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FARM SECTOR NEWS

GENERAL SURVEY OF AGRICULTURE

ARTICLES

Costs and Returns from Cultivation of Major Crops in Punjab

A Study on Farm Livelihood Activities through Kudumbashree Programme in Kerala

AGRO - ECONOMIC RESEARCH

Economic Analysis of High-Yield Varieties of Apple Crop in Himachal Pradesh, Jammu & Kashmir, and Uttarakhand

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AGRICULTURAL SITUATION IN INDIA

VOL. LXXIX June, 2023 No. 03 **Editorial Board** Chairman Shri Arun Kumar Page No. **CONTENTS** Editor **FARM SECTOR NEWS** Dr. Promodita Sathish 1 Deputy Economic Adviser **GENERAL SURVEY OF AGRICULTURE** 5 Shri Rishi Kant ARTICLES Assistant Economic Adviser Dr. P. Babu Costs and Returns from Cultivation of Major 6 Officials Associated in Preparation of the Crops in Punjab - Bashir Ahmad Esar and Jatinder Publication Sachdeva Shri Sachin Mittal - Tech. Asst. A Study on Farm Livelihood Activities through Shri Navdeep Singh - Junior Statistical Officer 18 Kudumbashree Programme in Kerala - Dr. Cover Design By: Saravana Selvi C., Dr. K. Venkatesan, Dr. K.S. Smt. Yogeshwari Tailor - Asst. Graph Pushpa **Agro-Economic Research Section AGRO-ECONOMIC RESEARCH** Economics, Statistics and Evaluation Division Department of Agriculture & Farmers Welfare Economic Analysis of High-Yield Varieties of 27 Ministry of Agriculture & Farmers Welfare Apple Crop in Himachal Pradesh, Jammu & Government of India Kashmir and Uttarakhand - A Comparative 103, F-Wing, Shastri Bhawan, Study - Sujan Singh, Nisha Devi and Vamika Darhel New Delhi-110 001 - Agricultural Economics Research Centre (AERC), Phone: 23385988 HPU, Shimla (Email: publication.des-agri@gov.in) Soft copy of the journal is also available at: **COMMODITY REVIEW** https://desagri.gov.in/ and https://eands.dacnet.nic.in/publication.htm 39 Foodgrains Subscription **Commercial Crops** 43 Inland Foreign Single Copy : Rs. 40.00 £ 2.9 or \$ 4.5 **STATISTICAL TABLES** Annual : Rs. 400.00 £ 29 or \$ 45 Available from WAGES The Controller of Publications, 1. State-wise Average Daily Wages of Field 46 Ministry of Urban Development, Labourers Deptt. of Publications, Publications Complex (Behind Old Secretariat), **PRICES** Civil Lines, Delhi-110 054. Phone: 23813761, 23813762, 23813764, 23813765 2. Wholesale Prices of Certain Important 47 (Email: acop-dep@nic.in) Agricultural Commodities and Animal ©Articles Published in the Journal cannot be Husbandry Products at Selected Centres in reproduced in any form without the permission of the India. Chairman of the Editorial Board. For article submission, please refer to 'Note to **CROP PRODUCTION** Contributors'. Sowing and Harvesting Operations 50 NAAS Score: 4.53 out of 6

Editorial Desk

This edition of Agricultural Situation in India includes farm sector news, data on production and procurement of foodgrains, price indices, inflation rates, state-wise average daily wages along with two research articles, one on "Costs and Returns from Cultivation of Major Crops in Punjab" and second on "A Study on Farm Livelihood Activities through Kudumbashree Programme in Kerala". In addition to this, an Agro-Economic Research study titled "Economic Analysis of High-Yield Varieties of Apple Crop in Himachal Pradesh, Jammu & Kashmir, and Uttarakhand - A Comparative Study" conducted by the Agro-Economic Research Centre, Himachal Pradesh University, under the Agro-Economic Research scheme of Economics, Statistics and Evaluation Division, DA&FW is part of this edition.

The major farm sector news inter-alia cover Cabinet approval of MSP for kharif crops for Marketing Season 2023-24; events like celebration of Mission LiFE, G-20 Agriculture Working Group meeting; workshop on Systems Approach for Management of Fruits Flies on Mango; news on signing of MoU between ICAR and Amazon Kisan to empower farmers; launch of PM KISAN mobile app with face authentication feature, etc.

The annual rate of inflation based on all-India WPI has decreased from 16.23 percent in June, 2022 to (-) 4.12 percent (provisional) in the month of June, 2023. The annual food inflation rate decreased by 1.24 percent in the month June, 2023 (provisional) over June, 2022, whereas on month-on-month basis, the food inflation rate increased by 1.39 percent in June, 2023 over May, 2023, provisionally. The cumulative monsoon season rainfall in the country during the period 1st June, 2023 to 28th June, 2023 has been 16 percent lower than the long period average (LPA). Current live storage in 146 major water reservoirs in the country is 47.95BCM, as against the average storage of last 10 years, 43.49 BCM.

The article on "Costs and Returns from Cultivation of Major Crops in Punjab" intends to assess input use in major crops grown in Punjab *viz.*, wheat, paddy, basmati, cotton, maize and rapeseed & mustard. The article tries to calculate the major component of variable costs of main crops and returns over the variable costs. The study concludes that machine and human labor are the major components of cultivation costs. Wheat and paddy are found to be most profitable crops while maize and rapeseed & mustard are the least profitable. The paper suggests framing of policies to enhance the yield of maize and R&M, export of basmati, increase in area under resistance crops and encouraging farmers to cultivate oilseeds.

The article "A Study on Farm Livelihood Activities through Kudumbashree Programme in Kerala" explores the impact of the Kudumbashree programme on farm initiatives in Kerala and uses a case study to analyse the economic impact of this programme on the lives of rural women. The paper concludes that Kudumbashree programme's involvement in farm livelihood activities has proven to be a significant driver of women's economic empowerment and social transformation in rural Kerala. The programme has ventured into organic cultivation, and weekly markets called 'Nattuchantha' have proved as effective methods for marketing agricultural produce of women farmers. The programme also supports temporary value addition units during the Onam season, and is also ensuring better marketing opportunities for joint liability group products resulting in poverty alleviation and gender equality.

The Agro-Economic Research on "Economic Analysis of High-Yield Varieties of Apple Crop in Himachal Pradesh, Jammu & Kashmir, and Uttarakhand - A Comparative Study" aims to estimate the cost and return of high-density apple plantation in Himachal Pradesh, Jammu & Kashmir and Uttarakhand. The study aims to assess these practices and suggest improvements in ongoing apple farming practices. The analysis of high-density apple production in three selected states/UTs found that Himachal Pradesh had the highest per hectare net returns over costs. The study also observes that per hectare net returns over cost were highest in marginal farms in Himachal Pradesh, small farms in Jammu & Kashmir, and medium farms in Uttarakhand state. The study suggests providing quality root stocks & low cost high density plants, developing irrigation infrastructure, addressing crop damage, offering insurance services, organizing awareness camps, regulating labour markets, establishing soil testing labs, and setting up of cold storage and fruit processing units to encourage growers to increase area coverage under high density apple crops.

Promodita Sathish

Farm Sector News

Cabinet Decisions and Announcements

Union Cabinet approves MSP for Kharif crops for Marketing Season 2023-24

The Cabinet Committee on Economic Affairs (CCEA) chaired by the Hon'ble Prime Minister, Shri Narendra

Modi has approved the increase in the Minimum Support Prices (MSP) for all mandated kharif crops for marketing season 2023-24. The Government has increased the MSP of kharif crops for marketing season 2023-24 to ensure remunerative prices to the growers for their produce and to encourage crop diversification.

(Rs per quintal)

Minimum Support Prices for Kharif Marketing Season (KMS) 2023-24

						(ito:per quintar)
Crops	MSP 2014-15	MSP 2022-23	MSP 2023-24	Cost* KMS 2023-24	Increase in MSP over 2022-23	Margin over cost in percent
Paddy-Common	1360	2040	2183	1455	143	50
Paddy-Grade A^	1400	2060	2203	-	143	-
Jowar-Hybrid	1530	2970	3180	2120	210	50
Jowar- Maldandi^	1550	2990	3225	-	235	-
Bajra	1250	2350	2500	1371	150	82
Ragi	1550	3578	3846	2564	268	50
Maize	1310	1962	2090	1394	128	50
Tur/Arhar	4350	6600	7000	4444	400	58
Moong	4600	7755	8558	5705	803	50
Urad	4350	6600	6950	4592	350	51
Groundnut	4000	5850	6377	4251	527	50
Sunflower seed	3750	6400	6760	4505	360	50
Soybean (Yellow)	2560	4300	4600	3029	300	52
Sesamum	4600	7830	8635	5755	805	50
Nigerseed	3600	7287	7734	5156	447	50
Cotton (Medium staple)	3750	6080	6620	4411	540	50
Cotton (Long staple) ^	4050	6380	7020	-	640	-

Note: *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; ^ Cost data are not separately compiled for Paddy (Grade A), Jowar (Maldandi) and Cotton (Long staple)

The expected margin to farmers over their cost of production is estimated to be highest in case of bajra (82%), followed by tur (58%), soybean (52%) and urad (51%). For rest of the crops, margin to farmers over their cost of production is estimated to be at least 50%.

Meetings and Events

Mega event on Mission LiFE celebrated on World Environment Day

Ministry of Agriculture and Farmers Welfare organized a mega event on Mission LiFE on the occasion of "World Environment Day" on 5th June, 2023 at Dr. C. Subramaniam Auditorium, NASC Pusa, New Delhi. The programme began with tree plantation activity in the premises of the venue by Shri Kailash Choudhary, Minister of State for Agriculture and Farmers Welfare with other dignitaries. This was followed by inauguration of exhibition on Natural and Organic Farming showcasing and creating awareness on the sustainable agricultural practices symbolizing Mission LiFE.

Shri Kailash Choudhary in his remarks highlighted the importance of Life Style for Environment and stressed upon chemical free farming as one important option for sustaining the resources for future generations. He emphasized the adoption of Mission LiFE in agriculture to address the adverse impact of climate change. He also stressed upon recycling of wastes in agriculture as it is best example for circular economy. He emphasized that we should all take care in day to day life to save the resources.

Shri Manoj Ahuja, Secretary, DA&FW in his address briefed on the global temperature rise from preindustrial era and its direct and indirect impacts on agriculture and allied sectors. He also mentioned on the saving of water through adoption of Per Drop More Crop as India consumes more water for irrigation compared to other countries. He added that there is a need to adopt all the 7 principles of Mission LiFE in day to day agricultural practices besides making policy towards sustainable agriculture.

The inaugural session was followed by panel discussion on linking Mission LiFE to organic and natural farming. A total of 713 awareness events and 709 action events were organized with 52346 no. of participants and total 49028 people taking pledge under Mission LiFE so far.

G-20 Agriculture Working Group meeting

A 3-day meeting from 15-17 June, 2023 of the Agriculture Ministers under the Agriculture Working Group (AWG) of the G-20 was held in Hyderabad. More than 200 delegates from member countries, invited countries and international organizations participated

in the meeting. Hon'ble Union Agriculture and Farmers Welfare Minister, Shri Narendra Singh Tomar in a press conference said that agriculture priority sectors are being discussed in the meeting. Shri Tomar said that the priority areas of the Agriculture Working Group are: (a) Food security and nutrition with a focus on improving social protection systems to promote agrodiversification and enhance food security; (b) Sustainable agriculture and financing green and climate resilient agriculture with a climate smart approach focused on climate resilient technologies and farming system models for sustainable agricultural production; (c) Strengthening infrastructure for small and marginal farmers, women and youth, sharing technology and investment and through increasing economic opportunities inclusive agricultural value chains and food systems to enhance the resilience and efficiency of value chains; (d) Digitalization for agricultural transformation with emphasis on standardized agricultural data platforms as digital public goods and leveraging new-emerging digital technologies to transform the agri-food sector.

