U.S. DEPARTMENT OF AGRICULTURE, AGRICULTURAL MARKETING SERVICE

SUMMARY OF COMMENTS TO "ACCESS TO FERTILIZER: COMPETITION AND SUPPLY CHAIN CONCERNS"

January 2023

In 2021, President Biden signed an Executive Order on Promoting Competition in America's Economy that directed USDA and other agencies to robustly enforce Congress' laws and police U.S. markets, including in agriculture, where: "Consolidation in the agricultural industry is making it too hard for small family farms to survive." As part of executing the executive order, in March 2022, USDA initiated a public records request to document the concerns from agricultural producers regarding concentrated market power in the in seed, fertilizer, other agricultural inputs, and retail markets. Across all requests, USDA received: 1600+ comments in the public record, confidentially submitted comments, calls, and public forum remarks from concerned individuals.

In response to the Public Request for Information on Access to Fertilizer, commenters submitted 1,494 comments (1,482 via regulations.gov; 12 confidentially emailed or mailed), which USDA read and analyzed to identify key concerns. **Eighty-seven percent of commenters described concerns about high prices; 72 percent described concerns about the power of fertilizer manufacturers; 12 percent about restrictive contract practices; and 54 percent about economic or environmental harms**. **Commenters also recommended key funding considerations for USDA's $500 million Fertilizer Product Expansion Program, launched in September 2022,** to expand the manufacturing and processing of fertilizer and nutrient alternatives. Commenters included: National Corn Growers Association members (803 comments; 54 percent); Illinois Farm Bureau members (479 comments; 32 percent); industry challengers including startups, environmental, and advocacy organizations (70 comments; 5 percent); farmer organizations, particularly state-level farmer unions (42; 3 percent); fertilizer industry and energy companies, farm bureaus, and commodity associations (41; 3 percent); and fertilizer and alternative startups (30; 2 percent).

Highest points from comments:

- In 2022, farmers reported record double, triple, or quadruple fertilizer prices and being held "hostage while we have no other options."[1] Fertilizer accounts for 15 percent of farm cash costs.[2]
- High fertilizer prices shifted planting decisions: farmers planted more soybeans instead of corn, likely causing suddenly increased demand for soybean inputs and increased pressure for non-rotated soybean diseases, e.g.: soybean cyst nematode, which costs an estimated $1 billion annually in crop losses.[3]

[1] Nicholson, TADD, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1078 ("The number of fertilizer companies are so few that the word monopoly is not unfair. The US government has got to look into the market concentration to protect the integrity of the market, protect food security and protect farmers from being held hostage while we have no other options. Left unchecked the fertilizer industry will cause farmers to produce less food. These are very large companies that need to feel oversight of the government. Please investigate them because [n]o one else can.").

[2] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407 (Citing analysis from Myers, S. and V. Nigh (2021), "Too Many to Count: Factors Driving Fertilizer Prices Higher and Higher," Farm Bureau, available at https://www.fb.org/market-intel/too-many-to-count-factors-driving-fertilizer-prices-higher-and-higher).

[3] New York Farm Bureau, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1338 ("The impact of high fertilizer prices is evident in the 2022 March Prospective Plantings report. U.S. farmers indicated they intend to plant 91 million acres of soybeans, which is an increase of 4.4% compared to 2021 after a 4.6% increase from 2020 to 2021. They also indicated they intend to plant 89.5 million acres of corn, a decrease of 4.1% compared to 2021. This indicates an implied shift that U.S. farmers are pulling back corn acres and planting them into soybeans, a direct impact of the high cost of fertilizer and the increased cost of other inputs").

- Commenters suggested that increased costs to farmers also resulted in increased costs to American consumers. For instance, American consumers saw food costs increase 8.8 percent.[4]
- Farm Action and other commenters pointed that while U.S. households are hurt by higher grocery prices and farmer incomes suffer through higher input costs, fertilizer corporations are reporting record-high profit margins. For instance, the two largest U.S. fertilizer manufacturers saw increased costs of 58 and 125 percent; but they increased gross margins by a much higher 669 and 298 percent.[5]
- CF Industries, Nutrien, Koch, and Yara-USA account for 75% market share of Nitrogen fertilizer products, which is down from "46 firms making Nitrogen" in 1984.[6] Nutrien and Mosaic are the "only 2 major Potash suppliers"[7] and likely control most of U.S.' imported potash through jointly held Canpotex.[6] Mosaic controls 60 percent of phosphate production.[8]
- Commenters described concerns with fertilizer manufacturers and/or downstream distributors or retailers hiking prices and breaking and enforcing contracts with farmers, retailers, or other market participants. Explaining how manufacturers can control these terms, commenters pointed to manufacturers' control of supply, storage, and distribution and retail; for instance, we (USDA staff) have heard that 3 companies control 90 percent of Midwest fertilizer storage and distribution, which is consistent with comments.[9]
- 346 commenters mentioned the role of Russia's war in Ukraine. Russia is the world's largest exporter of fertilizers. Commenters noted the disruptions caused by the war to fertilizer and especially nitrogen fertilizer input availability, transport, and distribution. Commenters suggested that these significant disruptions resulted from the United States' overreliance on few fertilizer sources that makes "us, the farmer, vulnerable to trade issues,"[10] with others impacted: "fertilizer usage will drop, impacting rural COOPS [sic] and fertilizer plants, along

[4] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407 (Citing analysis by Reuters, (2022), "Food prices jump 20.7% yr/yr to hit record high in Feb, U.N. agency says", https://www.reuters.com/world/food-prices-hit-record-high-february-un-agency-says-2022-03-04/).

[5] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407 ("In 2021, Nutrien's cost of goods sold did increase by 58% compared to 2020; however, their gross manufacturing margin was up 669% from 2020.24 CF Industries saw their gross margin increase by 298% in 2021, though the cost of sales only accounted for 125% of that increase. Yara's 2021 annual report admits that "increased price transparency can challenge fertilizer premiums;" the authors go on to attribute the 76% increase in U.S. earnings before interest, taxes, depreciation, and amortization (EBITDA) since last year to "high production margins in North America and slightly higher deliveries").

[6] Open Markets Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1411 (Commenter cited analyses showing the market share controlled by US fertilizer firms. For example, for potash, Mosaic controls a 40 percent market share and Nutrien 22 percent. For imports, which U.S. producers depend on to receive "93-96% coming from global producers": Canada's Canpotex, consisting of Nutrien of Mosaic, accounts for 83% of non-domestic potash).

[7] Verbeck, Dennis, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0056 ("In 1984 there were 46 firms making Nitrogen, 2021 16 firms, currently 4 major U.S. producers. The U.S has only 2 major Potash suppliers P.C.S./Nutrien & Mosaic. They also are the two most prominent Phosphate suppliers. Mergers and consolidation of the fertilizer industry has left agriculture with too few of choices and price manipulation").

[8] Novaphos Inc., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256.

[9] Wabash Valley Resources LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357 (One commenter described how producers own most of ammonia storage, with "very little owned by wholesalers/retailers and little to none by the farmers." The commenter describes how producer-level ownership of storage "gives producers… increased control" and ability to allocate volume).

