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From Editor's Desk

This edition of Agricultural Situation in India includes news from the agriculture sector, information on the production and purchase of foodgrains, price indexes, rates of inflation, average daily earnings of field labourers by state, etc. The journal includes two research articles, one on "Break Even Analysis of Black Gram Production in Andhra Pradesh" and second on "Dynamics of Production and Marketing of Cotton in Karnataka". In addition to this, an Agro-Economic Research study titled "Future Market for Agriculture Commodities in India" conducted by the Agro-Economic Research Unit, Institute of Economic Growth (IEG), University of Delhi under the Agro-Economic Research Scheme of Economics, Statistics and Evaluation Division, DA&FW is part of this edition.

The major farm sector news brought out in this issue are: International Research Conference on Just and Resilient Agri-Food Systems; 16th Agricultural Science Congress; Global experts chart for G20 countries to achieve women's empowerment in agri food systmes; Inauguration of International Workshop on Food Loss and Waste Prevention; MoU between ICAR and IIT, Kanpur; MoU between NRFMTTI and Mahindra; Approval of MSP for Rabi Crops for Marketing Season 2024-25 among other news.

The annual rate of inflation based on all-India WPI has decreased from 8.67% percent in October, 2022 to (-) 0.52 percent (provisional) in the month of October, 2023. The annual food inflation rate increased by 1.07 percent in the month October, 2023 (provisional) over October, 2022, whereas on month-on-month basis, the food inflation rate decreased by 1.01 percent in October, 2023 over September, 2023, provisionally. The cumulative pre-monsoon season rainfall in the country during the period 1st October, 2023 to 30th October, 2023 has been 32 percent lower than the long period average (LPA). Current live storage in 150 major water reservoirs in the country is 127.59 BCM, as against the average storage of last 10 years, 138.84 BCM.

The article on "Break Even Analysis of Black Gram Production in Andhra Pradesh" attempts to estimate the cost of cultivation and profitability of black gram in Andhra Pradesh. The study finds that black gram, or urad (Phaseolus mungo), is a significant pulse crop in India, enhancing soil fertility and providing essential nutrients. It contributes about 15.7% of the country's total pulse acreage. Despite being the largest pulse producer globally, India imports 3-4 million tonnes annually to meet domestic demand. In Andhra Pradesh, black gram is mainly grown in rice fallows, with rising production costs due to fertilizers and pest control. The study aims to evaluate its cultivation costs and profitability, finding total costs at Rs. 53,334.29 per hectare, with a net return of Rs. 18,686.08. The break-even point is 5.79 quintals per hectare, indicating profitability due to favorable market prices.

The article on "Dynamics of Production and Marketing of Cotton in Karnataka" aims to identify and assess the existing as well as emerging prospects in production and marketing of cotton in Karnataka. The study examines cotton production and marketing dynamics in Karnataka, India. It highlights that Karnataka contributes 7% of the country's cotton area and 4% of its production, with major growing regions like Raichur, Yadgir, and Haveri. The study analyzes trends in area, production, and productivity, noting significant growth rates due to technological adoption. Market dynamics are assessed through market arrivals, price behavior, and marketing channels, with producers favoring direct sales to processing units. Cost analysis shows transportation and labor as major expenses. The study finds that the channel which is through producer village traders and to the process units is the most efficient, offering a higher producer share and lower price spread.

The Agro-Economic Research study on "Future Market for Agriculture Commodities in India" aims to analyze the future trade of different agricultural commodities, analyses the benefits of future trade, and addresses the inflationary role of the future market. The findings highlight that the future market is a vital tool in a liberalized economy, especially in agricultural commodities, offering forward-looking price signals based on current and future conditions. This study assesses the future trade of commodities such as wheat, gram, soybean, and maize. Using data from NCDEX and statistical methods like Johansen's co-integration and Granger causality tests, the study reveals that the future market plays a crucial role in price discovery, with lower volatility in future markets than spot markets for most commodities. The study found no evidence that future trading causes inflation in the spot market. Strengthening the future market through policy interventions, such as mandatory delivery and farmer participation, is recommended for sustained development.

Promodita Sathish

Farm Sector News

Meetings and Events

Research Conference on 'From research to impact: Towards Just and Resilient Agri-Food Systems'

President of India, Smt. Droupadi Murmu, inaugurated an International Research Conference on 'From research to impact: Towards Just and Resilient Agri-Food Systems', on October 9, 2023 at NASC Complex, Pusa in New Delhi. The four-day long conference was hosted by the CGIAR GENDER Impact Platform and the Indian Council of Agricultural Research (ICAR). The two institutions joined forces to leverage national and international research to ensure that women take up their rightful leadership roles and spearhead the transformation of agriculture and food systems everywhere. Union Minister for Agriculture and Farmers Welfare Shri Narendra Singh Tomar, Union Ministers of State for Agriculture and Farmers Welfare Shri Kailash Choudhary and Sushri Shobha Karandlaje, Secretary for Department of Agriculture and Farmers Welfare Shri Manoj Ahuja, Secretary for Department of Agriculture Research and Education, and Director General for Indian Council of Agricultural Research Dr Himanshu Pathak, Executive Managing Director for CGIAR Prof. Andrew Campbell, Director for CGIAR GENDER Impact Platform Dr. Nicoline de Haan, Director, and South Asia Regional Director for CGIARTemina Lalani-Shariff also graced the inaugural program.

In her address, Smt. Droupadi Murmu highlighted the importance of empowering women engaged in agriculture to advance the vision of women-led development. She said that women are indispensable in making every grain reach from farm to plate as they sow, grow, harvest, process, and market our food. "For ecologically sustainable, ethically desirable, economically affordable, and socially justifiable production, we need research which can enable conditions to reach these goals. She further said that "We need systematic understanding of how to transform the agri-food systems. I hope this conference and this community will take all the measures and steps to achieve these milestones," said Smt. Murmu.

The four-day conference (October 9-12) is welcoming gender researchers from 68 countries to share cutting-edge knowledge on gender and inclusion in food systems. The event is designed to catalyse scientific exchanges and dialogues among researchers from diverse types of organizations, and will create opportunities to engage with policymakers, practitioners, private sector actors, and others working toward the shared goal of equitable food systems transformation. Its goal is to bridge the gap between research and practice and foster gender-equal and socially inclusive, resilient food systems.

ICAR, accompanied by CGIAR and other research partners, continues to guide and shape the future of India's 126 million smallholder farmers. As a CGIAR Impact Platform, GENDER aims to broker knowledge to co-create agricultural solutions that work for women and contribute to equitable, resilient and prosperous societies. Partnering with ICAR, one of the world's biggest national agricultural research and extension systems, offers CGIAR and its research partners a unique and welcome opportunity to collaborate, connect with on-the-ground demand and achieve large-scale impact.

16th Agricultural Science Congress

16th Agricultural Science Congress (ASC) was organised by the National Academy of Agricultural Sciences (NAAS) at Kochi from 10th-13th October, 2023. Over 1500 delegates from India and abroad attended the four-day event, which took place for the first time in Kerala and hosted by the Central Marine Fisheries Research Institute (CMFRI).

Union Minister of Fisheries, Animal Husbandry and Dairying Parshottam Rupala, after inauguration of event, said that in view of the increasing food demand, environmental degradation and the challenges posed by climate change, there is an urgent need to transform agri-food systems into sustainable enterprises through scientific innovations. Union Minister shared his observation during the Sagar Parkirama drive that marine and inland water pollution has seriously

affected aquatic life and coastal ecology. He exhorted the scientists to find lasting and sustainable solutions to address this perilous threat.

Sharing his enthusiasm, Shri Rupala highlighted that traditional farm products such as pokkali rice needs to be promoted and measures are to be taken to ensure profitability for the pokkali farmers. He suggested that minimising post-harvest losses is equivalent to boosting production and this can be achieved by focusing attention on advanced technological interventions.

Shri Rupala also inaugurated the Agri Expo being held on the side-line of the event which showcases innovative agricultural technologies of public and private sector research institutes, universities, agro-industries, extension agencies and NGOs. The Union Minister gave away Dr. B.P. Pal Award for Excellence in Agricultural Sciences, Dr. A.B. Joshi Memorial Lecture Award and several other NAAS awards to the recipients.

Secretary to the Department of Agricultural Research and Education and Director General of Indian Council of Agricultural Research (ICAR), Dr Himanshu Pathak delivered concluding remarks on 13th October, 2023. He said that India's agriculture has bright future with more youngsters coming to the sector with great fervour.

The Congress discussed 10 thematic areas, including all issues related to agriculture and allied areas and sustainability issues on land and water, agricultural production systems, products, agricultural machinery, climate action, economics, renewable or alternative energy, precision farming, alternative farming systems, coastal agriculture, next-generation technologies, etc. As many as 114 papers were presented at the Congress.

With a comprehensive agenda, the 16th ASC featured six plenary lectures by prominent figures in the field of agriculture and allied sectors. The Congress also hosted three panel discussions and four symposiums covering an array of topics.

An Agri Expo held on the side-line of the event showcased innovative agricultural technologies of public and private sector research institutes, universities, agro-industries, extension agencies and NGOs.

Global experts chart new directions for G20 countries to achieve women's empowerment and leadership in agri-food systems

Strengthening women's empowerment and leadership in agri-food systems is crucial to increase agricultural productivity, food security and nutrition, and resilience to climate change impacts. Global experts and researchers reached these conclusions at the close of the international gender conference From research to impact: Towards just and resilient agri- food systems, which took place in New Delhi on 9th -12th October, 2023 and which was hosted by the CGIARGENDER Impact Platform and the Indian Council of Agricultural Research (ICAR).

Summarizing key insights from the conference deliberations, Assistant Director General (HRD), ICAR, Dr. Seema Jaggi said that G20 leaders agreed on four priority areas: investments in food security and nutrition, climate-smart approaches, inclusive agricultural value chains and digitalization for agricultural transformation. She said that CGIAR and ICAR can play a key role in informing these four priority areas.

Speaking in the closing plenary session on 12th October, 2023 were, in addition to Dr Puskur , Dr Jaggi and Senior Director of Program Quality and Partnerships at CARE USA, Dr Maureen Miruka, Dr Stefan Kachelriess-Matthess, Senior Programme Manager, GIZ and Senior Program Officer, Women's Empowerment, Agriculture Development at the Bill and Melinda Gates Foundation, Ms Vicki Wilde. As key development partners, they gave their perspectives on what is needed to move from research to impact, including renewed focus on designing agricultural solutions that consider the needs and constraints of women smallholders.

The four-day international agricultural gender research conference, which comprised 4 plenary sessions, 54 parallel sessions, and 6 poster sessions, brought together delegates from more than 60

countries, deliberating how agricultural gender research can contribute to more resilient and just agri-food systems.

International Workshop on Food Loss and Waste Prevention in South Asian Region

Union Minister of State for Agriculture and Farmers' Welfare Sushri Shobha Karandlaje inaugurated the International Workshop on Food Loss and Waste Prevention in South Asian Region on 30th October 2023 at New Delhi. The International Workshop on Food Loss and Waste Prevention in South Asian Region was organized jointly by The Indian Council of Agriculture Research and the Thünen Institute, Germany. Deputy Director General (NRM) - ICAR, Dr. SK Chaudhari, Research Director, Thünen Institute, Germany, Dr. Stefan Lange, Deputy Director General (Ag. Engg.) – ICAR, Dr. SN Jha and around 120 delegates from India, Bangladesh, Bhutan, France, Germany, Indonesia, Nepal, and Sri Lanka were present on the occasion.

In her address, MoS Sushri Shobha Karandlaje appreciated the efforts made by ICAR and Thünen Institute, Germany to address an important social and economic issue concerning both to the farmers and the consumers. She stated that approximately 3 billion tonnes of food go waste across the globe. She outlined the scale of problem of food loss and waste. She opined that the proven technologies and practices of developed as well as developing countries should be brought forward so that the losses and wastage across the globe could be reduced using methods acceptable to the society. She also emphasised that the social organizations need to play a vital role in spreading awareness among various stakeholders and also should practice the methods to minimise food waste. She also pointed out that loss of food is not only a direct loss to the consumers but also has bearings on environment and supporting economies.

Sushri Shobha Karandlaje said that south Asia a major producer as well as consumer of food and it is our moral responsibility as well as economic necessity to reduce the food loss and waste. She called to identify the primary reasons of food loss and waste; education and awareness among all the stakeholders; efficient harvest and storage; smart distribution; industry involvement; donation and food banks; innovation in food packaging; and consumer responsibility, etc. She emphasized that wasting food is a crime and exhorted all to teach our children the importance of not wasting food. She was hopeful that the three-days workshop would help us plan and act together to arrive at some meaningful policy.

Dr. Stefan Lange mentioned that mitigating and preventing food loss and food waste is the biggest and most effective lever to ensure that food reaches to the needy. He further informed that a "Collaboration Initiative on Food Losses & Food Wastes" has been functioning to promote the global exchange of research results and practical experience in fighting food losses and waste. Government of India can play a vital role in influencing all neighbouring countries in initiating individual as well as collaborative efforts to curb food loss and waste.

DDG (NRM), Dr SK Chaudhari and Deputy Director General (Ag. Engg.), ICAR, Dr. SN Jha welcomed all the guests and delegates and informed the house that Post-harvest losses and Food Waste varies among geographies in the world. It largely depends on the crops and commodities, duration of storage, climate, technological interventions, human behavior, traditions, etc. During the G20-MACS held in Varanasi, April 2023; a bilateral meeting was held between India and Germany in which both the countries decided to organize a regional workshop to address the challenges of Food Loss and Waste understanding that despite the abundant agricultural production, a substantial amount of food is lost or wasted throughout the food supply chain, from production to consumption, and impacts food security and availability, environment, economy and the society; this hold higher significance for South Asian Region, which is a major food producer as well as consumer of food. He shared that around 74 million tonnes of food is lost in India every year, which, if saved, can make many people richer.

General Agricultural Sector News

NRFMTTI inks MoU with Mahindra

The Northern Region Farm Machinery Training and Testing Institute (NRFMTTI), Ministry of Agriculture and Farmers Welfare, Govt. of India based in Hisar,

Haryana, has signed Memorandum of Understanding (MoU) with one of India's foremost manufacturers of tractors and agricultural machinery Mahindra and Mahindra Ltd., Mumbai. This strategic partnership aims to foster skill development among the youth, equipping them with the necessary expertise for a career in the field of farm mechanization.

The MoU outlines a collaborative effort to offer comprehensive training programs that will prepare young individuals for the challenges and opportunities in the agricultural machinery industry. The primary objective of this partnership is to bridge the gap between industry requirements and the skill sets possessed by the youth, ultimately strengthening the workforce in the farm mechanization sector.

Key Highlights of the MoU

i. Skill Development Programs: NRFMTTI and the leading agricultural machinery manufacturer will jointly design and implement skill development programs tailored to the specific needs of the farm machinery industry.

ii. State-of-the-Art Facilities: Mahindra will develop world-class training facilities, laboratories, and experienced faculty to ensure high-quality training for the enrolled students.

iii. Industry-Linked Curriculum: The training curriculum will be designed to align closely with industry demands, ensuring that graduates are job-ready upon completion of their training.

iv Internship and Placement Support: The partnership will facilitate internship opportunities for students within the manufacturing company, providing them with practical exposure to real-world industry operations. Additionally, the manufacturer will actively participate in NRFMTTI's placement efforts, aiding in job placements for graduates.

MoU between ICAR-IARI and IIT, Kanpur to support incubators and start-ups

A Memorandum of Understanding (MoU) was signed on 13th October, 2023 between Pusa Krishi, ICAR-Indian Agricultural Research Institute here and Start-up Incubation & Innovation Centre (SIIC), IIT Kanpur.

The MoU was signed virtually by Dr. Viswanathan Chinnusamy, Joint Director (Research) IARI and Professor Ankush Sharma, Department of Electrical Engineering, SIIC IIT Kanpur.

Through this MoU, both the sides will provide vital support to incubators and start-ups, fostering their growth and success. The joint efforts will offer a conducive environment for start-ups to thrive and make meaningful contributions to the agriculture sector. Pusa Krishi and SIIC IIT also expressed their commitment to explore and establish further collaborations to drive advancements and innovations in agriculture.

