

Regional analysis

Agrochemicals

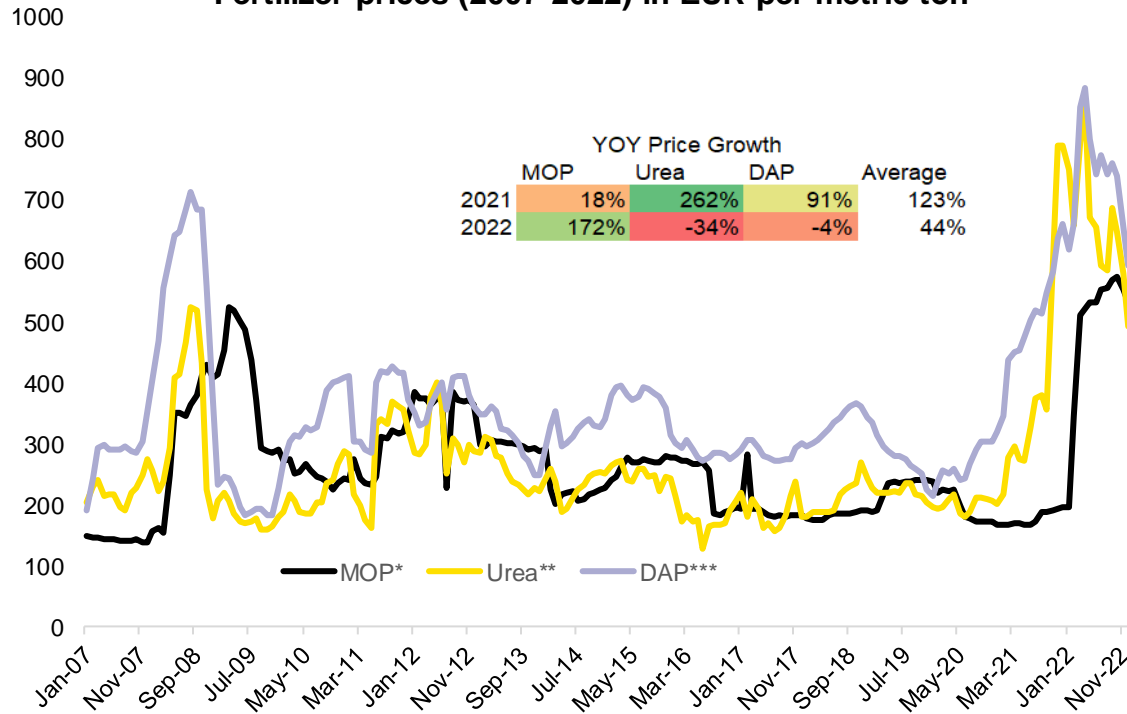
**Agrochemicals – another factor behind
more expensive groceries**

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Fertilizer prices have eased from their early 2022 peaks, but they remain at historically high levels. The current price plateau reflects weak underlying demand as farmers cut back fertilizer use due to affordability and availability issues. As such, we are taking a deeper insight into functioning of agrochemical industry and its drivers in Adria region.