[10] Rader, Arin, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0425 ("Relying on foreign goods of any kind makes us, the farmers, vulnerable to trade issues and the war in Ukrainian is affecting this as they are limiting or stopping exports of fertilizer for next year").

with affecting yields."[11] Some commenters referenced analyses that pointed out that while COVID-19-induced supply chain disruptions are partly to blame for price volatility,[12] concentrated industry structures would likely allow "North American fertilizer companies... to benefit from the current market conditions and have a good financial year in 2022."[13]

1. **1298 commenters (87 percent) described price increases, e.g.: double, triple, or quadruple the price for fertilizer from 2021 – 2022.[14][15][16][17] Meanwhile, food prices "are up 8.8%"[18] during the same time period.**

    - One commenter said that in their 52 years farming, they had never seen such high fertilizer price increases, which included "Anhydrous Ammonia (NH3) cost $498.00 last year and has now jumped up to $1,680.00/Ton. My MAP fertilizer for the 2021 crop cost $565/Ton and this year the same fertilizer is costing me $1,135/Ton [2x] ... My urea nitrogen was $395/Ton last year and it has risen to $1,165.00/Ton this year [3x] … Potash last year cost me $399.00/Ton and it is now $940.00/Ton [2.4x] ... Anhydrous Ammonia (NH3) cost $498.00 last year and has now jumped up to $1,680.00/Ton [2.3x] … UAN-28 nitrogen last year cost $209.00/Ton and it has sky rocketed [sic] to $698.00/Ton [3x] …"[19]
    - **Farmer and commodity organizations presented supporting analyses**. North Dakota Farmers Union, for example, referenced DTN/Progressive Farmer analyses finding that various fertilizer products' prices ranged from 48 – 117 percent more expensive in March 2022 compared to 2021.[20]

[11] Reichert, Mark, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0326.
[12] National Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1349 (National Corn Growers Association referenced a commissioned study by Texas A&M that acknowledged that "there may be other factors at play in the case of rising fertilizer costs [including] COVID-induced supply chain disruptions chain disruptions." Given these factors, however, "It is safe to assume that highly concentrated industries are synonymous with the exercise of market power in which output prices are higher than marginal costs of production and are not representative of competitive equilibria."
[13] Illinois Farm Bureau, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0952 (Illinois Farm Bureau referenced an analysis by University of Ilinois stating that given the Ukraine-Russia conflict and COVID-19 disruptions and concentrated industry structure: "We... note North American fertilizer companies are likely to benefit from the current market conditions and have a good financial year in 2022").
[14] Austin, Byron, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0162 ("Cost has been double or tripled in some cases if available.").
[15] Buchanan, Michael, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0200 ("Fall 2021, I could have applied $700 per ton ammonia… I have locked in and paid for ammonia at $1524 per ton as of 30 days ago and have since learned the price is now $1700 per ton for spring application…").
[16] Henebry, Daniel, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0265 ("Dap [sic] and potash are basically 100% higher…").
[17] NCGA form letter comment describing the increase in fertilizer costs for monoammonium phosphate (MAP), urea, potash, and other products. https://www.regulations.gov/comment/AMS-AMS-22-0027-0657.
[18] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.
[19] Hadley, Roger, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0214 ("I farm in Northeast Indiana, in Allen County, and have been farming for over 52 years. I have never in my lifetime seen fertilizer prices increase as they have this year. AP fertilizer for the 2021 crop cost $565 00/Ton and this year the same fertilizer is costing me $1,135.00/Ton… My urea nitrogen was $395/Ton last year and it has risen to $1,165.00/Ton this year, which is nearly 2 times as high. Potash last year cost me $399.00/Ton and it is now $940.00/Ton, which makes it 2.36 times higher. Anhydrous Ammonia (NH3) cost $498.00 last year and has now jumped up to $1,680.00/Ton, that makes NH3 3.37 times higher than last planting season. UAN-28 nitrogen last year cost $209.00/Ton and it has sky rocketed to $698.00/Ton, which makes it 3.34 times higher…").
[20] North Dakota Farmers Union, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1429 (Commenter cited analysis from DTN/Progressive Farmer showing that some fertilizer prices were 48 – 117 percent more expensive: "Retail fertilizer prices have reached record highs in 2022 for nitrogen, phosphorus, and potassium. Prices were already considerably higher in 2021 compared to the previous year, and they have

- **Farm Action and other commenters pointed out an 8.8 percent increase in domestic food prices as farmers lose income; meanwhile, fertilizer corporations are reporting record-high profit margins,** e.g.: Nutrien's "gross manufacturing margin… [increased] 669% from 2020" while "cost of goods sold… increase[d] by 58%;" CF Industries' gross margin increased 298% in 2021 while "cost of sales only accounted for 125%." Explaining the association between fertilizer costs and food prices, Farm Action cited Farm Bureau analysis showing that fertilizer "accounts for approximately 15% of [farmers'] total cash costs of in the U.S." The commenter suggested that at $39.55 per acre, farmer income could decrease to $94,000, according to Texas A&M University; or down to $64,600, according to analysis from University of Illinois.[21]
- **Larger fertilizer manufacturers and lobbyist acknowledged "elevated prices" but asserted that "prices paid by American farmers are oftentimes the most competitive in the world."** The Fertilizer Institute further explained that cost increases arise primarily from "increased demand for fertilizer from farmers around the world", drought, energy spikes, natural gas, price of sulfur, and other costs, including increased fertilizer distribution costs.[22] CF Industries agreed, stating that "increase in wholesale prices for [nitrogen fertilizers] results from "three major market forces… Stronger demand… Unanticipated disruptions… Higher input costs." **CF Industries also noted that U.S. Gulf nitrogen prices decreased compared to spring peaks:** UAN prices decreased by 42 percent "since their spring peaks."[23] **Mosaic noted that higher prices for phosphates resulted from "higher input costs such as ammonia and sulfur",** which had increased by "500% and nearly 600% from 2020 – 2022.[24]

2. <u>925 Commenters (62 percent) described a link between increased prices and price-setting by manufacturers.</u>

- Commenters observed the fertilizer and grain price tracking, with one commenter saying that "The price of fertilizer today is set by the producers depending on what the price of corn and beans happens to be."[25] One commenter suggested that "Every time commodity prices increase, along comes suppliers to get more than their share."[26]
- **Corn growers associations cited supporting analyses, e.g.: Texas A&M stated that the fertilizer industry's primary explanation is "highly suspect"**, and calculated that natural gas accounts for only "15% of that increase."[27] Illinois Corn Growers Association cited a 2015 analysis by USDA economists that found that "natural gas and ammonia fertilizer prices were decoupled around the year 2008"; instead, ammonia fertilizer prices "became more highly correlated with the price of corn" thereafter.[28] The Illinois Farm Bureau cited University of Illinois economists who said that "retail fertilizer prices are highly related to corn

continued to rise in 2022. Compared to 2021 prices, as of late April 2022, 10-34-0 is 48% more expensive, MAP is 54% higher, DAP is 68% more expensive, UAN28 is 81% higher, UAN32 is 87% more expensive, urea is 99% higher, potash is 103% higher and anhydrous is 117% more expensive").

