



2022

FBN[®] FERTILIZER TRANSPARENCY REPORT

OCTOBER 12, 2022

AN FBN RESEARCH & DATA SCIENCE COLLABORATIVE REPORT



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Report Contacts

Media Relations

Amy Wolfcale

Head of Media Relations & Corporate Communications

awolfcale@farmersbusinessnetwork.com

Public Affairs

Ken Barbic

Head of Policy & Government Relations

kbarbic@farmersbusinessnetwork.com

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Amid skyrocketing energy markets and disrupted global fertilizer trade, farmers are facing steep fertilizer cost increases with prices more than doubling over the past two years. Further exacerbating the cost increases is the lack of transparency in fertilizer pricing at a local or even national level, putting farmers at risk of even higher operational costs.

Founded eight years ago with a vision of returning margin back to the farmer, *Farmers Business Network (FBN)* remains steadfastly focused on our core mission. One way our team strives to achieve this vision is by addressing the asymmetric access farmers have to information provided by the large multinational companies from which they purchase inputs.

This report is just one example of *FBN* providing such information access.

A special thank you goes to the more than 1,000 *FBN* farmers who contributed data to help make this report possible. By distributing an electronic survey and series of SMS text polls in September 2022, our *FBN* Research team collected information on fertilizer values across farming regions, as well as participating farmers' intended operational changes as a result of these increases in fertilizer values. The results were anonymized, cleaned and aggregated to produce many of the findings in this report.

FBN farmers who responded also received a detailed report showing how their fertilizer prices compared to nearby, anonymized farmers. In many cases, these reports expose the wide price variation for some key fertilizers, especially nitrogen fertilizer.



Dr. Kevin McNew

Vice President of FBN Research
and Chief Economist



EXECUTIVE SUMMARY

- There is considerable price variance across the United States in fertilizer values, especially nitrogen-based products. Even within a small, localized area, nitrogen-based fertilizer values show about twice as much variation as potash fertilizers, which could be symptomatic of lack of transparency.
- Farmers apply nitrogen at different rates depending on the crop, but also depending on their soil circumstances. While corn is the most intensive of key field crops, *FBN* Research noted considerable variation in nitrogen application rates across the country. Because southern growing regions tend to apply more nitrogen fertilizer, these growers are disproportionately affected by high fertilizer prices.
- Surveyed farmers indicated a slight tendency to pull back on fertilizer applications this fall, with 17% indicating they would reduce fertilizer this fall while only 9% noted a planned increase.
- In terms of crop choices in 2023, farmers seem more unanimous in wheat acreage expansion. Farmers surveyed indicated they are more likely to plant wheat in the 2023 growing season, but there were no clear convictions at a national level on other crops including corn, soybeans and cotton. Nonetheless, regional differences were fairly pronounced as planting rates of nitrogen-intensive crops in the South and East will likely be lowered in 2023.

Continue reading for specific insights and data visualizations on fertilizer pricing and application rates.

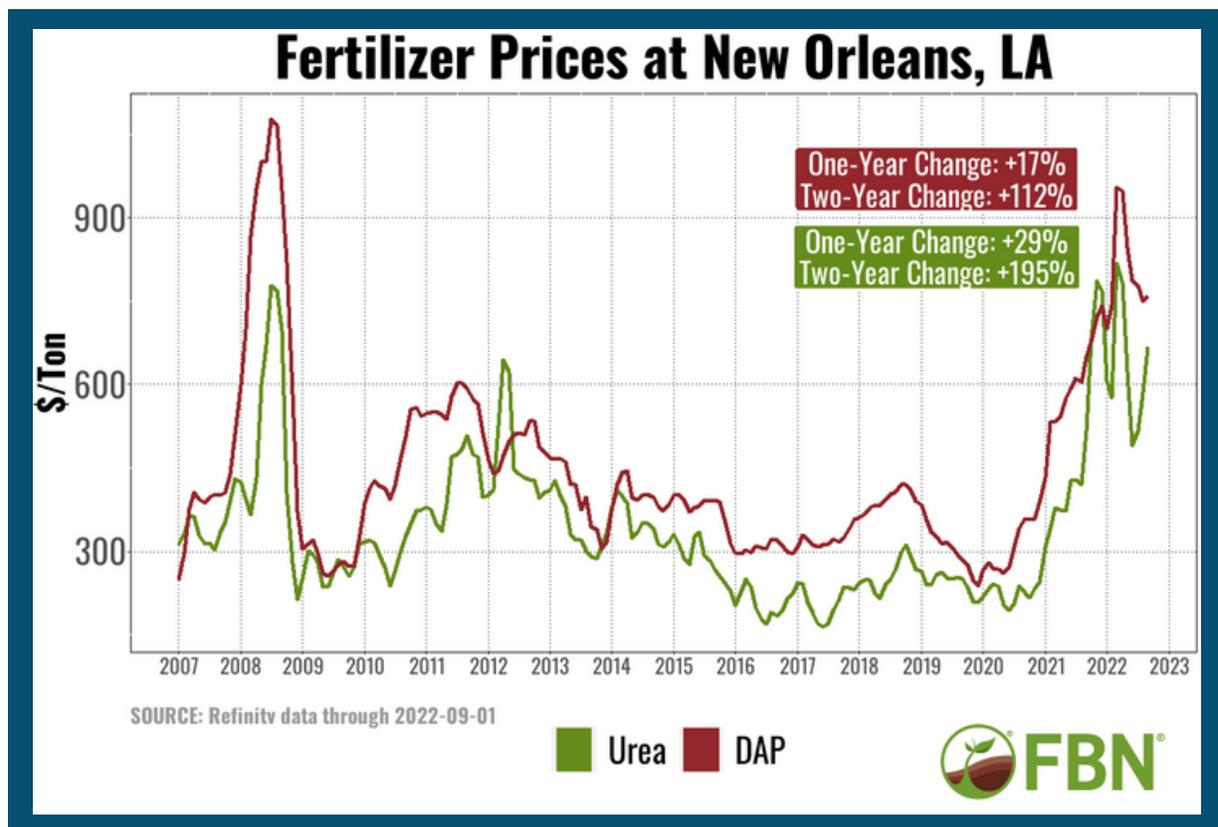


FERTILIZER PRICES REMAIN PERSISTENTLY HIGH

Farmers have been seeing red in recent years as soaring fertilizer costs have collided with high grain markets.

Back in early 2021, escalating grain prices created a demand surge in fertilizer. In 2022, however, elevated energy markets and disrupted trade from the Russia-Ukraine conflict have fueled persistently high fertilizer prices.

As U.S. farmers finish up fall harvest, their attention will turn to fertilizer applications. While fertilizer values have backed off the highs of early 2022, they still remain well above historical norms. Data also indicates that prices may surge even higher in response to strong farmer demand in the coming months.



WILL FERTILIZER PRICES NORMALIZE SOON?

Because inflated fertilizers prices are a consequence of the enmeshed issues around high natural gas prices and the Russia-Ukraine conflict, these catalysts will not be easy to resolve soon.

HIGH NATURAL GAS PRICES

In the U.S., natural gas prices are up 400% in the past two years. However, this figure pales in comparison to the 3,600% explosion in natural gas prices in Europe.

Because Europe's manufacturing sector has largely relied on imported natural gas from Russia, that lost supply source has sent natural gas prices soaring to epic heights. Considering that natural gas generally accounts for 70% or more of the costs to produce nitrogen fertilizers, this has had seismic impacts on the nitrogen fertilizer market.¹

Europe is a sizable producer and user of nitrogen fertilizers; the dramatic rise in natural gas has taken many manufacturers offline or deeply diminished their capacities. While the U.S. has sizable natural gas and nitrogen capacity, both are being diverted toward world markets to satisfy huge shortfalls, causing U.S. nitrogen prices to remain elevated.

RUSSIA-UKRAINE CONFLICT

Although international sanctions against Russia did not specifically target food and fertilizer exports, the ongoing conflict still tangentially affected such exports; because shipping and insurance companies were wary of the associated risks, Russian product shipments were disrupted. In 2020, Russia was the largest exporter of nitrogen fertilizer, accounting for 13% of 2020 global trade. The country also wields significant volumes of other key nutrient trade, including potash (19%) and phosphorus (11%).²

While fertilizer markets appear to be adjusting to the new global calculus of costs and trade disruptions, a simple and quick path to lower prices remains unlikely.

U.S. farmers are starting to make purchasing and cropping decisions for the 2023 season with most input purchases and crop choices completed in the next six months, offering a limited time in which to see a sizable correction in fertilizer values.

¹ Huang, W. "Impact of Rising Natural Gas Prices on U.S. Ammonia Supply". USDA-ERS, August 2007. https://www.ers.usda.gov/webdocs/outlooks/40459/11717_wrs0702_1_.pdf?v=389

² FAO. FAO-STAT online query. <https://www.fao.org/faostat/en/>



With an ever-changing price environment, farmers face significant risks around fertilizer values and transparency with their local retailers. Fertilizer prices, unlike grain prices, are not publicly quoted by ag retailers and fertilizer suppliers.

In an effort to shed light on this opaque market, *FBN* conducted a Fertilizer Transparency Survey across its U.S. farmer members.

Not only will this lift the veil of secrecy vital for an efficient market, but it will also allow a clear picture of geographical differences in fertilizer costs. This will likely play into farmer decisions and initiate ripple effects into modern-era sustainability programs that incentivize reduced fertilizer usage.

FBN FERTILIZER SURVEY OVERVIEW

FBN electronically surveyed its U.S. members in September 2022 to inquire about the prices they were quoted for eight key fertilizer categories this fall. In addition, the survey included questions about nitrogen application rates on their corn, wheat and cotton crop in 2022, as well as their intended application rates in fall 2022 versus fall 2021. Finally, considering that rising fertilizer costs create asymmetric impacts on a farmer's budget based on which crop they grow, a set of questions was used to determine 2023 crop acreage choices.

