

# Cereal killers

February 20, 2023



Research

**CRISIL MI&A Research analytical contacts**

**Pushan Sharma**  
Director  
pushan.sharma@crisil.com

**Priyanka Uday**  
Manager  
priyanka.uday@crisil.com

**Manaswini Beri**  
Research Analyst  
manaswini.beri@crisil.com

**Media contacts**

**Aveek Datta**  
Associate Director  
Marketing & Communication  
aveek.datta@crisil.com  
+919920493912

**Riddhi Savla**  
Assistant Manager  
Marketing & Communication  
riddhi.savla1@crisil.com  
+919819957423

## Climate change adds to supply-demand woes in staples

Food inflation — particularly of cereals — is on the boil. Our analysis shows that cereal inflation is not new in India. But the recent bout could be pinned down to the presence of three concomitant factors: higher global and domestic demand, and lower production due to climate change shocks. This has important implications for food, agriculture, trade, and nutrition security policies.

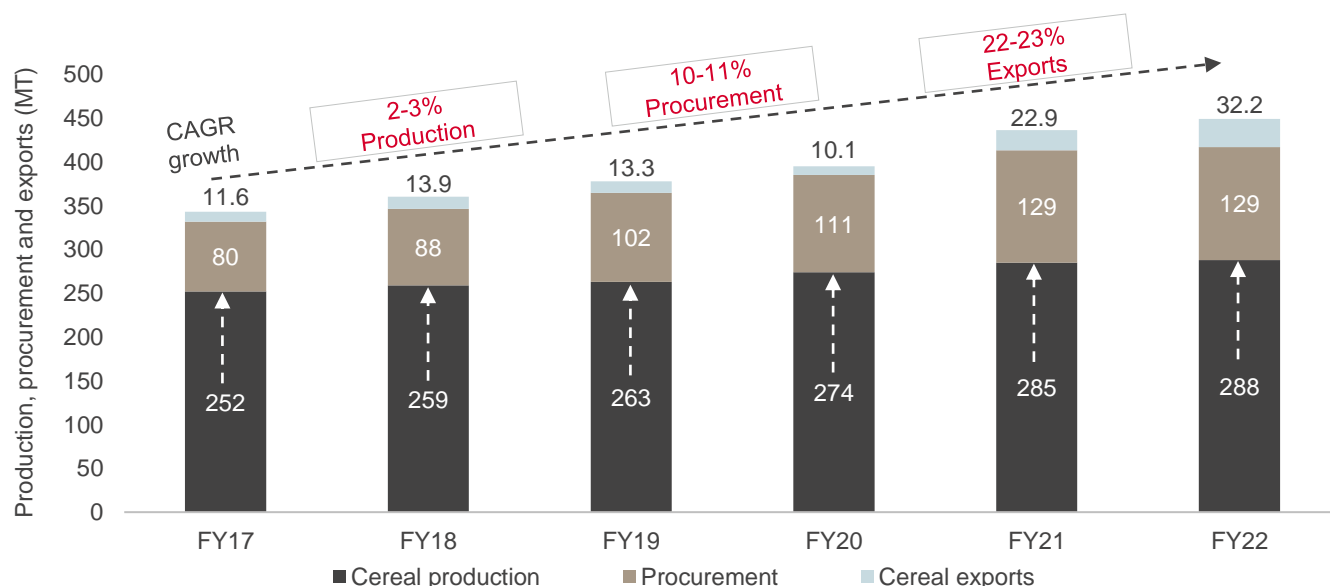
### Cereals in numbers

Cereals form an essential part of Indians' staple diet, from wheat in the north to rice in the south and east, to millets such as jowar and ragi in different regions of states.

Over half of the gross cropped area of the country is under cereal crops — paddy, wheat, and nutri/coarse cereals such as maize and millets.

Production of cereals has consistently up-trended, logging a compound annual growth rate (CAGR) of 2-3% for the past 50 years.

Increase in awareness among farmers on good agriculture practices, support from government in the form of input subsidies and procurement at minimum support prices, positive export sentiments, and growth in domestic demand have all contributed to this trend.