[21] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.

[22] The Fertilizer Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1472.

[23] CF Industries, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1482.

[24] The Mosaic Company, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1454.

[25] Dallas, David, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0490 (One of many comments pointing out fertilizer-grain price tracking).

[26] Young, Joe, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0923.

[27] National Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1349.

[28] Illinois Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1064.

prices" and suggested that companies' pricing decisions were influenced by "demand conditions and assessment of farmers' abilities to pay."[29]

- **Farm Action said that the fertilizer industry publicly admitted the existence of fertilizer-grain price trend,** citing the 2018 Yara Fertilizer Industry Handbook: "[v]ariations in grain prices (corn or wheat) explain approximately 50% of the variations in the urea price, making grain prices one of the most important factors driving fertilizer prices."[30]
- **Larger fertilizer companies acknowledged that fertilizer prices may be related to grain prices, but attributed higher fertilizer prices to increased farmer demand** responding to higher grain prices. The Fertilizer Institute stated that: "As farmers seek to increase production to capture additional revenue from high or increasing crop prices… this further raises the demand for fertilizer." The organization also wrote a rebuttal to corn growers'-cited Texas A&M analysis, and stated that the study "looked at one specific period of time related to natural gas input costs and fertilizer production… completely ignored the international nature of the fertilizer market."[31]

3. **1075 Commenters (72 percent) described an asymmetric fertilizer industry power dynamic where, for instance, they were held "hostage while we have no other options"[32] and "at the mercy of the large conglomerates"[33] that could cause "artificial product shortages" due to their "ownership of fertilizer resources"[34]**

    - **Commenters attributed price increases to a few unaccountable fertilizer manufacturers: "**Excessive price increase of fertilizer appears to be fueled by greed within the small group of fertilizer manufacturers"[35] which are "very large companies that need to feel oversight of the government."[36]

[29] Illinois Farm Bureau, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0952.
[30] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.
[31] The Fertilizer Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1472 (The Fertilizer Institute acknowledged that fertilizer prices typically track closely with grain markets, explaining that fertilizer prices increase due to farmer demand. The commenter also noted exception years, which included crop price increases "between 2002-2005 and 2012-2013 [while] fertilizer prices remained low in those years. The reverse happened in 2008-2009 and 2015-2016").
[32] Katschnig, Rock, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0206 ("Farmers being held hostage due to fertilizer price monopoly by 3 major players in market").
[33] Marten, Jason, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0579 (NCGA form letter commenter stating that "Competition in the fertilizer marketplace has became virtually nonexistent. With all the mergers and acquisitions we are at the mercy of the large conglomerates").
[34] Williams, Jay, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0743 (NCGA form letter commenter identified a "small group of fertilizer manufacturers" as the source for "excessive" price increases).
[35] Leiseth, Paul, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0846 (NCGA form letter commenter said that "Our country has allowed nearly a monopoly to occur in the ownership of fertilizer resources. The monopolistic behavior of companies such as Mosiac, Nutrien, and CFI virtually guarantees artificial product shortages and price gouging. Unless regulatory action takes place, this type of anti competitive market behavior will continue and will impact farmers and consumers alike").
[36] Nicholson, TADD, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1078 ("The number of fertilizer companies are so few that the word monopoly is not unfair. The US government has got to look into the market concentration to protect the integrity of the market, protect food security and protect farmers from being held hostage while we have no other options. Left unchecked the fertilizer industry will cause farmers to produce less food. These are very large companies that need to feel oversight of the government. Please investigate them because bo [sic] one else can").

- **Commenters described extensive control by manufacturers over retail, transport, or production markets such that it is "the same company [which] controls every step in the process;"[37]**
    - **Commenters pointed out how some manufacturers may have business lines as, for example, fertilizer seller and retailer buyer;** this gives them power to "force other [retailers dependent on the manufacturer's product] to buy at inflated prices."[38] Regarding fertilizer distribution, one commenter described how "large distributors" are "acquiring small manufacturers"; and "effectively lock[] up retail locations from being approached" by competitor manufacturers, by "eliminating competing products from [acquired manufacturers' catalog and consolidate to one product] and "forc[e downstream] retail locations to place large minimum orders." The commenter noted how this acquisition also often "destroys local manufacturer-retailer relationships."[39]
    - **Commenters described high concentration nationally,** e.g.:
        - For nitrogen fertilizer, CF Industries, Nutrien, Koch, and Yara-USA account[] for 75% market share,"[40] which is down from "46 firms making Nitrogen" in 1984. [41] American Soybean Association stated that in 2021, "CF Industries had a 38.8% share of domestic capacity in anhydrous ammonia, 50.2% share in urea ammonium nitrate (UAN) and 45.5% share in urea."[42]
        - For potash and phosphate, "The UShas [sic] only 2 major Potash suppliers… Nutrien & Mosaic."[43] Moreover, the two firms likely also control a high market share of imports: "with 93-96%" of U.S. potash imported, "83% of potash production comes from Canada's export cartel Canpotex, consisting of Nutrien and Mosaic."[44] Phosphate producers decreased in number from "11 phosphoric acid producers with 12 [million metric tons] of capacity" to "on four US phosphate producers with 7.5m mt of capacity" in 2021, with Mosaic controlling "60% of capacity."[45]
        - **Larger fertilizer manufacturers instead stated that "U.S. fertilizer industry is one of the most competitive and dynamic in the world."** In nitrogen markets, for instance, the number of additional companies and plants has increased: "We have seen four

[37] Nelson, Leslie, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0213 ("There are no independent dealers anymore. The same company controls every step in the process from producing the fertilizer to transporting it to the local dealer").
[38] Guinnip, Don, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0187 ("Monopoly exists. Dept of Justice asleep. Some companies vertices intigrated. [sic] Force others to buy at inflated prices").
[39] Rooted Leaf Agritech, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1378.
[40] Open Markets Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1411 (Commenter cited analyses showing the market share controlled by US fertilizer firms. For example, for potash, Mosaic controls a 40 percent market share and Nutrien 22 percent. For imports, which U.S. producers depend on to receive "93-96% coming from global producers": Canada's Canpotex, consisting of Nutrien of Mosaic, accounts for 83% of non-domestic potash).
[41] Verbeck, Dennis, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0056 (ILFB form letter commenter described the number of manufacturers of each major nutrient).
[42] American Soybean Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1392 ("Our concern is the continuing decline of competition in the domestic market and the opportunity for monopoly or oligopoly rents this lack of competition presents").
[43] Verbeck, Dennis, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0056.
[44] Open Markets Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1411.
[45] Novaphos Inc., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1256.

additional companies and 13 additional plants open in the U.S. since industry lows in 2008 and 2010, at a time of record high natural gas prices." Additionally, the U.S. is "one of only 3 nations with 20 or more unique companies that produce fertilizer."[46]