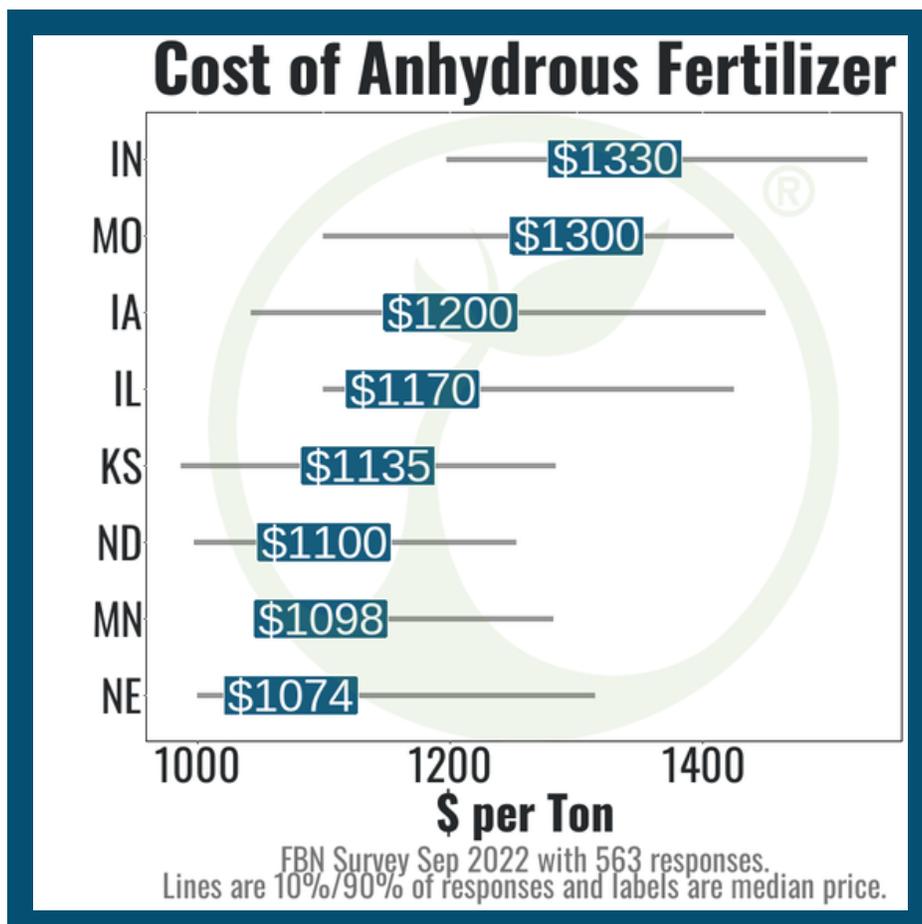
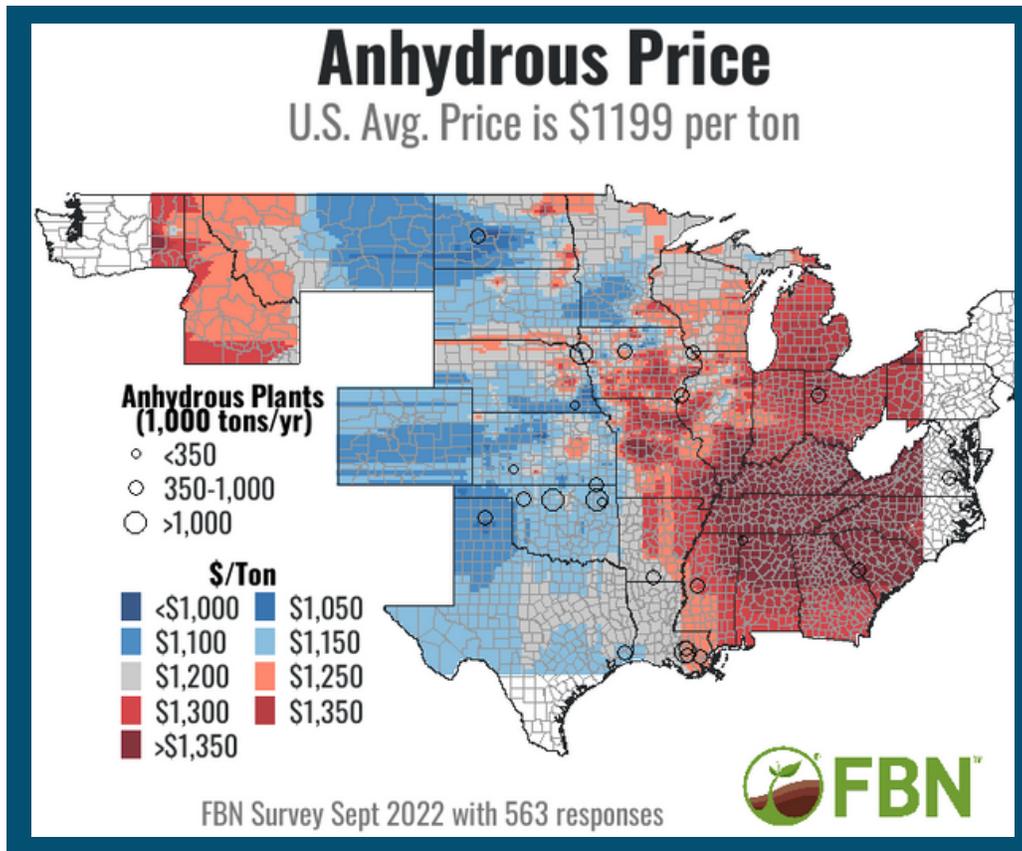
All results are anonymized and respondents were also provided a detailed analysis of their fertilizer price and intentions compared to local, state and national benchmarks.

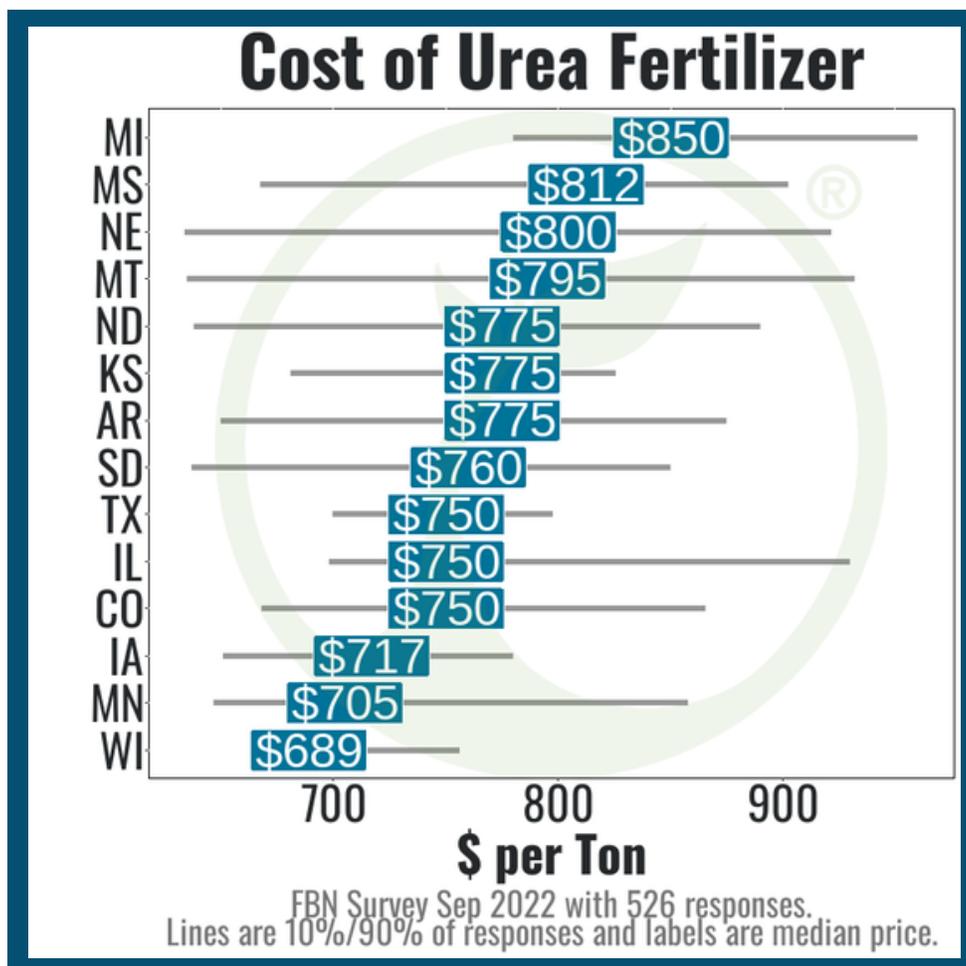
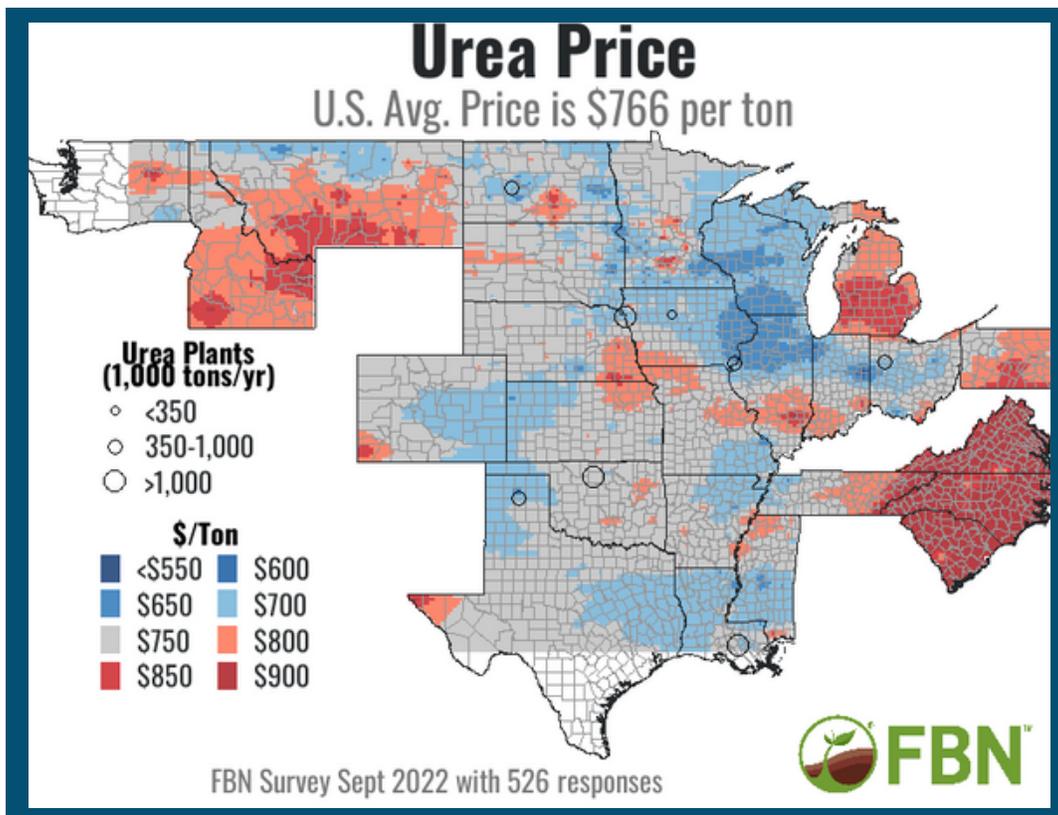
FERTILIZER PRICE RESULTS