Prof. Ankush Sharma expressed that the partnership will promote innovative activities in the farming sector through collaborative efforts, leveraging the expertise and resources of both the organizations.

Dr. Viswanathan Chinnusamy said, "In research, we need collaborations which further help our start-ups as well as incubators. I am glad today we signed a MoU with SIIC IIT."

Concluding the virtual ceremony, Dr Akriti Sharma said, "If we want our start-ups to reach newer heights, make more profits, then we need support from tech-innovators like IIT Kanpur. This is just the beginning, in future, we will come up with such more collaborations with IIT Kanpur for overall development of agriculture sector."

Minimum Support Prices (MSP) for Rabi Crops for Marketing Season 2024-25

The Cabinet Committee on Economic Affairs, chaired by the Hon'ble Prime Minister Shri Narendra Modi, has approved the increase in the Minimum Support Prices (MSP) for all mandated Rabi Crops for Marketing Season 2024-25.

Government has increased the MSP of Rabi Crops for Marketing Season 2024-25, to ensure remunerative prices to the growers for their produce. The absolute highest increase in MSP has been approved for lentil (masur) at Rs. 425 per quintal followed by rapeseed & mustard at Rs. 200 per quintal. For wheat and safflower, an increase of Rs. 150 per quintal each has been approved. For barley and gram an increase of Rs. 115 per quintal and Rs. 105 per quintal respectively, has been approved.

Minimum Support Prices for all Rabi crops for Marketing Season 2024-25

(Rs. per quintal)

S. No.	Crops	MSP RMS 2014 -15	MSP RMS 2023 -24	MSP RMS 2024 -25	Cost* of production RMS 2024 -25	Increase in MSP (Absolute)	Margin over cost (in %)
1	Wheat	1400	2125	2275	1128	150	102
2	Barley	1100	1735	1850	1158	115	60
3	Gram	3100	5335	5440	3400	105	60
4	Lentil (Masur)	2950	6000	6425	3405	425	89
5	Rapeseed & Mustard	3050	5450	5650	2855	200	98
6	Safflower	3000	5650	5800	3807	150	52

*Refers to cost which includes all paid out costs such as those incurred on account of hired human labour, bullock labour/machine labour, rent paid for leased in land, expenses incurred on use of material inputs like seeds, fertilizers, manures, irrigation charges, depreciation on implements and farm buildings, interest on working capital, diesel/electricity for operation of pump sets etc., miscellaneous expenses and imputed value of family labour.

The increase in MSP for mandated Rabi crops for Marketing Season 2024-25 is in line with the Union Budget 2018-19 announcement of fixing the MSP at a level of at least 1.5 times of the All-India weighted average Cost of Production. The expected margin over All-India weighted average Cost of Production is 102 percent for wheat, followed by 98 percent for rapeseed & mustard; 89 percent for lentil; 60 percent for gram; 60 percent for barley; and 52 percent for safflower. This increased MSP of rabi crops will ensure remunerative prices to the farmers and incentivise crop diversification.

2nd advance estimate for the year 2022-23 for area and production of horticultural crops

Ministry of Agriculture and Farmers Welfare has released the 2nd Advance Estimates of the area and production of various horticultural crops for the year 2022-23. According to this estimate, total horticulture production in the country is expected to be a record 351.92 million tonnes in the year 2022-23.

Union Minister for Agriculture and Farmers' Welfare Shri Narendra Singh Tomar has said that along with food grains, horticulture is also continuously recording record production in the country, which is the good result of the hard work of our farmers, the efficiency of scientists and the farmer-friendly policies of the Central Government under the able leadership of Prime Minister Shri Narendra Modi, who is committed to the welfare of farmers.

Highlights of the year 2021-22 (Second Advance Estimates)

i. Total horticulture production in the year 2022-23 is estimated to be 351.92 million tonnes, an increase of about 4.74 million tonnes (1.37%) as compared to the year 2021-22 (final).

ii. Production of fruits, vegetables, plantation crops, flowers and honey is expected to increase.

iii. Fruit production is estimated to be 108.34 million tonnes in the year 2022-23 as compared to 107.51 million tonnes in the year 2021-22.

iv. The production of vegetables is estimated to be 212.91 million tonnes in the year 2022-23 compared to 209.14 million tonnes in the year 2021-22.

v. Production of plantation crops is estimated to increase from 15.76 million tonnes in 2021-22 to 16.05 million tonnes in 2022-23, which is an increase of about 1.78%.

Potato production is expected to be 60.54 million tonnes, compared to 56.18 million tonnes in the year 2021-22.

Total Horticulture	2021-22 (Final)	2022-23 (First Adv. Est.)	2022 -23 (Second Adv. Est.)
Area (in million hectares)	28.04	28.28	28.12
Production (in million tonnes)	347.18	350.87	351.92

Final estimates of production of major crops for the year 2022-23

The Final Estimates of production of major crops for the year 2022-23 have been released by the Department of Agriculture and Farmers Welfare. As per Final Estimates for 2022-23, total foodgrain production in the country is estimated at record 3296.87 lakh tonnes which is higher by 140.71 lakh tonnes than the production of foodgrains of 3156.16 lakh tonnes achieved during 2021-22. Further, the production during 2022-23 is higher by 308.69 lakh tonnes than the previous five years' (2017-18 to 2021-22) average production of foodgrains.

As per Final Estimates, the estimated production of major crops during 2022-23 is as under:

1) Foodgrains – 3296.87 lakh tonnes.
2) Rice – 1357.55 lakh tonnes.
3) Wheat – 1105.54 lakh tonnes.
4) Nutri/Coarse Cereals – 573.19 lakh tonnes.
5) Maize – 380.85 lakh tonnes.
6) Pulses – 260.58 lakh tonnes.
7) Tur – 33.12 lakh tonnes.
8) Gram – 122.67 lakh tonnes.
9) Oilseeds – 413.55 lakh tonnes.
10) Groundnut – 102.97 lakh tonnes.
11) Soybean – 149.85 lakh tonnes.
12) Rapeseed and Mustard – 126.43 lakh tonnes.
13) Sugarcane – 4905.33 lakh tonnes.
14) Cotton – 336.60 lakh bales (of 170 kg each)
15) Jute & Mesta – 93.92 lakh bales (of 180 kg each)

Total production of rice during 2022-23 is estimated at record 1357.55 lakh tonnes. It is higher by 62.84 lakh tonnes than previous year's Rice production of 1294.71 lakh tonnes and by 153.65 lakh tonnes than the last five years' average production of 1203.90 lakh tonnes.

Production of wheat during 2022-23 is estimated at record 1105.54 lakh tonnes. It is higher by 28.12 lakh tonnes than previous year's wheat production of 1077.42 lakh tonnes and by 48.23 lakh tonnes than the average wheat production of 1057.31 lakh tonnes.

Production of nutri/coarse cereals is estimated at 573.19 lakh tonnes, which is higher by 62.18 lakh tonnes than the production of 511.01 lakh tonnes achieved during 2021-22. Further, it is also higher by 92.79 lakh tonnes than the average production. Production of Shree Anna is estimated at 173.20 lakh tonnes.

Total pulses production during 2022-23 is estimated at 260.58 lakh tonnes which is higher by 14.02 lakh tonnes than the last five years' average pulses production of 246.56 lakh tonnes. Total oilseeds production in the country during 2022-23 is estimated at record 413.55 lakh tonnes which is higher by 33.92 lakh tonnes than the oilseed production during 2021-22. Further, the production of oilseeds during 2022-23 is higher by 73.33 lakh tonnes than the average oilseeds production of 340.22 lakh tonnes.

Total production of sugarcane in the country during 2022-23 is estimated at 4905.33 lakh tonnes. The production of sugarcane during 2022-23 is higher by 511.08 lakh tonnes than the previous year sugarcane production of 4394.25 lakh tonnes.

Production of cotton is estimated at 336.60 lakh bales (of 170 kg each) is higher by 25.42 lakh bales than the previous year's cotton production. Production of jute & mesta is estimated at 93.92 lakh bales (of 180 kg each).

First Advance Estimates of production of major kharif crops 2023-24

Ministry of Agriculture and Farmers Welfare has been released first Advance Estimates of production of major Kharif crops for 2023-24. The estimation of crop production relies on data provided by States and is subsequently validated using information from various alternative sources. These sources include reports from the Crop Weather Watch Group (CWWG), remote sensing estimates, estimates based on econometric modeling, inputs collected from farmer surveys, and historical trends in crop estimation.

As per First Advance Estimates, the estimated production of major Kharif crops for 2023-24 is as under:

1) Foodgrains – 1485.69 lakh metric tonnes(LMT)
2) Rice – 1063.13 lakh metric tonnes
3) Maize – 224.82 lakh metric tonnes
4) Tur – 34.21 lakh metric tonnes
5) Moong – 14.05 lakh metric tonnes
6) Urad – 15.05 lakh metric tonnes
7) Oilseeds –215.33 lakh metric tonnes
8) Groundnut – 78.29 lakh metric tonnes
9) Soybean – 115.28 lakh metric tonnes
10) Sugarcane – 4347.93 lakh metric tonnes
11) Cotton – 316.57 lakh bales (of 170 kg each)
12) Jute & Mesta –91.91 lakh bales (of 180 kg each)

Area under rice which is the major kharif crop is estimated to be higher by around 2 lakh hectare over previous year final estimate and by around 4.5 lakh hectare over average rice area. Its production is also estimated to be higher by about 1 lakh tonnes as compared to average Kharif Rice production.

Other cereal crops area such as kharif maize and jowar is also estimated to be higher as compared to previous year as well as average area under these crops. Kharif maize production is estimated at 224.82 lakh metric tonnes as compared to average production of 213.51 lakh metric tonnes registering an increase of about 11 lakh metric tonnes.

For 2023-24, production of kharif nutri/coarse cereals is estimated at 351.37 LMT which is slightly higher than the average coarse cereals production of 350.91 LMT. The production of Shree Anna is estimated at 126.55 LMT during 2023-24.

The production of tur is estimated at 34.21 LMT, which is approximately similar to the last year's production. Further, the area under urad is estimated at 30.73 lakh hectares which is approximately similar to the last year's area of 30.98 lakh hectares. However, total kharif pulses production for 2023-24 is estimated to be lower than previous year due to climatic conditions. Total kharif pulses production during 2023-24 is estimated at 71.18 LMT.

Total production of sugarcane is estimated at 4347.93 LMT which is higher than average sugarcane production of 4222.55 LMT.

It's important to note that this first production assessment for 2023-24 (kharif) is largely based on the average yield of last 3 years and may undergo change after receiving the yield estimates based on actual crop cutting experiments.

General Survey of Agriculture

Trend in Food Prices

The rate of inflation, based on all-India WPI, stood at -0.52% (Provisional) for the month of October, 2023 as compared to 8.67% during the corresponding period of last year.

WPI Food Index (Weight 24.38%): The Food Index consisting of 'Food Articles' from Primary Articles group and 'Food Product' from Manufactured Products group has increased from 177.8 in September, 2023 to 179.6 in October, 2023. The year-over-year rate of inflation based on WPI Food Index decreased from 1.54% in September, 2023 to 1.07% in October, 2023.

Based on Wholesale Price Index (WPI) (2011-12=100), the WPI of pulses, cereals and fruits increased by 19.43 percent, 7.51 percent and 6.27 percent, respectively, and for vegetables, it decreased by 21.04 percent in October, 2023 over corresponding period of last year. On month-on-month basis, the WPI for cereals, vegetables and pulses increased by 0.94 percent, 4.15 percent and 2.05 percent, respectively, and for fruits, it decreased by 1.07 percent in October, 2023 over September, 2023.

Among cereals, the WPI based rate of inflation for wheat and paddy increased by 4.75 percent and 9.39 percent, respectively, in October, 2023 over October, 2022 while on month-on-month basis, the WPI for paddy and wheat increased by 1.50 percent and 0.41 percent, respectively, in October, 2023 over September, 2023.

Rainfall and Reservoir Situation, Water Storage in Major Reservoirs

Cumulative Post-Monsoon Season (October to December), 2023 rainfall for the country as a whole during the period 1st October, 2023 to 30th October, 2023 has been 32% lower than the Long Period Average (LPA). Rainfall in the four broad geographical divisions of the country during the above period has been higher than LPA by 46% in North-West India, by 10% in East & North East India but lower than LPA by 59% in Central India and by 60% in South Peninsula. Out of 36 met sub-divisions, 07 met sub-divisions received large excess/excess rainfall, 07 met sub-divisions received normal rainfall and 22 met sub-divisions received deficient/large deficient rainfall.

Current live storage in 150 reservoirs (as on 26th October, 2023) monitored by Central Water Commission having Total Live Capacity of 178.78 BCM was 127.59 BCM as against 159.37 BCM on 26.10.2022 (last year) and 138.84 BCM of normal storage (average storage of last 10 years). Current year's storage is 80% of last year's storage and 92% of the normal storage.

Articles

Break Even Analysis of Black Gram Production in Andhra Pradesh

K. Solomon Raju Paul[1]

Abstract

The present study is based on an economic analysis of black gram cultivation in Andhra Pradesh. The data on cost of cultivation has been collected under the 'Comprehensive Scheme on Cost of Cultivation of Principal Crops' and available with the Directorate of Economics and Statistics (DES), Government of India. The study used the data for the years 2021-22 with an objective to work out the profitability of black gram in the study area. The study revealed that the per-hectare cost of cultivation of black gram was Rs. 53,334.29/ha and the average yield was 10.89 quintals per hectare. The cost of production per quintal was Rs. 4897.54. The results of the study revealed that black gram cultivation in Andhra Pradesh is a profitable enterprise, as the return per rupee invested has been found to be Rs. 0.35. The breakeven point was observed at 5.79 quintals/ha.

Keywords: *Andhra Pradesh, black gram, break-even analysis, cost of cultivation, margin of safety*

1. Introduction

Black gram is commonly known as urad in India and scientifically called as Phaseolus mungo. Black gram is one of the important pulse crops, grown throughout the country. The crop is resistant to adverse climatic conditions and improves soil fertility by fixing atmospheric nitrogen in the soil. It has been reported that the crop produces equivalent to 22.10 kg of N/ha., which has been estimated to be a supplement of 59 thousand tonnes of urea annually (Gandhi *et al*., 2018; Jakaria *et al*., 2013). In the pulses, black gram plays an important role in Indian diet, as it contains vegetable protein and a supplement to cereal based diet. It contains about 26% protein, which is almost three times that of cereals and other minerals and vitamins. Besides, it is also used as nutritive fodder, especially for milch animals (Kumar and Kumar, 2022).

India is the largest producer of pulses and consumer as well. In spite of being the largest pulse producer in the world, India is importing 3 to 4 million tonnes of pulse grain every year to meet its domestic demand (Barik, 2021).

Black gram area accounts for about 15.7 percent of India's total pulse acreage and contributes 9.09 percent of total pulse production. About 95 percent of urad bean (black gram) production comes from 10 states *viz*., Madhya Pradesh, Rajasthan, Andhra Pradesh, Uttar Pradesh, Tamil Nadu,

Maharashtra, Jharkhand, Gujarat, Karnataka, and West Bengal (Srilatha and Srilatha, 2020).

Andhra Pradesh, with an area of 3.83 lakh hectares and production of 3.41 lakh tonnes in 2021-22, ranked second in production among the black gram growing states in the country (Annual Report, Directorate of Pulses Development, GoI, 2021-2022). In Andhra Pradesh, it is mostly grown as rabi crop under rice fallows. The increased cost of inputs particularly fertilizers, pesticides, and labour has greatly resulted in doubling or trebling its cost of production. Another important challenge is the pest and disease menace and consequent costly control measures, which escalate the total cost of production.

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1.1 Objectives of the study

The study attempts to estimate the cost of cultivation and profitability of black gram in Andhra Pradesh.

2. Data sources and methodology

The present study is based on the state-level aggregate data on cost of cultivation collected under the 'Comprehensive Scheme on Cost of Cultivation of Principal Crops' exclusively drawn from the Directorate of Economics and Statistics (DES), Government of India (GoI), for the state-wise data on production, yield, and the data for the input usage. The present paper uses 2021-2022 data to estimate the net returns, farm income, measures, and break-even analysis.