- **Commenters pointed out high local/regional geographic control by manufacturers and/or retailers**, which may own "all the river terminals" and make it "nearly impossible for any independent retailers to get started"; moreover, they may "buy out any remaining small retailers, furthering consolidation.[47]
    - **One commenter pointed out the presence of regional monopolies in the West and Northeast:** "Both the Western and Northeastern states have little to no local ammonia production and are dependent on imports by rail or ship. The local farmers in those regions are dependent solely on the most nearby ammonia producer or importer, who is essentially operating as a local monopoly."[48]
    - **Commenters pointed out how increasingly larger suppliers, including cooperatives, that are often their only option,[49] may be favoring larger farmers:** For instance: "Increasingly the larger member owners of cooperatives Gain more favorable terms than smaller farmers somewhat negating original intent of coops"; in contrast, in the past, "the coop insured [sic] supply at reasonably stable prices."[50]
- **Commenters documented a history of consolidation within and across business lines; and/or through business arrangements:** "In 2013, Mosaic purchased CF Industries' phosphate business." "Nutrien [merger between PotashCorp and Agrium, a major North American retailer] has vertically integrated into the retail market", and operates "more than 2,000 retail locations, through which it markets fertilizer, seeds, and other crop inputs."[51] Open Markets Institute commented on one "exclusive arrangement": "CHS, a U.S. farm cooperative that strikes deals with major potash players to store inventory in their extensive network of houses."[52]
- **Commenters, including National Corn Growers Association, described how retailers "are reluctant to complain about treatment they receive from large fertilizer manufacturers for fear of reprisal,"[53] e.g.: threaten supply allocation.** While one commenter noted that supply allocation may

[46] The Fertilizer Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1472.

[47] Vos, Jason, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0179 ("There are only 2-3 local retailers to get prices from. They own all the river terminals locally and have access to other sources, making it nearly impossible for any independent retailers to get started. They also buy out any remaining small retailers, furthering consolidation").

[48] GTI Energy, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367.

[49] Ehlers, Matt, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0114 ("Small to mid size growers are at the mercy of the coops on availability and pricing. Most growers only have access to one supplier - the local coop").

[50] Frye, Jay, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0276 ("Supply cooperatives were formed to make availability of needed inputs more stable. Increasingly the larger member owners of cooperatives Gain more favorable terms than smaller farmers somewhat negating original intent of coops").

[51] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.

[52] Open Markets Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1411.

[53] National Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1349 ("Our organization is not set up to gather or compile legal evidence but we have anecdotally heard repeatedly over the last two years that retailers are reluctant to publicly complain about treatment they receive from large fertilizer manufacturers for fear of reprisal").

be based on retailers' purchase history,[54] other commenters noted that the practice may "give additional market power to producers," who own "most of [ammonia] storage"; and thereby enjoy "sole discretion" over retailers' supply, which "tends to suppress pushback from customers."[55]

- Commenters across the fertilizer industry and farm groups described their concerns with the power of rail firms, in which "Today, four railroads haul more than 90 percent of all rail freight… Further, six of the seven Class I U.S. freight railroads (the largest carriers) have implemented a form of the so-called precision-scheduled railroad operating model, which at its core involves dramatic reductions in operating expenditures… Many [manufacturing and retail] facilities are captive to a single railroad…"[56][57][58] The Fertilizer Institute pointed out how "more than half of all fertilizer moves by rail" with rail rates to ship anhydrous ammonia increasing 206 percent in the past 20 years. The commenter cited an incident in which "one fertilizer shipper was facing $800,000 in additional freight costs because of poor service on just one rail carrier" and recommended "ongoing scrutiny and oversight of rail operations and service… to enhance rail service and competition."[59]

4. Commenters described restrictive contractual practices or other conduct from fertilizer manufacturers

- **Commenters described instances of not receiving contracted delivery, likely due to manufacturers or retailers canceling contracts.** Commenters described suppliers "magically" making available fertilizer products when prices "doubled or more"; using "their privilege of forced mejure [sic]" to break original contracts;"[60] and farmers or retailers needing to "recontact at higher prices."[61]
- **Commenters also mentioned the use of requirements "to purchase fertilizer through a particular vendor as part of an agronomic services packages"** while denying third-party manufacturers;[62] **"bundle products**

[54] Newtrient LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1414 ("The biggest change [in fertilizer availability] has been the allocation of fertilizer to only the amount used last year").
[55] Wabash Valley Resources LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1357 (One commenter described how producers own most of ammonia storage, with "very little owned by wholesalers/retailers and little to none by the farmers." The commenter describes how producer-level ownership of storage "gives producers… increased control" and ability to allocate volume).
[56] National Council of Farmer Cooperatives, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1427 (National Council of Farmer Cooperatives (NCFC) described the consolidation and exercise of market power by U.S. rail firms).
[57] Yara North America, Inc., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1478 (Agreeing with NCFC, Yara North America, Inc. stated that "one of the larger impediments to reliable supply availability is domestic rail service as the consolidation of this industry has precipitated lower service capacity, higher costs, and increased unreliability").
[58] Agricultural Retailers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1481 (Agreeing with other commenters on their concerns with rail consolidation, Agricultural Retailers Association cited a study by Rail Customer Coalition that found that "Revenue from non-competitive rates increased 230%, while revenue from competitive rates increased only 24%" and "Real rates… increased 43% while… expenses increased only 8.1%" over the last 15 years).
[59] The Fertilizer Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1472.
[60] VanWatermeulen, Steven, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0407 (ILFB form letter commenter described how two vendors seemed to have made product available after cost doubled; and declared force majeure to break the initial lower-priced contract).
[61] Schirding, Harry, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0250 (ILFB form letter commenter described how suppliers (that contract with farmers) are "affected by Forc Majure [sic] on products they had secured under contract and had to recontact at higher prices" from manufacturers).
[62] Rooted Leaf Agritech, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1378 (Commenter detailed distributor consolidation in which "large agricultural supply distributors control both sides of very important segments of the market for fertilizers and processed food

that lock you in 100% in their line of products;" new **pre-pay requirements; and "reduced price" for some farmers.**[63]

- **National Corn Growers Association and other commenters described how "consolidation empowers certain companies" to "avail themselves of Antidumping and Countervailing Duties (AD/CVD)."** American Soybean Association (ASA) further described the incident in which "Mosaic [63 percent market share of domestic MAP and DAP] successfully petitioned the International Trade Commission to impose countervailing duties (CVDs) on Moroccan and Russian phosphate imports due to alleged unfair subsidization." As a result, "the new largest international supplier of MAP and DAP to the U.S. [became] Saudi Arabia" (32 percent share). Notably, "Mosaic has a 25% interest" in a Saudi joint venture.[64]
  - **Explaining its successful petition, Mosaic said that they were not the unilateral authority:** rather, the duties were the result of "affirmative rulings in March 2021 by both the U.S. International Trade Commission (ITC) and the U.S. Department of Commerce." Mosaic provided additional rationale, citing "injurious impact that unfairly traded imports have on U.S. industry and workers" and "in the best interest of U.S. farmers long term, due to a more diversified import supply base." Additionally, Mosaic said that imports increased in 2021 "by 1.7 million metric tonnes or 73% compared to 2020."[65]
- **Commenters documented a pattern of fertilizer manufacturers restricting supply:** For instance, "Large companies that sell fertilizer are buying out all the small companies… buy their locations, close up the location after acquiring it, and even remove it completely by demolition."[66]
  - **The Open Markets Institute cited news stories documenting capacity reductions:** "After the merger [between Agrium and PotashCorp in 2018], Nutrien "reduced capacity at its production facilities, shutting down mines at Allan, Lanigan, and Vanscoy and temporarily laying off 750 workers;" in 2014, after Mosaic acquired rival CF Industries' phosphate business, it canceled plans for a $1.1 billion Louisiana plant and a $1 billion phosphate processing plant in Florida.[67]
  - **Illinois Corn Growers Association described "bait-and-switch" behavior to dissuade new entry,** and cited analysis attributing signaling behavior, i.e.: announcements to increase expansions without

items"; and contractually bind farmers to buying an agronomic services package from a particular vendor. We did not find many other comments mentioning the use of agronomic services packages).

