sunny days range from 1200 to 1800  $\mu\text{mol}/\text{m}^2/\text{s}$  while typical instantaneous plant canopy-level values for cloudy days are 100 to 400  $\mu\text{mol}/\text{m}^2/\text{s}$ . In general, sunny days (all else equal) are better for crops, especially if moisture is non-limiting.

For soybean, photosynthetic photon flux densities that exceed 700  $\mu\text{mol}/\text{m}^2/\text{s}$  produce minimal gains in leaf-level photosynthetic efficiency, which ultimately can translate into yield production. As the sun moves across the sky, leaves can orient themselves perpendicular to incoming direct light to increase interception or parallel to the light to decrease direct interception as too much direct light can be harmful for plants. Changing orientation in the upper canopy can also allow for more light to be intercepted by lower leaves allowing for more leaves to optimize photosynthetic rates at a time.

Corn (having a slightly different photosynthetic pathway) can continue to increase photosynthesis with increasing light and tends to benefit from more sun if temperatures and water levels are not limiting growth. Upper leaves in corn grow more vertically and are smaller but become larger and more horizontal lower in the canopy. This orientation works to increase light penetration into the canopy and optimize interception.

So, with the wildfire haze and just regular cloudy days, how have our average radiation values for June and July compared to past years? In 2021, the daily average photosynthetic photon flux density was lower for June and July as compared to the last 4 years (2017-2020) (Table 1). Given these are daily values, the cumulative effects of this reduction will likely equate to lower overall yield potential because of the additive nature of light loss. However, cooler temperatures could help extend the season and help crops gain yield from more days with active growth during the grain fill period. The levels of light seen in 2021 may still be sufficient if other factors end up being more limiting to yield production; factors like water stress, biotic factors, and adequate mineral nutrition still play a major role in yield gains during the season.

*Table 1: Daily average photosynthetic photon flux density during daylight hours in Wood County, Ohio.*

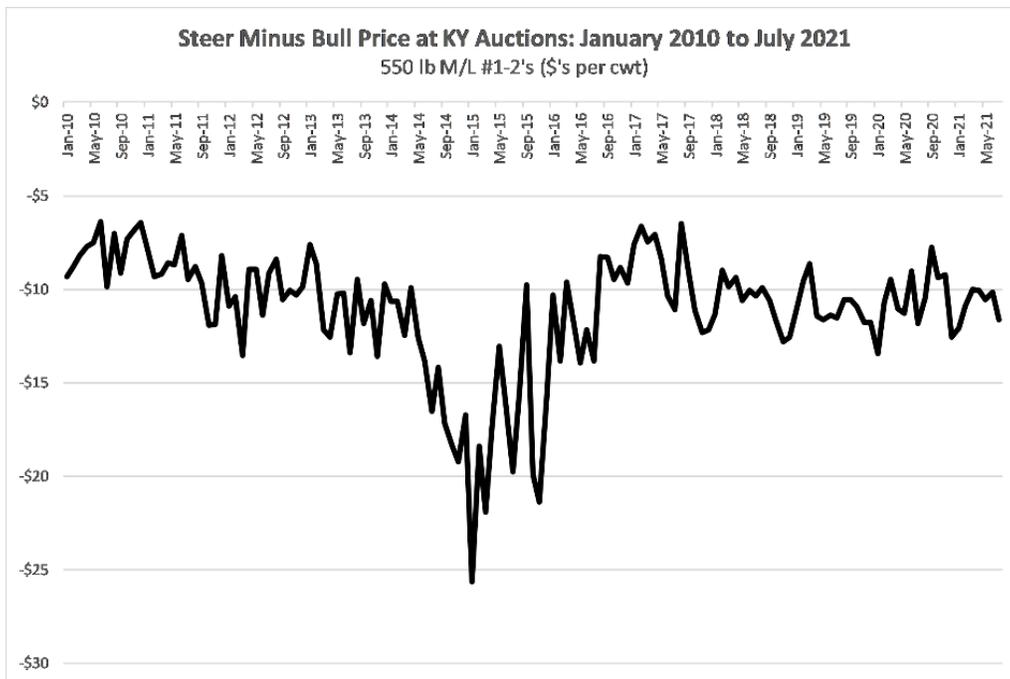
Year	June	July
	$\mu\text{mol}/\text{m}^2/\text{s}$	
2021	679	694
2017 to 2020	730	738
Difference	-51	-44

**RENTAL AGREEMENTS**...that are written are always preferred, but there are often questions about what to include. Ag Lease 101 (<https://aglease101.org/>) was developed by the North Central Farm Management Extension Committee and provides several example documents for land and building rental arrangements.