2.1 Tools adopted for analysis

2.1.1 Cost concepts

Various cost concepts were developed by different economists to assess the extent of cost of cultivation. The cost concepts classification adopted by CACP (Commission on Agricultural Costs and Prices), New Delhi was used in the present study for estimating the cost of cultivation of black gram.

Cost A_1 = Value of hired human labour

+ Value of bullock labour (both hired and owned)

+ Value of machinery power (both hired and owned)

+ Value of seeds (purchased)

+ Value of insecticides, pesticides and weedicide

+ Value of manure (both owned and purchased)

+ Value of fertilizers

+ Value of irrigation charges

+ Depreciation and maintenance of implements and farm buildings

+ Miscellaneous expenses (electricity charges, fuel, gunny bags etc.)

+ Land revenue/cess and other taxes

+ Interest on working capital

Cost A_2 = Cost A_1 + Rent paid for leased in land

Cost B_1 = Cost A_1 + Interest on fixed capital (excluding land)

Cost B_2 = Cost B_1 + Rental value of owned land

Cost C_1 = Cost B_1 + Imputed value of family labour

Cost C_2 = Cost B_2 + Imputed value of family labour

Cost C_3 = Cost C_2 + 10 percent of cost C_2

2.1.2 Farm income measures

Different income measures are derived by using the cost concepts. They are

1. Farm business income = Gross income - Cost A_1
2. Family labour income = Gross income - Cost B_2
3. Farm investment income = Farm business income – imputed value of family labour
4. Break even analysis

   Breakeven point (BEP) is a situation where farmer neither loss money nor makes profit, algebraically BEP was estimated by using the formula.

BEP =F/ P–V

where,

BEP = Break-Even Point

F = Fixed cost in ₹/ha

P = Price ₹/quintal

V = variable cost in ₹ per quintal

2.1.3 Margin of safety

The excess production over break even output is called the margin of safety. It indicates the strength of the enterprise. A high margin of safety indicates that the enterprise will make profits even if there is a fall in the output. In other words, a high margin of safety reveals the shock absorbing capacity of the enterprise in the event of fluctuations in returns against anticipation owing to the unforeseen eventually.

Margin of safety= Total output - output at break-even point (BEP)

3. Results and discussion

3.1 Cost of cultivation of black gram

The profitability of any enterprise depends upon costs and returns. Generally, costs in any economic study are discussed under two heads, viz.,variable costs and fixed costs. In general, variable costs alone are reckoned as the cost of cultivation by the farmers, and profit and loss are worked out ignoring the fixed costs. But, in the economic analysis of any business enterprise, the fixed costs are also taken into account to arrive at total costs and compute net profits.

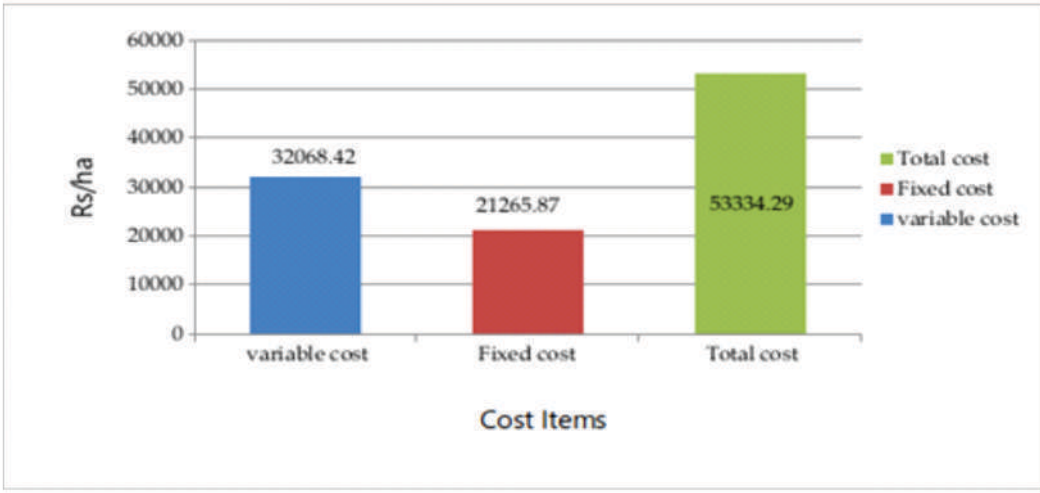
TABLE 1: PER HECTARE COST OF CULTIVATION OF BLACK GRAM IN ANDHRA PRADESH

S. No	Particulars	Amount (Rs.)	Percentage to total cost
A	**Operational costs**		
1	Human labour		
	a. Family labour	2798.18	5.25
	b. Casual labour	12335.00	23.13
	Total	15133.18	28.38
2	Bullock labour	422.72	0.79
3	Machine labour	6548.86	12.28
4	Seed	3808.82	7.14
5	Manures & fertilizer	1361.93	2.55
6	Insecticides	3583.83	6.72
7	Irrigation charges	233.75	0.44
8	Miscellaneous charges	81.86	0.15
9	Interest on working capital	893.47	1.68
	Total operational cost	32068.42	60.13
B	**Fixed cost**		
1.	Rental value of owned land	19837.19	37.18
2	Rent paid for leased in land	950.12	1.8
3.	Depreciation on implements & farm building	75.11	0.14
4.	Interest on fixed capital	403.45	0.75
	Total fixed cost	21265.87	39.87
	Total cost	53334.29	100.00

Source: Secondary data

Cost items for black gram production were divided into variable and fixed costs (Table 1 and Figure 1). The total cost of black gram production was Rs. 53334.29/ha, wherein total variable and fixed cost accounted for 60.13 percent and 39.87 percent of the overall cost, respectively. Among the operational costs, cost of human labour accounted for the highest share (28.38 percent), followed by machine labour (12.28 percent), seeds (7.14 percent), plant protection chemicals (6.72 percent), manures and fertilizer (2.55 percent), and interest on working capital (1.68 percent). From the data, it may be inferred that the cost on rental value of owned land accounted the major share (37.18 percent) in fixed costs, followed by rent paid for leased in land (1.80 percent), and interest on owned fixed capital (0.75 percent) (Sunandini and Devi, 2020).

Figure 1: Cost Items



3.2 Cost concepts

The information with regard to cost of cultivation according to cost concepts per hectare for black gram was collected and is presented in Table 2. Of all the cost concepts, cost C_2 is the most comprehensive cost as it covers all the variable costs and fixed costs.

TABLE 2: COST OF CULTIVATION IN BLACK GRAM ACCORDING TO COST CONCEPTS

Cost concept	Cost A_1	Cost A_2	Cost B_1	Cost B_2	Cost C_1	Cost C_2	Cost C_3
Amount (Rs.)	29560.08	30510.21	29963.53	50750.85	32546.99	53334.29	53662.83

Source: Computed by author

3.3 Output and returns

The output of the black gram was 10.89 q/ha, with a prevailing market price of Rs. 6613.45/q, allowing farmers to have a revenue of Rs. 72020.47/ha. The prevailing market price of black gram is higher than the minimum price needed to recover the unit cost for producing 1 quintal of black gram at Rs. 5417.32/quintal. The results pertaining to the rate of return (benefit-to-cost ratio) suggest that for every unit cost incurred by black gram farmers, at least Rs. 0.35/q is the net margin received by farmers. The results further imply the importance of price as an indicator of the financial performance of a farming system (paddy-black gram) to be adopted (Ilango *et al.*, 2021).

TABLE 3: OUTPUT AND RETURNS OF BLACK GRAM

Yield (q (ha^{-1})	Price per quintal (Rs.)	Gross returns (Rs. ha^{-1})	Total costs (C_2) (Rs. ha^{-1})	Net returns (Rs. ha^{-1})	Rate of return (%)	Cost of production (Rs. q^{-1}) as per C_2	Cost of production (Rs. q^{-1}) as per C_3
10.89	6613.45	72020.47	53334.29	18686.08	0.35	4897.54	5417.32

Source: Computed by author

3.4 Farm income measures

The farm business income, family labour income, and farm investment income of black gram was Rs. 42460.39, Rs. 21269.62, Rs. 39662.21per hectare, respectively.

TABLE: 4 MEASURES OF FARM INCOME IN BLACK GRAM PRODUCTION

Gross income	Net income	Farm business income	Family labour income	Farm investment income
72020.47	18686.08	42460.39	21269.62	39662.21

Source: Computed by author

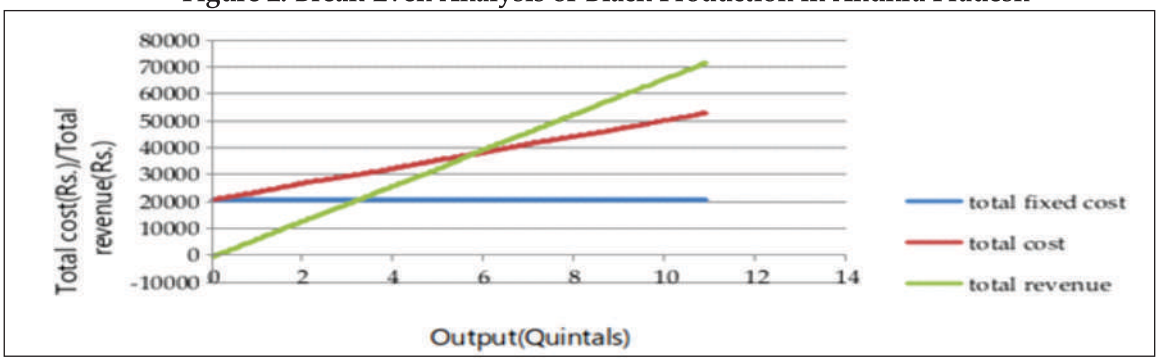
Break even analysis indicates costs volume profit relations. Break-even point (BEP) was found to be 5.79 quintals per hectare which indicates that farmers should produce a minimum of 5.79 quintal black gram per hectare so as to not incur any loss. The contribution margin, and margin of safety was observed Rs. 3668.70 /qtl and 5.10 qtl /ha, respectively. It is evident that none of the black gram farmers were under losses situation in Andhra Pradesh during the study period, because price received by farmers were high as compared to contribution margin and actual production on the farms were greater than breakeven production per quintal (Mohiuddin *et al.*, 2018)

TABLE 5: BEAK-EVEN ANALYSIS OF BLACK GRAM PRODUCTION

TFC (Rs./ha)	TVC (Rs./per qtl.)	Price / quintal	BEP (qtl./ha)	Margin of safety (qtl./ha)	Contribution margin (Rs./qtl)
21265.87	2944.75	6613.45	5.79	5.1	3668.70

Source: Computed by author

Figure 2: Break Even Analysis of Black Production in Andhra Pradesh



Source: Designed by author

4. Conclusion

This study investigated the cost and return of black gram in Andhra Pradesh. Labour costs represent the largest percentage share of variable costs, while rental value of own land was the major share in fixed cost. The rate of return of 0.35 indicates 0.35 Rs./qtl is the net margin received by farmers. The prevailing market price of black gram is higher than the minimum price needed to recover the unit cost for producing 1 quintal of black gram at 5417.32 Rs./quintal during the year 2021-2022. It is concluded after the analysis of breakeven point; black gram crop was profitable because, there was a huge gap between breakeven point and actual production. It indicated that production and price received by farmers was higher as compared to BEP qtl/ha and contribution margin.

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Dynamics of Production and Marketing of Cotton in Karnataka

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Abstract

Cotton is the major commercial and fibre crop of India and it is considered as 'White gold' and 'King of the fibre'. The objective of the study is to analyze the trends in area, production, market arrivals and prices of cotton in major markets of Karnataka and also to estimate the marketing costs, margins and price spread in cotton marketing. The trends in area, production and productivity along with market arrivals and prices of cotton was analysed through Compound Annual Growth Rate (CAGR). The results of the study revealed that in Karnataka state during the period I, the growth rate of area was negative (-2.44 %) and the growth rate of area in the period II was positive (2.68 %). But the growth in productivity was found higher in the period I with 6.41 percent than in the period II with 2.14 percent. The market arrivals from 2003 to 2022 in all the selected markets showed a decreasing trend. The marketing efficiency in channel-III was greater than in channel-II in Raichur and Yadgir districts as the net price received by the producer in study area was Rs. 6900.50, Rs. 6676.00 and Rs. 6835.50 in channel-I, channel-II and channel-III, respectively. The growth in arrivals was positive in Chitradurga, Vijayapura and Annigeri markets whereas, the growth rates of arrivals in Ranibennur and Raichur markets were negative. It is concluded that the increase in production of cotton was due to increase in area which was more than increase in the productivity in the state. Therefore, efforts are required to enhance the productivity by more concentrated effects of extension for promoting adoption of new production technologies. Further, there is a need for policy intervention for strengthening market infrastructure to increase the market arrivals by providing competitive prices for cotton.

Key words: *Cotton, CAGR, Marketing efficiency, Marketing Channel*

1. Introduction

Cotton *(Gossypium hirustum)* is the major commercial and fibre crop of India. It is considered as 'White gold' and 'King of the fibre'. India is the only country in the world growing all the four cultivated species of cotton, *viz., Gossypium hirustum, G. arboreum, G. herbaceaum and G. barbadense.*

India ranks first in cotton area and its productivity and second among cotton growing countries. The concerted research efforts in crop improvement and development of location specific crop production and protection technologies have increased cotton production. India has the distinction of having largest area under cotton cultivation which is about 37 percent of the world's area under cotton cultivation. India is one of the largest producers of cotton in the world accounting for about 22 percent of the world cotton production. The area of cotton in India is 130.61 lakh ha with the production of 343.47 lakh bale (1 bale = 170 kg) and productivity is 447.06 kg/ha is still lower against the world average yield of about 787 kg/ha (Anonymous, 2022b). India holds the unique distinction of being the only country in the world that grows all four cultivated species of cotton and their hybrids in the vast diverse agro-climatic situations prevailing across the length and breadth of the country. Cotton is grown in the country on different holdings with varied planting dates, soil and water conditions, and largely in rainfed situations.

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In India, Gujarat is the leading producer and processor of cotton, followed by Maharashtra, Telangana, Rajasthan and Karnataka, which stand at fifth position in area and production of cotton in the country. Area under cotton crop in Karnataka is around 673.77 lakh hectares, which is 7 percent of the country`s area. The production of the crop is 19.52 lakh bales (around 4 percent of the country`s production), while productivity is 493 kg/ha. The main cotton-growing districts in Karnataka are Raichur, Yadgir, Haveri, Dharwad, Mysore and Ballari. However, Raichur is called as 'Cotton Bowl of Karnataka'. Raichur and Yadgir stand first and second in terms of area and production of cotton in Karnataka. Fluctuations in market arrivals largely contribute to the price instability of agricultural commodities. In order to devise the appropriate ways and means for reducing the price fluctuation of agricultural commodities, there is a need to understand the price behavior over time and space. The knowledge on the interrelations between prices and arrivals of farm products is required for assessing the extent of price fluctuations over time.

This study analysed the trends in area, production and productivity of cotton in Karnataka, in addition to marketing aspects such as marketing cost, price spread and market efficiency, which would help farmers to improve their profit margin by identifying the most appropriate channel which will enable more producer share in the consumer's rupee. The problems faced by the farmers in marketing cost, market margin and price spread of cotton and other intermediaries are analyzed.

1.1 Objectives of the study

The study identified and assessed the existing and emerging prospects in production and marketing of cotton in Karnataka with the following objectives.

1) To analyze the trends in market arrivals and prices of cotton in major markets of Karnataka.

2) To identify the marketing channels and estimate the marketing costs, margins and price spread.

2. Data sources and methodology

The required secondary data related to the price and arrivals of cotton in Karnataka was collected from Krishimaratavahini *(www.krishimaratavahini.kar.nic.in)*. Based on five-year average arrivals of cotton, the top five cotton markets, *viz.,* Vijayapura, Ranibennur, Chitradurga, Annigeri and Raichur cotton markets were selected. Area, production and productivity of cotton in Karnataka state were collected from the Directorate of Economics and Statistics. The dynamics of market arrivals and prices of cotton were studied through Compound Annual Growth Rate (CAGR) which is worked out by using an exponential function with the formula.

$$Y = AB^x$$

By taking logarithm on both sides,

$$\log Y = \log A + x \log B$$

Writing $\log A = a$, $\log B = b$ and $\log Y = y$,

The equation becomes

$$y = a + bx$$

where,

y = dependent variable

x = time (year)

a = intercept

b = regression coefficient

CAGR = (Antilog b-1) × 100

To study the decadal variation in area, production and productivity, the study period (2000-2020) was divided into two periods (Period I: 2000-2009) and (Period II: 2010-2021) and Compound Annual Growth Rate was estimated. Marketing efficiency was assessed in the study area using the Shepherd, Acharya, and Aggarwal, as well as the marketing efficiency index approaches.