Fertilizer prices (2007-2022) in EUR per metric ton



Source: Bloomberg Terminal

* Potassium chloride (muriate of potash), standard grade, spot, f.o.b. Vancouver

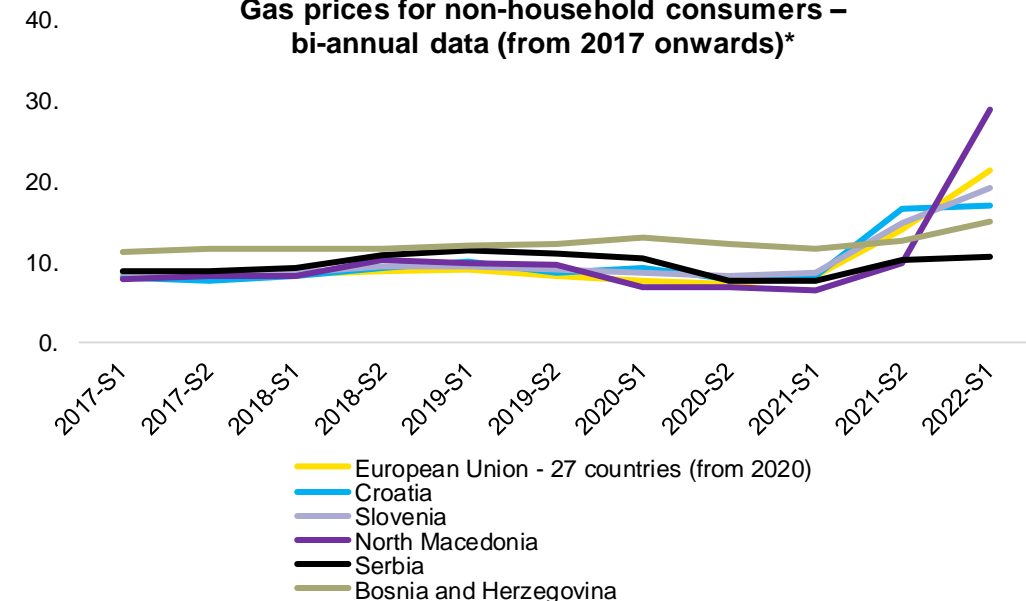
** Urea, (Black Sea), bulk, spot, f.o.b. Black Sea (primarily Yuzhnyy), f.o.b. Eastern Europe

*** DAP (diammonium phosphate), standard size, bulk, spot, f.o.b. US Gulf

In 2022, prices surpassed previous historical peaks from 2008. The price increase was widespread for the three principal fertilizers – Urea, muriate of potash (MOP) and DAP. Upside price pressures were fuelled by:

- High input prices**, predominantly a sharp rise in natural gas prices starting in 2021 and continuing throughout 2022. Fertilizer production is highly resource intensive. Surging natural gas prices led to production standstills in Europe. European ammonia production was severely downsized, as many European companies were rendered uncompetitive by high natural gas prices. Natural gas is the largest input cost in ammonia production, accounting for roughly 50-70% of operating costs, with 33mln btus required to make one ton of ammonia.
- Supply side snags** due to the Russia-Ukraine conflict -> Russia and Ukraine are major exporters of both fertilizer and raw materials for fertilizer production. They are low-cost, high-volume producers. Sanctions imposed slammed the global supply of both fertilizer and raw material.

Gas prices for non-household consumers – bi-annual data (from 2017 onwards)*



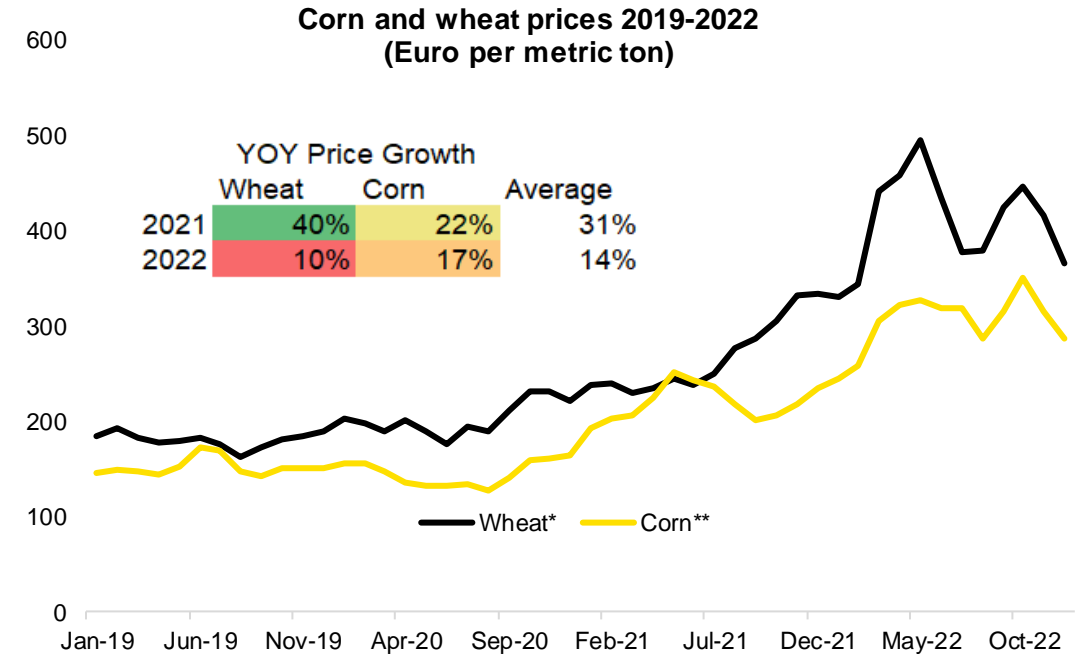
Source: Eurostat

* Unit of measure: Gigajoule (gross calorific value - GCV), Price includes all taxes and levies, Consumption band used: I4 : 100 000 GJ < Consumption < 1 000 000 GJ