The first day of the three-day G20 Agriculture Ministers Meeting began with the inauguration of an exhibition by Hon'ble Minister of State, MoA&FW, Shri Kailash Choudhary. The exhibitors displayed their achievements in the field of agriculture and allied sectors. The exhibition included 71 stalls in the fields of Waste to Wealth management, post-harvest, smart & precision agriculture, agri innovations, value chain management, etc.

Post the inauguration of the exhibition, the day was dedicated to the Agriculture Deputies Meeting with the delegations from member countries, invited countries and international organizations, followed by side events in the form of panel discussion. The first side event was based on 'Managing Agribusiness for Profit, People and Planet.' The panel discussion focused on bringing out concrete examples on managing trade-offs between profit, people, and planet. They also discussed ways to identify solutions, policies, and programs to achieve greater sustainability for food systems at large. The second side event revolved around the topic 'Connecting the Digitally Disconnected: Harnessing the Power of Digital Technologies in Agriculture.' The panel discussion was focussed on exploring strategies for scaling-up and replicating the best practices of digital agriculture initiatives and on discussing the nature of interventions made by the Government and stakeholders in promoting, supporting and bridging the gap for digitally disconnected population.

The G20 Agriculture Ministers' Meeting adopted the agreed outcome document titled "Outcome Document and Chair's Summary". This historical consensus was reached after deliberations on various issues centered on the agriculture sector wherein leadership of G-20 developing countries was envisaged.

Workshop on Systems Approach for Management of Fruits Flies on Mango

The Asia Pacific Plant Protection Commission unanimously elected India as chair of the Standing Committee on Integrated Pest Management (IPM) for the biennium 2023-24 during the 32nd Session of the Asia and Pacific Plant Protection Commission (APPPC) held in Bangkok during November, 2022. Accordingly, the APPPC Workshop on Systems Approach for the Management of Fruit Flies on Mango was scheduled from 19-23 June, 2023 at Vashi, Navi Mumbai.

Hon'ble Minister of State for Agriculture & Farmer Welfare, Sushri Shobha Karandlaje in her inaugural speech emphasised on the production of pest free as well as residue free fruits and vegetables for getting market worldwide so that farmer's income can be increased. She further linked the agricultural export/ trade, measures to be taken and need to strengthen the working together for export promotion.

Shri Ashish Kumar Shrivastava, Joint Secretary (PP) briefed on International Plant Protection Convention (IPPC), APPPC and their role in phytosanitary mitigation for safe transboundary movement of commodity. He shared his experiences on implementation of Systems Approach for mango in India. In this aspect, he further emphasized on development of Systems Approach for all the important agricultural commodities by farm registration/ orchard registration with State Agriculture Department, application of Integrated Pest Management at farmer level, regular monitoring of pest and timely management of pest so that even small and marginal farmer can also produce export quality produce and stringent treatment can be avoided.

Dr J.P. Singh, Plant Protection Adviser, DPPQ&S and Chairman, APPPC IPM Standing Committee in his welcome address shared the journey of Systems Approach implementation in India through farmers registration, adoption of Good Agricultural Practices by the farmers, pest monitoring, processing attack house and phytosanitary treatment for pest free global trade. Dr Yubak Dhoj, Executive Secretary, APPPC Secretariat said that this capacity development programme will provide the practical measure for managing of fruit fly during transboundary movement of agri product at international level. Shri Tarun Bajaj, Director, APEDA explained the role of APEDA in export of agriculture commodity and informed that India has exported around 60 million dollars of fresh mango.

During the 5 days' workshop, the deliberations on Systems Approach for management of fruit fly in mango, review of all relevant ISPMs, pre-harvest Integrated Plant Health Management for mango pest and NPPO case studies were discussed and visit to treatment facility & mango orchard was also organized.

General Agricultural Sector News

ICAR signs MOU with Amazon Kisan

Indian Council of Agricultural Research (ICAR), New Delhi signed a MoU with Amazon Kisan to combine strengths and create synergy between the two organizations for guiding the farmers on scientific cultivation of different crops for optimum yield and income. ICAR will provide technological backstopping to the farmers through Amazon's network. It will improve farmers' livelihood and boost crop yield. This MoU in farmer's partnership with Amazon Kisan program will help ensuring access to high quality fresh produce for consumers across India, including through Amazon Fresh. Dr Himanshu Pathak, Secretary, DARE & Director General, ICAR emphasized upon secondary agriculture for better remuneration for the farmers. He further highlighted the importance and role of critical inputs in agriculture and season-based crop plans. He mentioned that ICAR will collaborate with Amazon for technologies, capacity building and transfer of new knowledge.

The outcomes from a pilot project at Pune between ICAR-KVK and Amazon has motivated to further expand the collaboration to extend the precise agriculture practices developed through extensive research. Krishi Vigyan Kendras will strengthen a wider group of farmers by leveraging technological base through transfer of technology and capacity building programmes. ICAR and Amazon will work together on other farmer engagement programmes at Krishi Vigyan Kendras, conducting demonstrations, trials, and capacity building initiatives to enhance farming practices and farm profitability. Furthermore, Amazon will provide training support and assist farmers in marketing their produce through its online platform, facilitating direct connections with consumers.

PM KISAN mobile app

The PM-KISAN mobile app with face authentication feature was launched by the Hon'ble Union Agriculture and Farmers Welfare Minister, Shri Narendra Singh Tomar under the Central Government's ambitious and popular scheme for income support to farmers "Pradhan Mantri Kisan Samman Nidhi". Using face authentication feature from this app, farmer can complete e-KYC remotely, sitting at home easily by scanning face without OTP or fingerprint. Recognizing the need to make e-KYC mandatory, the Government of India has extended the ability of farmers to perform e-KYC to officers of State Governments, so that each officer can complete the e-KYC process for 500 farmers.

Thousands of farmers present in Krishi Vigyan Kendras across the country, as well as officers of the

Central and State Governments and representatives of various Government agencies and agricultural organizations were virtually connected to the event held at Krishi Bhavan, New Delhi on 22nd June, 2023.

MOU with Pixxel Space India Pvt. limited

Ministry of Agriculture & Farmers Welfare signed a MOU with Pixxel Space India Pvt. limited on 26th June, 2023 to develop various geospatial solutions on pro bono basis for the Indian Agriculture Ecosystem using Pixxel's hyperspectral dataset. The project focuses on leveraging sample hyperspectral data from Pixxel's path finder satellites to develop analytics models focused on crop mapping, crop stage discrimination, crop health monitoring and soil organic carbon assessments. This will enable the Government to develop use cases with hyperspectral data provided by PIXXEL. MNCFC on behalf of the DA&FW will associate with Pixel team for developing and implementing the suitable methodologies.

Hyperspectral remote sensing technology includes spectral measurements in narrow wavelength bands by satellites and such measurements offer certain unique indices to monitor and assess health of crops and soils. This is an emerging technology with unique capabilities for monitoring agriculture. Crop health monitoring by detecting the changes in chlorophyll content and canopy moisture status, using hyperspectral data would be beneficial to find crop risk management solutions to farmers.

Soil nutrient mapping including soil organic carbon assessments is one of the important applications of hyperspectral technology. The soil reflectance observations measured by the sensors offer more direct, cost-effective datasets to estimate soil organic carbon. Early detection of crop stress, accurate diagnostics of crop stress due to pest/disease or water using hyper spectral data offers numerous opportunities to strengthen the current advisory system of the Government benefiting millions of farmers.

General Survey of Agriculture

Trend in Food Prices

The rate of inflation, based on all-India WPI, stood at - 4.12% (Provisional) for the month of June, 2023 as compared to 16.23% 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 172.8 in May, 2023 to 175.2 in June, 2023. The annual rate of inflation (Y-o-Y) based on WPI Food Index changed from (-) 1.59% in May, 2023 to (-) 1.24% in June, 2023.

Based on Wholesale Price Index (WPI) (2011-12=100), the WPI of pulses and cereals increased by 9.21 percent and 8.34 percent, respectively, and for fruits and vegetables, it decreased by 0.86 percent and 21.98 percent, respectively, in June, 2023 over corresponding period of last year. On month-on-month basis, the WPI for cereals, vegetables and pulses decreased by 0.76 percent, 13.18 percent and 2.72 percent, respectively, and for fruits, it decreased by 4.65 percent in June, 2023 over May, 2023.

Among cereals, the WPI based rate of inflation for wheat and paddy increased by 9.02 percent and 7.67 percent, respectively, in June, 2023 over June, 2022 while on month-on-month basis, the WPI for paddy and wheat increased by 0.56 percent and 1.35 percent, respectively, in June, 2023 over May, 2023.

Rainfall and Reservoir Situation, Water Storage in Major Reservoirs

Cumulative Monsoon Season (June-September), 2023 rainfall for the country as a whole during the period 1st June, 2023 to 28th June, 2023 has been 16% 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 42% in North-West India but lower than LPA by 17% in Central India, by 21% in East & North East India and by 45% in South Peninsula. Out of 36 met sub-divisions, 08 met subdivisions received large excess/excess rainfall, 09 met sub-divisions received deficient/large deficient rainfall.

Current live storage in 146 reservoirs (as on 30th June, 2023) monitored by Central Water Commission having Total Live Capacity of 178.19 BCM was 47.95 BCM as against 49.02 BCM on 30.06.2022 (last year) and 43.49 BCM of normal storage (average storage of last 10 years). Current year's storage is 98% of last year's storage and 110% of the normal storage.



Articles

Costs and Returns from Cultivation of Major Crops in Punjab

BASHIR AHMAD ESAR¹ AND JATINDER SACHDEVA²

Abstract

Stagnation or decline in farm returns with the increasing cost of cultivation is a challenge in Punjab. The study focuses on the cost of cultivation and returns from major crops cultivated in Punjab. Machine and human labour are found to be the major components of the cultivation cost in the state for various crops. In terms of returns, paddy in kharif and wheat in rabi season are the most profitable crops, while maize and rapeseed & mustard are the least profitable crops. So, there is need to frame policies to increase the profitability of these crops as it will help in diversifying the Punjab agriculture from paddy and wheat monoculture.

Keywords: Cost cultivation, returns over variable costs, main product, by-product.

1. Introduction

Agriculture is the art and science of cultivating the soil, growing crops and raising livestock. This sector is the backbone of economics in developing countries, which provides food and facilitates human life. India is the largest food producer in the world and the state of Punjab is known as the "Granary" of this country. The Central Government's policy played a key role in imitating the policy of the Green Revolution under which the pattern of agricultural production in Punjab shifted crucially towards a monoculture of rice and wheat, the food items being important for the national goal of self-reliance in food availability (Singh, 2012). With a significant change in the pattern of cultivation over the last sixty years, the area devoted to the main crops has increased from 37.9 lakh hectares in 1960-61 to 78.3 lakh hectares in 2020-21, an increase of over 100 percent. More importantly, the area under wheat increased from 13.9 lakh hectares to 35.3 lakh hectares (an increase by 2.54 times), while the rice area increased from 2.3 lakh hectares to 31.49 million hectares (an increase by 13.7 times) during this period 2021). (Anonymous, Although mechanization

contributed significantly to the state's agricultural development in the past, but now, it is showing the negative effects of intensive farming. The significant increase in fixed costs has threatened the economic viability of agriculture, especially for small and marginal farmers. While the variable costs of rice and wheat production in the state declined during the 1980s and 1990s, the fixed costs gradually increased during this period (Sidhu *et al.*, 2005). In recent decades, the productivity of the state's major crops has become stagnated, resulting in lower income for farmers. Presently, agriculture in Punjab has reached a stage where new additions to production are accompanied by increased costs, making it an expensive sector.

1.1 Objectives of the study

The present study has been undertaken with the following objectives:

- a) To assess input use from major crops grown in Punjab.
- b) To calculate the major component of variable costs in major crops.

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c) To explore the returns over variable costs of the major crops in the state.