[63] Fox, Jon, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0660 ("I don't like these bundle products that lock you in a 100% in their line of products just so you can get a reasonable price for fertilizer or other products and have to pay ahead way before the actual growing season that you would be using it. As a small beginning farmer I also feel I am at a disadvantage on price for inputs because I am given one price and the more established farmer is given a reduced price because he buys more volume of the same product").

[64] American Soybean Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1392.

[65] The Mosaic Company, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1454 ("We reiterated that the subsequent CVD orders are not something over which Mosaic has unilateral authority. The duty orders on phosphate imports from Morocco and Russia were the result of affirmative rulings in March 2021 by both the U.S. International Trade Commission (ITC) and the U.S. Department of Commerce (Commerce). Further, those rulings were the outcome of thorough investigations pursuant to long-established U.S. laws designed to remedy the injurious impact that unfairly traded imports have on U.S. industry and workers").

[66] Brinkman, Dustin, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0082 ("I do not believe the fertilizer market is sufficiently competitive at all. Most large companies that sell fertilizer are buying out all the small companies. They buy their locations, close up the location after acquiring it, and even remove it completely by demolition. This makes less competition overall and makes the big players in the game able to control the price themselves. My area for example has one single company that we can buy fertilizer directly from. All competition was bought by them and shut down. Now we pay the price they give us because we have to").

[67] Open Markets Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1411.

actually expanding, to dominant manufacturers acting on "an incentive to limit entry and expansion domestically."[68]

- **Farm Action cited company statements suggesting that fertilizer manufacturers are confident that they – not market forces – control supply:** "Fertilizer companies have also attributed these rising [input] prices to global shortages, yet… Yara's 2021 third quarter report explicitly states that this has had "[l]imited impact on finished fertilizer production". Similarly, Nutrien "curtailed production" in 2020 and in 2021, "increased our production by nearly 1 million tonnes [of potash], which "represented a small portion of our low-cost available production capacity."[69]
- **Larger fertilizer companies explained that declining domestic capacity resulted from challenges domestically and from global competition.** CF Industries said that declines in capacity in the 1990s/2000s resulted from: "long stretches of unprofitability," high domestic gas prices, global competitors "advantaged by foreign government subsidies and investments by foreign state-owned or state-controlled companies", and a "domestic nitrogen industry that was primarily cooperative owned… with some facilities underinvested in lean times."[70] Yara North America said that transportation systems and labor regulations are "limiting factors" to adequate supply.[71]
- **Larger fertilizer companies said that they made best efforts to meet domestic demand; and recommended that the Federal Government address permitting, transportation, energy, environmental, and international trade issues:** For instance, CF Industries "invested more than $5 billion to expand ammonia, urea, and UAN capacity" and "approximately $5 billion in maintenance capex."[72] The Mosaic Company also "plans to bring an additional 1.5 million metric tonnes of finished phosphate and potash products… to the global market."[73]

- **Commenters described how incumbents made it impossible, especially for competitors with new technologies, to break into the industry.**
  - **One commenter described how fertilizer manufacturers [dependent on Haber-Bosch synthesis] may exercise market power to "set prices below production costs in order to drive out the new competition [green ammonia competitor]**."
  - **The commenter suggested that fertilizer companies with market power may also directly or indirectly stifle new technology research**, either because adopting the new technology is not economically advantageous; or because "while ammonia technology licensors and ammonia producers are interested in new technology options, they are averse to funding early and mid-stage development."[74]

[68] Illinois Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1064j (Illinois Corn Growers Association cited a 2020 analysis by Bekkerman and Brester examining why plans about 31 new or expanded plants realized only 13 projects with less than half capacity added from 2013 – 2018. Because "domestic firms with large market shares have an incentive to limit entry and expansion domestically," signals may cause competitors to reconsider market activities).
[69] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.
[70] CF Industries, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1482.
[71] Yara North America, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0082 ("Port facilities are subject to significant restriction by labor disruptions. New regulations on drivers… which changes the contractual obligation of independent operators from contractors to employee status with their contracting companies, will result in fewer available personnel and will further restrict truck freight availability to deliver fertilizer products in key areas").
[72] CF Industries, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1482.
[73] The Mosaic Company, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1454.
[74] GTI Energy, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367 (GTI Energy commented on fertilizer companies with market power pricing out competitors or directly or indirectly stifling new technology research).

- **Commenters described manufacturers' and/or suppliers' restrictive practices on competitor retailers.**
  - **One commenter, an ag retailer, stated that with two suppliers only, they are resigned to increasingly difficult terms, including pre-payment which stretches their credit limit; and very short buying window** ("buy opportunity… only open for an afternoon" and uncertainty thereafter)."[75]
  - **Farm Action described how manufacturers and/or suppliers "like Nutrien"** can both **"offer below-market prices"** to **"take short term losses"** and **price out competitors;** and an incident where suppliers **reduced an independent retailer's credit terms** to an "inoperable ten [days]".[76] Another commenter agreed, saying that fertilizer manufacturers can use advantages: "large balance sheets", ability to "credibly threaten to expand", "network of plants and terminals", and the "ability to optimize sales" – to "steer price differences", i.e.: target and price out competitors.[77]
  - **Larger fertilizer manufacturers emphasized that they do not interact directly with farmers**. CF Industries and The Mosaic Company stated that they "do[] not bundle our products with services to farmers. Agricultural retailers sell products and services to their farmer customers."[78][79]

5. <u>809 Commenters (54 percent) described</u> <u>economic and environmental effects</u>

- **Commenters described how high fertilizer and input costs:**
  - **Bankrupted farmers: "**We can't begin to tell you how rough things are at the farm level on the fertilizer and input levels costs are up to a point of no return." "We have already seen some bankruptcy issues in our area in operations that completely surprise me. I want our family farm to carry through to the next generation my oldest son and one of my nephews plan to carry our farm forward." [80]

[75] Weiss, Jennifer, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0670 (NCGA form letter commenter, a retailer, described how they have a "choice of two suppliers" and are "concerned at the amount of money I will need to purchase fertilizer to sell to my growers. My credit line is not large enough to purchase my grower's needs and will have to pay for all of it in advance of pulling it from terminals. My buy opportunity for a portion of my needs is usually only open for an afternoon and then you don t know when the next opportunity will be").

[76] Farm Action, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1407.