Gas prices soared, with the EU27 level (as the key benchmark) up by 158% yoy in 1H 2022. More importantly, in 1H 2022 gas prices at the EU27 rose by 143% compared to an average level for 2017-2021, which the best depicts the magnitude of input cost expansion vs. the past multi-year standards. **Countries in the Adria region experienced substantial natural gas hikes.** North Macedonia saw the greatest price hike (54% in the second half of 2021), even greater than in the EU. Serbia had the lowest gas prices from the second half of 2021 carried on to 2022. Increases in fertilizer price had a three-pronged effect:

- pressured farmers budgets, squeezing margins and diminishing farm enthusiasm
- dampened agricultural output as less fertilizer was used; due to higher cost of planting, less crops were planted, leading to lower yields; chemical-intensive crops such as corn and wheat suffered the largest blow
- contributed to rising food prices for end consumers.

Input price hikes and the ensuing effects were partially ameliorated through higher prices of corn and wheat. This boosted earnings for farmers, however due to inflated input costs, margins stayed flat. Agriculture chemicals peers saw boosted earnings in 2021 and 2022 due to higher crop prices. Prices of crops have not kept up with fertilizer prices in terms of average growth rates.



Source: Bloomberg Terminal

* Wheat (U.S.), no. 2 hard red winter Gulf export price; June 2020 backwards, no. 1, hard red winter, ordinary protein, export price delivered at the US Gulf port for prompt or 30 days shipment

** Maize (US), no. 2, yellow, f.o.b. US Gulf ports

Peer comparison

In our **peer analysis**, we are observing the key business result indicators for fertilizer producers in Adria region. The industry is more or less concentrated into couple of big producers, reflecting the nature of product usage i.e. too many producers in a relatively narrow geographical area would shape rather unprofitable business outcomes. As a result, our peer sample contains four companies, with sales concentrated on two of them – Elixir and Petrokemija.

Adria Region peers saw double digit sales growth averaging 16.7% in 2021. The regional fertilizer industry is profitable, boasting an average EBITDA margin of 11% in 2021 and average EBIT margin of 7.7% in 2021. The debt position of Adria Region peers is favourable in 2021, with an **average net debt to EBITDA amounting to 2x in 2021**, down from 2.5x in 2020.

Elixir group is the leading fertilizer producer in the region, exhibiting **13.8% top line growth in 2021**. The competitive advantage of Elixir Group is the achievement of synergy between raw material production (Elixir Prahovo) which directly supplies fertilizer production (Elixir Zorka), benefiting from an established distribution network (Elixir Agrar) and relatively affordable gas prices compared to the EU and the rest of the Adria Region. Around 70% of produced volume goes into exports. Elixir Zorka is an entity within the group that produces fertilizer. Elixir Prahovo produces one of the main inputs for fertilizer production – phosphoric acid. Phosphoric acid usually is not used directly as a fertilizer because it is corrosive but is used to manufacture other fertilizers. MAP and DAP are the products of reactions between phosphoric acid and ammonia. Products are sold through the Elixir Agrar entity which handles distribution.

Petrokemija d.d. is an outlier in terms of profitability, posting the lowest margins in the peer group. Petrokemija was especially susceptible to high gas prices, as it is the largest single consumer of industrial gas in Croatia. **Despite a top line increase of 20.2% in 2021, sales volume is lower by 28% compared to 2020.** Total production was also lower (37%) caused by production downtime due to turnaround and planned plant shutdowns for maintenance. In November 2022, the Turkish producer of mineral fertilizers Yildirim signed an agreement for the purchase and sale of a 53.52% stake in Kutina's Petrokemija from INA and PPD through the company Terra Mineral fertilizers. Ownership change transaction was expected to finish by the end of Q4 2022 However, production has still not started and a capital investment plan along with the offer to buy the remaining shares is still in the works.