Additionally, OSU Extension has the following publications that can be useful when developing lease arrangements:

- Law Bulletin - [What's in Your Farmland Lease? A Checklist of Farm Lease Provisions](#)
- Law Bulletin - [Creating an Enforceable Farm Lease](#)
- Law Bulletin - [Protecting Interests in a Verbal Farm Lease Situation](#)
- Law Bulletin - [Leasing Your Land for Hunting](#)
- [Crop Share Leasing in Ohio Fact Sheet](#)
- [Legal Aspects of Ohio Farmland Leases Fact Sheet](#)

**STEER-BULL PRICE DIFFERENTIAL**...is discussed by Dr. Kenny Burdine, Livestock Economist, University of Kentucky, in this OSU Extension Beef newsletter: <https://u.osu.edu/beef/2021/08/11/the-steer-bull-price-differential-a-historical-perspective/#more-11336>. When examining historical prices, it is difficult to argue that there is not a price advantage to selling steers.



Going back to January of 2010, there has not been a single month when the average price of 550 lb bulls exceeded that of 550 lb steers in Kentucky. The figure above plots this data by month from January 2010 to July 2021. The bull discount got very wide at times during 2014 and 2015, but



otherwise has been running in a general range of \$7 to \$14 per cwt. Over that entire time period, the bull discount has averaged \$11.12 per cwt.

A logical follow up question would involve the likely weaning weight differences between steers and bulls. In the figure above, I tracked the price differential at the same sale weight. On a 550 lb calf, that \$11.12 per cwt historical price difference amounts to a little more than \$60 per head, but also ignores potential weight differences between the two. I like to frame this discussion by asking how much more a bull calf would have to weigh at weaning to make up for that difference. To answer this question, we have to understand the value of additional lbs (value of gain) and not confuse this with sale price. Price slide refers to the decrease in price per cwt that occurs as the weight of cattle increases. Because of price slide, the value of additional lbs is typically less than the sale price. This is a key concept in cattle marketing that impacts most all decisions that producers make. I will walk through a quick illustration.

The average price of a 550 lb bull calf from 2010 to 2020 in Kentucky auction markets was \$150 per cwt or \$825 per head. If the price slide in the market were \$10 per cwt, for each 100 lb increase in the bull's weight, his price decreases by \$10 per cwt. So, if a bull weighed 600 lbs, rather than 550 lbs, his price would have been \$145 per cwt (\$5 per cwt less) and his total value would be \$870. This is \$45 more dollars than the 550 lb bull, which means that those additional pounds were worth roughly \$0.90 each. At that rate, the bull's weight would need to exceed the weight of the steer by 67 lbs for their values to be similar. As price slide increases, the value of additional lbs decreases. So, if the price slide were \$15 per cwt, rather than \$10 per cwt, the value of those additional lbs would be even less. Using a larger price slide of \$15 per cwt would make the value of those additional lbs worth only about \$0.60, which would mean that the bull would need to outweigh the steer by roughly 100 lbs for his value to be comparable. Similarly, a smaller price slide would result in higher values of gain and fewer additional lbs needed to offset the price differential.

This discussion is quickly summarized in the table below. In the table, I work through these calculations for price slides of \$5, \$10 and \$15 per cwt. The table below is largely for illustration purposes, but does provide a framework from which producers can make similar calculations based on calf prices and price slides in any market.

**Price Slides and Value of Additional Weight**

	<b>\$5 / cwt price slide</b>	<b>\$10 / cwt price slide</b>	<b>\$15 / cwt price slide</b>
Value of 550 lb bull, initial price of \$150 per cwt	\$825 per head	\$825 per head	\$825 per head
Value of 600 lb bull	\$885 per head	\$870 per head	\$855 per head
Value of additional 50 lbs	\$60	\$45	\$30
Value of each additional lb	\$1.20	\$0.90 per lb	\$0.60 per lb
Lbs needed to add \$60 of value per head	50 lbs	67 lbs	100 lbs



Finally, I would mention that implants likely need to be considered as part of this discussion too. While I leave implant specifics to my animal science colleagues, implanted steers have the potential to see much better rates of gain and narrow that weight difference considerably. So, unless a producer is selling into a market that does not allow implants, they may offer the potential to receive steer prices, but see lower impacts on weight gain.

Every producer has to decide for themselves whether castrating bulls makes sense for their operation. I am fully aware that there is a cost to working calves and some producers may choose not to do this due to facility or time limitations. I have not attempted to delve into those additional costs in this article, but rather have focused on the value differences, so that producers can weigh those against the additional costs. There is pretty consistent evidence that bulls will sell at a discount to steers in the marketplace and the additional pounds needed for bulls to offset that discount can be significant. I would also point out that there are individuals in the market who make money by purchasing bulls, castrating them, backgrounding them for a period of time, and re-selling them. I just mention this as evidence that this is a common way that value is added to cattle. So, producers who typically sell bulls may want to consider the potential value that can be added to their calves through this practice as they look for ways to increase profitability in the future.

**BEEF QUALITY ASSURANCE**...training will be held August 25<sup>th</sup> at Sugarcreek Stockyards. The program will begin at 7pm and the TCCA will provide refreshments. Additional trainings will be scheduled following harvest.

**FARM SCIENCE REVIEW**...will be held September 21, 22, and 23 at the Molly Caren Agricultural Center near London. Pre-sale tickets are available from the Extension office.