[77] Atlas Agro, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0944 ("The incumbent producers have large balance sheets and are able to credibly threaten to expand capacity, which will reduce market prices for everyone all else equal. The incumbents further have a network of plants and terminals and the ability to optimize sales across the continent and into exports. These networks combined with high costs of logistics mean incumbents can steer price differences in different micro-markets, for example selling more and depressing prices near a new-built plant whilst reaping higher prices further away from the plant").

[78] CF Industries, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1482.

[79] The Mosaic Company, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1454.

[80] Monds, William, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1303.

- **Prevented many types of farmers, including small and beginning farmers, from continuing to operate:** "Fertilizer producers can artificially run up the price of fertilizer… lead[ing] to smaller farmers not being able to compete… and prevents new farms from starting up."[8182]
- **Forced farmers to switch from corn to soybean production; and/or "caused some to consider planting a different crop** than they had originally intended."[8384] Colorado and New York Farm Bureaus cited the 2022 USDA March Prospective Plantings report that estimated a 4.4 increase in soybean acres planned and 4.1 decrease in corn acres planned, following the surge in fertilizer prices.[85]

- **Commenters noted that fertilizer manufacturer consolidation corresponded with:**
  - **Decreased availability of other fertilizer options, e.g.: superphosphate:** Illinois Corn Growers Association commented that availability of superphosphate fertilizers decreased from 98 percent of fertilizer purchases in 1960 to 9 percent in 2015. The commenter said that farmers "in Illinois do not want or need the N fertilizer present in MAP and DAP [mono and diammonium phosphate]" and have "asked for alternatives to non-ammoniated P fertilizers [e.g.: superphosphates]." The commenter pointed out that MAP and DAP easily lose the nitrogen component in water, which have contributed to "drinking water contamination… eutrophication of the Gulf of Mexico."[86] Another commenter said that other nutrients decreased in availability: "Over the years, it has become increasingly difficult to obtain high quality products that continue nutrients other than N-P-K, such as any secondary or micronutrients."[87]
  - **Delayed and/or degraded quality of service to farmers that depend on their products:** Commenters described how, for example, despite "numerous acquisitions of the facilities that manufacture the types of products we would like to purchase," "each time these facilities are purchased it results in long delays and changes in overall availability." Moreover, "One fertilizer

[81] Hanke, Lucas, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0234 (Commenter said that fertilizer market consolidation led to a host of harms, including price gouging, disadvantaging small farmers, and preventing new farm entrants: "The current market consolidation leads to farmers and other end users of fertilizer to have a harder time making money since fertilizer producers can artificially run up the price of fertilizer. This also leads to smaller farmers not being able to compete and causes consolidation in farming as well and prevents new farms from starting up").

[82] Sterzinger, Wendy, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1231 (Commenter described fertilizer cost impacts on them as a small farmer: "I am a small farmer, only 400 tillage acres. I do I do everything I can to lower fertilizer costs. However even with good commodity prices our bottom-line remains marginal when fertilizer, tires and chemical cost have increased over 300-600%. Hard work and marketing plans are not enough to overcome these crazy cost increases". "Fertilizer prices are killing the young farmers that I am trying to work with to take over my farm operation. Starting farmers are really hurting").

[83] Reinhardt, Josh, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0287 ("The shortage and movement of fertilizer have made prices almost unattainable and has caused some to consider planting a different crop than they had originally intended").

[84] Johnson, Joyce, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0127 ("Prices keep climbing. Farmers are going to plant more soybeans instead of corn because of these prices").

[85] New York Farm Bureau, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1338 ("The impact of high fertilizer prices is evident in the 2022 March Prospective Plantings report. U.S. farmers indicated they intend to plant 91 million acres of soybeans, which is an increase of 4.4% compared to 2021 after a 4.6% increase from 2020 to 2021. They also indicated they intend to plant 89.5 million acres of corn, a decrease of 4.1% compared to 2021. This indicates an implied shift that U.S. farmers are pulling back corn acres and planting them into soybeans, a direct impact of the high cost of fertilizer1 and the increased cost of other inputs").

[86] Illinois Corn Growers Association said that farmers are concerned about availability overall and about the lack of availability of non-ammoniated phosphatic fertilizers.[28]

[87] Blue Grass Enterprises, Inc. , Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0018 (Commenter described how in their experience, consolidation of plants has actually led to delays and changes in availability. One plant that sources one of "the only places left" for hot blended fertilizer, "has not been updated in production machinery since the 70s").

contact told me that their plant… has not been updated in production machinery since the 70s, but they are one of the few places left where we can get hot blended fertilizer for the lawn care industry."[88] Regarding services received, one commenter said that "The level of service we receive from these bigger 3 companies is a lot worse than what we used to receive when there were more companies to choose from."[89]

- **Restricted geographic availability:** National Corn Growers Association noted that "CF Industries "does not supply the East and West Coast region because it is "expensive to transport UAN by rail from the Midwest to the coastal regions." Because of this and CF's existing control of "42% of U.S. ammonia production" and "gross margin increase of 530 percent," NCGA filed an amicus brief to appeal ITC's decision on CF Industries' (42 percent of U.S. ammonia production) 2022 petition to restrict nitrogen imports from Trinidad and Tobago.[90]

- **Commenters described concerns with fertilizer production, runoff, or emissions contaminating their communities, e.g.:**
  - **Retailers' or manufacturers' marketing practices indirectly facilitated increased fertilizer runoff:** "Quite a few dealers were pushing fall application of AA in places where it was a poor management practice… Also saw quite a bit dry spread on frozen ground, followed by big rain… Farmers told they need to get it on while available..." [91] Regarding specific marketing practices, fall ammonia was "$700 per ton", which would have led to "totally disregarded Illinois agronomy recommendations", while spring application (recommended time by agronomists) was "$1524 per ton."[92]
  - **Center for Biological Diversity commented on the health harms posed by fertilizer production and waste; and air pathway cancer risk for nearby residents:** Mosaic's Riverview facility south of Tampa sits "adjacent to the historically Black community of Old Progress Village;" "Mosaic Fertilizer's Uncle Sam facility is located in an infamous 85-mile stretch of industrial area in southern Louisiana containing 150 facilities, known as Cancer Alley"; and "elevated levels of heavy metal in monitoring wells in the deep confined aquifer at the Simplot plant" (near Shoshone-Bannock tribal lands)."[93]

[88] Blue Grass Enterprises, Inc. , Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0018.

[89] Williams, Ryan, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0135 ("As more companies are bought by the big industry conglomerates, there is less competition to keep prices in check. In my area, I was not able to get anhydrous ammonia prices even though I was willing to prepay ahead of time. Also, the level of service we receive from these bigger companies is a lot worse than what we used to receive when their [sic] was more companies to choose from").

[90] National Corn Growers Association, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1349.

[91] Guinnip, Don, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0187 ("Quite a few dealers were pushing fall application of AA in places where it was a poor management practice - leaching & denitrification because of price and supply concerns. Also saw quite a bit dry spread on frozen ground, followed by big rain. Farmers told they need to get it on while available. More ba[d] advice").