MSP (Rs/quintal)	FY17	FY18	FY19	FY20	FY21	FY22	5-year CAGR
Paddy	1,470	1,550	1,750	1,815	1,868	1,940	5-6%
Wheat	1,525	1,625	1,735	1,840	1,925	1,975	5-6%

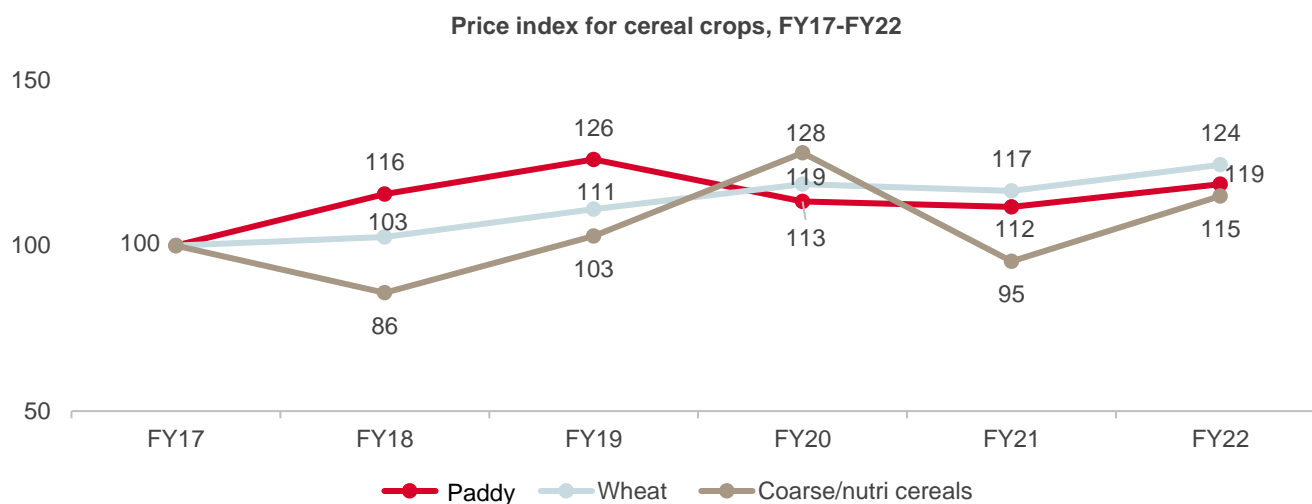
Note: Procurement includes paddy and wheat procured by the Food Corporation of India, cereal exports include rice, wheat and maize

Source: Ministry of Agriculture and Farmers' Welfare, Ministry of Commerce & Industry, Fertiliser Association of India, CRISIL MI&A Research



Interestingly, cereal crop prices have also been rising over the years.

The weighted average crop price index for cereal crops logged 3-4% CAGR between fiscals 2017 and 2022. While wheat prices rose 4-5%, paddy and coarse cereal prices grew 3-4% and 2-3%, respectively.



Source: Agmarknet, CRISIL MI&A Research

Even in the current fiscal, cereal prices have risen significantly on-year in the first ten months. While prices of wheat and paddy rose 8-11%, those of maize, jowar and bajra jumped 27-31%.

#### Year to date (YTD) variation in weighted average prices of cereal crops

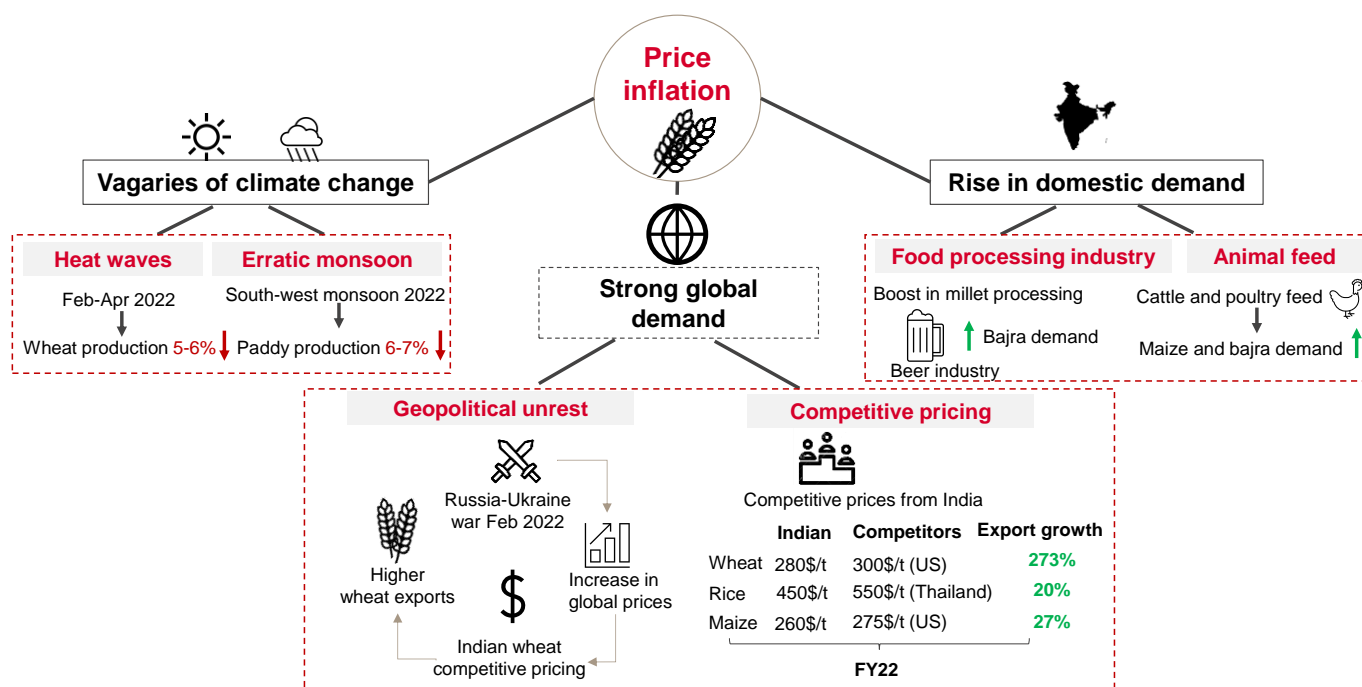
Commodity price (Rs/quintal)	April 2021-January 2022	April 2022-January 2023	y-o-y variation
Wheat	1953	2164	10-11%
Paddy	1915	2086	8-9%
Maize	1566	1997	27-28%
Bajra	1557	2027	30-31%
Jowar	2147	2779	29-30%