3. Results and discussion

3.1 Trends in area, production and productivity of cotton

The analysis of growth rate in area, production, and productivity of cotton in Karnataka state, Raichur, and Yadgir districts is depicted in Table 1. For the state as a whole, overall growth in area was recorded at a positive

growth rate of 2.09 percent. The production was found to have a positive growth rate of 8.20 percent, and productivity showed a positive growth rate of 5.02 percent, and all were significant at the 1 percent level. This was mainly because adoption of improved technologies, strengthening of extension, reducing risks in cotton production (Praveenraj, 2021). For the Raichur district, the area recorded a positive growth rate of 9.04 percent, production was found to have a positive growth rate of 15.34 percent, and productivity showed a positive growth rate of 5.66 percent and was significant at the 1 percent level. In the Yadgir district, which was included in period II, the area recorded a positive growth rate of 12.46 percent and significance at the 5 percent level; production was found to have a positive growth rate of 17.93 percent and significance at the 5 percent level; and productivity showed a positive growth rate of 4.48 percent.

In Karnataka state during period I, the growth rate of area was negative (-2.44%), and the growth rate of area in period II was positive (2.68%) because, in period II, the adoption of Bt-cotton by farmers was high and demand for Indian cotton was increased from foreign countries. Production was found to have a positive growth rate in both periods. But the productivity was found to have a higher growth rate in period I with 6.41 percent and significant at 1 percent than in period II with 2.14 percent in Karnataka state. Raichur district in period I, the growth rate of area was negative (-6.81%) and the growth rate of area in period II was positive (16.71%), and it was significant at the 1 percent level because, in period II, the demand for Indian cotton was increased from foreign countries and farmers adopted Bt cotton, which was resistant to bollworm pests. Production was found to have a positive growth rate in both periods. But productivity in period I (14.30% and significant at 1%) was higher than period II (0.64%). Hence, there was an increase in growth of area, production, and productivity of cotton in Karnataka. Results are in line with Ramesh *et al.* (2020), who studied the growth in area, production, and productivity of cotton in selected districts of Karnataka. The growth rate in area in Karnataka was increasing at the rate of 2.76 percent and production at the rate of 8.55 percent.

TABLE 1: TRENDS IN AREA, PRODUCTION AND PRODUCTIVITY OF COTTON IN SELECTED DISTRICTS

		Growth rate (%)						
Sl. No	Particulars	Period I (2000 -2009)		Period II (2010 -2022)			Overall (2000 -2022)	
		Karnataka	Raichur	Karnataka	Raichur	Yadgir	Karnataka	Raichur
1.	Area	-2.44	-6.81*	2.68	16.71*	12.46*	2.09*	9.04*
		(0.27)	(0.00)	(0.166)	(0.00)	(0.02)	(0.03)	(0.00)
2.	Production	3.83	7.63	5.32	17.89*	17.93*	8.20*	15.34*
		(0.16)	(0.53)	(0.088)	(0.00)	(0.04)	(0.00)	(0.00)
3.	Productivity	6.41*	14.30*	2.14	0.64	4.48	5.02*	5.66*
		(0.01)	(0.00)	(0.26)	(0.72)	(0.56)	(0.00)	(0.00)

Note: 1. * Indicates significant at 5 percent
2. Figures in parentheses indicate the p- values
3. Yadgir district included in period II (District formed in the year 2009)

3.2 Market arrivals of cotton in major markets of Karnataka

The total market arrivals of cotton in major markets of Karnataka state are depicted in the Table 2. Based on the five-year average of cotton arrivals, the top five markets were selected for study in Karnataka, *viz.* Vijayapura, Ranibennur, Chitradurga, Annigeri, and Raichur.

TABLE 2: ARRIVALS OF COTTON IN MAJOR MARKETS OF KARNATAKA

('000 Quintals)

Sl. No.	Markets	2018	2019	2020	2021	2022	Average	Rank
1	Vijayapura	502.09	460.03	569.83	453.11	456.77	488.37	I
2	Ranibennur	405.95	193.25	251.59	135.68	91.31	215.56	II
3	Chitradurga	157.26	132.32	171.68	157.47	142.11	152.17	III
4	Annigeri	278.38	197.44	175.99	41.61	40.29	146.74	IV
5	Raichur	198.74	205.37	171.31	58.50	30.75	132.93	V
6	Manvi	157.35	214.82	202.25	4.66	2.40	116.30	VI
7	Others	652.67	412.45	665.58	235.23	89.91	411.17	VII
8	Karnataka	2352.48	1815.72	2208.26	1086.27	853.57	1663.26	

Source: www.krishimaratavahini.kar.nic.in

3.3 Total production and market arrivals of cotton in Karnataka

Total production and arrivals of cotton in Karnataka are depicted in the Table 3. Total production of cotton was increased from 2012 to 2022 due to the adoption of Bt cotton by farmers being high, and demand for Indian cotton was increased from foreign countries (Praveenraj, 2021). Although the total production of cotton increased, but total arrivals decreased due to the direct selling of cotton to processing units. Therefore, percent share of total arrivals to the production was decreased from 2012 to 2022.

TABLE 3: TOTAL PRODUCTION AND TOTAL MARKET ARRIVALS OF COTTON IN KARNATAKA (2012-22)

Sl. No.	Year	Total production ('000 qtls)	Total market arrivals ('000 qtls)	% share of total arrivals in APMC
1	2012	5000.29	2863.48	57.26
2	2013	7525.41	3298.06	43.83
3	2014	10090.46	3991.92	39.56
4	2015	4921.71	3697.38	75.12
5	2016	4297.72	2167.59	50.43
6	2017	7864.89	2561.70	32.57

Sl. No.	Year	Total production ('000 qtls)	Total market arrivals ('000 qtls)	% share of total arrivals in APMC
7	2018	6381.53	2352.48	36.86
8	2019	9981.75	1815.72	18.19
9	2020	10289.54	2208.26	21.46
10	2021	8669.837	1086.56	12.53
11	2022	11282.15	882.90	7.82

Source: www.des.karnataka.gov.in

3.4 Trends in market arrivals of cotton in major markets of Karnataka

The analysis of growth rate in total market arrivals of cotton in major markets of Karnataka state is depicted in Table 4. Prices of cotton were showing an increasing trend due to economic development, an increase in demand, and purchasing power parity. Trends in market arrivals and prices of cotton in major markets of Karnataka are represented in Figures. 1 and 2.

Figure 1: Market Arrivals of Cotton in Major Markets of Karnataka (2003-2022)

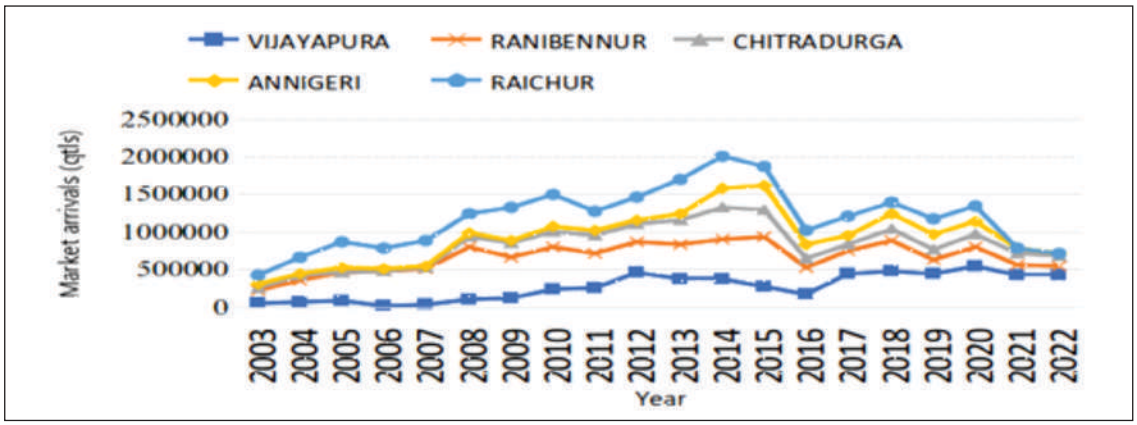
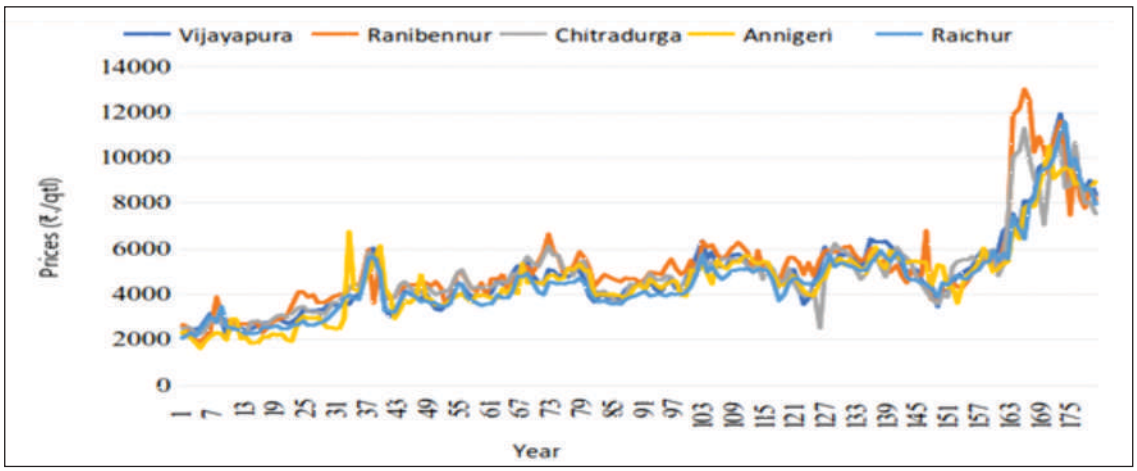


Figure 2: Price Behaviour of Major Cotton Markets in Karnataka (2008-2022)



In period I, the results revealed that, higher compound annual growth in arrivals was found in Chitradurga and Vijayapura markets, recorded 57.27 and 22.53 percent, respectively. This was due to the smaller number of processing units located in their vicinity. Growth rates of arrivals in other selected markets, *i.e.,* Ranibennur, Annigeri, and Raichur markets, were 8.69, 12.76, and 6.57 percent per annum, respectively.

In period II, the results revealed that a higher compound annual growth rate in arrivals was found in Vijayapura markets, *i.e.,* 4.96 percent. Growth rates of arrivals in other selected markets, *i.e.,* Ranibennur, Chitradurga, Annigeri, and Raichur markets, were -16.10, -9.80, -12.33, and -38.44 percent per annum, respectively, and they were showing a negative growth rate because most of the cotton produce moving directly to processing units.

Overall, the results revealed that all the selected markets showing decrease in the market arrivals from 2003–22. The higher compound annual growth in arrivals was found in Chitradurga, Vijayapura, and Annigeri markets, i.e., 17.18, 12.51, and 9.76 percent, respectively. Growth rates of arrivals in Ranibennur and Raichur markets were -3.67 and -11.85 percent per annum, respectively, and they are showing negative growth rate because most of the cotton produce moving directly to processing units. Similar results were obtained by Nagaraj (2019).

TABLE 4: TRENDS IN MARKET ARRIVALS OF COTTON IN MAJOR MARKETS OF KARNATAKA (CAGR %)

Sl. No	Markets	Period I (2003 - 2012)	Period II (2013 - 2022)	Overall (2003 - 2022)
1	Vijayapura	22.53*	4.96	12.51*
		(0.003)	(0.061)	(0.000)
2	Ranibennur	8.69*	-16.10*	-3.67*
		(0.000)	(0.000)	(0.002)
3	Chitradurga	57.27*	-9.80	17.18*
		(0.002)	(0.058)	(0.004)
4	Annigeri	12.76	-12.33	9.76*
		(0.060)	(0.070)	(0.000)
5	Raichur	6.57	-38.44*	-11.85*
		(0.052)	(0.005)	(0.000)

Note: 1. * Indicates significant at 5 percent
2. Figures in parentheses indicate the p- values
3. Market arrivals in quintals

3.5 Marketing cannels followed by the sample respondents in the study area

Three major marketing channels of cotton were identified in the study area. They are,

Channel-I: Producer → Processing units

Channel-II: Producer → Commission agent (APMC) → Processing units

Channel-III: Producer → Village traders → Processing units

The sale of cotton through different marketing channels has been depicted in Table 5. Overall study area, the majority of cotton was marketed through channel I and channel III and least marketed through

channel II. In channel I, 64.16 percent of farmers marketed 71.71 percent of cotton, followed by in channel III, which was 20.00 percent of farmers marketed 16.22 percent of cotton, and in channel-II, 15.84 percent of farmers marketed 12.07 percent of quantity of cotton.

In Raichur, 46.66 percent, 31.67 percent, and 21.67 percent of farmers marketed cotton through channel I, channel II, and channel III, which were 56.49 percent, 23.01 percent, and 20.50 percent of cotton, respectively. In the case of Yadgir, cotton was marketed through two channels, *i.e.,* channel I and channel III. Of total quantity marketed, 88.48 percent and 11.52 percent of cotton were marketed through channel I and channel III, respectively. Similar results were reported by Shivakumar *et al.* (2007) in their study. Farmers prefer direct selling of cotton because it reduces the exploitation by the middlemen.

TABLE 5: MARKETING CHANNELS FOLLOWED BY THE SAMPLE RESPONDENTS IN STUDY AREA

		Raichur		Yadgir		Total	
Sl. No.	Marketing channels	No. of farmers	Quantity sold (q)	No. of farmers	Quantity sold (q)	No. of farmers	Quantity sold (q)
1	Channel I	28 (46.66)	1350 (56.49)	49 (81.66)	1920 (88.48)	77 (64.16)	3270 (71.71)
2	Channel II	19 (31.67)	550 (23.01)	-	-	19 (15.84)	550 (12.07)
3	Channel III	13 (21.67)	490 (20.50)	11 (18.34)	250 (11.52)	24 (20.00)	740 (16.22)
	Total	60	2390	60	2170	120	4560

Note: 1. Channel-I: Producer → Processing units
2. Channel-II: Producer → Commission agent (APMC) → Processing units
3. Channel-III: Producer → Village traders → Processing units

3.6 Cost incurred by the farmers in marketing of cotton

Table 6 indicates the average marketing charges incurred per quintal of cotton by producers. It was revealed that per quintal average marketing cost incurred by cotton producer were Rs. 99.35, Rs. 124.00, and Rs. 89.22 in study area. In the case of Raichur district, the marketing cost incurred by the cotton producer was Rs. 102.00, Rs. 124.00, and Rs. 90.00 in channel-I, channel-II and channel-III respectively. In channel I, transportation charges account for the highest, *i.e.,* 41.96 percent of total marketing cost. In the case of channel II and channel III, loading and unloading charges accounts highest, i.e., 32.02 percent and 44.12 percent of the total marketing cost, respectively. The cost of marketing of cotton was highest in channel II due to commission charges.

In Yadgir, marketing cost incurred by producer per quintal of cotton was Rs. 97.00 and Rs. 89.00 in channel-I and channel-III respectively. In channel I, transportation charges accounts highest, *i.e.,* 42.01 percent, and in channel III loading and unloading charges accounts highest, *i.e.,* 39.88 percent of total marketing cost.