2. Data sources and methodology

In order to achieve the stipulated objective, the study has been conducted in the state of Punjab. To workout the input-output coefficient of different crops, the specific cross-sectional data in Punjab were drawn from the centrally sponsored "Comprehensive Scheme to Study the Cost of Cultivation of Principal Crops in Punjab", being managed by the Department of Economics and Sociology, Punjab Agricultural University, Ludhiana for the year 2018-19. Under this scheme, a sample of 300 households from 30 tehsils was surveyed to collect the plot-wise data. Farmers were chosen from the state's three agro-climatic zones using a three-step stratified sampling approach. The first stage being the tehsil, the second being a village or cluster of villages, and the third being the operational holdings within the cluster. Ten operational holdings, two from each of the five size classes viz., marginal (<1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-6 ha), and large (≥ 6 ha) were randomly chosen from each cluster.

2.1 Analytical tools: Budgetary analysis has been performed to work out the economics of different crops. The various components in the cost of cultivation of crops under study were estimated in line with the methods provided in the manual of cost of cultivation like farm-produced and purchased seed, fertilizers and manures, plant protection chemicals, human labour, owned/hired machinery charges, and interest on working capital.

2.2 Cost concept: Based on the cost concept used, the overall costs included the farmers' paid-out expenses in cash and kind for various items of cost of the cultivation (in Rs. per hectare) taken in the present study. Variable cost included i) value of the seed, ii) value of fertilizer and manure, iii) value of plant protection chemicals, iv) value of human labour (family + hired), v) value of machine labour (owned + hired), vi) irrigation charges.

2.3 Cost of cultivation: The cost of hiring human labour and machine labour charges was calculated on the basis of prevailing rates at that particular time within a concerned research area with regard to

operating costs. In addition, the value for family labour was estimated by reference to a baseline rate of pay in the study area. The cost of seeds, chemical fertilizers and manure, plant protection chemicals, interest on working capital and irrigation charges were calculated at the prevailing price at the time of application. The owned seed was priced in accordance with the prevailing price of seeds. The interest on working capital is charged at the rate of 10 percent per year and a half for crop period. Cost and returns of crops were calculated using the approach suggested in earlier studies (Sachdeva, 2011; Singh *et al.*, 2013; Raju *et al.*, 2015; Meena *et al.*, 2016; Pushpa *et al.*, 2017; Srivastava, 2017; Sachdeva and Singh, 2017; Bansal and Grover, 2020 and Prakash, 2022).

2.4 Returns over variable cost: The process for calculating the average output from each crop has been worked out in terms of the value of the total output per hectare. The total output included the value of the main product as well as the value of the by-product realized throughout the particular year at post-harvest prices. The gross returns are the results of the quantity of the main product plus by-product multiplied with the current market price of main product and by-product. Returns over variable cost can be calculated as gross return (value of main product + value of by-products) minus variable cost.

$$GR_{c} = \sum_{i=1}^{n} * \sum_{j=1}^{m} (MP_{ij} * PMP_{ij}) + (BP_{ij} * PBP_{ij}) / \sum_{i=1}^{n} * \sum_{j=1}^{m} A_{ij}$$
$$VC_{c} = \sum_{i=1}^{n} * \sum_{j=1}^{m} * \sum_{k=1}^{t} (I_{ijk} * PI_{ijk}) / \sum_{k=1}^{n} * \sum_{j=1}^{m} A_{ij}$$
$$ROVC_{c} = GR_{c} - VC_{c}$$

where,

 $GR_c = Gross returns from c^{th} crop (Rs./ha)$

 $VC_c = Variable cost of c^{th} crop (Rs./ha)$

ROVC_c = Returns over variable costs from cth crop (Rs./ha)

 $\label{eq:MP_ij} MP_{ij} = Quantity \mbox{ of main products from } j^{th} \mbox{ plot of } i^{th} \\ farmer (Qt/ha)$



 BP_{ij} = Quantity of by-products from jth plot of ith farmer (Qt/ha)

 $MPP_{ij}\text{=} Price \ of \ main \ product \ realized \ by \ the \ i^{th} \\ farmer \ for \ the \ produce \ of \ j^{th} \ plot \ (Rs./Qt)$

 BPP_{ij} = Price of by-product realized by the i^{th} farmer for the produce of j^{th} plot (Rs./Qt)

 A_{ij} = Area of jth plot of ith farmer put under cth crop

 I_{ijk} = Kth input used by the ith farmers for the jth plot (Kg/litre, m³ or hr/ha)

 PI_{ijk} = Price of k^{th} input used by the i^{th} farmers for the j^{th} plot (Rs./ha)

k= Types of input (fertilizer, plant protection chemicals, labour, etc.)

c = Selected crop (1, 2 and 3)

3. Results and discussion

3.1 Costs and returns from wheat cultivation in Punjab

Wheat being the main rabi crop accounted for 44.90 percent of the gross cropped area of the cropping pattern in Punjab. The costs and returns from wheat

cultivation presented in Table 1 shows that per hectare, the total variable cost of wheat cultivation in the state was Rs. 35135 during 2018-19. The examination of various components of variable cost revealed that a major portion of cost was on agricultural machinery used for sowing, spraying and harvesting. Tractor was used for 13.17 hours for the cultivation of one hectare of wheat crop. The harvesting of wheat is mostly done by combine harvester which was used for 1.41 hours per hectare, and the expenditure on machine was Rs. 18604 per hectare. The next major cost component in the cultivation cost of wheat crop was human labour at Rs. 5499 per hectare. The expenditure on manure and fertilizers applied to one hectare wheat crop was Rs. 3592. The quantity of seed used for sowing one hectare wheat came out to be 114.17 kg which was higher than the recommended level of 100 kg per hectare (Anonymous, 2021). The main product of wheat crop was 50.06 quintals per hectare, while the by-product was 34.93 quintals per hectare which is used as dry fodder for animals. The gross returns from wheat cultivation per hectare for the main product and byproduct taken together was Rs. 102512, and the returns over variable cost come out to be Rs. 67377.02 per hectare in the state.

TABLE 1: COSTS A	AND RETURNS FI	ROM WHEAT CULTI	VATION IN PUNJAB,	2018-19
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			(Rs. per hectare)
Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	50.06	93707.94
2	By-product (Qtls)	34.93	8804.12
	Total		102512.06
В.	Variable costs		
1	Seed (Kg)	114.17	2662.17
2	Manure and fertilizer (Kg)		
	i) Bio fertilizer		9.86
	ii) Farm yard manure (Qtls)		50.74
	iii) Growth regulator		35.52
	iv) NPK fertilizer (nutrient)		3432.47
	v) Other fertilizer		0.00
	vi) Water soluble fertilizers and micronutrients		63.81
	Sub total		3592.40



Sr. No.	Item	Quantity	Value (Rs.)
3	Plant protection chemicals (Kg)	1.44	2065.56
4	Hiring charges of implements (Hours)		52.79
5	Irrigation (Hours)		
	i) Owned machine (Centrifugal/submersible pump/oil engines)	27.18	50.96
	ii) Hired machine (Centrifugal/submersible pump/oil engines)	3.55	650.58
	Sub total		701.54
6	Human labour (Hours)		
	i) Family human labour	55.73	2833.87
	ii) Servant human labour	14.52	738.26
	iii) Casual human labour	37.89	1926.84
	Sub total	108.14	5498.97
7	Machine (Hours)		
	i) Tractor	13.17	15622.54
	ii) Harvester combines	1.41	2707.17
	iii) Power sprayer	2.22	188.84
	iv) Motorcycle/scooter	1.16	80.86
	v) Tempo	0.02	4.98
	Sub total	17.98	18604.39
8	Interest on working capital		1957.23
	Total variable costs		35135.04
C.	Returns over variable cost		67377.02

Source: Primary data

3.2 Costs and returns from paddy cultivation in Punjab

Paddy is the most important Kharif crop of the state and accounted for 39.57 percent of the gross cropped area of the cropping pattern in Punjab. Table 2 shows that per hectare, the total variable cost of paddy cultivation in the state was Rs. 45388 during 2018-19. The examination of major components of variable cost revealed that expenditure on human labour use in paddy cultivation (325.44 hours per hectare) was Rs. 16189 per hectare. The labour intensive operation of paddy transplanting is the reason for higher use of human labour. The next major component in the cultivation of paddy was machine labour with an expenditure of Rs. 13604 per hectare. Combine harvester was usually used on the hired basis and its usage was 1.73 hours per hectare. The use of power sprayer for spraying various chemicals in paddy cultivation was for 3 hours per hectare. The next major cost component was plant protection chemicals with the expenditure value of Rs. 4942 per hectare. The per hectare expenditure on other costs components in the cultivation of paddy like irrigation, interest on working capital, manures & fertilizers, seedling and hiring charges of implements was Rs. 4518, Rs. 2425, Rs. 2093, Rs. 1599, and Rs. 19, respectively. From one hectare paddy cultivation, the main product was 69.40 quintals while the by-product was 4.69 quintals. The gross return per hectare in paddy cultivation was Rs. 123191 while the returns over variable cost came out to be Rs. 77803 in the state during the study year.



			(Rs. per hectare)
Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	69.40	122818.44
2	By-product (Qtls)	4.69	372.97
	Total		123191.40
B.	Variable costs		
1	Seedling (Kg)		1599.24
2	Manure and fertilizer (Kg)		
	i) Bio fertilizer		24.87
	ii) Farm yard manure (Qtls)		348.20
	iii) Growthregulator		125.92
	iv) NPK fertilizer (nutrient)		1291.78
	v) Other		30.97
	vi) Water soluble fertilizers and micronutrients		271.21
	Sub total		2092.94
3	Plant protection (Kg)		4942.02
4	Hiring charges of implements (Hours)		19.38
5	Irrigation		
	i) Owned Machine (Centrifugal/submersible pump/oil engines)		382.69
	ii) Hired Machine(Centrifugal/submersible pump/oil engines)		4134.93
	Sub total		4517.63
6	Human labour (Hours)		
	i) Family human labour	114.90	5715.39
	ii) Servant human labour	45.34	2255.42
	iii) Casual human labour	165.21	8218.10
	Sub total	325.44	16188.91
7	Machine (Hours)		
	i) Tractor	12.35	10064.44
	ii) Combine harvester	1.73	3139.12
	iii) Power sprayer	3.00	260.56
	iv) Motorcycle/scooter	1.41	139.50
	Sub total	18.49	13603.62
8	Interest on working capital		2424.72
	Total variable costs		45388.45
C.	Returns over variable cost		77802.95
Source: Prima	ry data		

TABLE 2: Costs And Returns From Paddy Cultivation in Punjab, 2018-19

3.3 Costs and returns from basmati cultivation in Punjab

Basmati accounted for 3.02 percent of the gross cropped area in Punjab. This premium quality rice crop is relatively low fertilizer and irrigation intensive in comparison to non-basmati rice (Singh, 2022). The per hectare total variable cost of basmati cultivation in the state (Table 3) was Rs. 48449 during 2018-19. The examination of major components of variable cost shows that expenditure on human labour use in basmati paddy cultivation (442.48 hours per hectare) was Rs. 21638 per hectare. The labour intensive operation of basmati paddy transplanting is the reason for the higher use of human labour. The next major component in the cultivation of basmati paddy, with an expenditure value of Rs. 13629 per hectare, was machine labour which includes use of tractor, combine harvester and power sprayer. This was followed by the plant protection chemicals with an expenditure value of Rs. 4042 per hectare. Per hectare expenses on other components of cultivation cost of basmati paddy like interest on working capital, manures & fertilizers, irrigation, seedling and hiring charges of implements were Rs. 2657, Rs. 2275, Rs. 2122, Rs. 2082, and Rs. 4, respectively. From one hectare of basmati paddy cultivation, the main product was 41.13 quintals and the by-product was 24.26 quintals with gross returns of Rs. 129547. The returns over variable cost came out to be Rs. 81099.