The largest producer of mineral fertilizer in North Macedonia is Alkaloid. Fertilizer production is done through its Chemistry Cosmetics Botanicals (CCB) profit centre, namely the Chemistry sub segment. The total net sales of this Profit Centre amounted to EUR 25.26 million, which is a share of 12.17% (down from 13.23% in 2020) in the total sales of Alkaloid Group. Chemistry accounts for 21.26% of the CCB profit centre, increasing 3.25% in 2021. Liquid fertilizers account for 6.82% of the Chemistry sub segment, amounting to EUR 366tsd net sales in 2021, which represents a top line increase of 30% compared to 2020. **Although a relatively small business segment, it still benefits from Alkaloid's sales network and market presence.** The majority of volume is sold domestically, while the rest is sold to countries in the region.

Company name	Sales EUR in millions			Sales growth %			EBITDA margin %			EBIT margin %			ROE %			ROIC %			Net debt/EBITDA		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Elixir Group	273.3	286.9	326.4	1.7	4.7	13.8	5.2	5.0	15.0	1.1	2.8	11.9	1.5	1.0	17.2	1.1	2.9	11.9	2.1	5.1	2.1
Humko	2.6	2.7	3.2	6.0	5.0	19.4	5.3	5.1	4.6	1.8	1.8	1.6	6.6	4.9	5.8	3.9	3.8	3.8	3.2	4.7	4.2
KS Commerce	0.5	0.9	0.9	(13.3)	80.9	(4.0)	3.5	24.3	20.1	1.4	21.7	17.5	0.2	58.3	39.3	1.4	39.8	27.1	10.0	0.2	1.0
Petrokemija	286.0	239.4	287.7	16.7	(16.3)	20.2	12.4	20.7	4.2	7.7	16.0	(0.2)	47.1	52.9	(1.4)	18.1	33.1	(0.6)	2.0	(0.0)	1.9
Median	138.0	121.0	145.4	n.a.	(12.3)	20.2	5.3	12.9	9.8	1.6	9.4	6.8	4.0	28.9	11.5	2.6	18.4	7.9	2.6	2.5	2.0
Average	140.6	132.5	154.6	n.a.	(5.8)	16.7	6.6	13.8	11.0	3.0	10.6	7.7	13.8	29.3	15.2	6.1	19.9	10.6	4.3	2.5	2.3

Source: Company financial statements, Bloomberg Adria analysis

Peer comparison

Slovenia and BIH do not have fertilizer producers of a large scale. Humko is the largest producer of fertilizer and substrate in Slovenia. KS Commerce produces and distributes fertilizer and substrates in Bosnia. It is the only fertilizer produced domestically. KS Commerce is the only member of the Adria region peer group that saw a top line decline in 2021 (-4%), however it boasts the highest returns and margins. On a further note, due to its size, less capital is employed compared to large scale regional peers.

Given the nature of agrochemical product sale channels, we are also taking a look into the global companies. Our global peer group was selected to outline the performance of the largest and most influential global fertilizer producers. The group consists of some of the largest publicly traded fertilizer producers from all over the world.

The global peer group displayed a 41% average sales growth in 2021, notably outperforming Adria peers. High selling prices of fertilizer in 2021 brought about double digit sales growth across the board. Margins are also stronger for global players, with average EBITDA margins around 33% and average EBIT margins at 22%. Returns (ROE and ROIC) are also steady, sitting at double digit level in the low to mid-teens area. On average, global players run on less debt in 2021, with the average net debt to EBITDA ratio of 1.1x in 2021, down from 3.5x in 2020.