TABLE 6: COST INCURRED BY THE FARMERS IN MARKETING OF COTTON

Sl. No.	Particulars	Raichur			Yadgir		All		
		Channel I Cost (Rs.)	Channel II Cost (Rs.)	Channel III Cost (Rs.)	Channel I Cost (Rs.)	Channel III Cost (Rs.)	Channel I Cost (Rs.)	Channel II Cost (Rs.)	Channel III Cost (Rs.)
1.	Average Transportation charges	42.80 (41.96)	38.30 (30.88)	30.80 (34.22)	40.75 (42.01)	32.8 (36.86)	41.62 (41.89)	38.30 (30.88)	31.5 (35.30)
2.	Average Loading and unloading charges	39.70 (38.92)	39.70 (32.02)	39.70 (44.12)	35.50 (36.89)	35.5 (39.88)	37.60 (37.84)	39.70 (32.02)	37.6 (42.14)
3.	Average Packing and packaging material	15.00 (14.70)	15.00 (12.10)	15.00 (16.66)	16.75 (17.26)	16.70 (18.76)	15.87 (15.97)	15.00 (12.10)	15.87 (17.79)
4.	Weighing charges	4.50 (4.42)	4.50 (3.62)	4.50 (5.00)	4.00 (4.12)	4.00 (4.50)	4.25 (4.27)	4.50 (3.62)	4.25 (4.76)
5.	Commission charges	-	26.50 (21.38)	-	-	-	-	26.50 (21.38)	0
	Average total marketing cost	102.00	124.00	90.00	97.00	89.00	99.35	124.00	89.22

Note: 1. Figures in parentheses indicate percent to respective total
2. Channel-I: Producer → Processing units
3. Channel-II: Producer → Commission agent (APMC)→ Processing units
4. Channel-III: Producer → Village traders → Processing units

3.7 Total marketing cost incurred by market intermediaries in study area

Market intermediaries observed in the study area were village traders and commission agents. Marketing costs incurred by market intermediaries are depicted in Table 7. Total marketing cost incurred by the village traders per quintal of cotton in Raichur district was Rs. 76.00. Transportation charges accounts highest, which was 57.89 percent, followed by labour charges 33.56 percent of the total marketing cost. Average marketing cost incurred by the commission agent per quintal of cotton was Rs. 40.00. Labour charges accounts highest, which was of Rs. 76.25 percent of total marketing cost. In the case of Yadgir district, the average marketing cost incurred by the village traders per quintal of cotton was Rs. 70.00. Transportation charges accounts highest, at 54.29 percent, followed by labour charges 38.57 percent of the total marketing cost.

TABLE 7: MARKETING COST INCURRED BY MARKET INTERMEDIARIES IN STUDY AREA

Sl. No	Particulars	Village trader		Commission agent
		Raichur Cost (Rs .)	Yadgir Cost (Rs .)	Raichur Cost (Rs.)
1	Transportation charges	44.00 (57.89)	38.00 (54.29)	-
2	Labour charges	25.50 (33.56)	27.00 (38.57)	30.50 (76.25)

Sl. No	Particulars	Village trader		Commission agent
		Raichur Cost (Rs .)	Yadgir Cost (Rs .)	Raichur Cost (Rs.)
3	Shop rent	-	-	5.00 (12.50)
4	License and market fee	-	-	2.00 (5.00)
5	Weighing charges	4.50 (5.92)	4.00 (5.71)	-
6	Miscellaneous charges	2.00 (2.63)	1.00 (1.43)	2.50 (6.25)
	Total	**76.00**	**70.00**	**40.00**

Note: Figures in parentheses indicate percent to respective total

3.8 Price spread of cotton through different marketing channels

Table 8 depicts the marketing margin price spread and producer share in consumer rupees across different marketing channels in the study area. Overall average marketing cost per quintal cotton, including all intermediaries, was Rs. 99.50, Rs. 164.00, and Rs. 162.00 in channel I, channel II, and channel III, respectively. In the case of the channel I processing units, directly purchase cotton from the producer by incurring a marketing cost of Rs. 99.50 per quintal. In the case of channel II, the share of marketing cost by the farmer and commission agent was Rs. 124.00 and Rs. 40.00, respectively. Whereas in the case of channel III, the share of marketing cost by farmers and village traders was Rs. 89.50 and Rs. 72.50, respectively. The total marketing margin per quintal was Rs. 360.00 and Rs. 172.50 in channel II and channel III, respectively. In the case of Raichur district, the marketing cost per quintal cotton, including all intermediaries, was Rs. 102.00, Rs. 164.00, and Rs. 165.00 in channel I, channel-II, and channel-III, respectively. In the case of the channel-I processing units directly purchase cotton from the producer by incurring a marketing cost of Rs. 102.00 per quintal. In the case of channel II, the share of marketing cost by the farmer and commission agent was Rs. 124.00 and Rs. 40.00, respectively. Whereas in the case of channel III, the share of marketing cost by farmers and village traders was Rs. 90.00 and Rs. 75.00, respectively. The total marketing margin per quintal was Rs. 360.00 and Rs. 125.00 in channel II and channel III respectively. In the Yadgir district, the per quintal total marketing cost of cotton, including all intermediaries was Rs. 97.00 and Rs. 159.00 in channel I and channel III, respectively. Whereas in the case of the channel-I, processing units directly purchase cotton from the producer by incurring a marketing cost of Rs. 97.00 per quintal. In the case of channel III, the share of marketing cost by farmers and village traders was Rs. 89.00 and Rs. 70.00, respectively. The total marketing margin per quintal was Rs. 170.00 in channel III.

The price spread is the difference between the price paid by the ultimate consumers and the price received by the producer for an equivalent quantity of farm produce. The spread includes marketing costs incurred by the intermediaries as well as their margin accrued. The price spread has been computed for cotton sold by the sample farmers. The gross and net price received along with the marketing cost incurred by each intermediary under different channels has been computed. The net price received by the producer in the study area was Rs. 6900.50, Rs. 6676.00, and Rs. 6835.50

in channel I, channel II and channel III respectively. Price spread of cotton was Rs. 524.00 and Rs. 309.50 in channel I and Channel II respectively. The net price received by the producer in Raichur was Rs. 6898.00, Rs. 6676.00, and Rs. 6810.00 in channel I, channel II and channel III, respectively. In Yadgir, it was Rs. 6903.00 and Rs. 6816.00 in channel I and channel III, respectively. The price spread in Raichur was Rs. 524.00 and Rs. 290.00 in channel II and channel III, respectively. Whereas in Yadgir, it was Rs. 329 in channel III. In Raichur district, the producer share in consumer rupee was worked out to be 92.72 percent and 95.91 percent in channel II and channel III, respectively. Lower price spread and higher producer share in consumer rupee were seen in channel III, compared to channel II. Therefore, channel III was more efficient. In the case of Yadgir, it was 95.42 percent in channel III. Lower price spread and higher producer share in consumer rupee were seen in channel II, compared to channel III.

TABLE 8: PRICE SPREAD OF COTTON THROUGH DIFFERENT MARKETING CHANNELS

(Rs./q)

Sl. No.	Particular	Raichur			Yadgir		All		
		Channel I	Channel II	Channel III	Channel I	Channel III	Channel I	Channel II	Channe l III
I	Net price received by farmer	6898.00	6676.00	6810.00	6903.00	6861.00	6900.50	6676.00	6835.50
II	Sales price								
1	Commission agent	0	7200.00	0	0	0	0	7200.00	0
2	Village traders	0	0	7100.00	0	7190.00	0	0	7145.00
III	Cost of marketing								
1	Farmer	102.00	124.00	90.00	97.00	89.00	99.50	124.00	89.50
2	Commission agent	0	40.00	0	0	0	0	40.00	0
3	Village traders	0	0	75.00	0	70.00	0	0	72.50
	Total	102.00	164.00	165.00	97.00	159.00	99.50	164.00	162.00
IV	Margin								
1	Commission agent	0	360.00	0	0	0	0	360.00	0
2	Village traders	0	0	125.00	0	170.00	0	0	172.50
	Total	0	360.00	125.00	0	170.00	0	360.00	172.50
V	Price spread	0	524.00	290.00	0	329.00	0	524.00	309.50
VI	Producer share in consumer rupees (%)	100	92.72	95.91	100	95.42	100	92.72	96.57

Note: Channel-I: Producer → Processing units
Channel-II: Producer → Commission agent (APMC) → Processing unit
Channel-III: Producer → Village traders → Processing units

3.9 Channel wise marketing efficiency of cotton in study area

Table 9 showed the marketing efficiency in different channels. Shepherd has suggested that the ratio of the total value of goods sold in the market and the total marketing cost be used as a measure of marketing efficiency. According to him, the greater the ratio, the higher the efficiency, and vice versa. The marketing efficiency in channel III (43.03) was greater than in channel II (43.90) in Raichur. Also, in Yadgir, the marketing efficiency in was channel III (45.22).

According to Acharya and Agarwal's approach, the greater the ratio, the higher the efficiency, and vice versa. The marketing efficiency of channel III (24.48) was higher, followed by channel II (13.74) in Raichur. In the case of Yadgir, the marketing efficiency of channel III was 21.85. The average marketing efficiency of channel III (23.16) was greater than that of channel II (13.74). According to the marketing efficiency index, lower the ratio, higher the efficiency. The marketing efficiency of channel III (1.75) was lesser than that of channel II (3.19) in the Raichur district. And in the case of Yadgir, the marketing efficiency index of channel III was 2.06. The average marketing efficiency index of channel III (1.91) was lesser than that of channel II (3.19), because market margin was highest in channel II. Similar results were reported by Shivakumar (2007) in their study.

TABLE 9: CHANNEL WISE MARKETING EFFICIENCY OF COTTON IN STUDY AREA

Sl. No.	Particular	Raichur		Yadgir	All	
		Channel II	Channel III	Channel III	Channel II	Channel III
1	Processors purchase price (Rs ./q)	7200.00	7100.00	7190.00	7200.00	7145.00
2	Total marketing cost (Rs. /q)	164.00	165.00	159.00	164.00	162.00
3	Gross marketing margin (Rs. /q)	360.00	125.00	170.10	360.00	147.50
5	Shepherd's method	43.03	43.90	45.22	43.03	44.12
6	Acharya and Agarwal's method	13.74	24.48	21.85	13.74	23.16
7	Market Efficiency Index	3.19	1.75	2.06	3.19	1.91

Note: Channel-I: Producer → Processing units
Channel-II: Producer → Commission agent (APMC)→ Processing units
Channel-III: Producer → Village traders → Processing units

4. Conclusions and policy implications

1) Compound annual growth rate analysis showed that, the overall period (2000-2022), Karnataka state showed a positive and significant growth rate in area (2.09%), production (8.20%) and productivity (5.02%). In the Raichur district for the overall period (2000-22), growth rate in area (9.04 %), production (15.34 %) and productivity (5.66%) were recorded as positive and significant, and also in Yadgir district, growth rate in area (12.46%), production (17.93%), and productivity (4.48%) were recorded for the period 2010-22.

2) The area under cotton in Karnataka has increased (2.68%) and in production (5.32%) in the Period-II (2010-2022).

3) The results revealed all the selected markets showing a decrease in the market arrivals from 2003–2022. The higher growth in arrivals was found in Chitradurga, Vijayapura, and Annigeri markets, which recorded 17.18, 12.51, and 9.76 percent annual compound growth rates, respectively. Growth rates of arrivals in Ranibennur and Raichur markets were -3.67 and -11.85 percent per annum, respectively, and they showed a negative growth rate.

4) The majority of cotton was marketed through channel I and channel III and least marketed through channel II. In channel-I (64.16%) of farmers marketed 71.71 percent of cotton.

5) It was revealed that per quintal marketing cost incurred by the cotton producer was Rs. 101.70, Rs. 124.20, and Rs. 89.75 in Raichur in channel I, channel II and channel III, respectively. In Yadgir, marketing cost per quintal incurred by the cotton producer was Rs. 97 and Rs. 88.75 in channel I and channel III, respectively. It was revealed that per quintal average marketing cost incurred by cotton producers was Rs. 99.35, Rs. 124.00, and Rs. 89.22 in the study area.

6) Total marketing cost incurred by the village traders per quintal of cotton in Raichur was Rs. 76.00, and marketing cost incurred by the commission agent per quintal of cotton was Rs. 40.00. Total marketing cost incurred by the village traders per quintal of cotton in Yadgir was Rs. 70.00.

7) Overall average marketing cost per quintal cotton, including all intermediaries, was highest in channel II (Rs. 164.00). The total marketing margin per quintal was highest in channel II (Rs. 360.00).

8) Price spread of cotton in study area was Rs. 524.00 and Rs. 309.50 in channel II and channel III, respectively. The price spread in Raichur district was highest in channel II (Rs. 524.00), and in Yadgir it was (Rs. 329) in channel III.

9) According to the Shepherds approach, the average marketing efficiency in channel III (44.12) was greater than in channel II (43.03), because marketing cost was higher in channel II than channel III.

10) According to Acharya and Agarwal's approach, the average marketing efficiency of channel III (23.16) was greater than that of channel II (13.74). The average marketing efficiency index of channel III (1.91) was lesser than that of channel II (3.19).

The growth rate analysis revealed that the increase in production of cotton was due to an increase in area, which was more than an increase in productivity in the state. Therefore, efforts are required to enhance productivity by more concentrated effects of extension for promoting adoption of new production technologies. The results revealed all the selected markets showing a decrease in the market arrivals from 2003–2022. The higher growth in arrivals was found in Chitradurga, Vijayapura, and Annigeri markets, which recorded 17.18, 12.51, and 9.76 percent annual compound growth rates, respectively. Growth rates of arrivals in Ranibennur and Raichur markets were -3.67 and -11.85 percent per annum, respectively, and they showed a negative growth rate. The growth rate analysis revealed that the increase in production of cotton was due to an increase in area, which was more than an increase in productivity in the state. Therefore, efforts are required to enhance the productivity by more concentrated effects of extension for promoting adoption of new production technologies. There is a need for policy intervention for strengthening market infrastructure to increase the market arrivals by providing competitive prices for cotton.

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Agro-Economic Research

Future Market for Agriculture Commodities in India

Brajesh Jha, Sangeeta Chakravarty and Deepak Kumar[1]

Abstract

The present study analyzes the benefits of future trade in agricultural commodities with gram, wheat, soybean, maize-kharif, and maize-rabi. The data for the above analysis is obtained from the National Commodity Derivatives Exchange (NCDEX) and pertains to the period from 2013 to 2018. The study besides usual statistical techniques also uses cointegration between the spot and future prices of the above commodities. The study finds that apprehensions related to future trade in agriculture are exaggerated and finally argues for certainty in policies related to the future trade in agricultural commodities.

Keywords: *Future Market, agricultural commodities, NCDEX*

1. Introduction

The future market is an essential instrument of a liberalized economy. A well-functioning future market in agricultural commodities has the potential to guide farmers about their resource allocation. This is forward-looking unlike the one based on the historical trend in prices. This is based on the current situation and takes account of events in the future. With such an expectation, the future market for many agricultural commodities was initiated in 2003, and in the following years future trade in agricultural commodities has increased. However, future trade in some commodities is often suspended on apprehension of speculation. This uncertainty of the future market restricts its emergence as an effective instrument to provide many benefits to stakeholders and society. The present study, therefore, analyses the future trade of agricultural commodities with the following specific objectives:

1.1 Objectives of the study

The study was undertaken with the following major objectives:

a) To assess future trade of different agricultural commodities in historical years and discuss the kinds of distribution.

b) It analyses the benefits of future trade in terms of volatility, transmission of information, and price integration in spot and future markets with the case of wheat, gram, soybean, maize-kharif, and maize-rabi.

c) It reviews and finally addresses the inflationary role of the future market in a commodity.

2. Data Sources and Methodology

This has been an all-India study based on secondary information from important national (not regional) commodity exchanges especially National Commodity Derivatives Exchange (NCDEX), New Delhi. The study analyses benefits of the future market with the selected commodities like chana, wheat, soybean, maize-kharif and -rabi. The analysis uses many statistical techniques including the long-term relation between future and spot prices and also trade volume of the above commodities. The stationarity of the time-series data is assessed with the Augmented Dickey-Fuller (ADF) test. After making the data stationery, the Johansen's co-integration test is utilized to investigate the long-run relationships among the variables. Additionally, the Granger causality test is conducted to explore the causal relationship between spot prices (Sp) and future prices (Fp) and also trade volume.