TABLE 3: COSTS AND RETURNS FROM BASMATI PADDY CULTIVATION IN PUNJAB, 2018-19

			(Rs. per hectare)
Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	41.13	126303.75
2	By-product (Qtls)	24.26	3243.43
	Total		129547.18
В.	Variable costs		
1	Seedling (Kg)		2082.31
2	Manure and fertilizer (Kg)		
	i) Bio fertilizer		111.46
	ii) Farm yard manure (Qtls)		508.04
	iii) Growth regulator		153.00
	iv) NPK fertilizer (nutrient)		1050.70
	v) Other fertilizer		7.78
	vi) Other		3.11
	vii) Cost of procuring		219.48
	viii) Water soluble fertilizers and micronutrients		221.88
	Sub total		2275.44
3	Plant protection (Kg)		4042.11
4	Hiring charges of implements (Hours)		3.70
5	Irrigation		
	i) Owned machine (Centrifugal/submersible pump/oil engines)		880.01
	ii) Hired machine (Centrifugal/submersible pump/oil engines)		1241.98
	Sub total		2121.99



Sr. No.	Item	Quantity	Value (Rs.)
6	Human labour (Hours)		
	i) Family human labour	155.71	7614.72
	ii) Servant human labour	35.22	1722.42
	iii) Casual human labour	251.54	12300.81
	Sub total	442.48	21637.94
7	Machine (Hours)		
	i) Tractor	12.70	11324.70
	ii) Harvester combines	1.18	1995.13
	iii) Power sprayer	2.44	172.69
	iv) Motorcycle/scooter	1.92	135.99
	Sub total	18.24	13628.51
8	Interest on working capital		2656.63
	Total variable costs		48448.62
C.	Returns over variable cost		81098.56

Source: Primary data

3.4 Costs and returns from cotton cultivation in Punjab

Cotton is mainly sown as commercial crop and grown in the south-western districts (Zone-III) in Punjab and accounted for 3.42 percent of the gross cropped area. It can be seen from Table 4 that the per hectare total variable cost of cotton cultivation in Punjab was Rs. 59270 during the study year 2018-19. Examination of major components of variable cost revealed that cotton is a highly labour intensive crop where most of the agronomic practices were done manually which include weeding, picking, and even the removal of leftover plants from fields after picking. Thus, the use of human labour was 624.15 hours per hectare with the expenditure value of Rs. 26387 per hectare. The next major component in the cost of cultivation of cotton was machine labour with the expenditure value of Rs. 14767. It was followed by plant protection chemicals with the expenditure value of Rs. 6201 per hectare. Other components of cultivation cost for cotton were seed, interest on working capital, manures & fertilizers, irrigation and hiring charges of implements with per hectare expenses of Rs. 5572, Rs. 3133, Rs. 2585, Rs. 615, and Rs. 10, respectively. The gross returns from cotton cultivation were Rs. 131480, while the returns over variable cost came out to be Rs. 72211 per hectare in the study area.

(Rs. per hectare)

Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	23.86	126903.37
2	By-product (Qtls)	67.24	4577.14
	Total		131480.52
B.	Variable costs		
1	Seed		5572.09

TABLE 4: Costs And Returns From Cotton Cultivation in Punjab, 2018-19

Sr. No.	Item	Quantity	Value (Rs.)
2	Manure and fertilizer (Kg)		
	i) Farm yard manure (Qtls)		72.46
	ii) Growth regulator		3.83
	iii) NPK fertilizer (nutrient)		1771.29
	iv) Cost of procuring		270.21
	v) Water soluble fertilizers and micronutrients		467.39
	Sub total		2585.18
3	Plant protection (Kg)		6201.21
4	Hiring charges of implements (Hours)		9.84
5	Irrigation (Hours)		
	i) Owned machine (Centrifugal/submersible pump/oil engines)		373.35
	ii) Hired machine (Centrifugal/submersible pump/oil engines)		241.38
	Sub total		614.73
6	Human labour (Hours)		
	i) Family human labour	147.25	6225.23
	ii) Servant human labour	45.91	1940.76
	iii) Casual human labour	430.99	18221.05
	Sub total	624.15	26387.04
7	Machine (Hours)		
	i) Tractor	25.56	14291.57
	ii) Other non-irrigation machine	0.00	0.00
	iii) Power sprayer	2.17	475.44
	Sub total	27.73	14767.01
8	Interest on working capital		3132.84
	Total variable costs		59269.93
C.	Returns over variable cost		72210.59

Source: Primary data

3.5 Costs and returns from maize cultivation in Punjab

Maize is an important kharif crops which accounted for 1.46 percent of the gross cropped area among the selected major crops for the year 2018-19. It is mainly grown in Zone-I of the state. Table 5 shows that the total variable cost of maize cultivation in Punjab was Rs. 42163 per hectare. The examination of major components of variable cost revealed that the human labour use (333.4 hours) including casual, family and servant labour for cultivating one hectare of maize crop was Rs. 15020 on the fields of the sample farms. The next major component in the cultivation cost of maize was machine labour with the expenditure value of Rs. 12227 per hectare. It was followed by seed with the expenditure value of Rs. 6384 per hectare. Other components in the cultivation cost of maize were manures & fertilizers, plant protection chemicals,



interest on working capital and irrigation with an expenditure of Rs. 3659, Rs. 2426, Rs. 2342, and Rs. 105 per hectare, respectively. Per hectare gross returns from

maize cultivation was Rs. 75639, while the return over variable cost came out to be Rs. 33475 per hectare.

			(Ks. per nectare)
Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	42.28	72370.88
2	By-product (Qtls)	18.45	3267.91
	Total		75638.79
B∙	Variable costs		
1	Seed (Kg)		6384.00
2	Manure and fertilizer (Kg)		
	i) Bio fertilizer		25.77
	ii) Farm yard manure (Qtls)		162.79
	iv) NPK fertilizer (nutrient)		3236.23
	v) Procuring cost		211.44
	vi) Water soluble fertilizers and micronutrients		22.51
	Sub total		3658.74
3	Plant protection (Kg)		2426.33
5	Irrigation (Hours)		
	i) Owned machine (Centrifugal/submersible pump/oil engines)		31.85
	ii) Hired machine (Centrifugal/submersible pump/oil engines)		73.30
	Sub total		105.15
5	Human labour (Hours)		
	i) Family human labour	128.08	5769.98
	ii) Servant human labour	57.28	2580.51
	iii) Casual human labor	148.04	6669.63
	Sub total	333.40	15020.12
6	Machine (Hours)		
	i) Tractor	14.53	4406.07
	ii) Harvester combine	1.70	3708.84
	iii) Power sprayer	2.98	4010.95
	iv) Motorcycle/scooter	1.44	100.93
	Sub total	20.65	12226.78
7	Interest on working capital		2342.27
	Total variable costs		42163.38
C·	Returns over variable cost		33475.41

TABLE 5: COSTS AND RETURNS FROM MAIZE CULTIVATION IN PUNJAB, 2018-19

Source: Primary data

3.6 Costs and returns from rapeseed & mustard cultivation in Punjab

Rapeseed & mustard is an oilseed crop of the Rabi season that accounted for 0.4 percent of the gross cropped area on the sample holdings in Punjab. The various inputs used in the cultivation along with their values have been presented in Table 6. It can be seen from the table that per hectare variable cost of rapeseed and mustard cultivation in Punjab was Rs. 33025 during 2018-19. The examination of major components of variable cost revealed that the expenditure value on machine use in rapeseed & mustard cultivation was Rs. 12797 per hectare. The next major component in the cultivation of rapeseed & mustard was human labour with the expenditure of Rs. 12428 per hectare. This was followed by manures & fertilizers on which the expenditure was Rs. 3208 per hectare. Other components in the cultivation cost of rapeseed and mustard were the interest on working capital, seed, plant protection chemicals, irrigation and hiring charges of implements with per hectare expenditure of Rs. 1625, Rs. 1531, Rs. 790, Rs. 473, and Rs. 174, respectively. From one hectare of rapeseed and mustard cultivation, the main product derived was 14.61 quintals, while the by-product was 12.70 quintals. The gross returns from main and by-product were Rs. 56689, while the returns over variable cost came out to be Rs. 23664.

			(Rs. per hectare)
Sr. No.	Item	Quantity	Value (Rs.)
А.	Gross return		
1	Main product (Qtls)	14.61	54831.50
2	By-product (Qtls)	12.70	1857.75
	Total		56689.25
B.	Variable costs		
1	Seed (Kg)		1531.16
2	Manure and fertilizer (Kg)		
	i) NPK fertilizer (nutrient)		3199.17
	ii) Other fertilizer		0.00
	iii) Water soluble fertilizers and micronutrients		8.47
	Sub total		3207.64
3	Plant protection (Kg)		790.01
4	Hiring charges of implements		173.58
5	Irrigation (Hours)		
	i) Owned machine (Centrifugal/submersible pump/oil engines)		220.89
	ii) Hired machine (Centrifugal/submersible pump/oil engines)		252.37
	Sub total		473.26
6	Human labour (Hours)		
	i) Family human labour	143.19	6306.04
	ii) Servant human labour	47.86	2107.73
	iii) Casual human labour	91.15	4014.23
	Sub total	282.20	12428.00



Sr. No.	Item	Quantity	Value (Rs.)
7	Machine (Hours)		
	i) Tractor	12.36	12679.82
	ii) Power sprayer	0.40	42.68
	iii) Motorcycle/scooter	1.06	74.09
	Sub total	13.82	12796.59
8	Interest on working capital		1625.05
	Total variable costs		33025.30
C.	Returns over variable cost		23663.95

Source: Primary data

4. Conclusion and policy implications

The analysis of cost of cultivation of the selected crops shows that the total cost per hectare for cotton cultivation was the highest at Rs. 59269 for the sample of the study area during the agricultural year 2018-19 followed by basmati, paddy, maize, wheat and rapeseed & mustard. From the important components of cost cultivation of major crops in the state, it was observed that cotton was at the highest level of using human labour with 624.15 hours per hectare with value of Rs. 26387, followed by basmati, paddy, maize, R&M. Wheat used lowest human labour at 108 hours per hectare and costing Rs. 5,500. Similarly, cotton had the highest level of machine labour use at 28 hours with value of Rs. 14800 per hectare, followed by maize, basmati, paddy, wheat. R&M made lowest use of machine labour with 14 hours use and value of Rs. 12800 per hectare. The gross returns from the crop cultivation were observed to be the highest from cotton, followed by basmati, paddy, wheat, maize, rapeseed and mustard. In percentage terms, the returns over variable costs were found to be the highest from wheat crop, followed by paddy, basmati, cotton, maize, rapeseed and mustard. In the terms of returns over variable cost from major crops in Punjab, basmati had the highest level of returns over variable costs at value of Rs. 81099. It was followed by paddy, cotton, wheat, maize and R&M. Rapeseeds and mustard had the lowest level of returns over variable costs at Rs. 23664. It is necessary to formulate policies to enhance the yield of crops such as maize and R&M. A policy may be placed

to make arrangements for the export of basmati crop. Increasing the area under resistance crops in the Rabi season, including barley and sunflower, would be a prudent move towards crop diversification. Furthermore, the farmers may be encouraged to cultivate more area under oilseed crops by offering a competitive price, which would be a positive step towards making the state self-sufficient in edible oils, while also promoting crop diversification beyond the traditional paddy-wheat monoculture.

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A Study on Farm Livelihood Activities through Kudumbashree Programme in Kerala

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Abstract

The Kudumbashree programme is a poverty eradication and women empowerment programme in Kerala. It focuses on various livelihood activities, including farm and animal husbandry. The Kudumbashree programme in Kerala has been instrumental in empowering women and promoting poverty eradication through a variety of livelihood activities. This research paper explores the impact of the Kudumbashree programme on farm initiatives in Kerela state. The major findings of the research paper shows that, a total of 75353 number of Joint Liability Group and 266 Jaivika plant nurseries are functioning in the state. Wayanad, Malapuram and Trissur districts show the highest Jaivika plant nurseries. In passion fruit cultivation, a total of 38887 beneficiaries were trained for passion fruit cultivation. The study concludes that Kudumbashree programme's involvement in farm livelihood activities has proven to be a significant driver of women's economic empowerment and social transformation in rural Kerala.

Keywords: Farm activity, livelihood activity, Kudumbashree, Kerala.

1. Introduction

Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala. The name Kudumbashree in Malayalam language means 'prosperity of the family'. The name represents 'Kudumbashree Mission' or SPEM as well as the Kudumbashree Community Network. What is commonly referred to as 'Kudumbashree' could mean either the Kudumbashree Community Network, or the Kudumbashree Mission, or both.