International players have the advantage of scale and a broader product mix curtailing risk through diversification and limiting exposure to input price hikes to a certain degree. **The highest margins were noted for Sabic Afagri nutrients (formerly known as SAFCO - Saudi Arabian Fertilizer Company), PhosAgro PJSC and OCI NV.**

PhosAgro is the largest producer of phosphate-based fertilizers in Europe and holds a leading position in the production of diammonium phosphate (DAP) and monoammonium phosphate (MAP) fertilizers across the World. They also have a large product portfolio, including DAP, MAP, NPK, ammonium nitrate and others. **Besides a wide product range and scale, these players also benefit from relatively affordable natural gas.** Russia has the largest natural gas reserve in the world and accounts for 24% of global natural gas reserves. Saudi Arabia comes in at fifth place and accounts for 4.2%. OCI, (the third largest global nitrogen fertilizer producer) produced less volume (7%), but due to high fertilizer selling prices boosted both margins and sales.

US and Canadian peers saw double digit top line increases in 2021, along with stellar profitability reflected in double digit EBITDA and EBIT margins. Canada-based Nutrien is the world's leading potash company in terms of capacity. Nutrien represents around 20% of global production capacity and more than 60% of North American production capacity. Nutrien is unique in the peer group, with a sizeable chunk of revenue being generated through its retail operation. Florida-based The Mosaic Company is focused in phosphate and potash-based nutrients, while CF Industries concentrates on the production of nitrogen-based fertilizers.

The performance of global players highlights their pricing power. Despite rampant rises in input costs (mainly natural gas), margins strengthened and sales rose despite lower volumes produced. This means that farmers and consumers will likely foot the bill for higher fertilizer prices.

Company name	Sales			Sales growth			EBITDA margin			EBIT margin			ROE			ROIC			Net debt/EBITDA		
	EUR in millions			%			%			%			%								
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Nutrien	17,942.8	18,340.4	23,443.5	2.3	4.1	32.5	18.1	13.6	24.1	9.2	4.1	17.1	4.2	2.0	13.7	4.1	2.4	10.4	2.9	3.5	1.6
CF Industries	4,100.7	3,617.6	5,530.9	3.6	(10.2)	58.5	43.1	39.1	40.9	22.0	14.8	25.7	16.8	10.9	29.9	8.3	6.1	14.4	2.0	2.2	0.8
The Mosaic Company	7,956.8	7,615.6	10,454.0	(7.1)	(2.5)	42.3	(1.3)	15.5	27.2	(12.3)	4.8	20.0	(10.9)	7.1	16.2	(6.3)	5.8	12.0	n.a.	3.1	1.1
OCI N.V.	2,708.5	3,047.5	5,345.4	(6.8)	14.6	81.9	21.4	22.4	38.8	3.5	5.4	24.7	(28.3)	(14.3)	36.5	0.0	1.3	17.8	6.7	5.2	1.0
PhosAgro PJSC	3,428.6	3,100.0	4,822.8	6.3	2.3	65.6	30.5	34.4	46.0	20.8	23.3	39.0	42.0	14.5	95.4	20.1	7.3	43.7	1.7	1.8	0.8
Sabic Agri Nutrients	783.0	777.7	2,163.3	(14.8)	1.2	188.3	57.9	56.6	69.6	40.4	39.3	60.6	18.5	16.0	44.1	18.7	16.0	44.5	(0.4)	(0.9)	(0.8)
Yara International ASA	11,487.2	10,167.6	14,057.5	(0.5)	(9.9)	43.4	7.7	10.1	6.4	4.7	6.0	2.7	6.8	8.1	5.9	5.4	6.3	3.8	2.0	1.4	1.9
Median	4,100.7	3,617.6	5,530.9	n.a.	(11.8)	52.9	19.8	19.0	33.0	6.4	5.1	22.4	(3.4)	4.6	23.1	2.1	4.1	13.2	2.9	3.3	1.1
Average	6,915.4	6,666.6	9,402.5	n.a.	(3.6)	41.0	20.3	22.7	32.8	5.6	7.3	21.9	(4.6)	1.4	24.1	1.5	3.9	13.6	3.9	3.5	1.1