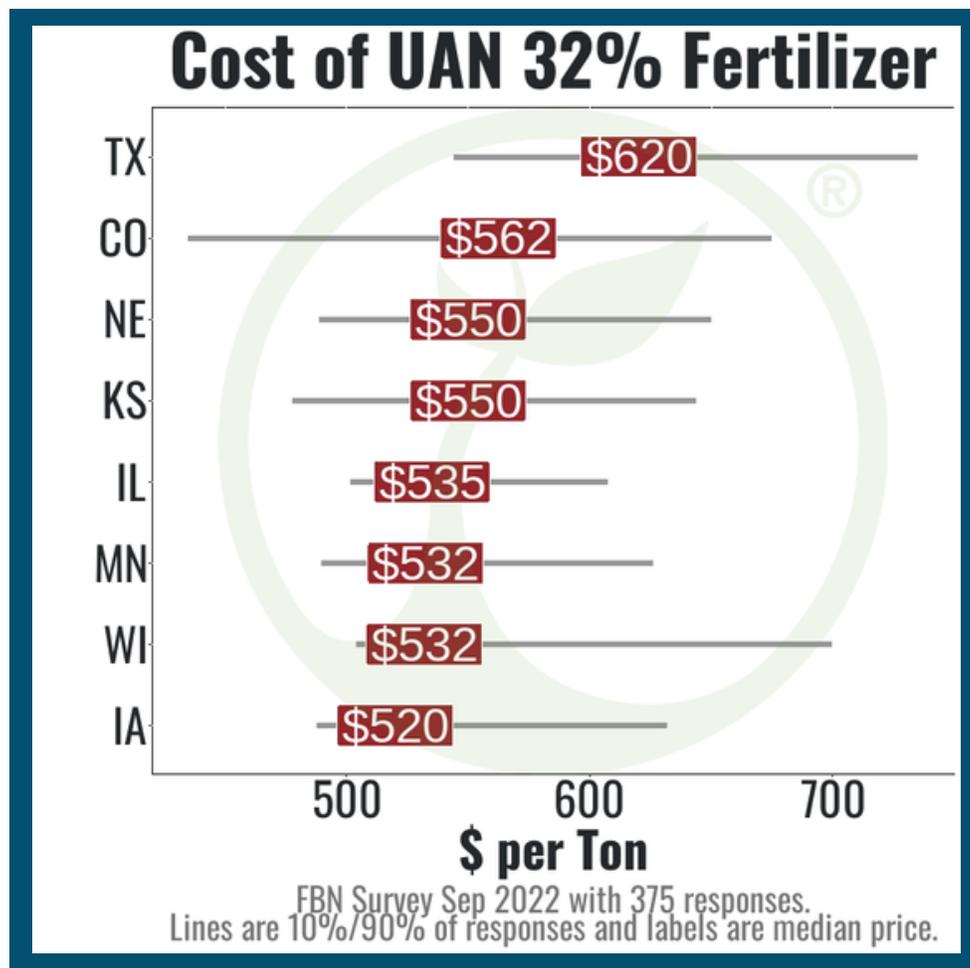
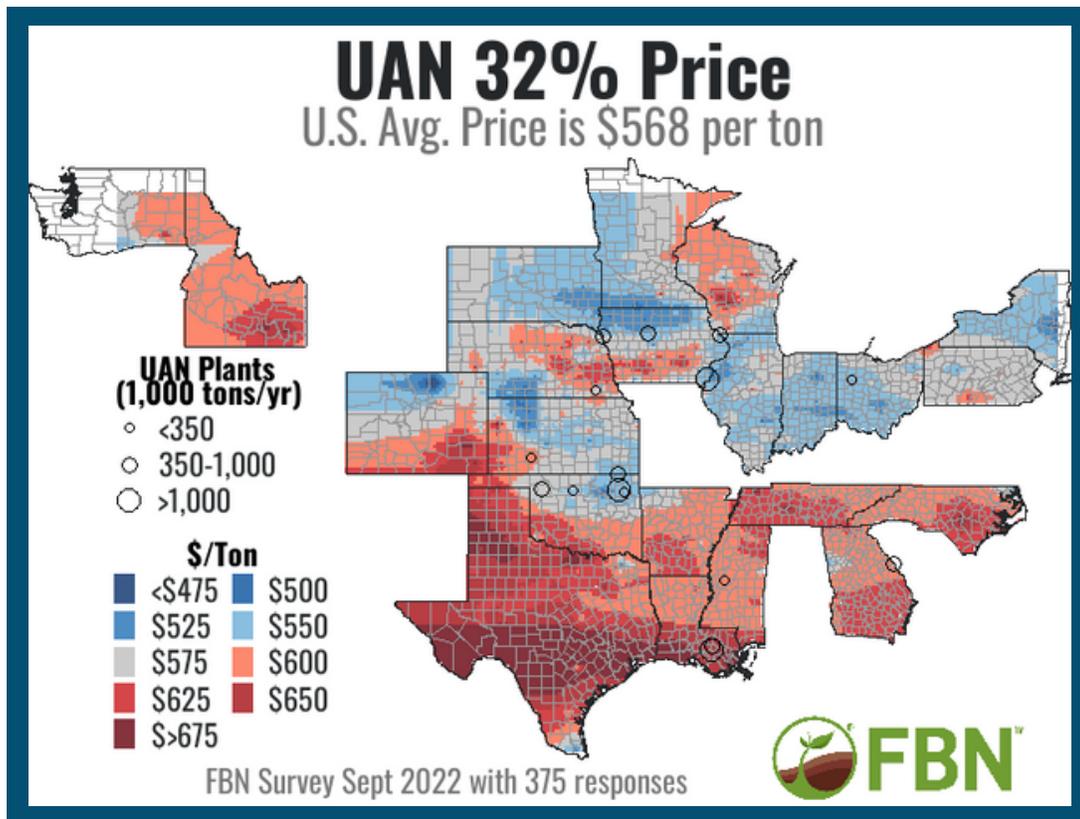
Nitrogen fertilizers vary widely by geography based on production capacity of various fertilizer types. Generally speaking, nitrogen production occurs in the Louisiana Gulf region, Northern Oklahoma/Southern Kansas and Northwest Iowa. The nitrogen fertilizer costs reported below show not only a great degree of regional variation, but even within region variability.