Kudumbashree was set up in 1997 following the recommendations of a three member task force appointed by the State Government. Its formation was in the context of the devolution of powers to the Panchayat Raj Institutions (PRIs) in Kerala and the Peoples' Plan Campaign which attempted to draw up the Ninth Plan of the local governments from below through the PRIs. Kudumbashree has a three-tier structure for its women community network with Neighbourhood Groups (NHGs) at the lowest level, Area Development Societies (ADS) at the middle level and Community Development Societies (CDS) at the local government level. The community structure that Kudumbashree accepted is the one that evolved from the experiments in Alappuzha Municipality and Malappuramin early 1990s.

Kudumbashree community network was extended to cover the entire State in three phases during 2000-2002. The Kudumbashree network by 15th September, 2021 had 2,94,436 NHGs affiliated to 19,489 ADSs and 1064 CDSs with a total membership of 45,85,677 women. Kudumbashree membership is open to all adult women, limited to one membership per family.

In 2011, the Ministry of Rural Development (MoRD), Government of India recognized Kudumbashree as the State Rural Livelihood Mission (SRLM) under the National Rural Livelihood Mission (NRLM).

Kudumbashree is essentially a community network that covers the entire State of Kerala. It consists of a three tier structure with Neighbourhood Groups (NHGs) as primary level units, Area Development Societies (ADS) at the ward level, and Community Development

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Societies (CDS) at the local government level. It is arguably one of the largest women's networks in the world. While the community network is formed around the central themes of poverty eradication and women empowerment, its main features include democratic leadership, and support structures formed from the 'Kudumbashree family'.

1.1 Objectives of the study

- i. To explore the impact of the Kudumbashree programme on farm initiatives.
- ii. To examine the role of farm in enhancing the economic status of women and families in rural areas.

2. Data sources

For the study purpose, the secondary data was collected from the Annual Report of Kudumbashree Programme in Kerala and online database to gather insights on Kudumbashree Scheme.

3. Discussion

3.1 Farm livelihood activities of Kudumbashree programme

Kudumbashree focuses on improving the livelihoods of women in rural and urban areas through various income-generating activities. The programme is operated at the grassroots level, with local self-help groups (SHGs) as its basic operational units. These SHGs engage in a wide range of livelihood activities to uplift their economic status.

Kudumbashree promotes various farming activities, including vegetable cultivation, organic farming, poultry farming and animal husbandry. Women are trained in modern and sustainable agricultural practices to increase their farm productivity. Here are some of the common livelihood activities of Kudumbashree are discussed under the following heads.

3.1.1 Collective farming

Collective farming is an initiative introduced by Kudumbashree to encourage cultivation among neighborhood groups. It not only brings in significant changes in the lives of the poor but also helps to increase agricultural production by bringing fallow and cultivable wasteland into agricultural use, and has significance as a food security measure. Women enter the programme as cultivators as opposed to agricultural labour, and control over the means of production and access to formal credit helps in increasing the returns from farming. The programme is being implemented in all districts with the support of local self government (LSG). Table 1 indicates the collective farming activities of Kudumbashree programme for the year 2022-2023.

S. No.	Districts	No. of Joint Liability Group (JLG)	Area under cultivation (ha)	No. of women farmers in JLG
1	Thiruvananthapuram	4667	1194.1	24300
2	Kollam	3972	901.67	19860
3	Pathanamthitta	4074	1897.54	20370
4	Alappuzha	5720	1684.5	29452
5	Kottayam	4069	1805.43	18300
6	Idukki	7486	2245.27	32455
7	Ernakulam	6297	2363.93	26188
8	Thrissur	7261	3049.07	29627
9	Palakkad	6318	1157.57	15282
10	Malappuram	4686	10253.8	18816
11	Kozhikode	4210	1201.35	18320

TABLE 1: COLLECTIVE FARMING



S. No.	Districts	No. of Joint Liability Group (JLG)	Area under cultivation (ha)	No. of women farmers in JLG
12	Wayanad	8250	4025	36250
13	Kannur	4260	2792.59	30212
14	Kasaragod	4260	940	21360
	Total	75353	20348.94	378810

Source: Compiled from Kudumbashree website, 2023 (https://www.kudumbashree.org/pages/518)

Joint Liability Groups (JLGs) are an important financial inclusion initiative in India, particularly in rural areas, and are aimed at providing small and marginal farmers, and rural entrepreneurs' access to credit and other financial services. These groups are formed by a number of individuals, typically 5-20, who come together to avail collateral-free loans and other financial services from banks and microfinance institutions. From table 1, it can be seen that a total of 75353 number of Joint Liability Group are functioning in Kerala with around 20348.94 (ha) area under cultivation and a total of 378810 women farmers. Compared with other districts, Wayanad (8250 JLG) and Idukki districts (7486) are ranked one for Joint Liability Group activities in Kerala. In Wayanad and Idukki, agriculture is a significant part of the district's economy. Coffee, tea, spices (such as pepper and cardamom) and various fruits are cultivated in the region. The district is also known for its organic farming practices.

3.1.2 Mahila Kisan Sashakthikaran Pariyojana (MKSP)

Mahila Kisan Sashakthikaran Pariyojana (MKSP), a sub-component of the National Rural Livelihood Mission (NRLM), aims at increasing the visibility of women in agriculture, reducing drudgery and providing a livelihood opportunity by adopting sustainable and eco-friendly agriculture. Kudumbashree, the programme implementing agency (PIA) for Kerala, has undertaken the project through the institution of Joint Liability Group (JLG) of women farmers. The project target was kept at promoting 30,000 JLG, with 1,50,000 women farmers undertaking cultivation in 24,000 Ha. MKSP project focuses on capacity building of the farming community through identification of best practices among the community. Resource persons are selected from the community and act as grassroots workers of this programme. Trainings form an integral part of project aiming at providing scientific practices and solution at the doorstep of the farmers.

3.1.2.1 Programmes under Mahila Kisan Sashakthikaran Pariyojana (MKSP)

- **Agri Nutri Garden:** To provide nutritious food to families is the prime goal of agri nutri garden. To combat malnutrition, the goal is to establish 10,00,000 agri nutri gardens across the state to ensure better nutritious support to the NHG members there by getting additional income to the farm livelihood.
- **Nattuchantha:** Nattuchantha were identified as one of the best methods of marketing the agricultural produce of women farmers. It was found that the production-demand cycle of vegetables were on a weekly basis creating a chance for weekly markets.
- Urban Vegetable Kiosk: Aim of this project is to fill that gap and provide more opportunities so as to get sustainable income to the women farmers. It is included under the special livelihood package in 2019-20.
- **Green Carpets:** Aimed the formation of professional mobile units which support terrace garden, kitchen garden, ornamental garden and various types of garden with special focus on urban areas.
- **Organic Farming:** Kudumbashree has ventured into the realm of organic cultivation with a mission of bringing 10,000 Ha under organic farming in 201 clusters in all districts. Launched during 2021-2022,

this mission expects an involvement of around one lakh Kudumbashree women farmers in 20000 Joint Liability Groups.

JLGs are groups of women farmers comprising of 4 to 10 members undertaking farm livelihood activities. These groups are the foundation of all agricultural movements in Kudumbashree aiming at social and economic empowerment through sustainable agricultural development. In the cluster approach, around 100 JLGs form one cluster and two Cluster Level Coordinators (CLC) monitor the organic farming activities of a cluster. The CLCs provide necessary training and documentation for certification processes of JLGs. 402 CLCs have already been selected and deployed out in the field to coordinate the initial preparatory works.

Participatory Guarantee System certification would be sought for organic farming. National Centre of Organic Farming (NCOF) approved Regional Council (RC) will give necessary support, guidance and training for the smooth conduct of this programme and also facilitate the certification process. From the already established bio pharmacies, one from each block (total 152) would be strengthened to support the input needed for organic farming activities.

3.1.3 Medicinal plants

Medicinal plants used in Ayurveda industry are about 400sp (saplings plant) and the medicinal plant related trade in India is Rs. 1000cr/yr. The main collection is from the wild while only 10% of items are obtained from cultivated sources. The demand for Ayurvedic products is increasing by 30% every year. Alternative medicines are being sought after for many lifestyle disorders and also the fact that India's exports of raw herbs and herbal products have increased multi-fold in the past 10 years, prompted this project. Medicinal plant cultivation on 250 Ha of land by 2000 JLG for undertaking cultivation with 50 ha each per district is targeted. 5 collection centres would be established for supporting cultivation.

3.1.4 Paddy Producer Company

Establishment of 10 paddy collectives in the state and formation of an apex body for these producer

companies are envisaged by this project. Revolving funds would be given @ Rs 40/kg to these PCs for procurement and marketing. Along with these, infrastructure funds would also be given. 4 CFCs (Common Facility Centres) would be established at strategical locations (Kottayam, Palakkad, Malappuram and Thrissur). After the setting up of regional PCs, an apex state level promoting agency is the final target of this project.

3.1.5 Value addition units in coconut and banana

Kudumbashree through its initiate of microenterprises, collectives and Joint Liability Groups of agriculture has supported numerous enterprises. In order to further facilitate these enterprises and to venture into new domain, value addition units in coconut and banana, the following new initiatives are proposed in this project. Coconut being one of the major crops of Kerala provides for a staple supply for value addition in all the seasons. The renewed interest and confidence in the usage of coconut oil in food industry and household level has further increased the demand for coconut oil in the state. In order to tap into this market, Kudumbashree is planning to establish coconut oil processing units at the village or block level and common facility centers at sub-district or district level. Also banana being one of the most important cash crops of the state, widely prevalent in all districts and consistently in demand irrespective of seasons, banana value addition units would also be set up as part of this venture. In order to add value to the primary product and build a common packaging and branding element, common facility centres focussing on industrial packing, standardization and homogenization will be established at the district and sub district level on both of these crops. Value addition units would be set up in 50 units in coconut, 35 units in banana and 5 CFCs each in both. Banana units would in 6 districts and coconut in 10 districts.

3.1.6 Plant Nursery - Jaivika

To attain self sufficiency on demand of the propagation material for Kudumbashree as well as for the supply of best quality seedlings and saplings to all at reasonable and uniform rates throughout Kerala, Kudumbashree Mission launched Jaivika plant nurseries across the



state. Kudumbashree had been dependent on Vegetable and Fruit Promotion Council Kerala (VFPCK) and Krishi Vigyan Kendra (KVK) for meeting the seedling requirements. Presently, Kudumbashree have 159 existing plant nurseries in hand. In addition to this, 140 new plant nursery units would be established, in a manner of 10 units per district, in the common brand name 'Jaivika'.

Considering the aspects such as sizable plot, road access and availability of basic resources, the nursery sites would be identified in the respective districts. 140 units would be identified and given high-end training in different propagation and maintenance techniques. Training would be imparted to the selected groups or individuals through various Government Departments or skilled personnel from other established units. These nurseries would have all kinds of planting materials including vegetables, fruit trees, ornamental plants and common trees developed through the latest propagation methods. Revolving funds would be extended to each unit for the same. Scale up and branding of existing Kudumbashree nurseries are also contemplated along with. Online monitoring of stocks and sales will be done at later stage to ensure the sustainability of these nurseries.

S. No.	Districts	No. of plant nurseries identified	No. of units supported with start-up fund	Amount distributed (in Rs.)	Physical target	No. of units established
1	Thiruvananthapuram	10	0	0	10	10
2	Kollam	12	8	400000	10	7
3	Pathanamthitta	7	0	0	10	0
4	Alappuzha	15	8	400000	10	8
5	Kottayam	12	0	0	10	12
6	Idukki	16	2	100000	10	2
7	Ernakulam	18	0	0	10	18
8	Thrissur	35	9	450000	10	12
9	Palakkad	15	2	100000	10	2
10	Malappuram	36	0	0	10	13
11	Kozhikode	29	3	150000	10	10
12	Wayanad	37	0	0	10	0
13	Kannur	13	13	130000	10	4
14	Kasaragod	11	0	0	10	0
	Total	266	45	1730000	140	98

TABLE 2: JAIVIKA PLANT NURSERIES

Source: Compiled from Kudumbashree website, 2023 (https://www.kudumbashree.org/pages/518)

Jaivika plant nursery is a facility or business that specializes in the propagation, cultivation and sale of a wide variety of plants, including ornamental, fruitbearing and sometimes even rare or exotic plants. Plant nurseries play a crucial role in horticulture and agriculture by providing healthy and well-cared-for plants to individuals, landscapers, gardeners and farmers. A total of 266 plant nurseries are functioning in Kerala state with Wayanad (37), Malappuram (36) and Thrissur (35) districts having the highest Jaivika plant nurseries.