The Granger's approach, assesses the extent to which the current value of one variable can be explained by the past values of another. The two-way causation is analyzed through bivariate regression, allowing for determination of whether spot prices (x) Granger causes future prices (y) with time lag and vice versa. The equations used for this analysis are:

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$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 + \alpha_1 y_{t-2} + \ldots\ldots + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \ldots\ldots\ldots + \beta_l x_{t-l} + ut \quad \ldots\ldots\ldots (1)$$

$$X_t = \alpha_0 + \alpha_1 x_{t-1} + \alpha_2 + \alpha_1 x_{t-2} + \ldots\ldots + \alpha_l x_{t-l} + \beta_1 x_{t-1} + \ldots\ldots\ldots + \beta_l x_{t-l} + ut \quad \ldots\ldots\ldots (2)$$

3. Results and Discussion

The data from different secondary sources suggest that future trade in agricultural commodities has increased in the initial years (after 2003), but in subsequent years after fluctuations future trade in agricultural commodities has tapered off, and this now accounts for less than 10 percent of total value of future trade (Jha et al., 2020). The future trade in agriculture is happening primarily in NCDEX, and this is followed by MCX and NMCE. The other future exchanges account for a minuscule proportion of the future trade in agriculture. The future trade is allowed for many agricultural commodities, but in actuality, it is happening regularly for some commodities (guar, castor, gram, crude palm oil, soya complexes, and menthe oil) only (Jha *et al.*, 2020).

Guar, castor oil and soya complexes together accounted for more than one-fourth of future trade of agricultural commodities in many years. An enquiry into nature of these commodities suggests that many of them are free from government regulation in the domestic market. The country has been an important trader (exporter or importer) for these commodities. Some commodities (castor oil, guar seed, soya, similar oil complexes, cotton, barley) traded are of the intermediate kind and have industrial use. The production and marketing of many of the above commodities are highly concentrated and the futures market provides a platform for price discovery. The low participation of farmers is another important feature of the future market for agricultural commodities (Jha *et al.*, 2020).

The commodities specifically studied for assessing the benefits of the future market are chana (gram), wheat, soybean, maize kharif, and maize rabi. The selection of commodities is based on the diversity of government policies and also the availability of desired information for the commodities. The future and spot prices of the above commodities were extracted from the NCDEX Website. The data for the present analysis consists of the daily closing (spot and future) price of a commodity, and the price is assumed to continue till a new price is declared. If multiple prices are reported within a day, the prices are averaged to generate the daily price for the analysis. The study for analytical convenience has considered the contract with the nearest maturity at each point. Thus, the future prices do not relate to a single contract, but it is a transit from the first contract to the latest through a series of intervening contracts. The data for the present analysis varies across commodities from July, 2013 to October, 2018.

The commodity-specific benefits of the future market were analyzed for volatility in future and spot markets of the commodity. Volatility is the ratio of the standard deviation of prices in future and the spot market of a commodity. A ratio of more than one suggests that instability in the future market is higher than that of the spot market. As is apparent from the results, volatility in the future market is higher than the spot market only in the gram (chana); in other commodities (soybean, wheat, and maize) volatility in the future market is lower than the spot market. Accordingly, the ratio is less than one for the majority of commodities, and this is significantly less than one (around 0.80) in wheat, maize rabi, and kharif crops. The present findings thus refute the general impression that the future market for agricultural commodities is more volatile because of speculative activities.

TABLE 1: RATIO OF STANDARD DEVIATION OF FUTURE TO SPOT PRICE OF THE COMMODITIES

Name of the commodities	Standard deviation in prices spot market	Standard deviation in prices of future market	R (SDFP/SDSP)
Chana (gram)	738.11	787.60	1.07
Soyabean	463.02	460.53	0.99
Wheat	146.32	119.16	0.81
Maize Rabi	148.98	125.02	0.84
Maize Kharif	173.45	143.13	0.82

Source: Computed

An active future market can provide a signal for the scarcity of the commodity. This is studied by comparing future and spot prices for particular dates as contango and backwardation in a commodity. Findings suggest that backwardation is the spot price greater than future price, and dominates in wheat, soya, maize-kharif, and maize-rabi crops. The exception to the above is gram (chana), where it is inconclusive as the frequency of backwardation and contango are similar. The prevalent pattern suggests that demand in the spot market is higher than the supply of commodities referred to. However, such a conclusion may be drawn with caution since the market analysts argues that frequency of future trades in the above commodities are fewer, and most of them happens immediately after harvest. While trade in spot market is disproportionately high for the above commodity, this also happens throughout the year. In general price of a commodity is high for a commodity during the off-season (period away from harvest).

TABLE 2: CROPS UNDER CULTIVATION

Name of the Commodities	Backwardation (%)	Contango (%)
Gram / chana	150 (50.2)	149 (49.8)
Soybean	754 (71.9)	295(28.1)
Wheat	823 (82.1)	180 (17.9)
Maize Rabi	471 (63.8)	267 (36.2)
Maize Kharif	453 (86)	74 (14)

Source: Computed

The efficiency of the futures markets requires that variances in both markets (spot and futures) are equal, and their prices are co-integrated. The present study assesses price efficiency by ascertaining co-integration of prices in both markets of a commodity. The estimates suggest existence of a long-run relationship between future and spot prices of most of the commodities analyzed. The direction of causation between the spot and future price was assessed with the granger casualty test. The prices are assumed efficient if the future price granger causes the spot price of a commodity. The estimates show that in gram (chana) and soya, future price granger causes spot price. Whereas, in rabi maize future price not granger causes spot price significantly. The relationship between future and spot price is bidirectional in wheat and maize kharif. The analyses thus suggest that the future market is efficient in gram, soya, wheat, and maize kharif, but it is not so in maize rabi crop.

TABLE 3: GRANGERS CAUSALITY BETWEEN FUTURE TRADE AND SPOT PRICE OF SOME COMMODITIES

Commodity	Null Hypothesis	F Statistics	P Value
Chana/gram	Spot does not granger cause future	0.693	0.5
	Future does not granger cause spot	10.911	0.0
Soybean	Spot does not granger cause future	0.572	0.564
	Future does not granger cause spot	66.882	0.0

Commodity	Null Hypothesis	F Statistics	P Value
Wheat	Spot does not granger cause future	14.695	0.0
	Future does not granger cause spot	4.341	0.013
Maize Rabi	Spot does not granger cause future	6.665	0.001
	Future does not granger cause spot	0.111	0.895
Maize Kharif	Spot does not granger cause future	5.4	0.005
	Future does not granger cause spot	4.727	0.009

Source: Computed

The role of the future trade on inflation of a commodity is being carried out with the Granger causality test between the volumes traded in future market and the spot price of the commodity. The analysis shows that in maize kharif only, causality runs from volume traded in future to spot price; that is, future trade has a positive effect on the rise in spot prices of the commodity. Though this is not the case for other commodities (gram, soybean, wheat, and maize rabi), and suspension of future trade (in a commodity) on apprehension of inflation is not correct. The review in this context suggests that the chances of inflationary pressure of future trade increases in a commodity if the future multiplier is high. This is so for commodities like pepper, mentha oil, guar gum, and guar seed where future multiplier is more than 80 percent. In the most of essential commodities future multiplier is as low as 20-30 percent, therefore the chances of inflation due to future trade does not arise.

4. Conclusions and Suggestions

The above analysis shows that the volatility of prices in the future market is less than the spot market for the commodities analysed. On the majority of dates, the prices of commodities analysed in the spot market are not less than the price in the future market. The prices in future and spot markets are co-integrated for commodities analysed. For such commodities volume traded in future market have not caused inflation in spot market of the same. The future market helps in the price discovery of the commodity, especially when the production and distribution of the commodity are highly concentrated, the commodities are traded (exporter or importer) and least regulated in the country.

Considering the benefits of the future market, it must be strengthened as an important institution for development. The suspension of future trade on the apprehension of speculative activity is not right. Besides suspension of future trade in specific commodities, the uncertainty is also due to changes in regulations like alteration in future margin of the commodity. The uncertainties in future markets constrain the development of the future as a reliable and serious institution. Therefore the study suggests that future trade may be started for a limited number of commodities, which is less sensitive for an average consumer. The introduction of measures like mandatory delivery in future trade of a commodity, and participation of government parastatals (state trading enterprises) will improve the reliability and seriousness of future market in agricultural commodities. This will also improve participation of stakeholders including farmers in the future market.

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Commodity Review

Foodgrains

Procurement of Rice

The total procurement of rice during kharif marketing season 2023-24 up to 22.11.2023 is18075 thousand metric tonnes as against 56869 thousand metric tonnes in marketing season 2022-23. The details are given in Table 1. A comparative analysis of procurement of rice for the period of marketing season 2023-24 (up to 22.11.2023) and the corresponding period of last year is given in figure 1. The percentage share of different states in procurement of rice has been given in figure 2.

TABLE 1: PROCUREMENT OF RICE IN MAJOR STATES

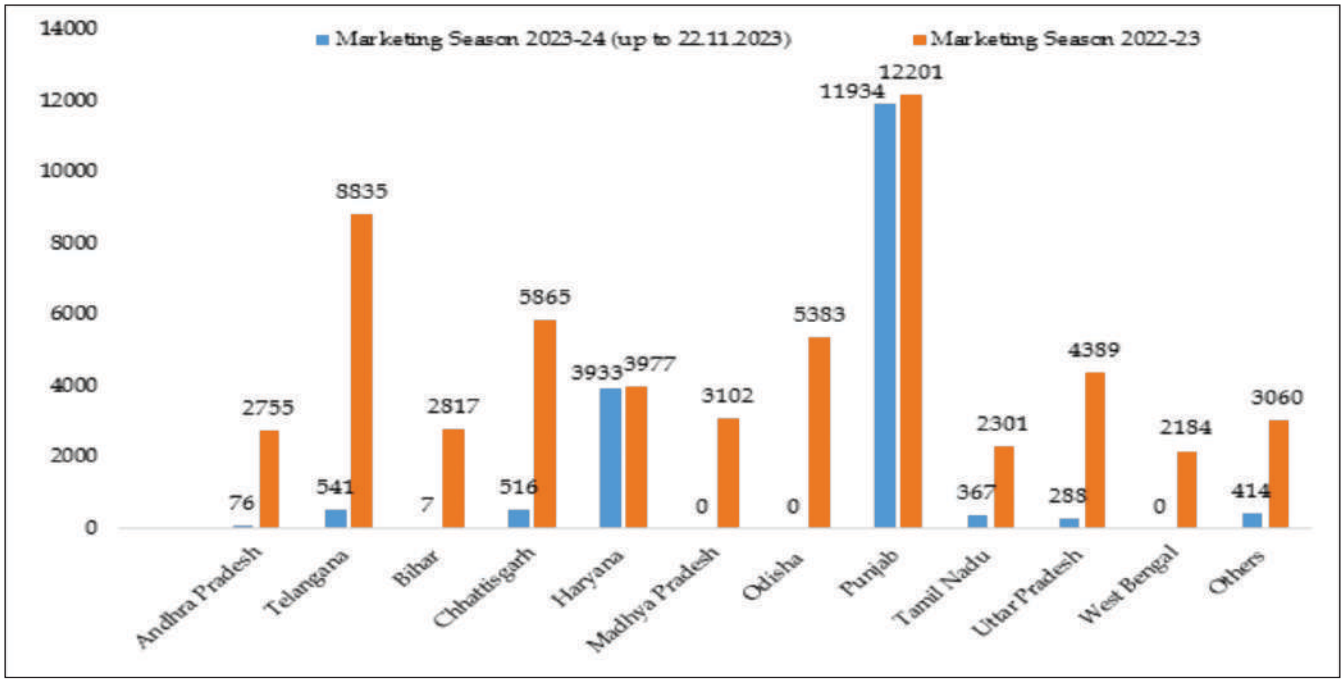
(In thousand metric tonnes)

State	Marketing Season 2023-24 (up to 22.11.2023)		Marketing Season 2022 -23	
	Procurement	Percentage to total	Procurement	Percentage to total
1	2	3	4	5
Andhra Pradesh	76	0.4	2755	4.8
Telangana	541	3.0	8835	15.5
Bihar	7	0.0	2817	5.0
Chhattisgarh	516	2.9	5865	10.3
Haryana	3933	21.8	3977	7.0
Madhya Pradesh	0	0.0	3102	5.5
Odisha	0	0.0	5383	9.5
Punjab	11934	66.0	12201	21.5
Tamil Nadu	367	2.0	2301	4.0
Uttar Pradesh	288	1.6	4389	7.7
West Bengal	0	0.0	2184	3.8
Others	414	2.3	3060	5.4
All India Total	**18075**	**100.0**	**56869**	**100.0**

Source: Department of Food & Public Distribution, Govt. of India

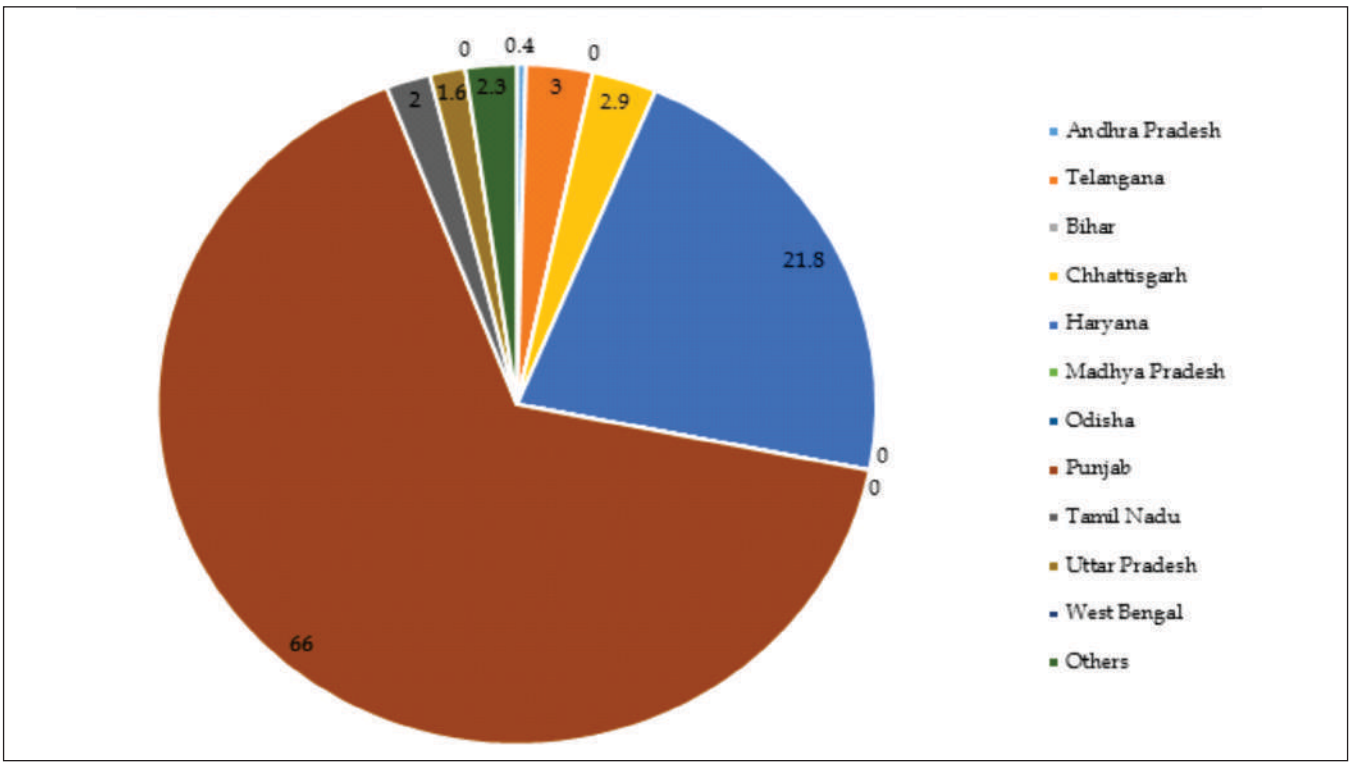
Figure 1: Procurement of Rice in Major States

(In thousand metric tonnes)



Source: Department of Food & Public Distribution, Govt. of India

Figure 2: Percentage Share of Different States in Procurement of Rice during Marketing Season 2023-24 (up to 22.11.2023)



Source: Department of Food & Public Distribution, Govt. of India

Procurement of Wheat

The total procurement of wheat during Rabi marketing season 2023-24 up to 14.07.2023 is 26202thousand metric tonnes as against 18792 thousand metric tonnes in marketing season 2022-23. The details are given in Table 2. The figure 3 depicts the comparison of procurement of wheat during the marketing season 2023-24 (up to 14.07.2023) with the corresponding period of last year. The percentage share of different states in procurement of wheat has been given in figure 4.