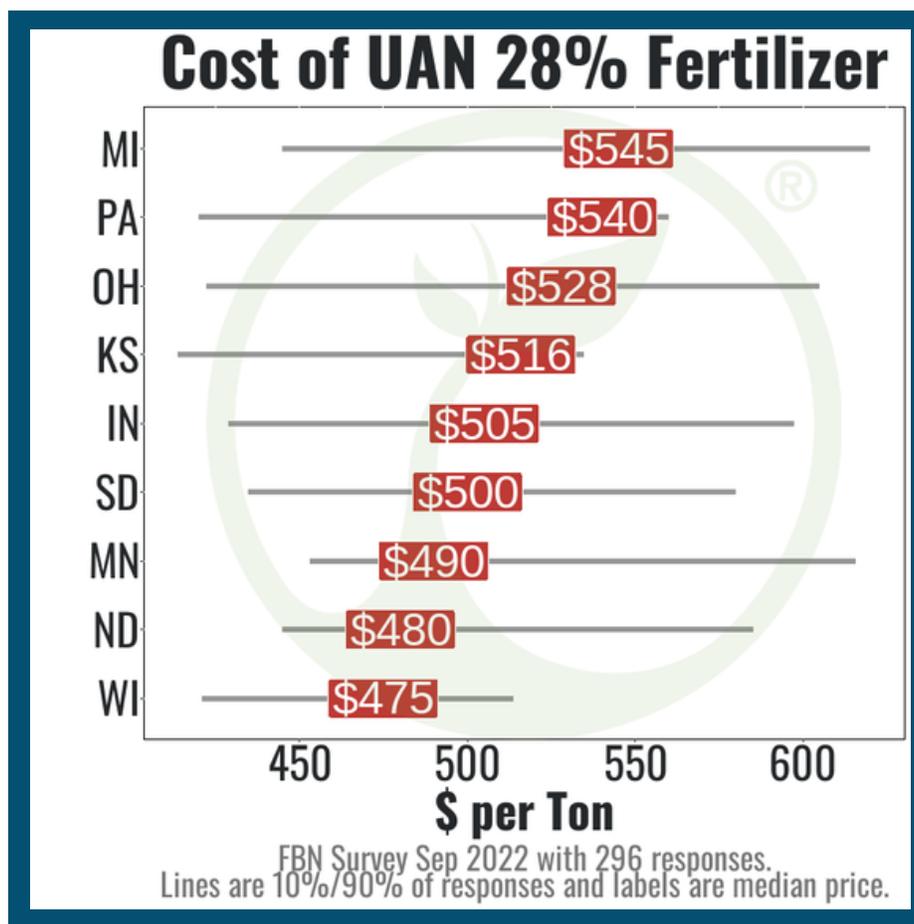
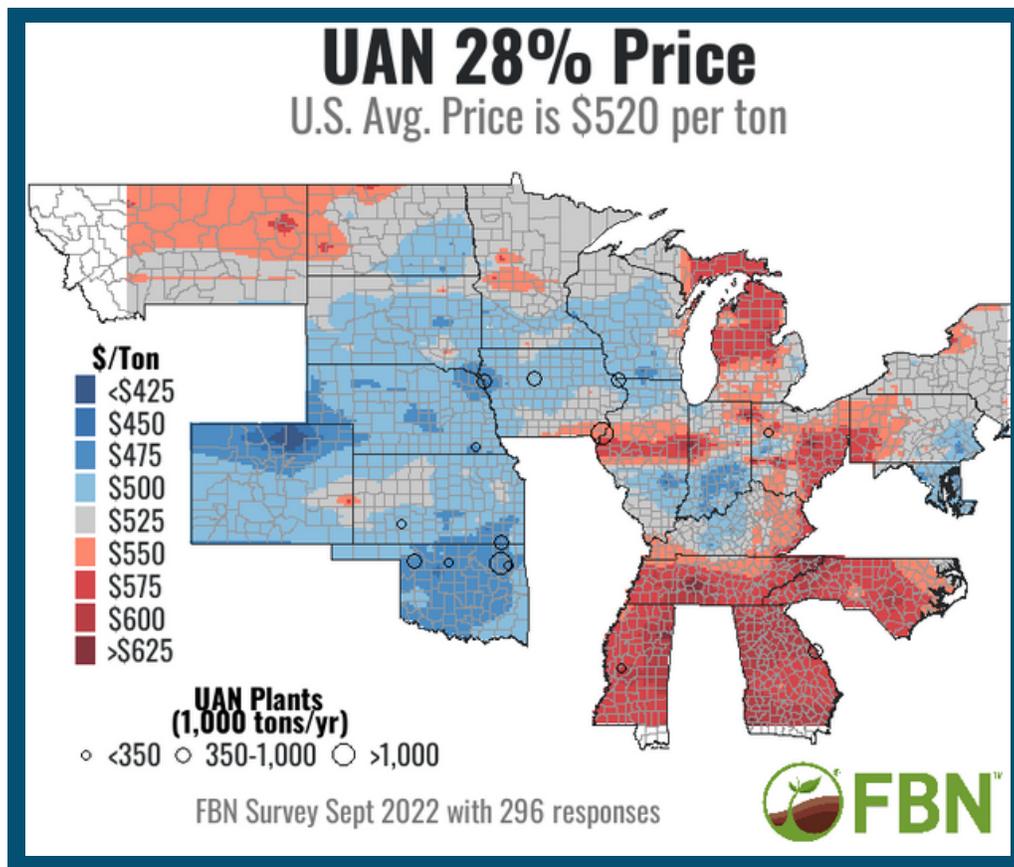
For instance, *FBN* member-contributed prices from Iowa showed a variability range of around 20% for urea and 32% for anhydrous relative to the median price.³ But for potash, the variability range was only 12%. Nitrogen availability, as well as extreme price variation, will likely be a constraint for growers for the balance of the upcoming growing season.

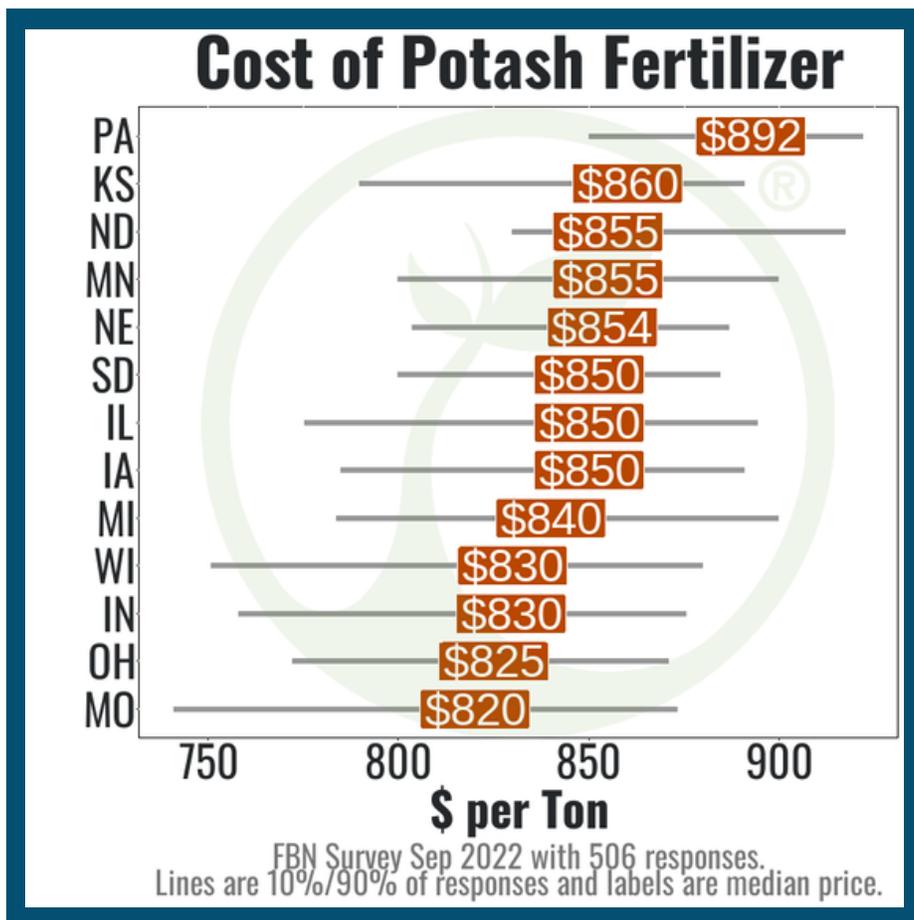
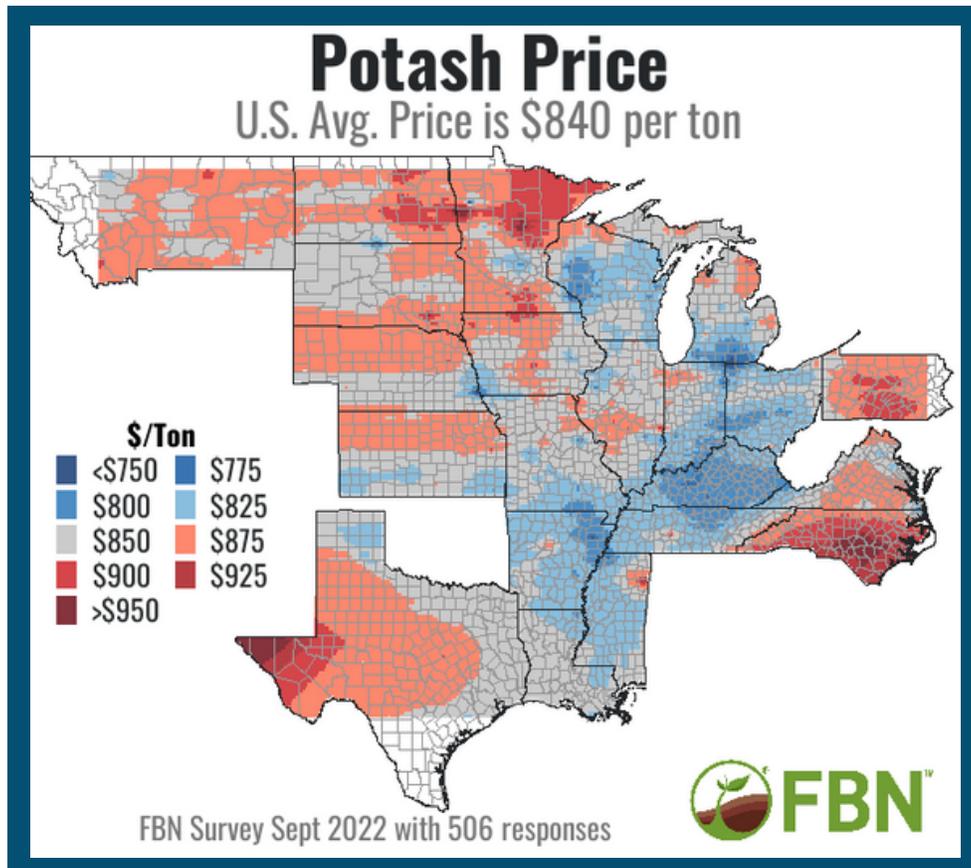
³ Here we define the variability range as the 10th percentile and 90th percentile prices relative to the median price and then these two extremes are summed. So, if the 10th percentile is 86, the 90th percentile is 120 and the median is 100, our variability range would be 34% = 14% + 20%.