3.1.7 Passion fruit cultivation

The project aims to popularize passion fruit cultivation

throughout Kerala in view of the spreading acceptance and high returns of passion fruit. Mapping of the existing area under vines in each gram panchayat would be done prior to the start of the project to assess the gaps in production and marketing. 10,000 seedlings will be distributed to each district for implementation. The seedlings would either be procured from Kudumbashree JLG groups or from VFPCK at the rate of Rs. 15/seedling or lower. Planting will start in May and harvesting 6-7 months later. 28,000 farmers are targeted for training and issuance of seedlings. Planting would be done in such a way that contiguous panchayats would be selected in a block for easiness in harvesting and transportation later. A collective system of harvesting is planned during harvesting season. The produce would be marketed through Nattuchanthas as well. Value addition and scale up will follow.

S. No.	Districts	No. of beneficiary trained	No. of saplings to be distributed	No. of saplings planted	Area covered (in ha)
1	Thiruvananthapuram	3000	10000	10000	5
2	Kollam	3214	10000	10000	3.8
3	Pathanamthitta	2000	10000	0	0
4	Alappuzha	2000	10000	6320	0
5	Kottayam	4000	30000	12270	2
6	Idukki	3630	10000	10350	10.35
7	Ernakulam	2000	10000	0	0
8	Thrissur	2000	10000	10000	0
9	Palakkad	5600	20000	7500	10.1
10	Malappuram	3393	30000	16470	63.55
11	Kozhikode	2000	20000	10000	25
12	Wayanad	2000	10000	0	0
13	Kannur	4000	20000	2435	3
14	Kasaragod	50	10000	0	0
	Total	38887	210000	95345	122.8

TABLE 3: PASSION FRUIT CULTIVATION

Source: Compiled from Kudumbashree website, 2023 (https://www.kudumbashree.org/pages/673)

Passion fruit thrives in a tropical climate and Kerala's warm and humid conditions are conducive for its growth. It can be grown in both lowlands and mid-altitude regions of the state. A total of 38887 beneficiaries were trained for passion fruit cultivation. 5600 beneficiaries were trained for passion fruit cultivation in Palakkad district of Kerala which is highest among all the districts in the state. Total area of 122.8 ha was covered for passion fruit cultivation in Kerala state.

3.1.8 Intensive banana farming

Intensive banana farming programme aims to avail maximum profit to the farmers from the Onam market through marketing of raw banana as well as value addition. Mapping of the present status of banana growing would be undertaken to assess the needs for value added products. To market the produce during festive season, financial assistance would be provided to district JEVA team (JLG Evaluation Agent) as revolving fund. 1200 JLGs would be identified and



trained for value addition and 600 units (4 units/block) would be established across the state supporting them with Rs. 10,000 for procurement and marketing activity. In order to sustain and scale up the programme and

value chain units, 2000 more new JLGs would be brought up into banana cultivation. Table 4 shows that the details of intensive banana farming.

	Area under cultivation and expected production for 2018 Onam		
District	Area under banana cultivation (in acres)	No. of JLGs engaged	Avg. expected production (in tonnes)
Thiruvananthapuran	n 583.5	506	4668
Kollam	273	185	2184
Pathanamthitta	566.3	461	4530.4
Alappuzha	456	347	3648
Kottayam	1119.3	632	8954.4
Idukki	1133	1372	9064
Ernakulam	2180	1828	17440
Thrissur	2091	1157	16728
Palakkad	1874	744	14992
Malappuram	1256.5	1139	10052
Kozhikode	568	278	4544
Wayanad	675	339	5400
Kannur	518.5	354	4148
Kasaragod	135	91	1080
Total	13429.1	9433	107432.8

TABLE 4: INTENSIVE BANANA FARMING

Source: Compiled from Kudumbashree website, 2023. (https://www.kudumbashree.org/pages/518)

Intensive banana cultivation in Kerala can be a profitable and sustainable agricultural endeavor due to the state's favorable climate and soil conditions. Popular varieties in Kerala include Nendran, Poovan, Rasthali and Red banana. From Table 4, it can be understood that around 13429.1 (acres) area was covered for banana cultivation. Compared with other districts in Kerala, Malappuram (1256.5 acres) and Kottayam (1119.3 acres) had highest area covered under banana cultivation. A total of 9433 JLG were engaged in intensive banana cultivation in Kerala. In 2018, 107432.8 tonnes of banana were cultivated.

3.2 Case study

To achieve the second objective of the study, an in depth

interview was conducted with the Kudumbashree member. The case study highlights information about the personal and family background, economic status of the family, membership details, training details, and investment details, impact of micro entrepreneur activity, challenges, opportunities, future plan and testimonials from the respondent. It looks at how the Kudumbashree impacts the rural women lives. The economic impact of Kudumbashree on the lives of rural women was analysed through this case study.

3.2.1 Case Study: Success of Carrot Farming

3.2.1.1 Personal and family details

Veerammal, aged 62 years, resides in Vattavada panchayat. She was married when she was just 19 years

old. Her husband is a relative of her father. She has two sons, both are married and all of them live in the same house as a joint family. Her elder son has completed schooling and is a carpenter. His wife is a graduate who is a homemaker. They have two daughters aged seven and three years. Her younger son is employed in a private firm. His wife has completed school education and is also a homemaker.

3.2.1.2 Economic status

The family belongs to Below Poverty Line and owns a tiled house which consists of a single room. The house has bathroom and latrine facilities. Veerammal and her husband are working under MGNREGA scheme. Both of them were seasonal workers and their income alone was not sufficient to meet the family expenditure as they remained unemployed for nearly six months in a year.

3.2.1.3 Membership under Kudumbashree

Veerammal is a member of Snegam Neighbourhood Group (NHG). This is a Joint Liability Group consisting of 10 members and was started in the year 2006 as part of the agriculture development programme. Most of the group members were agricultural labourers and few of them were housewives. The group members were very active and famous for joint farming.

3.2.1.4 Training

Training is an essential factor for all the Kudumbashree entrepreneurs as it helps to improve personality development and motivation. The fellow members cooperated with Veerammal when she started joint farming. Her native village, Koviloor in Vattavada panchayat is an intensive agriculture area which has a good scope for selling quality vegetables. Realizing this scope, the group members enrolled themselves as trainees in "Bio farming" sponsored by Krishi Vigyan Kendra (KVK), Adimaly. They underwent training for two weeks which included the techniques of making eco friendly bio cultivation.

3.2.1.5 Investment and start-up

The members of Snegam NHG group started joint farming in 2011 and since then they took joint farming in their stride. Veerammal's family owns 50 cents of

agricultural land in which paddy is cultivated seasonally. So they applied for registration in the prescribed format to the ADS which was subsequently verified by the chairperson of CDS. After the verification, the project cost was decided as Rs. 25,000/-. They took a loan of Rs. 15,000/- at 2 percent interest from the thrift savings. Each member has contributed Rs. 500/- for the commencement of this project.

3.2.1.6 Impact of Micro Economic (ME) activity

The group members followed the mixed cropping system. They sold the fresh produce by delivering them at the doorstep of the customers. They were cultivating seasonal vegetables and fruits. The main crops they cultivated include various types of banana like nendran, njalipoovan and mysore; vegetables such as tomatoes, potatoes, carrot, tapioca, beans, beetroot, cabbage and cauliflower. During the festival season they cultivated large quantities of vegetables and organized vegetable stalls near Koviloor market for sales. During the last Onam festival season, they sold vegetables and bananas for a whopping Rs. 50,000/-. According to the group members there was a huge demand for their products since no chemicals, fertilizers or pesticides were used during the cultivation of the vegetables and fruits.

3.2.1.7 Challenges

Veerammal and her group found it tough to market their produce as they had started cultivation on a large scale. When they cultivated small quantities, it was easy for them to sell the vegetables to their village people. However, Kudumbashree gives them the opportunity to market their vegetables in their weekly and monthly markets.

3.2.1.8 Future plan

Currently they are cultivating only a limited variety of vegetables and fruits. Mrs. Veerammal is planning to expand their cultivation as per the demand in the market. Mrs. Veerammal and her group members are motivating other rural home makers to join hands with them in joint liability farming.

3.2.1.9 Testimonial

Joint liability group farming provides livelihood



opportunities for the group members by adopting sustainable and eco-friendly agricultural practices. Kudumbashree and NRLM agency provides skill development training for preparing bio-fertilizers and bio-pesticides which helps them to make more profit. The success of this joint liability group farming has increased the self confidence and productivity of women in the locality and has a very positive effect on their families and the community at large.

The case study revealed a positive economic impact on the lives of Kudumbashree NHG member and their families. Joining NHGs has paved the way for solving financial problems, improved household management and also made women financially literate. It is clearly noted that farm activities through Kudumbashree has transformed their lives by making them self-employed and economically self reliant.

4. Conclusion

The Kudumbashree programme in Kerala, India has been instrumental in empowering women and promoting poverty eradication through a variety of livelihood activities. Kudumbashree has ventured into the realm of organic cultivation with a mission of bringing 10,000 ha under organic farming in 201 clusters in all districts. Weekly markets named 'Nattuchantha' were identified as one of the best methods of marketing the agricultural produce of women farmers. It was found that the production-demand cycle of vegetables were on a weekly basis creating a chance for weekly markets. It also ensures better marketing opportunities for the JLG (Joint Liability Group) products through the Kudumbashree networks by avoiding middle men. To utilize the opportunity of high demand for banana during the Onam season, Kudumbashree started banana cultivation targeting to the Onam season. Kudumbashree also provide support to temporary value addition units during this period. It could be concluded that, Kudumbashree programme's

involvement in farm livelihood activities has proven to be a significant driver of women's economic empowerment and social transformation in rural Kerala. This highlights the positive outcomes of the programme as well as it implications for poverty alleviation and gender equity.

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Agro-Economic Research

Economic Analysis of High-Yield Varieties of Apple Crop in Himachal Pradesh, Jammu & Kashmir and Uttarakhand - A Comparative Study

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Abstract

India is gifted with variety of agro-climatic conditions and is the second largest producing country of fruits accounting for about 8 percent of total world production. The agro-economic conditions in different parts of India provide ample opportunities for the regional specialization of the fruit crops. This paper is an attempt to estimate the cost and return of high-density apple plantation in Himachal Pradesh, Jammu & Kashmir and Uttarakhand. At overall level, per hectare net returns over cost of high-density apple was highest for Himachal Pradesh (Rs. 35,00,728), followed by J&K (Rs. 26,01,500) and Uttarakhand (Rs. 17,85,511). The state specific cost and problems faced by the sampled farms of the three states/UT in cultivation practices of high-density apple are discussed.

Keywords: Apple, high density, bearing, non-bearing, variable, marketing, cost and return.

1. Introduction

Apple is the fourth major fruit crop of India in terms of production after mango, citrus fruit and banana. Apple is grown mainly in the UT/states of Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Arunachal Pradesh. Apple is a predominant fruit crop of Himachal Pradesh, and in recent years, it has emerged as the leading cash crop amongst fruit crops. Himachal Pradesh is the second largest producer of apples in India, after Jammu & Kashmir, with Uttarakhand being the third largest producer in the country. Jammu & Kashmir is the largest producer of apples and contributes about 75 percent of the total produce in India. During the year 2019-20, the UT/states of J&K, Himachal Pradesh and Uttarakhand produced 1882319 MT, 715253 MT and 62089.5 MT apple crop, respectively. During 2019-20, Baramulla, Kupwara and Shopian were three major apple producing districts with highest area under crop in Jammu & Kashmir, whereas in the state of Himachal Pradesh, Shimla, Kullu and Kinnaur were the top three major apple producing districts. Uttarkashi, Almora and Nainital were the top three major apple producing districts with highest coverage area under apple in the state of Uttarakhand.