Note: The weighted average prices have been calculated with monthly arrivals being the weight

Source: Agmarknet, CRISIL MI&A Research

## Staple truths

CRISIL MI&A Research identifies three major factors driving inflationary pressure on these agricultural commodities — climate change, strong global demand, and rise in domestic demand.



Source: Ministry of Commerce & Industry, Trade map, CRISIL MI&A Research

## Vagaries of climate

Wheat and paddy together contribute to more than 80% of total cereal production in the country. However, change in temperatures and monsoon patterns impact production of these crops. For example, rise in temperatures during critical stages of wheat, such as flowering and grain formation, leads to sterility and early maturation of grains, affecting productivity. Heatwaves during rabi and erratic monsoons during kharif 2022 led to a significant decline in production for these key crops.

### Erratic weather is destabilising production

CY22	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<b>Rainfall deviation from normal</b>						-8%	16.8%	3%	8%	47.1%
						← Erratic monsoon →				
<b>Anomaly in temperature from normal</b>	0.09°C	-0.16°C	1.61°C	1.36°C						
			← Heat wave →							
<b>Impact on production</b>	Heat wave during the months of March and April in 2022 led to early maturation of grains of wheat declining productivity in northern states of Punjab, Haryana, UP, Rajasthan and parts of MP. Overall production declined by 5-6% on year					Deficit in monsoon during sowing window (June) led to lower acreages coupled with higher to excess rainfall during harvesting has led to decline in paddy production by 6-7% on year.				

Note: The % departure of monsoon in the table above has been colour-coded as per the following legend

Rainfall deviation from normal	>10%	+4% to +10%	- 4% to +4%	-4% to -10%	>-10%
	Largely excess	Excess	Normal	Deficit	Largely Deficit

Color coding for temperature anomaly	>1°C	0-1°C	<1°C

Source: IMD, CRISIL MI&A Research

Lower production, however, is only one part of the story of why cereal prices have risen in fiscal 2023. The other part is demand.

### **Strong global demand**

India has a notable presence in wheat, rice, and maize in the global market. Last year was exceptional for Indian wheat on account of the geopolitical tensions between Russia and Ukraine, which together contribute to 20-25% of global wheat exports. India has bridged the gap by exporting ~7 million tonne (MT) of wheat in fiscal 2022.

But lower wheat production due to heatwaves, coupled with higher exports, has led to a ~12% on-year fall in stocks of wheat in fiscal 2023. In view of the decline in stocks, the government imposed a ban on wheat exports in May 2022. However, it still had to fulfil previously committed consignments, leading to significant exports of ~4.6 MT of wheat in April-December 2022.

This increased momentum in exports has thus been a critical factor leading to a 10-11% on-year surge in wheat prices between April 2022 and January 2023.