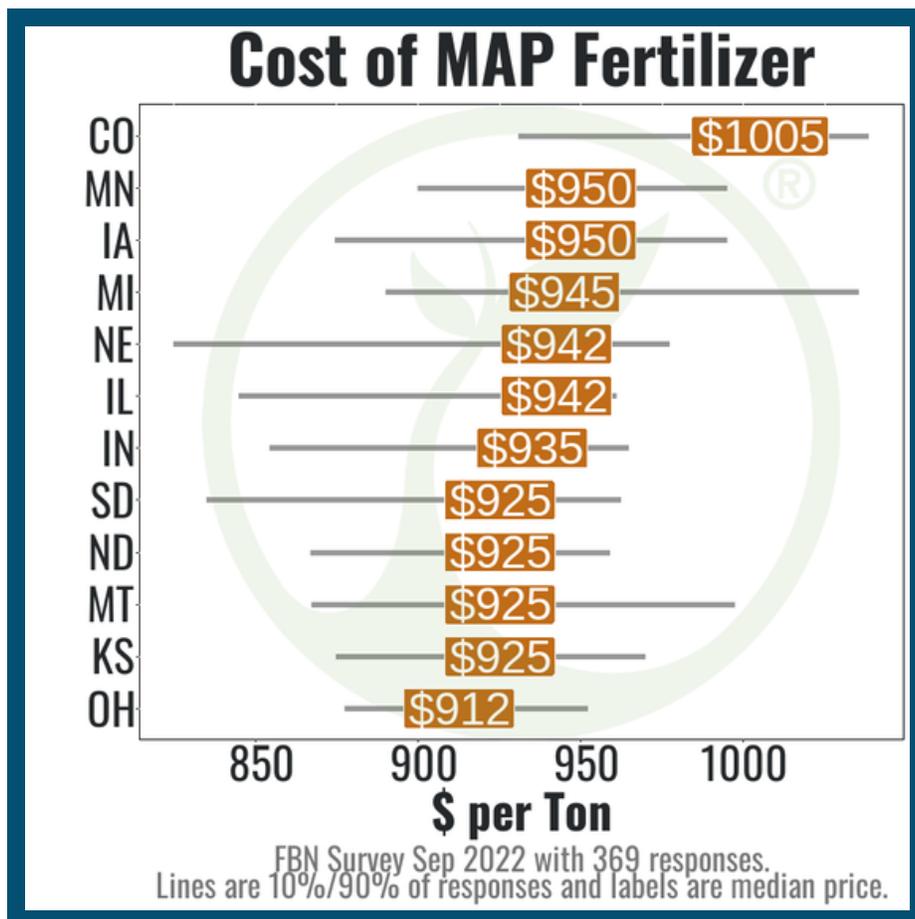
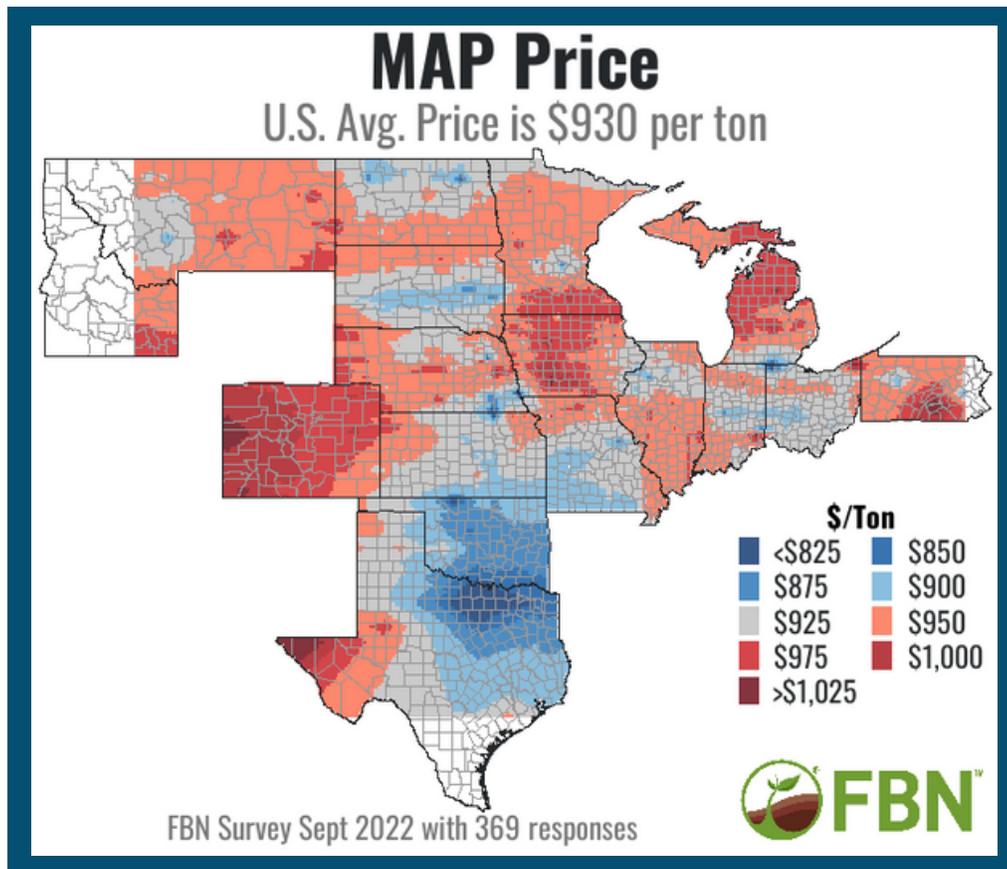


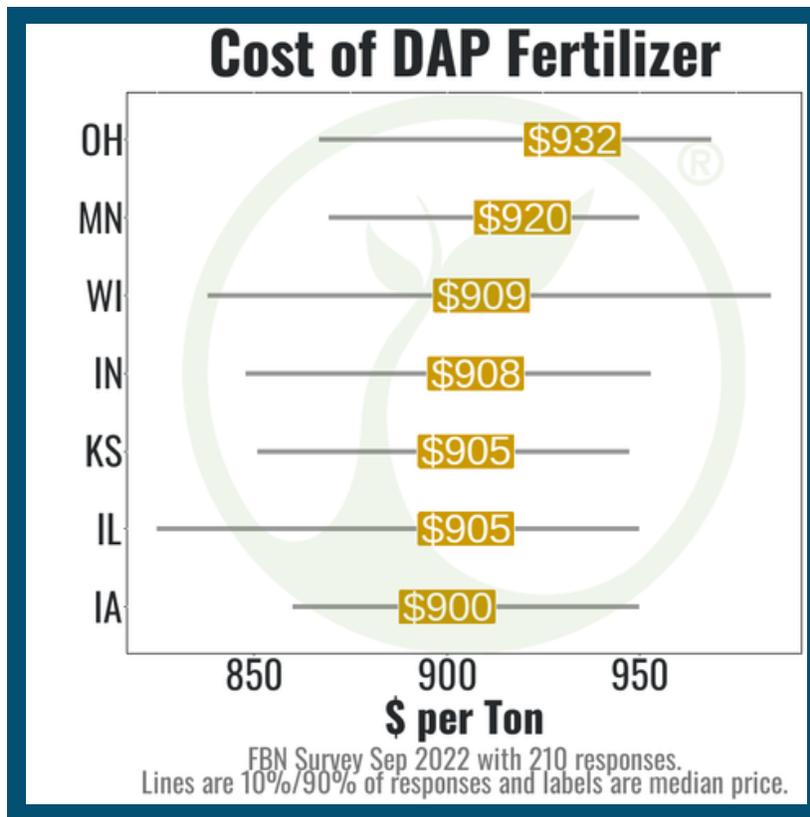
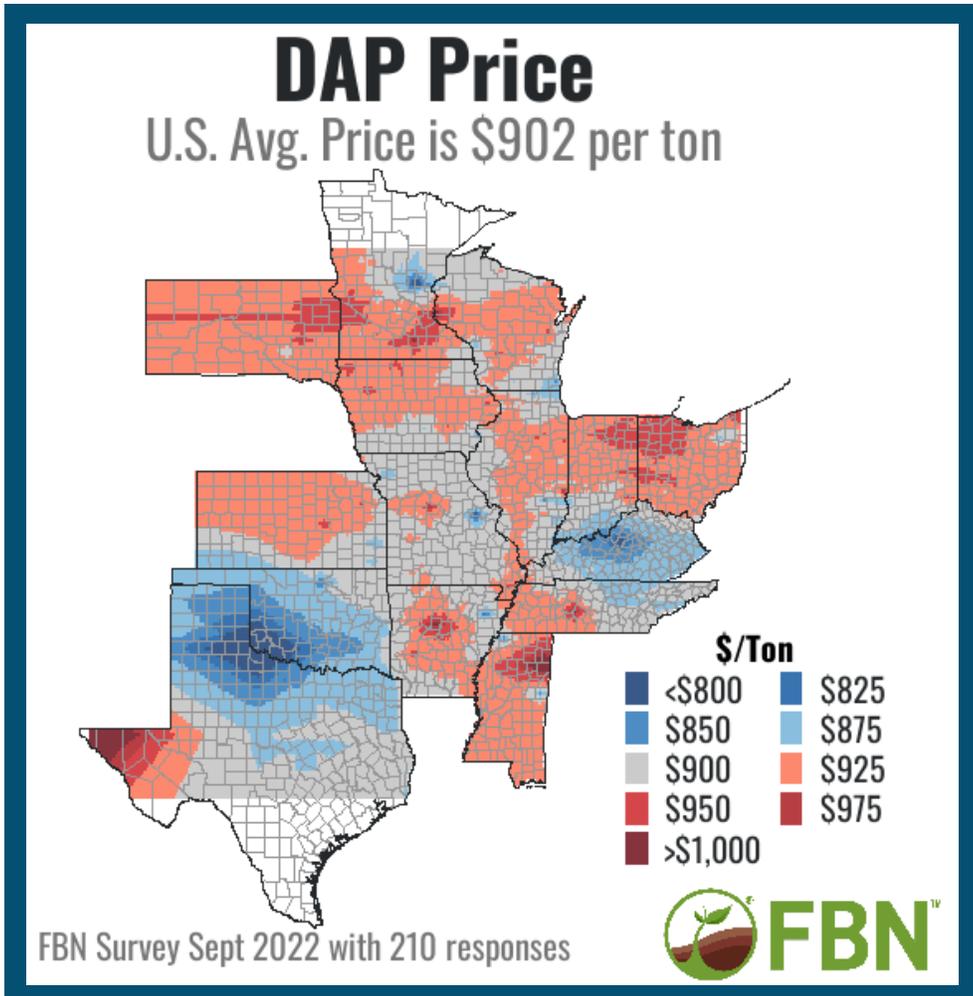