Apple economy of Himachal Pradesh, Jammu & Kashmir and Uttarakhand is moving from standard apple farming practices to high-density apple plantation which will enhance yield and improve quality of apple produce in all these states. At present, we see a huge competition among the UT/states of Himachal Pradesh, Jammu & Kashmir and Uttarakhand in the way of transformation from standard apple growing practices to high-yield apple growing practices like High Density Apple Plantation (HDAP), which is going to increase apple yield and productivity and improve the quality of apple produce as well. The Union Territory of Jammu & Kashmir has moved rapidly in this direction due to comprehensive support from the Government and financial institutions in modernising or setting up the high-density plantation farms, and presence of private implementation agencies that allowed importing highdensity plants from abroad. However, the state of Himachal Pradesh has not moved as swiftly in this direction due to the biggest hurdle of standard operating procedures (SOPs) for importing highyielding new generation plants from abroad while the state of Uttarakhand lags even more. However, few

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progressive growers of Himachal Pradesh have started this type of cultivation by privately importing planting materials from abroad with the help of progressive farmer unions without government intervention.

1.1 Objectives of the study

The present study is confined to assess the comparative analyses about economics of high-density varieties of apple farming among three states/UT, *i.e.* Himachal Pradesh, Jammu & Kashmir and Uttarakhand. With this background, the present study was conducted with following specific objectives:

- i. To analyze the economics of high-yield varieties of apple farming practices in all three states/UT.
- ii. To suggest measures for improvements in ongoing apple farming practices for all the selected states/UT.

2. Data sources and methodology

The present study is based on primary data from selected states/UT. A multistage purposive cum random sampling technique was adopted in the selection of district, blocks, revenue villages and orchardists. The present study was conducted in three states, where one district was selected purposively from each state on the basis of its coverage under apple farming with highest area and production of apples. At the first stage of sampling, Shimla district of Himachal Pradesh, Baramulla district of Jammu & Kashmir and Uttarkashi district of Uttarakhand were selected purposively for field survey. In the second stage, all the blocks were arranged on the basis of area and production of apple, and one block from each district of each state/UT was selected purposively.

In the third stage, all the revenue villages in each selected block were arranged on the basis of highest area and production of apple covered under high yield apple farming practices. One revenue village from each block was selected randomly. In the fourth stage, all the apple orchardists in each selected village were arranged on the basis of their land holdings and 75 orchardists were selected randomly from each revenue village. Thus, a total sample of 225 apple orchardists was selected randomly for the purpose of field survey.

The list of each 75 semi & ultra-high density apple orchardists located in Shimla district of Himachal Pradesh, Baramulla district of J&K, and Uttarkashi district of Uttarakhand was prepared and a sample of 225 orchardists was drawn randomly. Further, selected orchardists were classified according to size of holding. The size wise number of farms were 126 marginal (having land up to one hectare), 68 small (having land 1-2 hectares) and 31 medium farms (having land more than 2 hectares). In all three states/UT, out of total marginal farms who were engaged in cultivation practices of high-density plantation of apple crop, majority of them were found in the Union Territory of Jammu & Kashmir (43.65%), followed by the state of Uttarakhand (29.37%) and Himachal Pradesh (26.98%). Majority of small farms were found in the state of Himachal Pradesh (44.12%), followed by Uttarakhand (35.29%) and Jammu & Kashmir (20.59%). The highest medium farms of landholding were found in the state of Uttarakhand (45.16%), followed by Himachal Pradesh (35.49%) and Jammu & Kashmir (19.35%).

2.1 Analytical tools

A tabular presentation technique was followed to study economic characteristics such as size of land holding and economics of high-yield varieties of apple farming. In order to achieve the objectives of the present study, the data was analyzed with the help of simple tabular method, averages and percentage to obtain the meaningful result.

3. Results and discussion

3.1 Maintenance cost of non-bearing high-density apple plants among three selected states/UT

The analysis of maintenance cost of non-bearing highdensity apple plantation of sampled farms for three selected states/UT has been presented in Table 1, 2 and 3. Table 1 presents results for the state of Himachal Pradesh and reveals that the total maintenance cost of Rs. 51,380 per hectare was incurred on the total labour used in different activities undertaken for the establishment of non-bearing high-density apple plants. The cost was highest in case of pruning of plants, followed by plant protection, fertilizer application, irrigation and other maintenance activities. The total maintenance cost incurred was Rs. 59,327 per hectare on material used for farm yield manure (FYM), fertilizer application and plant protection activities with the highest being in case of fertilizer application, followed by plant protection, plants material and FYM activities. The total variable cost of Rs. 1,10,707 per hectare was incurred on labour and material used in different activities for the maintenance and establishment of nonbearing plants of high-density variety of apple in the state. Among different sampled farms, total labour cost, material cost and also total variable cost was highest for the medium sampled farms in the state of Himachal Pradesh.

TABLE 1: MAINTENANCE COST OF NON-BEARING PLANTS OF HIGH-DENSITY APPLE CROP IN HIMACHAL PRADESH

				(Rs./Hectare)
Cost component	Marginal	Small	Medium	All
A. Labour used				
Preparation & maintenance of basin	5024	5258	5581	5255
Interculture	2402	2542	2975	2598
FYM	3439	3552	3996	3620
Fertilizer application	5159	5313	5599	5328
Irrigation	5134	5375	5458	5311
Plant protection	5768	6854	6725	6444
Pit digging	4366	4906	5387	4834
Planting of plants	3134	3948	4155	3714
Pruning of plant	9854	11958	12324	11312
Other watch & ward, etc.	2829	2958	3169	2964
Total labour used	47109	52664	55369	51380
B. Material cost				
Plant material	12195	14063	15845	13842
FYM	4153	4674	4806	4524
Fertilizer application	23817	24246	25363	24366
Plant protection	15688	16875	17430	16595
Total material cost	55853	59858	63444	59327
Total variable cost (A+B)	102962	112522	118813	110707

Source: Field survey

Table 2 reveals that in Jammu & Kashmir, total maintenance cost incurred was Rs. 45,547 per hectare on labour used in different activities undertaken for establishment of non-bearing high-density apple plants. The cost was highest in case of pruning of plants, followed by plant protection, fertilizer application, preparation & maintenance of basin and other maintenance activities. The total maintenance cost incurred was Rs. 47,024 per hectare on material used for the establishment of non-bearing high-density plants of

apple. This was highest in case of fertilizer application, followed by plant protection, FYM and plants material activities. The total variable cost of Rs. 92,571 per hectare was incurred on labour and material used in different activities for the establishment of non-bearing plants of high-density apple in the Union Territory of Jammu & Kashmir. Among different sampled farms, total labour cost, material cost and also total variable cost was highest for the medium sampled farms.

				(Rs./Hectare)
Cost component	Marginal	Small	Medium	A11
A. Labour used				
Preparation & maintenance of basin	4148	4375	4737	4314
Interculture	2713	2885	3158	2838
FYM	3222	3462	3553	3357
Fertilizer application	4491	4663	4737	4589
Irrigation	3926	4135	4342	4061
Plant protection	4796	4904	5132	4883
Pit digging	4074	4207	4605	4197
Planting of plants	3148	3245	3553	3240
Pruning of plant	10873	11479	11974	11252
Other watch & ward, etc.	2667	2885	3158	2816
Total labour used	44058	46240	48949	45547
B. Material cost				
Plants material	2963	3125	3553	3105
FYM	4119	4370	4435	4256
Fertilizer application	21778	23137	24408	22649
Plant protection	16356	17596	17763	17014
Total material cost	45216	48228	50159	47024
Total variable cost (A+B)	89274	94468	99108	92571

TABLE 2: MAINTENANCE COST OF NON-BEARING PLANTS OF HIGH-DENSITY APPLE CROP IN J&K

Source: Field survey

Table 3 reveals that in the state of Uttarakhand, total maintenance cost incurred was Rs. 40,699 per hectare on the labour used in different activities undertaken for the establishment of non-bearing high-density apple plants. The cost was highest for pruning of plants, followed by plant protection, fertilizer application, preparation & maintenance of basin and other maintenance activities. The total maintenance cost incurred on material used for the establishment of nonbearing high-density apple plants was Rs. 46,407 per hectare which was highest for fertilizer application, followed by plant protection, plants material and FYM activities. The total variable cost of Rs. 87,106 per hectare was incurred on labour and material used in different activities for the establishment of non-bearing plants of high-density apple in the state. Among different size of holding farms, total labour cost, material cost and also total variable cost was highest for the medium sampled farms.

TABLE 3: MAINTENANCE COST OF NON - BEARING PLANTS OF HIGH-DENSITY APPLE CROP IN UTTARAKHAND

				(Rs./Hectare)
Cost component	Marginal	Small	Medium	All
A. Labour used				
Preparation & maintenance of basin	4026	4254	4363	4269
Interculture	2757	2903	3127	2990

Cost component	Marginal	Small	Medium	All
FYM	3419	3629	3784	3670
Fertilizer application	4191	4274	4376	4311
Irrigation	2996	3125	3205	3142
Plant protection	4301	4476	4595	4505
Pit digging	3971	4083	4138	4091
Planting of plants	2978	3175	3310	3208
Pruning of plant	8184	8346	8670	8474
Other watch & ward , etc.	1875	1996	2124	2039
Total labour used	38698	40261	41692	40699
B. Material cost				
Plant material	5978	6351	6620	6421
FYM	4221	4306	4396	4337
Fertilizer application	20331	20922	21261	20989
Plant protection	14118	14698	14826	14660
Total material cost	44648	46277	47103	46407
Total variable cost (A+B)	83346	86538	88795	87106

Source: Field survey

In comparison between three selected states/UT, maintenance cost incurred on labour and material used in different activities for the establishment of nonbearing plants of high-density apple crop was highest for the state of Himachal Pradesh, followed by Jammu & Kashmir and Uttarakhand. Per hectare total variable cost (labour + material) incurred on the maintenance of non-bearing plants of high-density apple was also highest for Himachal Pradesh (Rs. 1,10,707), followed by Jammu & Kashmir (Rs. 92,571) and Uttarakhand (Rs. 87,106). Among different sampled farms, total labour cost, material cost and also total variable cost was highest for the medium sampled farms in all three states/UT.

3.2 Maintenance cost of bearing plants of highdensity apple crop among three selected states/UT

In this section, the analysis of maintenance cost

incurred on bearing plants of high-density apple crop among three selected states/UT has been presented in Table 4, 5, and 6.

Table 4 shows that in Himachal Pradesh, total maintenance cost of Rs. 1,24,343 per hectare was incurred on labour used in different activities undertaken for maintenance of bearing high-density apple plants. The cost was highest in case of plucking (harvesting), followed by pruning of plants, fertilizer application, FYM, plant protection, anti-hail net installation and other maintenance activities. The total cost incurred on material used for the maintenance of bearing high-density apple plants was Rs. 1,22,504 per hectare, which was highest for plant protection and followed by fertilizer application and FYM activities.

			(Rs./Hectare)
Marginal	Small	Medium	All
4290	4419	4581	4436
3942	4092	4222	4094
8319	8623	8971	8652
8852	9196	9450	9133
5464	5681	5885	5688
7826	8073	8397	8109
28072	30892	31986	30521
7116	7273	7428	7281
3522	4148	4378	4062
5855	6143	6376	6141
35348	36242	36926	36226
118606	124782	128600	124343
11264	11685	11864	11634
52713	54307	56945	54705
55270	56360	56613	56165
119247	122352	125422	122504
237853	247134	254022	246847
	Marginal 4290 3942 8319 8852 5464 7826 28072 7116 3522 5855 35348 118606 11264 52713 55270 119247 237853	Marginal Small 4290 4419 3942 4092 8319 8623 8852 9196 5464 5681 7826 8073 28072 30892 7116 7273 3522 4148 5855 6143 35348 36242 118606 124782 11264 11685 52713 54307 55270 56360 119247 122352 237853 247134	MarginalSmallMedium429044194581394240924222831986238971885291969450546456815885782680738397280723089231986711672737428352241484378585561436376353483624236926118606124782128600112641168511864527135430756945552705636056613119247122352125422237853247134254022

TABLE 4: MAINTENANCE COST OF BEARING PLANT OF HIGH-DENSITY APPLE CROP IN HIMACHAL PRADESH

Source: Field survey

Per hectare total variable cost of Rs. 2,46,847 was incurred on both labour and material used for maintenance of bearing plants of high-density apple in the state. Among different size of holdings, per hectare total variable cost as well as labour and material used for the maintenance of bearing high-density plants was highest in case of medium sampled farms followed by small farms and marginal farms.