[92] Buchanan, Michael, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0200 ("I live in an area where fall applied ammonia is strongly discouraged because of soil characteristics. Fall 2021, I could have applied $700 per ton ammonia and totally disregarded Illinois agronomy recommendations. Instead, I have locked in and paid for ammonia at $1524 per ton as of 30 days ago and have since learned the price is now $1700 per ton for spring application").

[93] Center for Biological Diversity, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1471 (CBD wrote its comment signed by "People for Protecting Peace River, Tampa Bay Waterkeeper, Portneuf Resource Council, Suncoast Waterkeeper, ManaSota-88, Our Santa Fe River, Healthy Gulf, California Communities Against Toxics, and their thousands of members and supporters in regions negatively impacted by synthetic fertilizer production, use, and waste disposal", and focused some comments specifically on contamination from phosphoric acid production).

- **Carbon dioxide emitted from ammonia production (**"3 tons of CO_2 eq. per ton of N fixed") **post-application** ("approximately 6 tons of CO_2 eq. per ton of N applied"), [94] **and transport-related emissions**[95]**; and nitrogen leakage** ("efficiency of nitrogen is appallingly low at 30-50%") **in the form of nitrous oxide,** which is "273X more potent than CO_2 as a [greenhouse gas]" **and nitrate leached into groundwater.** [96]
- **Incentive for a powerful fertilizer industry to push farmers toward increased fertilizer use and discourage them from choosing other options.** For instance, National Sustainable Agriculture Coalition commented that fertilizer companies recommend "higher rates than [Land Grant University] Extension, promoting it as cheap insurance to guarantee maximum yields." This may "dissuade farmers from pursuing better nutrient budgeting that lead to lower application rates, and seeking alternative sources of fertility."[97] One commenter, Myno Carbon, said that the fertilizer industry's Nutrient Stewardship framework in which "fertilizer distributors also serve as crop input consultants" results in "perverse incentive," i.e.: that these consultants had a conflict of interest to recommend their own firm's product.[98]
- **Larger fertilizer manufacturers defended their commitment to environmental stewardship, in particular emphasizing their investments in decarbonized ammonia; and recommending that the USDA take steps to assist farmers "reduce field-level greenhouse gas emissions":** For instance, CF Industries announced "$385 million in investments in largescale carbon capture and sequestration projects" and "one of North America's largest and first green ammonia production facilities at our Donaldsonville, Louisiana complex."[99]
    - **The Fertilizer Institute, The Mosaic Company, J.R. Simplot, among others endorsed USDA adoption of 4R Nutrient Stewardship practices**: "As an example, the Conservation Security Program ("CSP") could allow a certified crop advisor ("CCA") plan as documentation for producers implementing certain enhanced conservation activities… USDA should overhaul the TSP program to allow CCAs to write 590 nutrient management plans with the ability for agricultural retailers to directly pay farmers for 4R nutrient stewardship practice implementation."[100]

6. <u>Commenters recommended key areas of need for USDA's Fertilizer Production Expansion Program or future programs</u>

[94] Pivot Bio, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1464 (Pivot Bio stated that conventional Haber-Bosch ammonia synthesis generates high amounts of carbon dioxide for each volume of nitrogen fertilizer produced).
[95] National Sustainable Agriculture Coalition, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022, https://www.regulations.gov/comment/AMS-AMS-22-0027-1489 (National Sustainable Agriculture Coalition cited an IPCC report stating that agriculture contributes 81 percent of nitrous oxide emissions).
[96] Phinite, Inc, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1359 (Phinite, Inc. explained some of the ways that nitrogen fertilizer loses nitrogen to nitrates and nitrous oxide).
[97] National Sustainable Agriculture Coalition, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1489 (National Sustainable Agriculture Coalition commented on market power by large fertilizer suppliers locking farmers into certain modes of production that incentivized overapplication, to the possible detriment of soil health).
[98] Myno Carbon Corporation, , Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1441 (Myno Carbon (WA), recommended adopting a more neutral (without conflict of interest) fertilizer recommendation education system than the current 4R (Right time, right rate, right source, right place) Nutrient Stewardship framework advocated for by industry. Under the current 4R framework, "fertilizer distributors also serve as crop input consultants, resulting in a perverse incentive").
[99] CF Industries, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1482.
[100] The Fertilizer Institute, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1472.

- **Commenters recommended implementation of fertilizer production activities**, including producing fertilizer, fertilizer alternatives, or fertilizer supplements directly, including through use of innovative processes. Final products could include processed manure, compost, other waste type product including digestor-derived biogas or biosolids;[101][102][103][104] and/or fertilizer supplements or soil conditioners to improve fertilizer uptake, e.g.: humic amendments, microbes, biochar, minerals, and sea product. [105][106][107]
- **Commenters recommended that USDA increase capacity for fertilizer activities**, including funding for:
    - Construction of regional or on-farm fertilizer storage facilities.[108]

[101] Sharara, Mahmoud¸ Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1461 ("Recent fertilizer price hikes and supply disruptions demonstrate significant vulnerabilities in the US food system that justify this investment initiative. A unique opportunity to overcome this challenge is by supporting the recycling of otherwise undervalued animal manures and byproducts into standardized fertilizer formats (e.g., prills, liquid, crystals). Several regions across the US have concentrated animal production without a sufficient infrastructure to utilize the manure nutrients to their full value or to distribute them to where they are greatly needed").

[102] Sharara, Mahmoud¸ Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1361 ("Our process utilizes AD to maximize the nutrient removal from animal manure. This is particularly important in regions such as the Delmarva peninsula where chicken manure cannot be used as a fertilizer without prior treatment due to the impact of nutrient runoff on the associated watershed…. Additional federal incentives for small farmers to install systems on their farms which utilize organic waste streams to generate commodities will go a long way to supporting their independence from fertilizer conglomerates. This funding opportunity should permit funds to be used for such systems that generate on-site fertilizer even if they utilize anaerobic digestion, because the benefits to the environment and the farmer far outweigh any initial cost").

[103] While several commenters voiced interest in funding for waste-type treatment, e.g.: biosolids and anaerobic digesters/biogas (methane), other commenters criticized features of these waste-type treatments. Critics stated that anaerobic digestors didn't work and further tied farmers and towns to large-scale livestock production that would worsen environmental pollution.

[104] American Infrastructure Holdings LLC., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0006 ("Development of demand for biosolids-based fertilizers comprised either entirely or largely from organic American sources will displace the use of imported chemical fertilizers ton for ton. Moreover, our dried, granulated, enhanced efficiency, slow release fertilizers optimize plant yield, minimize runoff of nutrients, and completely eliminate fugitive emissions of greenhouse gasses from common land-application of wet sludges").

[105] Fernandes, Alisson, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1119 ("It is highly feasible and scientifically proven to include microorganisms, humic substances, microalgae, enzymes and mineral rocks in organic matrices for the production of enriched organic fertilizers capable of partially replacing mineral fertilizers. This technology can be deployed on US farms and industries with great potential to reduce dependence on imported chemical mineral fertilizers").