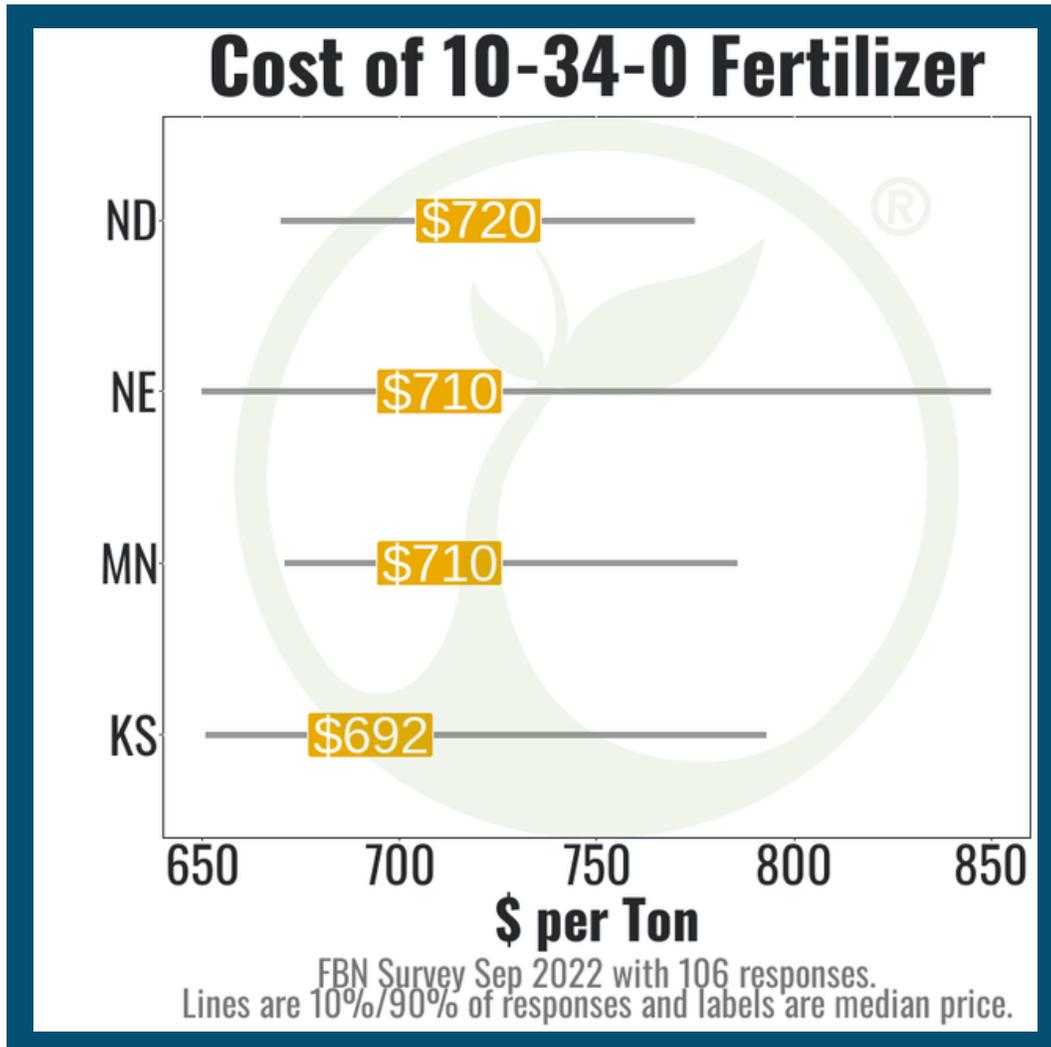








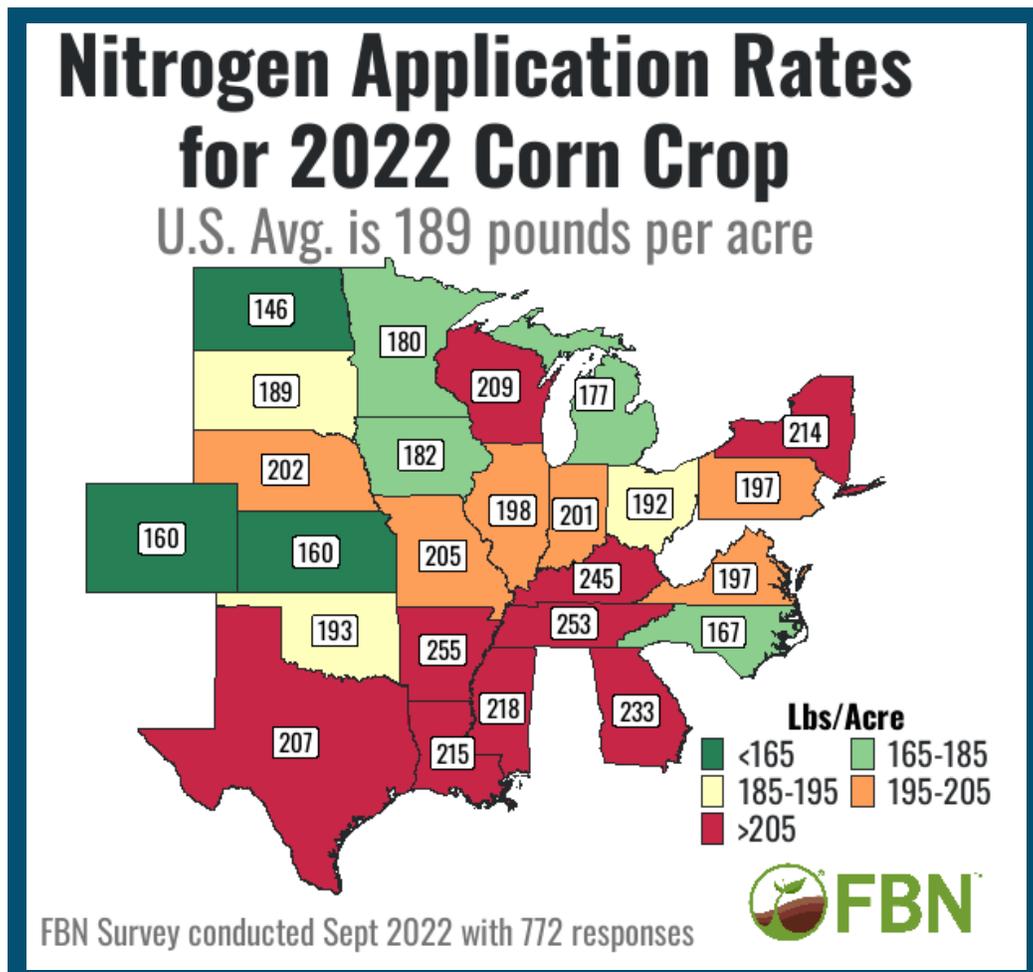


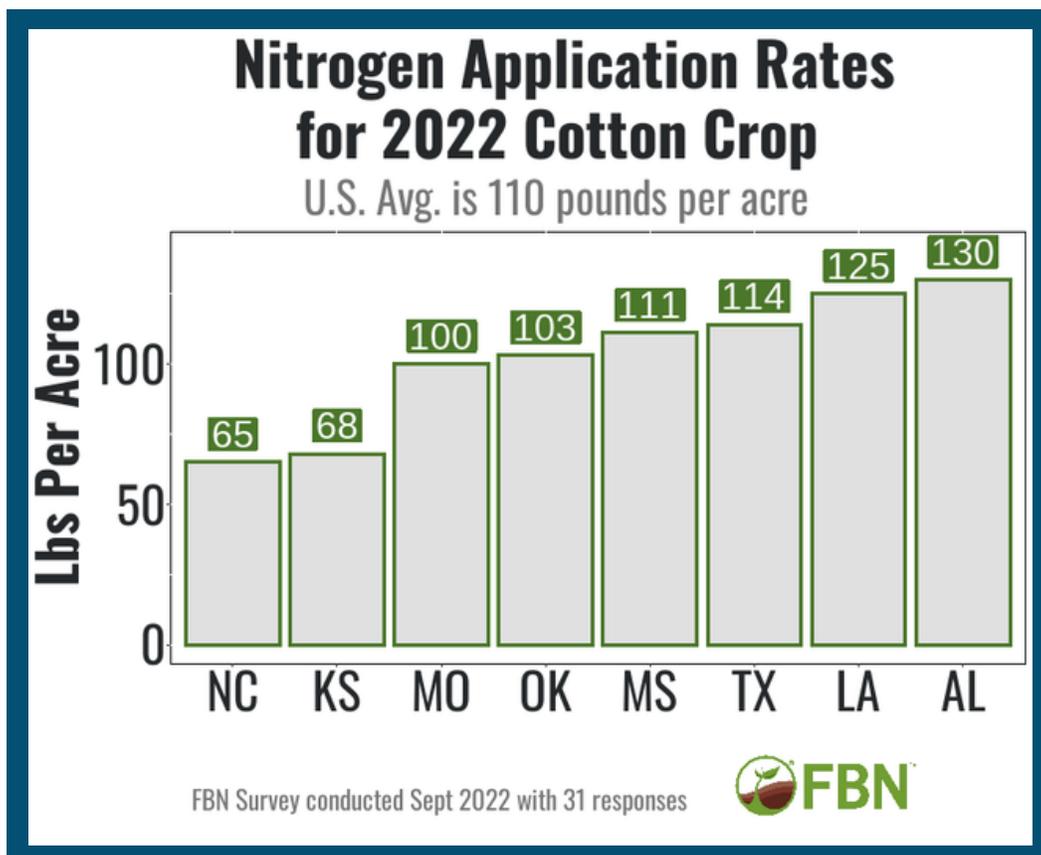
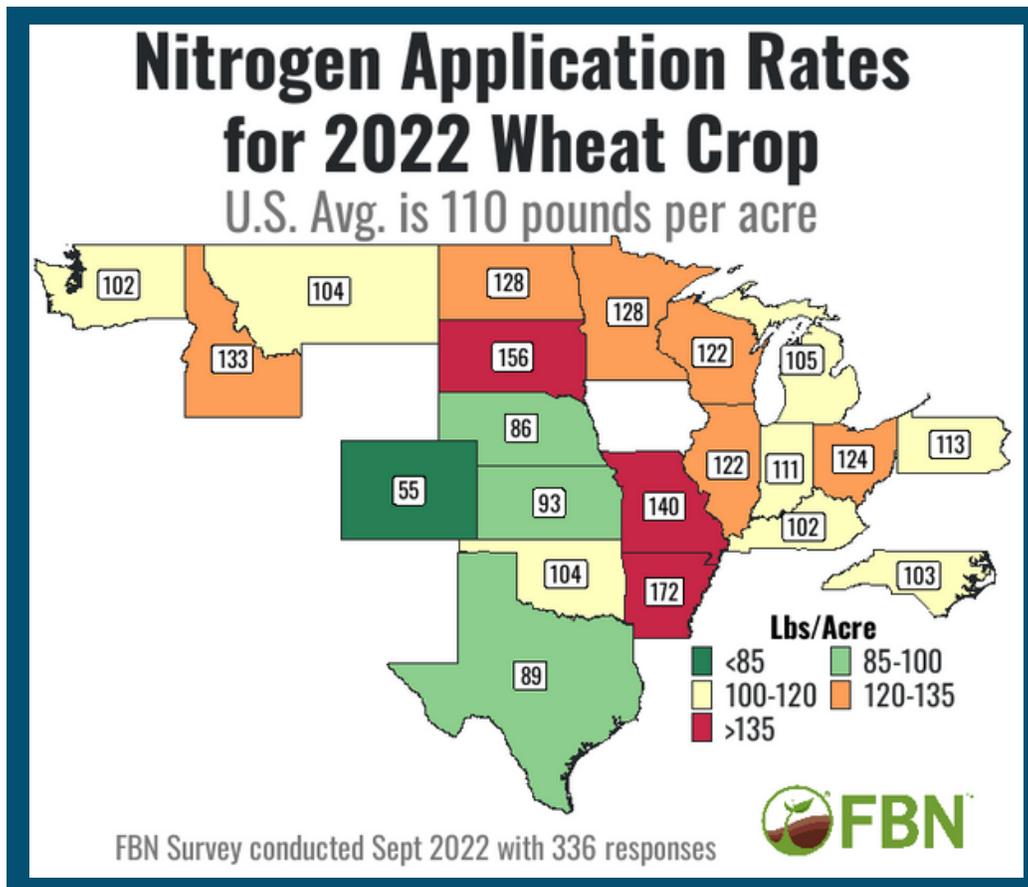