TABLE 2: PROCUREMENT OF WHEAT IN MAJOR STATES

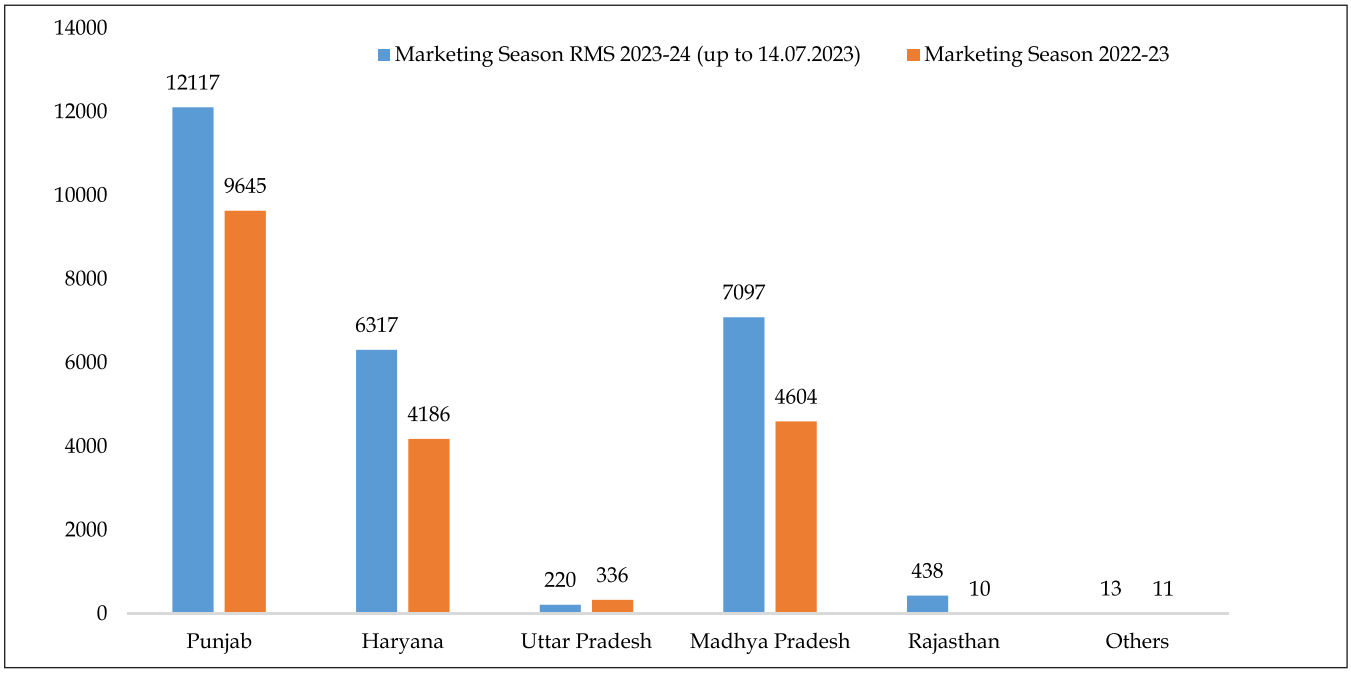
(In thousand metric tonnes)

State	Marketing Season RMS 2023 -24 (up to 14.07.2023)		Marketing Season 2022-23	
	Procurement	Percentage to Total	Procurement	Percentage to Total
1	2	3	4	5
Punjab	12117	46.2	9645	51.3
Haryana	6317	24.1	4186	22.3
Uttar Pradesh	220	0.8	336	1.8
Madhya Pradesh	7097	27.1	4604	24.5
Rajasthan	438	1.7	10	0.1
Others	13	0.1	11	0.1
All India	26202	100	18792	100

Source: Department of Food & Public Distribution.

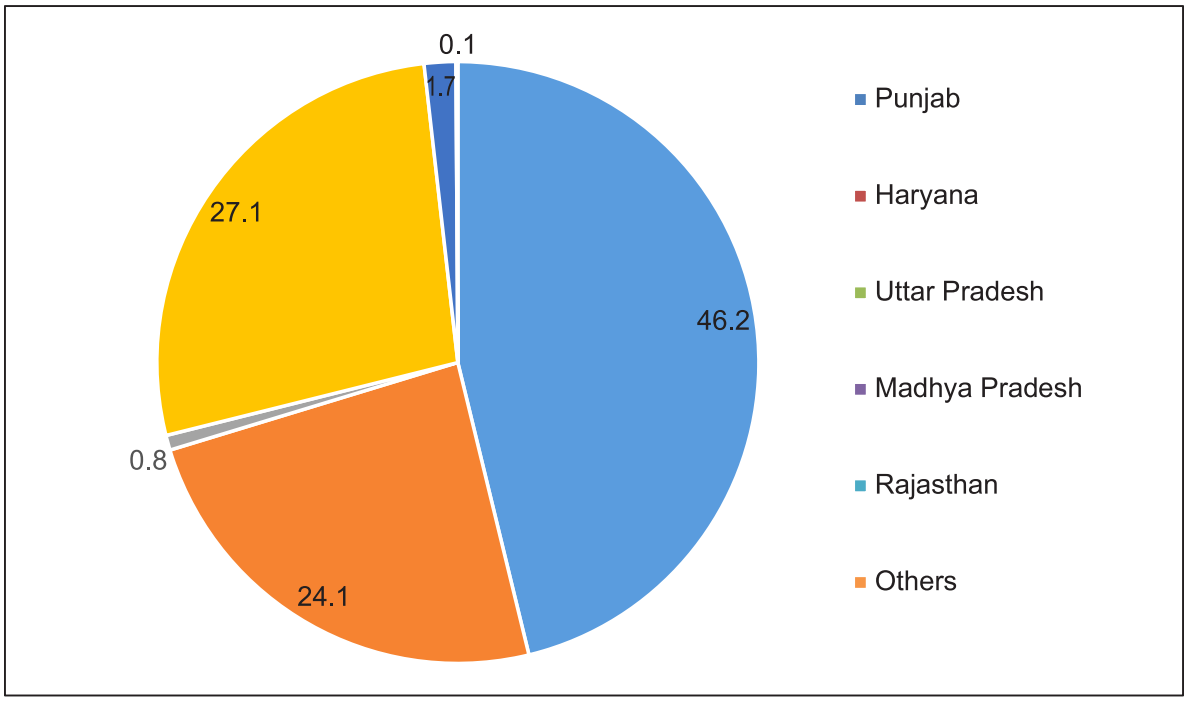
Figure 3: Procurement of Wheat in major States

(In thousand metric tonnes)



Source: Department of Food & Public Distribution, Govt. of India.

Figure 4: Percentage Share of Different States in Procurement of Wheat during Marketing Season 2023-24 (up to 14.07.2023)



Source: Department of Food and Public Distribution, Govt. of India

Commercial Crops

Oilseeds

The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 181.9 in October, 2023 showing a decrease of 2.10 percent over the previous month and decreased by 3.76 percent over the corresponding month of the previous year.

The WPI of all individual oilseeds showed a mixed trend. The WPI of groundnut seed (0.05percent), rape & mustard seed (0.36 percent), cotton seed (1.26 percent). However, the WPI ofcopra(coconut)(0.40percent), gingelly seed (sesamum) (0.78 percent), niger seed (1.72 percent), safflower (4.46 percent), sunflower (4.93percent) & soybean (4.93 percent) decreased over the previous month.

Manufacture of Vegetable and Animal Oils and Fats

The WPI of vegetable and animal oils and fats as a group stood at 142.3 in October, 2023 which shows a decrease of 0.70 percent over the previous month. Moreover, it is decreased by 17.89 percent over the corresponding month of the previous year. The WPI of rapeseed oil (2.62 percent) increased over the previous month. However, the WPI of mustard oil (1.46 percent), soybean oil (1.17 percent), sunflower oil (0.08 percent), groundnut oil (1.39 percent) copra oil (0.61 percent) cotton seed oil (0.90 percent) decreased over the previous month.

Fruits & Vegetable

The WPI of Fruits & Vegetable as a group stood at 204.1 in October, 2023 showing an increase of 1.90 percent over previous month and a decrease of 11.57 percent over the corresponding month of the previous year.

Potato

The WPI of potato stood at 209.7 in October, 2023 showing a decrease of 1.55 percent over the previous month. Moreover, it decreased by 29.27 percent over the corresponding month of the previous year.

Onion

The WPI of onion stood at 333.5 in October, 2023 showing an increase of 23.47 percent over the previous month and an increase of 62.60 percent over the corresponding month of the previous year.

Condiments & Spices

The WPI of condiments & spices (group) stood at 250.7 in October, 2023 showing a decrease of 1.14 percent over the previous month and an increase of 31.12 percent over the corresponding months of the previous year. The WPI of black pepper increased by 1.51 percent over the previous month, and turmeric increased by 0.49 percent &chillies (dry) decreased by 1.89 percent over the previous month.

Tea

The WPI of tea stood at 158 in October, 2023 showing no change over the previous month and a decrease of 8.67 percent over the corresponding month of the previous year.

Coffee

The WPI of coffee stood at 148.9 in October, 2023 showing a decrease of 0.60 percent over the previous month. Moreover, there is a decrease of 2.55 percent over the corresponding month of the previous year.

Sugarcane

The WPI of sugarcane stood at 217 in October, 2023 showing an increase of 3.28 percent over the previous month. Moreover, there is an increase of 3.28 percent over the corresponding month of the previous year.

Raw Cotton

The WPI of raw cotton stood at 159.4 in October, 2023 showing a decrease of 2.80 percent over the previous month and a decrease of 11.15 percent over the corresponding month of the previous year.

Raw Jute

The WPI of raw jute stood at 225.3 in October, 2023 showing a decrease of 4.49 percent over the previous month and a decrease of 17.80 percent over the corresponding month of the previous year.

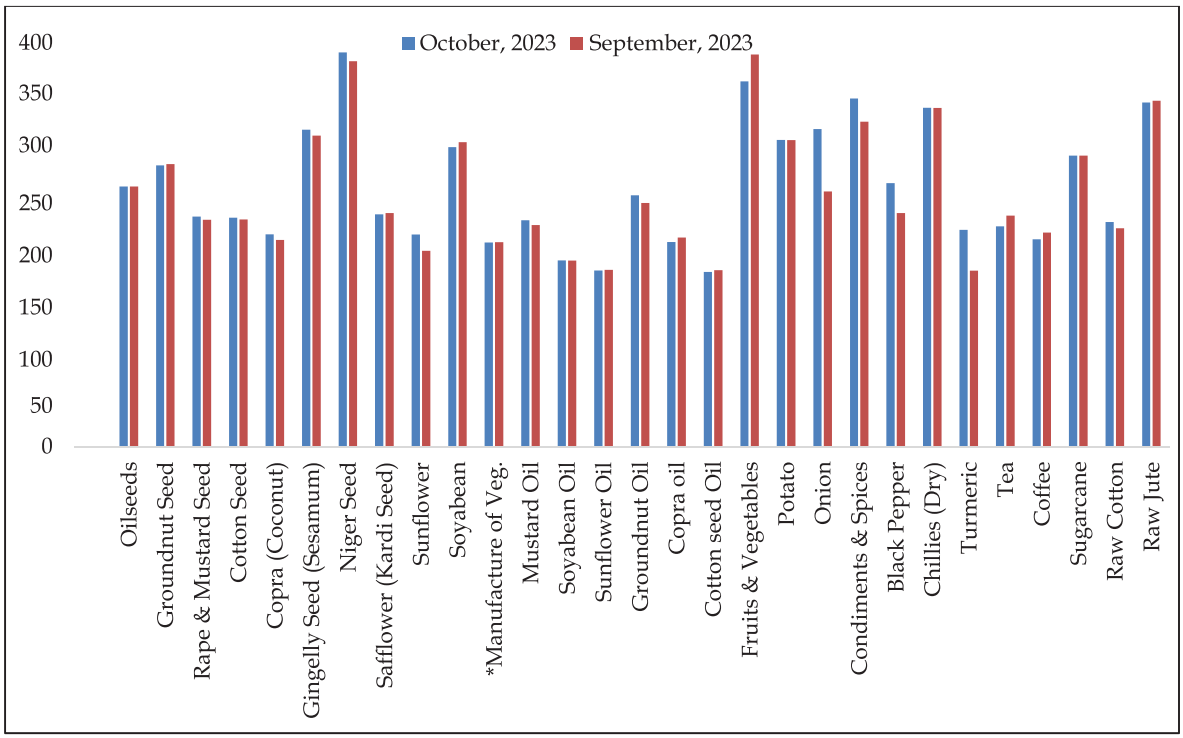
Wholesale Price Index of Commercial Crops is given in Table 3. A graphical comparison of WPI for the period of October, 2023 and September, 2023 is given in figure 5 and the comparison of WPI during the October, 2023 with the corresponding month of last year has been given in figure 6.

TABLE 3: WHOLESALE PRICE INDEX OF COMMERCIAL CROPS (Base Year: 2011-12)

Commodity	October, 2023	September, 2023	October, 2022	Percentage variation over the	
				Month	Year
Oilseeds	181.9	185.8	189.0	-2.10	-3.76
Groundnut Seed	201.1	201.0	175.2	0.05	14.78
Rape & Mustard Seed	166.0	165.4	197.4	0.36	-15.91
Cotton Seed	169.1	167.0	178.0	1.26	-5.00
Copra (Coconut)	150.0	150.6	183.2	-0.40	-18.12
Gingelly Seed (Sesamum)	227.9	229.7	184.9	-0.78	23.26
Niger Seed	291.7	296.8	243.0	-1.72	20.04
Safflower (Kardi Seed)	165.1	172.8	204.0	-4.46	-19.07
Sunflower	144.6	152.1	166.5	-4.93	-13.15
Soyabean	202.6	213.1	208.0	-4.93	-2.60
Manufacture of vegetable and animal oils and fats	142.3	143.3	173.3	-0.70	-17.89
Mustard Oil	154.9	157.2	195.5	-1.46	-20.77
Soyabean Oil	127.1	128.6	171.9	-1.17	-26.06
Sunflower Oil	124.0	124.1	165.7	-0.08	-25.17
Groundnut Oil	177.7	180.2	175.0	-1.39	1.54
Rapeseed Oil	129.1	125.8	158.5	2.62	-18.55
Copra oil	146.7	147.6	165.9	-0.61	-11.57
Cotton seed Oil	121.3	122.4	174.5	-0.90	-30.49
Fruits & Vegetables	204.1	200.3	230.8	1.90	-11.57
Potato	209.7	213.0	296.5	-1.55	-29.27
Onion	333.5	270.1	205.1	23.47	62.60
Condiments & Spices	250.7	253.6	191.2	-1.14	31.12
Black Pepper	201.3	198.3	164.7	1.51	22.22
Chillies (Dry)	238.3	242.9	248.5	-1.89	-4.10
Turmeric	163.8	163.0	110.4	0.49	48.37
Tea	158.0	158.0	173.0	0.00	-8.67
Coffee	148.9	149.8	152.8	-0.60	-2.55
Sugarcane	217.0	210.1	210.1	3.28	3.28
Raw Cotton	159.4	164.0	179.4	-2.80	-11.15
Raw Jute	225.3	235.9	274.1	-4.49	-17.80

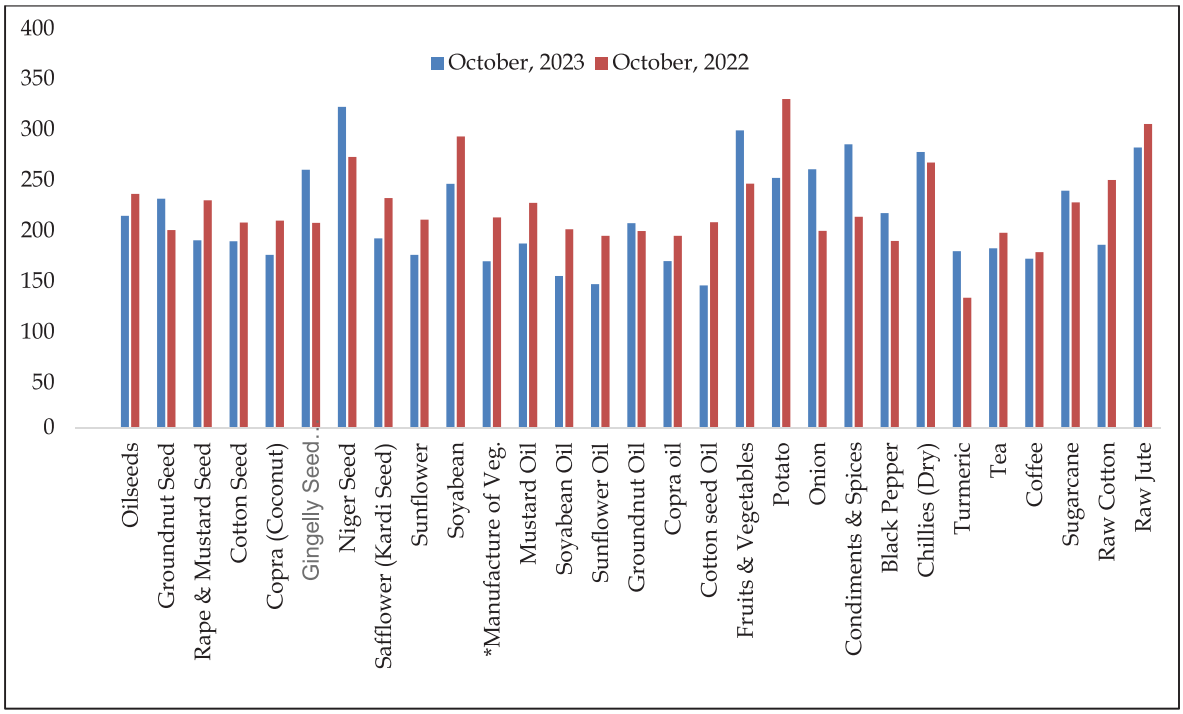
Source: Department of Food & Public Distribution, Govt. of India.