[106] Myno Carbon Corporation, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1441 ("Adding organic amendments such as biochar to increase soil nutrient holding capacity and increase nutrient use efficiency. While biochar itself does not contain significant amounts of nutrients, it increases soil nutrient holding and plant nutrient use efficiency, so it can be used to reduce overall fertilizer input requirements").

[107] Ocean Extracts LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1469 ("Adding organic amendments such as biochar to increase soil nutrient holding capacity and increase nutrient use efficiency. While biochar itself does not contain significant amounts of nutrients, it increases soil nutrient holding and plant nutrient use efficiency, so it can be used to reduce overall fertilizer input requirements").

[108] Agtegra Cooperative and South Dakota Corn Utilization Council, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1490 (One commenter, Agtegra Cooperative, stated that funding storage capacity would buffer price volatility. "If Agtegra had access to additional financial resources to increase its storage capabilities, Agtegra could increase its ability to transport more fertilizer to South Dakota when the fertilizer market is less volatile and when transportation costs are less expensive. Agtegra has also seen an increase in demand for its fertilizer processing business. Its fertilizer processing facility, Prescription Agronomics, has seen a five-fold increase in sales since the business started in 2017. An increase in investment in fertilizer processing facilities in remote areas could also assist in decreasing the volatility in the fertilizer market and provide farmers with access to additional fertilizer products").

- Improved application efficiency,[109] specifically through increased research, available equipment, analytical tools, and training.[110]
- Conservation assistance to incentivize uptake of more environmentally friendly fertilizer. Additionally, to provide analytical and educational support, e.g.: NRCS or University Cooperative Extension Service to advise on management practices; equipment; or data tools; and assist in developing regional production and/or distribution systems.[111][112]
- **Research that aims to discover, trial, and improve new fertilizer production processes,** specifically those related to green ammonia methods or phosphorus extraction; piloting and evaluating promising models, especially near-farm distributed-production models, to bridge the "valley of death" from research to implementation; side-by-side economic or environmental studies to evaluate cost feasibility

[109] American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1486 ("Research is needed now to find new ways to optimize the use efficiency of the nutrients that all plants require").
[110] Green Play Ammonia/Exactrix, LLC., , Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1370 ("Yes, but not all fertilizer applicator tools can apply with uniformity at 1% CV, deep in the soil without tillage. Exactrix applicators are extremely effective at reducing fertilizer application rates and they positively impact yields. Deep no-tillage application allows carbon storage, nitrous oxide, methane, and other greenhouse gas emissions").
[111] Creative AG Products Inc., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-0021 ("There is a shortage of agronomists who understand these practices and can advise farmers on transitioning away from input-intensive practices. The USDA could help by requiring USDA/state research stations and extension farm advisors to learn these practices").
[112] RMI Energy, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1365 ("USDA can also look to support buyers through CO-OPS and support de-risking of local production sites as a means to supporting the development of these production facilities").

or improve environmental impact of new methods; and improved nutrient delivery efficiency.[113][114][115][116][117][118][119][120]

[113] Cleaned and Green LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1390 ("The USDA could help tremendously by looking for ways to help small start-ups implement novel technologies that can compete effectively on a regional basis. These technologies could be enhanced efficiency macro nutrients, new micronutrient products, or ag biologicals that supplement and improve the efficiency of traditional fertilizer programs").
[114] Anonymous commenter, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1467 ("In Nevada (my state) several lithium clay deposits are being developed. At least one of these mines contains 3-4% potassium in the ore and is extracted along with the lithium with the sulfuric acid extraction. Assuming 50% recovery and 3% potassium in the ore, we estimate that 120,000 tons of potassium (144,000 tons of K2O) could be produced from the 8-10 millions tons proposed to be processed each year. At present, the proposed lithium extraction will use large amounts of sodium hydroxide for pH adjustment, and if that could be reduced by electrolysis of the potassium/sodium extract to produce the corresponding potassium/sodium base solution, this modification could improve the efficiency of potassium sulfate recovery. However, this would require modification of the lithium recovery process and requires additional research to make sure that these changes are possible and cost effective").
[115] Anonymous commenter, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1360 ("One key area of concern with this concept is the availability of electrolyzer manufacturing capacity. This also needs to be addressed in order to quickly ramp up green ammonia (nitrogen fertilizer) production").
[116] GTI Energy, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1367 ("The biggest obstacle toward new technology adoption in ammonia plants is the necessary de-risking at the pilot and demonstration scale and there is not a current government funding course focused on advancing fertilizer production technologies. For example, GTI Energy has several novel innovative technologies related to ammonia production or precursor hydrogen production at various precommercial technology readiness levels, and as GTI Energy is a non-profit, GTI is dependent on outside funding sources to advance these technologies. These technologies include hydrogen production through partial oxidation of natural gas followed by carbon capture, hydrogen generation by sorbent enhanced reforming with integrated carbon capture, hydrogen generation by biomass gasification at pressure, sorbent-enhanced Haber-Bosch ammonia synthesis, and electron beam powered ammonia synthesis reactors").
[117] Department of Energy NETL, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1470 ("Placing the ammonia production closer to the end user gives access and affordability to the farmers while demonstrating a new path to market for larger ammonia producers. Further stages of commercialization would include efforts to scale the technology to a 1+ ton/day benchmark, as to service subsequent customers seeking alternatives to HB NH3. Access to and affordability of fertilizer and environmental health would be highly increased for those in farms in the Midwest with renewable energy or NG on their land, or access to a privatized, local ammonia generation co-op or station. Government support between laboratory-developed technology and commercialization is a key area to getting beyond the valley of death and increasing industrial engagement for newer technologies").
[118] Newtrient LLC, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1414 ("In principle, manure could be spread on far more cropland, mitigating the risks that arise from excessive concentrations of manure and replacing high-priced commercial fertilizers. But there are several barriers to wider use. In the decade since this report many of the technical barriers to more widespread use have been overcome, and what remains is the need for the economics of renewable nutrient fertilizers to come into line with the price of commercial fertilizer sources").
[119] Easy Energy Systems, Inc., Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1468 ("We must make these new technologies easier to access for those who would see the greatest impact, local farmers and coops. This could be done in multiple ways including a combination of grant funding for equipment, and then also grant funds to subsidize the training and adaptation by individual regional farmers. Farmers by their nature are very questioning of "new" products. Thus, grants should be defined so as at least 50% of the grant funds awarded for each project would be allocated for subsidizing farmers utilization of regenerative ag products. It is suggested that this grant would pay for 50% of each gallon of microbe or regenerative ag product consumed by the farmers. It is suggested that this be done in return for at least 1 yield test…which would be done by grant applicant… for each different farmer. This will create substantial amounts of data to validate technology. Also, funds should be allocated for training regional farmers on the benefits of the regenerative ag technologies").
[120] National Farmers Union, Comments on Access to Fertilizer: Competition and Supply Chain Concerns, (Jun. 2022), https://www.regulations.gov/comment/AMS-AMS-22-0027-1437 ("Consideration should be given to incentivizing and assisting

farmers in transitioning to production systems that are less reliant on synthetic and foreign-produced fertilizer and facilitating widespread adoption of precision agriculture technology by ensuring that such technology is more affordable and widely available").