FERTILIZER APPLICATION RATES AND INTENTIONS

As nitrogen prices have soared in recent years, farmers are focusing more on the results they get from high-priced fertilizer inputs. Nitrogen is a key nutrient for corn, wheat and cotton crops in the United States. Optimal rates of nitrogen applications vary not only among these crops, but even for the same crop. The amount of nitrogen to be applied can vary based on soil type and growing conditions for each farmer.

The graphics below show *FBN* member nitrogen application rates for their 2022 crops. As there is considerable geographical variation in nitrogen rates by crop, this will make high-priced nitrogen a tighter constraint for some crops and regions, likely causing farmers to adjust application rates and cropping choices.

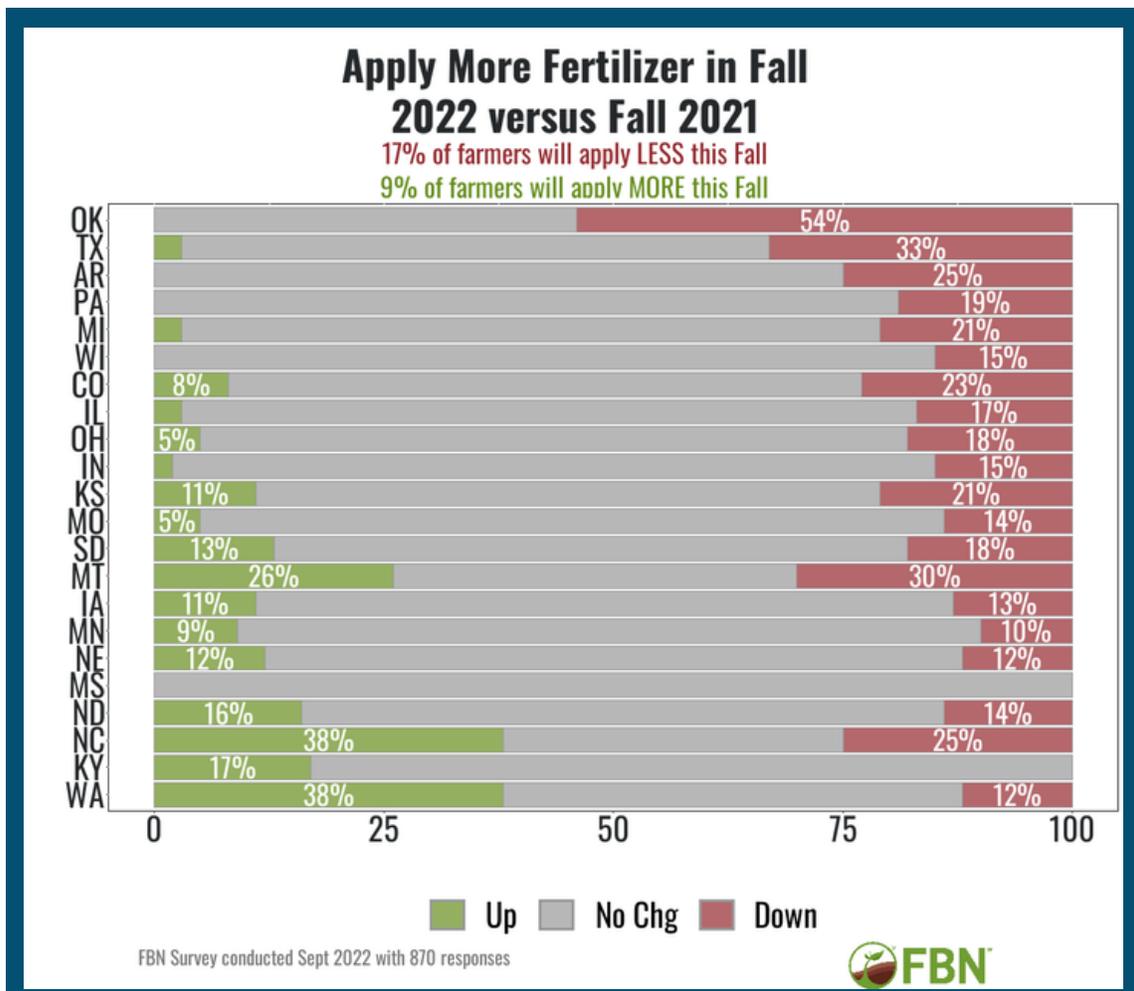




FERTILIZER APPLICATION RATES AND INTENTIONS [CONTINUED]

When asked about intentions to change their fall 2022 fertilizer application rates, 74% of farmers said they would stay the same as in fall 2021. For those who plan to adjust, 17% said they would lower their application rates this fall while only 9% would increase application rates versus last fall. This suggests that fertilizer cost increases may be constraining some farmer application rates.

However, cost increases are not the only constraint this fall. Prolonged drought in the Plains has also likely stymied farmer fertilization intentions. Oklahoma, Texas, Colorado and Kansas showed a much higher incidence of reducing fertilization rates this fall, which is the epicenter of drought over the past six months.



2023 ACREAGE INTENTIONS

A two-year bull market in grain and oilseeds has mostly stalled out in the past six months. But prices remain high by historical standards and futures prices for the upcoming 2023 growing season are robust.

Nonetheless, higher nitrogen fertilizer costs and shifting farm economics around this key line item on a farmers budget could have consequences for 2023 crop choices. *FBN* members were asked about their 2023 acreage intentions for corn, soybeans, wheat, cotton and sorghum compared to 2022 plantings. The key findings are:

- Wheat seems to be the big gainer for 2023 acres as 43% of farmers said they would be increasing plantings in the coming season. Only 12% of responding farmers indicated planting would decrease. Double cropping wheat with soybeans will also likely turn higher as the Delta and Southeast states likely increase wheat plantings this fall and follow next spring's wheat harvest with a soybean crop to help add back nitrogen.
- Farmers are more undecided with corn and soybean acres as a whole. More farmers were generally going to increase corn acres in 2023 (24%) versus increasing soybean acres in 2023 (22%).
- Drought hampered areas of Kansas, Oklahoma and Texas saw local farmers likely increasing sorghum plantings in 2023 versus 2022, prioritizing a more drought tolerant option compared to corn.