Figure 5: WPI of Commercial Crops during October, 2023 and September, 2023



*Manufacture of Vegetable, Animal Oils and Fats.
Source: Office of the Economic Advisor, DPIIT, Ministry of Commerce, Govt. of India.

Figure 6: WPI of Commercial Crops during October, 2023 and October, 2022



*Manufacture of Vegetable, Animal Oils and Fats.
Source: Office of the Economic Advisor, DPIIT, Ministry of Commerce, Govt. of India.

Statistical Tables

1. Wages

STATE-WISE PREVAILING AVERAGE DAILY WAGES

(Value in Rs)

Sr. No.	State	Month & Year	Normal Working Hours	Field Labour												* Field Labour		Non Agri. Occupation		
				Ploughing		Sowing		Weeding		Reaping &Harvesting		Other Agri. Labour		Tractor Driver				Carpenter	Blacksmith	Mason
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	M	M
1	Andhra Pradesh	June, 23	8	558	375	523	384	379	286	475	369	517	342	679	-			695	583	718
2	Assam	June, 23	8	488	465	483	439	476	438	489	440	483	448	556	-			568	512	553
3	Bihar	May, 23	8	390	340	354	313	358	315	375	-	370	340	465	-			559	537	545
4	Chhattisgarh	June, 23	8	469	357	272	226	231	210	240	215	241	216	470	-			455	358	401
5	Goa	June, 23	8	830	650	653	476	800	613	800	650	680	488	1213	-			1079	800	967
6	Gujarat	June, 23	8	312	NR	277	252	248	248	254	251	157	155	389	-			500	500	500
7	Haryana	June, 23	8	599	-	556	492	521	475	520	477	518	478	627	-			722	684	797
8	Himachal Pradesh	June, 23	8	584	-	509	491	496	485	502	506	471	449	649	-			671	657	658
9	Jharkhand	June, 23	8	311	287	305	273	309	267	309	283	301	263	402		Not Required		461	452	485
10	Karnataka	June, 23	8	647	-	444	309	372	288	397	291	450	321	625	-			577	522	710
11	Kerala	June, 23	8	930	NR	NR	616	NR	623	843	647	787	658	NR				1060	975	1031
12	Madhya Pradesh	June, 23	8	336	272	325	270	293	261	331	291	348	298	446	-			492	477	500
13	Maharashtra (P*)	June, 22	8	406	283	381	256	356	244	490	NR	378	244	607	-			500	450	472
14	Odisha	March,23	8	410	281	370	305	364	316	373	257	387	322	534	-			593	538	591
15	Punjab	June, 23	8	515	455	508	449	488	411	525	NR	492	415	522	-			620	599	614
16	Rajasthan	June, 23	8	456	361	448	357	378	339	394	344	419	308	511	-			534	495	593
17	Tamil Nadu	June, 23	8	678	320	643	331	647	329	754	329	653	338	864	-			797	716	851
				Not Required												495	321	476	450	NR
19	Tripura	June, 23	8	419	NR	369	319	364	313	357	300	303	251	491	NR			458	378	361
20	Uttar Pradesh	June, 23	8	349	-	345	327	336	317	348	324	337	323	400	-	Not Required		558	-	590
21	Uttarakhand	June, 23	8	651	NR	471	428	495	429	484	446	494	438	NR				726	NR	733
22	West Bengal	June, 23	8	489	400	359	323	346	312	372	331	337	309	532	-			538	506	543

Source: State Governments

Note: 1 Other agricultural labour include field waterping, carrying load, well diggers, cleaning silt from waterways and embankment, etc

2. *States of Telangana do not give operation–wise details as they furnish data for the group

3. P* - Provisional as the State has not furnished data for its all districts.

4. NR: Not Reported

2. Prices

WHOLESALE PRICES OF CERTAIN AGRICULTURAL COMMODITIES AND ANIMAL HUSBANDRY PRODUCTS AT SELECTED CENTRES IN INDIA

(All Prices in Rupees)

SN. No.	Commodity	Variety	Unit	State	Centre	Oct-23	Sep-23	Oct-22
1	Wheat	PBW 343	Quintal	Punjab	Amritsar	NA	NA	NA
2	Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	2329	2311	2311
3	Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	2698	2541	2368
4	Jowar	-	Quintal	Maharashtra	Mumbai	5000	4940	3600
5	Gram	No III	Quintal	Madhya Pradesh	Sehore	5809	6021	4298
6	Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	2078	1953	2336
7	Gram Split	-	Quintal	Bihar	Patna	7003	7018	6300
8	Gram Split	-	Quintal	Maharashtra	Mumbai	7700	6820	6500
9	Arhar Split	-	Quintal	Bihar	Patna	13515	13240	9650
10	Arhar Split	-	Quintal	Maharashtra	Mumbai	13500	13500	10100
11	Arhar Split	-	Quintal	Delhi	Delhi	14943	13740	9825
12	Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	14750	14040	9675
13	Gur	-	Quintal	Maharashtra	Mumbai	4950	4800	4775
14	Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	4700	4700	4900
15	Gur	Balti	Quintal	Uttar Pradesh	Hapur	3463	3760	3675
16	Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	5453	5440	6293
17	Mustard Seed	Black	Quintal	West Bengal	Raniganj	6350	6380	6463
18	Mustard Seed	-	Quintal	West Bengal	Kolkata	5925	5980	7038
19	Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	5333	5282	7838
20	Linseed	Small	Quintal	Uttar Pradesh	Varanasi	5315	5314	7740
21	Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	2975	2870	3000
22	Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	3750	3750	4125
23	Castor Seed	-	Quintal	Telangana	Hyderabad	NA	NA	NA
24	Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	13663	13140	10568
25	Copra	FAQ	Quintal	Kerala	Alleppey	8588	8210	7563
26	Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	7500	7500	6775
27	Groundnut	-	Quintal	Maharashtra	Mumbai	13000	12400	11750
28	Mustard Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1855	1821	2418
29	Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1796	1817	2254
30	Groundnut Oil	-	15 Kg.	Maharashtra	Mumbai	2413	2669	2461
31	Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2838	2830	2663
32	Linseed Oil	-	15 Kg.	Uttar Pradesh	Kanpur	2163	2154	2495
33	Castor Oil	-	15 Kg.	Telangana	Hyderabad	2419	2481	2775
34	Sesamum Oil	-	15 Kg.	Delhi	Delhi	2758	2780	2525
35	Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	4413	4510	3650
36	Coconut Oil	-	15 Kg.	Kerala	Cochin	1934	1869	1909
37	Mustard Cake	-	Quintal	Uttar Pradesh	Kanpur	2961	2937	2824
38	Groundnut Cake	-	Quintal	Telangana	Hyderabad	NA	NA	NA

WHOLESALE PRICES OF CERTAIN AGRICULTURAL COMMODITIES AND ANIMAL HUSBANDRY PRODUCTS AT SELECTED CENTRES IN INDIA - *Contd.*

SN. No.	Commodity	Variety	Unit	State	Centre	Oct-23	Sep-23	Oct-22
39	Cotton/Kapas	NH 44	Quintal	Andhra Pradesh	Nandyal	7275	7490	10000
40	Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	5925	6060	7250
41	Jute Raw	TD 5	Quintal	West Bengal	Kolkata	4825	5230	5931
42	Jute Raw	W 5	Quintal	West Bengal	Kolkata	4825	5230	5931
43	Oranges	Big	100 No	Tamil Nadu	Chennai	2400	2540	2275
44	Oranges	Nagpuri	100 No	West Bengal	Kolkata	NA	NA	600
45	Banana	-	100 No.	Delhi	Delhi	438	417	459
46	Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	600	580	588
47	Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	60000	60000	55000
48	Almonds	-	Quintal	Maharashtra	Mumbai	75000	75300	62500
49	Walnuts	-	Quintal	Maharashtra	Mumbai	88500	100000	125000
50	Kishmish	-	Quintal	Maharashtra	Mumbai	20000	20000	16000
51	Peas Green	-	Quintal	Maharashtra	Mumbai	7800	7960	7000
52	Tomato	Ripe	Quintal	Uttar Pradesh	Kanpur	1228	1950	2975
53	Ladyfinger	-	Quintal	Tamil Nadu	Chennai	1575	1360	1600
54	Cauliflower	-	100 No.	Tamil Nadu	Chennai	1875	1780	3250
55	Potato	Red	Quintal	Bihar	Patna	1220	1390	1768
56	Potato	Desi	Quintal	West Bengal	Kolkata	1595	1564	2150
57	Potato	Sort I	Quintal	Tamil Nadu	Mettuppalayam	4309	4142	4936
58	Onion	Pole	Quintal	Maharashtra	Nashik	2400	2010	1638
59	Turmeric	Nadan	Quintal	Kerala	Cochin	13000	12700	11000
60	Turmeric	Salam	Quintal	Tamil Nadu	Chennai	18000	18400	11775
61	Chillies	-	Quintal	Bihar	Patna	22450	22600	21700
62	Black Pepper	Nadan	Quintal	Kerala	Kozhikode	59875	61520	47375
63	Ginger	Dry	Quintal	Kerala	Cochin	33000	33000	15500
64	Cardamom	Major	Quintal	Delhi	Delhi	63088	59600	57725
65	Cardamom	Small	Quintal	West Bengal	Kolkata	221250	226000	155625
66	Milk	Buffalo	100 Liters	West Bengal	Kolkata	7750	7750	6500
67	Ghee Deshi	Deshi No1	Quintal	Delhi	Delhi	61417	62006	66613
68	Ghee Deshi	-	Quintal	Maharashtra	Mumbai	66000	75000	54250
69	Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	49025	48500	46625
70	Fish	Rohu	Quintal	Delhi	Delhi	13750	12400	13250
71	Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	50500	54400	51250
72	Eggs	Madras	1000 No.	West Bengal	Kolkata	5835	5732	4990
73	Tea	-	Quintal	Bihar	Patna	25725	25380	27400
74	Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	10284	10202	11320

WHOLESALE PRICES OF CERTAIN AGRICULTURAL COMMODITIES AND ANIMAL HUSBANDRY PRODUCTS AT SELECTED CENTRES IN INDIA - - *Concld.*

SN. No.	Commodity	Variety	Unit	State	Centre	Oct-23	Sep-23	Oct-22
75	Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	33250	41800	49000
76	Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	28000	28000	24000
77	Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	9056	9190	9038
78	Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	3950	4290	4433
79	Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	13200	13240	13250
80	Rubber	-	Quintal	Kerala	Kottayam	13350	12760	14625
81	Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	89000	91200	91250
82	Paddy	2716	Quintal	Andhra Pradesh	Vijayawada	2330	2386	2200
83	Paddy	Basmati	Quintal	Punjab	Amritsar	3363	3460	3238
84	Paddy	No III	Quintal	Uttar Pradesh	Kanpur	2155	2076	1931
85	Paddy	Common	Quintal	West Bengal	Kolkata	2183	2183	2040

Source: DPIIT, Ministry of Commerce and Industry, Govt. of India.

Crop Production

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING THE MONTH OF NOVEMBER, 2023

State	Sowing	Harvesting
(1)	(2)	(3)
Andhra Pradesh	Paddy, Jowar (in some areas), Bengal Gram, horsegram, condiment, spices and potato	Kharifpaddy,ragi,otherKharifcereals ginger and groundnut
Assam	Rabipaddy,gram,mustard,wintervegetables and potato	Kharif paddy, jute, tea and winter potato
Bihar	Wheat,Barley,Gram,rapeseed&mustard &sweet potato	KharifpaddyandPotato
Gujarat	Paddy, wheat, gram pulses and potato.	Paddy,Kharif,jowar,groundnut,bajraand cotton
Himachal Pradesh	Wheat,barleyandgram	Winter paddy, rabi kharif, sugarcane, ginger (dry), chillies (dry),tobacco, cotton, tumeric and sunnhemp
Jammu & Kashmir	Wheat(inKashmir),barley,linseed, rapeseed and mustard	Maize (in Jammu)
Karnataka	Bengal gram, potato and rabi paddy	Kharifpaddy,jowar,bajra,ragi,groundnut and sweet potato
Kerala	Paddy,pulses&sweetpotato	Kharifpaddy,sugarcane,gingerand tapioca
Madhya Pradesh	Wheat, barley, gram, rabi pulses, potato, rapeseed, mustard and castored	Kharif paddy, jowar, bajra, ragi, kharif, pulses, potato, chillies, tobacco, cotton sweet potato and turmeric
Maharashtra	Wheat, gram, barley, jowar and pulses	Kharifpaddy,jowar,groundnut,bajra, cotton and sugarcane
Manipur	–	Winterpaddy,tur,groundnut,sesamum, sweet potato and tumeric
Orissa	Wheat,sugarcane,tobacco,mustardgram and linseed	Kharifpaddy,groundnut,sugarcane,cottonand sunnhemp
Punjab	Wheat, barley, gram &linseed	Jowar,bajra,maize,cottonand sugarcane
Rajasthan	Wheat,barley,gram,potato,tobacco, rapeseed, mustard and lineseed.	Paddy, jowar, bajra, sugarcane and cotton

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING AUGUST, 2023- *contd.*

State	Sowing	Harvesting
(1)	**(2)**	**(3)**
Tamil Nadu	Rabi paddy, jowar, cotton tobacco, horsegram,chillies,rapeseedand mustard	Kharif paddy, kharif jowar, cumbu ragi, maize, groundnut (unirrigated), cotton varagu, samai, tapioca & ginger
Tripura	Pulses, potato, rapeseed and mustard	Winter rice
Uttar Pradesh	Wheat, barley, gram, lineseed and cotton	Kharifpaddy,jowar,bajra, sugarcane, groundnut, cotton, tobacco and sunnhemp
WestBengal	Wheatpaddy,wheat,barley,linseed, rapeseed, mustard and potato	winterpaddy,sugarcane,sesamumand cotton
Delhi	Wheat,barley,gram,pulses,tobacco, lineseed, rapeseed and mustard	Jowar,kharifpulses,sugarcane,sesamum and sweet potato

(K)- Kharif (R)- Rabi

Note to Contributors

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