Source: Bloomberg Terminal

We see fertilizer prices remaining in a relatively narrow range around the current levels going forward, with a mix of demand and supply side elements. On one hand, farmers are cutting back on fertilizer, which may have lingering effects on future yields. Natural gas prices are easing due to favourable weather conditions –a mild winter. Furthermore, the demand for fertilizer is highly seasonal. **Planting season for most crops is incoming, therefore the highest demand is expected in the period from March to May.** Within agriculture segments, Adria Region is focused on production of corn and wheat.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WESTERN EUROPE (most of)												
Corn			Plant	Plant	Plant	Grow	Grow	Grow	Harvest	Harvest	Harvest	
Spring Wheat	Plant	Plant	Plant	Grow	Grow	Harvest	Harvest	Harvest				
Winter Wheat			Grow	Grow	Harvest	Harvest	Harvest	Plant	Plant	Plant	Plant	
Soybeans			Plant	Plant	Grow	Grow	Grow	Harvest	Harvest			
Sunflowerseed			Plant	Plant	Grow	Grow	Grow	Harvest				
Sugar Beet	Harvest		Plant	Plant	Grow	Grow	Grow	Harvest	Harvest	Harvest	Harvest	
Rapeseed			Grow	Grow	Grow	Harvest	Plant	Plant	Plant			

Source: Bloomberg Terminal

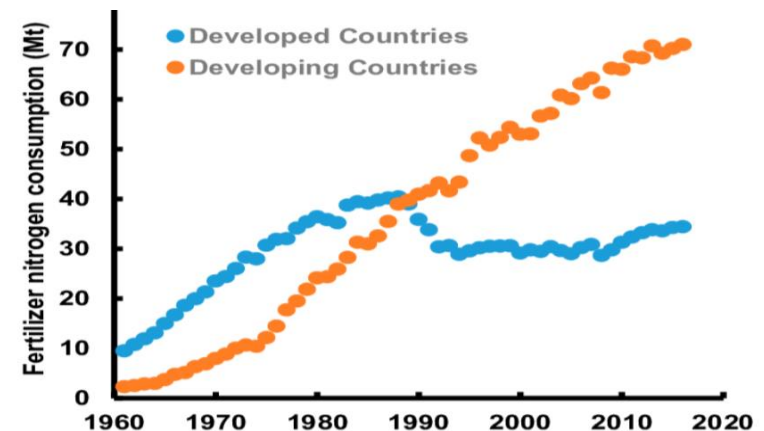
Many farmers are delaying their decision-making process about the usage of fertilizers. The rationale is to wait for prices to drop to decrease exposure to input price hikes. Some farmers are even waiting to use fertilizer after planting - once the prices of corn and spring wheat are defined and prices for fertilizer stabilize. **Additionally, further increases in input prices may lead farmers to switch to less chemically intensive crops, such as soybeans or sunflower.** Due to soaring prices farmers are also looking into alternatives to nitrogen based industrial fertilizer. Biological fertilizers (that contain living microorganisms) represent an alternative. Biological fertilizers are also much more sustainable than synthetic nitrogen-based fertilizers. However, most farmers perceive this leap as risky. **The switch from nitrogen-based to biological fertilizer may significantly impact yields and therefore farmers' income.** Crops are also tied to poultry and livestock performance, as crops are used as feed which further deepens risk.

Additional element in defining fertilizer prices are gas prices. Easing gas prices turned the fertilizer market bearish. If the price of gas continues to ease, it will surely continue to reflect on fertilizer prices going forward.

Cascading supply side risks continue to hinder availability. China's export ban of fertilizer starting in mid-2022, extended to the end of the year drove prices up. China imposed the ban to protect already tight domestic inventory. Generally, if China bans exports on any good, a price hike is expected. Trade restrictions related to the Russia-Ukraine conflict are also inflating prices. The main drivers are lower port utilization, rail disruptions (especially in Belarus, which links Russian product with Europe and is a significant producer itself – third largest producer of potash globally) and high costs of freight and insurance. If the situation in Ukraine tightens further, further supply tensions are imminent. **Fertilizer production is complex and requires ingredients from all over the world. Therefore, the global supply chain is prone to shocks.** Large, globally consolidated players possess a competitive advantage as they can source raw materials more easily and amortize costs of waste quantities of output. Also, farmers look for the cheapest inputs, therefore cost competitiveness is paramount.

Lastly, long term structural factors influence the demand for fertilizer. Demographic factors, principally the rising population in developing countries. Developing countries are grain and cereal dependent, therefore their demand for fertilizer is high. Western countries are progressively focusing on protein-based diets, therefore cereals/grains are declining in importance, impacting fertilizer consumption.

Changing consumption of fertilizers



Source: Research gate, (Singh and Ali, 2020)

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