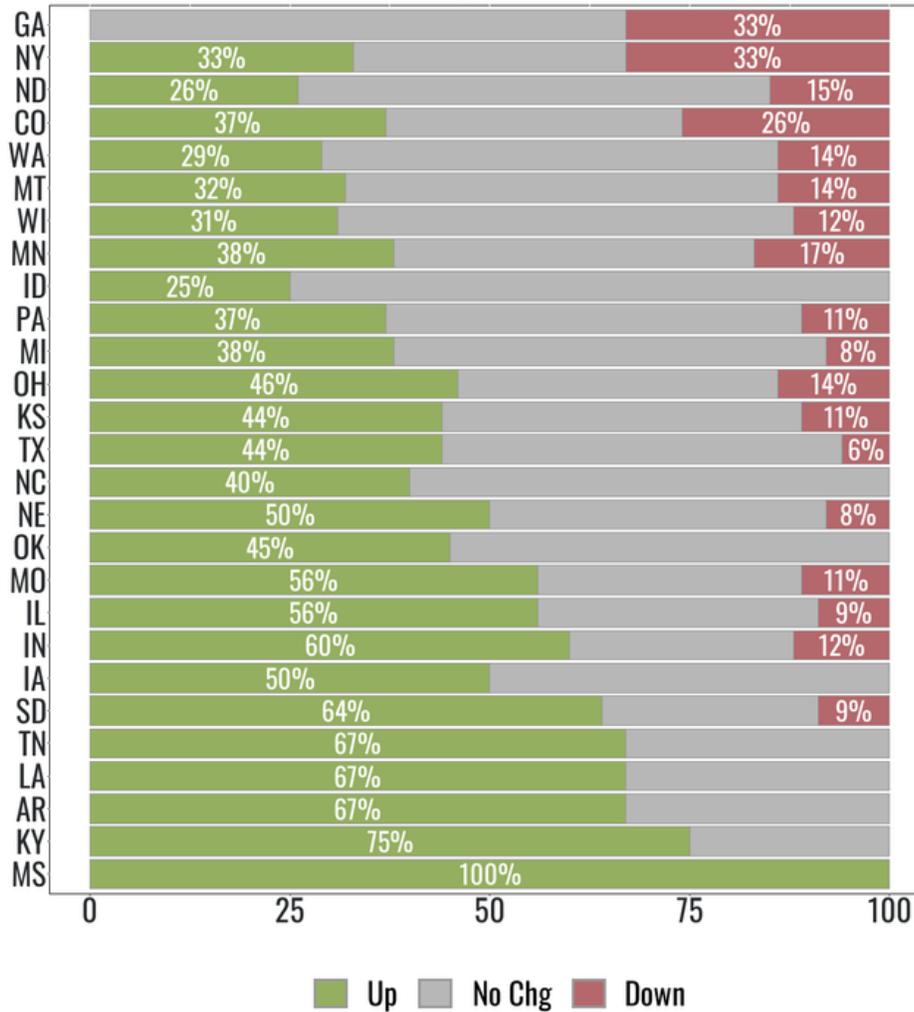
2023 Corn Acres Up or Down? 2023 versus 2022

16% of farmers will grow LESS in 2023
24% of farmers will grow MORE in 2023



2023 Wheat Acres Up or Down? 2023 versus 2022

12% of farmers will grow LESS in 2023
43% of farmers will grow MORE in 2023

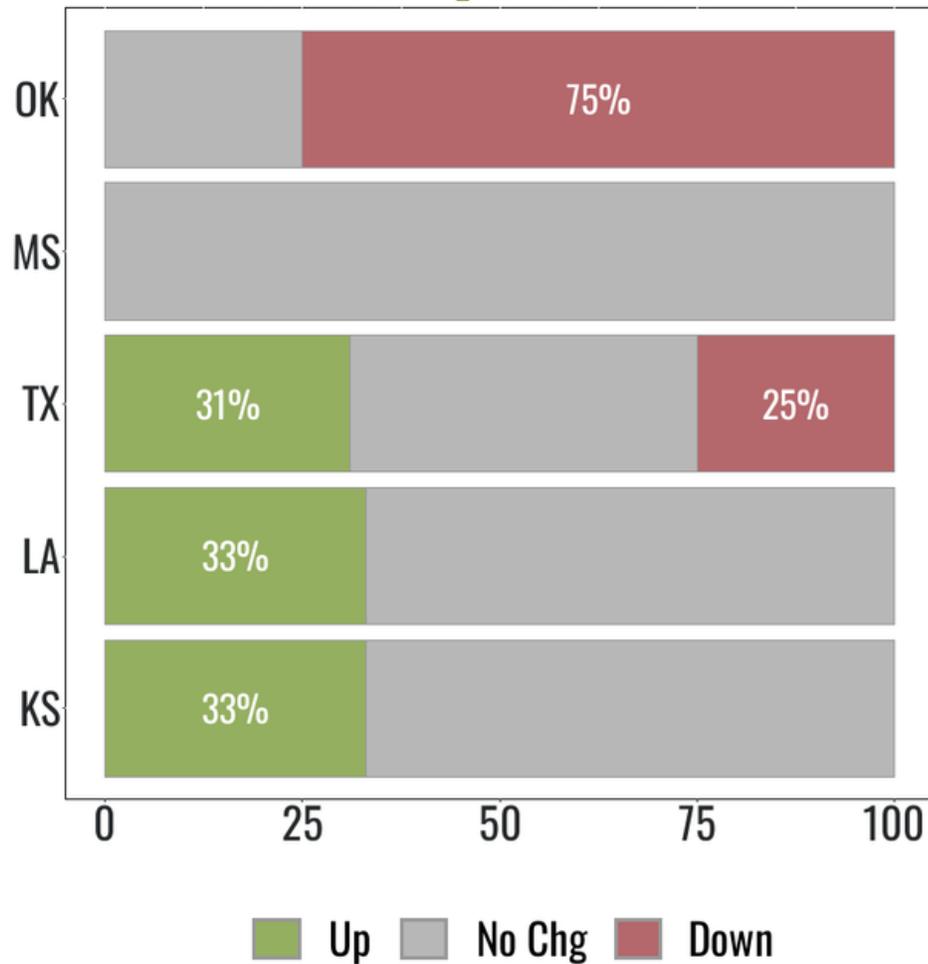


FBN Survey conducted Sept 2022 with 417 responses



2023 Cotton Acres Up or Down? 2023 versus 2022

24% of farmers will grow LESS in 2023
24% of farmers will grow MORE in 2023

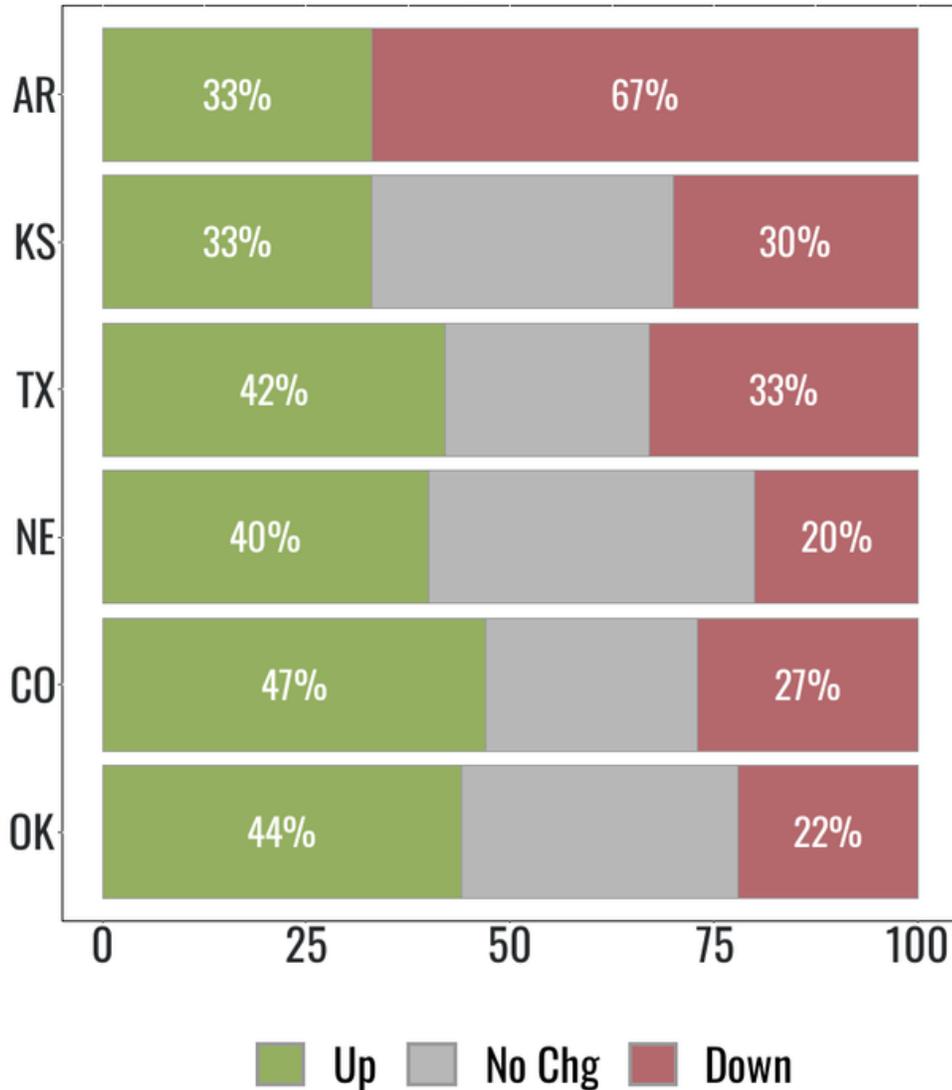


FBN Survey conducted Sept 2022 with 42 responses



2023 Sorghum Acres Up or Down? 2023 versus 2022

25% of farmers will grow LESS in 2023
42% of farmers will grow MORE in 2023



FBN Survey conducted Sept 2022 with 105 responses





Together, we're unlocking the power of agronomic data.

As a member of *Farmers Business Network*, you collaborate with 48,000+ farmers working with *FBN* to unlock the value in data. By working together, we create reports like this one to help our members make knowledgeable decisions that drive an ROI-focused business.



YOUR DATA IS
Never sold
Only used
to return
value to you



ABOUT FARMERS BUSINESS NETWORK

At **Farmers Business Network** we are wholeheartedly committed to putting **Farmers First**.[®]

We help family farmers maximize profit potential with a game-changing, direct-to-farm commerce, crop marketing, and sustainability platform enhanced by transparent insights and a peer community that redefines value and convenience. By working with farmers, we've analyzed 350 million acre-events of real-world data contributed by *FBN* members. Then we enrich that anonymized data with analytics and data science to return transparent, farm-tested insights back to our members, helping them make knowledgeable decisions that can reduce their cost of production and maximize their profit potential.

We're *Farmers Business Network* because we enhance the power of the 48,000+ members that make up our growing global farmer network for the benefit of every farmer's business through insights, commerce, and community. At *Farmers Business Network*, we know it's challenging for farmers to feel in control in their highly unpredictable world where unrelenting hard work doesn't guarantee they can make a good living. We understand the farming system lacks transparency and competition, and is inherently stacked against farmers, leaving many feeling concerned about the future of their farms and rural communities.

Farmers Business Network is on a mission to power the prosperity of every family farmer.

This report is a direct expression of our mission to work together with farmers and bring more transparency to agriculture, providing farmers with information they can use to make knowledgeable decisions for their operations.