### **Exports of wheat and rice on an upward trend**

Commodity	FY21	FY22	% change (FY22 over FY21)	Apr-Dec 2021	Apr-Dec 2022	% variation
Wheat	2 MT	7 MT	237%	5 MT	4.6 MT	-9%
Rice	17.8 MT	21 MT	20%	15MT	16 MT	7%

Source: Ministry of Commerce and Industry; MT - million tonne

In case of rice, competitive pricing of India vis-à-vis other nations boosted exports in fiscal 2022. In the current fiscal as well, Indian rice remains ~20% cheaper than Thailand's, one of the biggest rice exporters in the world. This has led to higher demand for Indian rice in the global market, pushing up the overall prices for rice and paddy.

Overall rice exports have been reported to be higher by 6-7% on-year in April-December 2022, despite a decline in paddy production by 6-7%, an increase in export duty to 20% for a few varieties of rice, and the ban on exports of broken rice. Overall rice stocks in the country, are expected to end fiscal 2023 lower by 30-35% on-year. This has also put upward pressure on rice and paddy prices. However, un-milled paddy stocks with FCI as of February 2023, reported to be higher by 28% compared to last five year average.

### **Rise in domestic demand**

For maize and bajra, domestic demand is estimated to be high, following an increase in demand from the animal feed industry. Maize prices are majorly driven by poultry feed demand, as over 50% of maize production is consumed by this industry. Estimated increase in poultry feed demand by 5-6% this fiscal so far on-year has caused maize prices to inch up.

However, in case of bajra, despite an increase in production by 7-8% on year, prices are estimated to be on the higher side, because of a strong increase in demand from the animal fodder and beer industries.

For jowar, the price rise can be attributed to a decline in production by 5-6% and an increase in prices of substitute commodities such as wheat, bajra and maize. According to CRISIL MI&A Research's on-ground interactions, hoarding of jowar by a few traders in parts of Maharashtra and Karnataka is also contributing to the uptick.

## **The future of prices**

We expect price sentiment to remain strong for all cereal crops in absolute terms for the next fiscal.

Production of wheat is anticipated to be higher in the current rabi season.

The continued ban on exports and discontinuation of the Pradhan Mantri Garib Kalyan Anna Yojana since January 2023 (free food grain scheme announced in April 2020) are also expected to bring the stock position up to a comfortable level compared with the previous year, putting downward pressure on wheat prices for fiscal 2024.

Despite this, prices are expected to be 14-15% higher compared with the past 5-year average.

Moreover, heatwaves will be a major monitorable for wheat.

For key kharif crops such as paddy, maize, bajra and jowar, production for next fiscal is anticipated to be higher, too, provided monsoons are normal and well-spread.

However, the National Oceanic and Atmospheric Administration has predicted a ~49% chance of El Nino impact on south-west monsoon between June-July 2023 and 57% between July-September.

This remains a key monitorable, as it might impact rainfall for kharif and lead to drought conditions, as happened during the previous strong El Nino year (2015) when the southwest monsoon was 14% below normal and kharif cereal production declined 2-3% on-year.

## About CRISIL Market Intelligence & Analytics

CRISIL Market Intelligence & Analytics, a division of CRISIL, provides independent research, consulting, risk solutions, and data & analytics. Our informed insights and opinions on the economy, industry, capital markets and companies drive impactful decisions for clients across diverse sectors and geographies.

Our strong benchmarking capabilities, granular grasp of sectors, proprietary analytical frameworks and risk management solutions backed by deep understanding of technology integration, make us the partner of choice for public & private organisations, multi-lateral agencies, investors and governments for over three decades.

## About CRISIL Limited

CRISIL is a leading, agile and innovative global analytics company driven by its mission of making markets function better.

It is India's foremost provider of ratings, data, research, analytics and solutions with a strong track record of growth, culture of innovation, and global footprint.

It has delivered independent opinions, actionable insights, and efficient solutions to over 100,000 customers through businesses that operate from India, the US, the UK, Argentina, Poland, China, Hong Kong, UAE and Singapore.

It is majority owned by S&P Global Inc, a leading provider of transparent and independent ratings, benchmarks, analytics and data to the capital and commodity markets worldwide.

For more information, visit [www.crisil.com](http://www.crisil.com)

Connect with us: [LINKEDIN](#) | [TWITTER](#) | [YOUTUBE](#) | [FACEBOOK](#) | [INSTAGRAM](#)

## CRISIL Privacy

CRISIL respects your privacy. We may use your personal information, such as your name, location, contact number and email id to fulfil your request, service your account and to provide you with additional information from CRISIL. For further information on CRISIL's privacy policy please visit [www.crisil.com/privacy](http://www.crisil.com/privacy).