Table 5 shows that in Jammu & Kashmir, total maintenance cost incurred was Rs. 97,701 on the labour used in different activities undertaken for the maintenance of bearing high-density apple plants. The cost was highest in case of plucking (harvesting) activity, followed by pruning of plants, fertilizer

application, FYM, plant protection, anti-hail net installation, irrigation and other maintenance activities. The total cost incurred on material used for the maintenance of bearing high-density apple plants was Rs. 1,15,698 per hectare, which was highest for plant protection, followed by fertilizer application and FYM activities. Per hectare total variable cost of Rs. 2,13,399 was incurred on both labour and material used for maintenance of bearing plants of high-density apple. Among different size of holding farms, per hectare total variable cost on labour and material was highest for medium sampled farms, followed by small farms and marginal farms.

TABLE 5: MAINTENANCE COST OF BEARING PLANT OF HIGH-DENSITY APPLE CROP IN J&I
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				(Rs./Hectare)
Cost Component	Marginal	Small	Medium	All
A. Labour used				
Preparation & maintenance of basin	3951	4043	4261	4044
Interculture	3073	3130	3239	3126
FYM	6122	6261	6364	6224
Fertilizer application	6244	6413	6648	6386
Irrigation	4171	4239	4318	4226
Plant protection	5902	6043	6136	6004
Pruning of plant	25010	26880	27926	26323
Anti-hail net installation	4951	5217	5455	5153
Bamboo/stick/ropes, etc.	2146	2239	2368	2228
Watch & ward, etc	4024	4130	4261	4111
Plucking	28573	30185	32188	29876
Total labour used	94167	98780	103164	97701
B. Material cost				
FYM	9766	10310	11352	10272
Fertilizer application	50784	52325	53693	51951
Plant protection	52098	54228	54716	53475
Total material cost	112648	116863	119761	115698
Total variable cost (A+B)	206815	215643	222925	213399

Source: Field survey

Table 6 shows that in the state of Uttarakhand, total maintenance cost of Rs. 78,703 per hectare was incurred on the labour used in different activities undertaken for the maintenance of bearing high-density apple plants. The cost was highest in case of plucking (harvesting) activity, followed by pruning of plants, plant protection, FYM, fertilizer application and other maintenance activities. The total cost incurred on material used for the maintenance of bearing high-density apple plants was Rs. 96,442 per hectare which

was highest for fertilizer application, followed by plant protection and FYM activities. Per hectare total variable cost of Rs. 1,75,145 was incurred on both labour and material used for maintenance of bearing plants of high-density apple in the state. Among different size of holding farms, per hectare total variable cost on labour and material used for the maintenance of bearing highdensity plants was highest in case of medium sampled farms followed by small farms and marginal farms.

				(Rs./Hectare)
Cost Component	Marginal	Small	Medium	All
A. Labour used				
Preparation & maintenance of basin	3750	3875	4038	3802
Interculture	2917	2875	3137	3003
FYM	5833	6000	5481	5104
Fertilizer application	5625	5875	5192	5087
Irrigation	3125	3750	4135	3576
Plant protection	5208	5250	5481	5313
Pruning of plant	21389	22250	22992	22157
Anti-hail net installation	3750	3500	3942	3785
Bamboo/stick/ropes, etc.	1667	1500	1827	1701
Watch & ward, etc.	2292	2500	2692	2465
Plucking	22448	22703	23077	22710
Total labour used	78004	80078	81994	78703
B. Material cost				
FYM	8611	8750	8894	8733
Fertilizer application	42948	43313	45433	43896
Plant protection	43542	43950	44135	43813
Total material cost	95101	96013	98462	96442
Total variable cost (A+B)	173105	176091	180456	175145

Source: Field survey

In comparison of three states/ UT, per hectare total cost incurred on labour and material used in different activities for the maintenance of bearing plants of high-density apple crop was highest for the state of Himachal Pradesh, followed by the Union Territory of Jammu & Kashmir, and least for Uttarakhand. Per hectare total variable cost incurred on the maintenance of bearing plants of high-density apple was also highest for Himachal Pradesh (Rs. 2,46,847), followed by Jammu & Kashmir (Rs. 2,13,399) and Uttarakhand (Rs. 1,75,145). Among different size of land holdings, per hectare total variable cost on labour and material used for the maintenance of bearing high-density plants was highest in case of medium sampled farms followed by small farms and marginal farms.

3.3 Marketing cost paid for high-density apple produce among three selected states/UT

The state/UT-wise comparative analysis of per box marketing cost paid for high-density apple produce by sampled farms is presented in Table 7. The analysis reveal that in Himachal Pradesh, total market cost of Rs. 230.52 per box was paid for marketing of high-density apple produce, which was highest for assembling, grading and packing activity, followed by transportation and loading/unloading activities.

In the Union Territory of Jammu & Kashmir, total market cost of Rs. 138.85 per box was paid for the marketing of high-density apple produce which was highest for the assembling, grading and packing activity, followed by transportation and loading/ unloading activities of high-density apple produce. Among different sampled farms, per box marketing cost of high-density apple produce was highest for marginal farms, followed by small farms and medium farms.

				(Valu	e in Rs./box)
Name of state/UT	Cost component	Marginal	Small	Medium	All
Himachal Pradesh	High-density apple				
	Assembling, grading and packing	156.19	154.20	153.34	154.49
	Loading/Unloading	7	7	7	7
	Transportation cost	65.52	67.58	71.00	69.03
	Total market cost	228.71	228.78	231.34	230.52
Jammu & Kashmir	High-density apple				
	Assembling, grading and packing	103.97	102.34	101.10	102.74
	Loading/Unloading	5	5	5	5
	Transportation cost	30.56	32.00	30.03	31.11
	Total market cost	139.53	139.34	136.13	138.85
Uttarakhand	High-density apple				
	Assembling, grading and packing	99.30	95.48	98.38	98.75
	Loading/Unloading	7	7	7	7
	Transportation cost	75.91	68.60	73.89	74.78
	Total market cost	182.21	171.08	179.27	180.53

Source: Field survey

Further, the analysis reveals that in the state of Uttarakhand, total marketing cost of Rs. 180.53 per box is paid for marketing of high-density apple produce, which was highest for assembling, grading and packing activity, followed by transportation and loading/ unloading activities. Among different size of sampled farms, per box total market cost of high-density apple was highest for marginal farms, followed by medium farms and small farms.

In comparison of three states/UT, it can be concluded that at overall level, per box total market cost paid for high-density varieties of apple produce was highest for Himachal Pradesh (Rs. 230.52), followed by Uttarakhand (Rs. 180.53) and Jammu & Kashmir (Rs. 138.85). Assembling, grading and packing activity was the most costly activity under marketing cost component of high-density varieties of apple produce for all the three selected states/UT. Amongst different size of sampled farms, per box marketing cost paid for high-density apple was highest for medium farms in Himachal Pradesh and for marginal farms in both Jammu & Kashmir and Uttarakhand.

3.4 Cost and returns of high-density apple produce among three selected states/UT

The comparative analysis about cost and returns from bearing plants of high-density apple on different size of sampled farms among three selected states/UT has been presented in Table 8. The analyses reveal that for Himachal Pradesh, per hectare net returns over cost of high-density apple was Rs. 35,00,728, which was highest for marginal farms. At overall level, per farm net returns over per farm variable cost and marketing costs paid by sampled farms was calculated to be Rs. 12,98,537. Among different size of sampled farms, per farm net returns over variable and marketing cost was highest for medium farms, followed by small farms and marginal farms. For the Union Territory of Jammu & Kashmir, per hectare net returns over cost was Rs. 26,01,500, which was highest for small farms. At overall level, per farm net returns over per farm variable cost and marketing costs paid by sampled farms was calculated to be Rs. 3,62,822, and this was highest for small farms.

				(Value	in Rs./Hectare)
Name of states/UT	Cost component	Marginal	Small	Medium	All
Himachal Pradesh	High-density apple				
	Variable cost	237853	247134	254022	246847
	Gross returns	4664478	4014578	3786154	4107126
	Return over variable cost	4426625	3767444	3532132	3860279
	Marketingcost	387647	348361	347896	359552
	Net return	4038978	3419083	3184237	3500728
	Return/farm	819675	1431456	2420020	1298537
Jammu & Kashmir	High-density apple				
	Variable cost	206815	215643	222925	213399
	Gross returns	2921232	3161061	2976080	3035930
	Return over variable cost	2714417	2945418	2753155	2822531
	Marketingcost	212732	230517	215797	221032
	Net return	2501685	2714901	2537358	2601500
	Return/Farm	186489	892039	744292	362822
Uttarakhand	High-density apple				
	Variable cost	173105	176091	180456	175145
	Gross returns	1696042	1647500	3041154	2175035
	Return over variable cost	1522937	1471409	2860698	1999890
	Marketingcost	272682	106925	174961	214379
	Net return	1250255	1364484	2685737	1785511
	Return/farm	48659	22741	199512	68564

TABLE 8: COST AND RETURNS OF HIGH-DENSITY APPLE PRODUCE AMONG THREE SELECTED STATES/UT

Source: Field survey

For Uttarakhand state, per hectare net returns over cost was Rs. 17,85,511, which was highest for medium farms. At overall level, per farm net returns over per farm variable cost and marketing cost paid by sampled farms was calculated to be Rs. 68,564. Among different size of sampled farms, per farm net returns over per farm variable and marketing cost was highest for medium farms.

4. Conclusion, farmer's perspective and policy implications

The analysis focused on the cost and returns of highdensity apple among three selected states/UT and concludes that at overall level, per hectare net returns over cost of high-density apple was highest for Himachal Pradesh (Rs. 35,00,728), followed by Jammu & Kashmir (Rs. 26,01,500) and Uttarakhand (Rs. 17,85,511). Among different size of sampled farms, per hectare net returns over cost was highest for marginal farms of Himachal Pradesh, for small farms of Jammu & Kashmir and for medium farms of Uttarakhand state.

Finally, the comparative analyses among three selected states/UT concluded that, per farm net returns over per farm variable cost and marketing cost of highdensity apple was highest for Himachal Pradesh, followed by Jammu & Kashmir and Uttarakhand. Among different sampled farms, per farm net returns was highest for medium farms in Himachal and Uttarakhand, and small farms in Jammu & Kashmir.

Following policy implications/suggestions are based on direct responses of the sampled apple farms as well as field observations made at the time of data collection in all selected states/UT. Suggestions are given separately for different state/UT in pertaining to their specific problems.

(a) For Himachal Pradesh, good quality and disease free root stocks of high-density apple plantation should be provided at panchayat level under HPHDP (Himachal Pradesh Horticulture Development Project) initiative started by the Horticulture Department. Natural irrigation is scarce in hilly Himachal Pradesh. Adequate irrigation facilities with elevation appropriate

technology should be provided. The problem of apple crop damage is prevalent in Himachal Pradesh due to hail storms and animal menace. Insurance services should be made available to help growers cope with their losses. Awareness camps and training programs should be organized by the Horticulture Department at panchayat level to impart knowledge about the technical aspect of apple cultivation practices. Labour market should be organized to regulate high costs. Soil testing labs should be set up at approachable distance in every village to spread awareness about the growers land's quality. Much of apple produce gets damaged post harvest as it is unable to reach the final consumer on time due to glitches in transportation system. For this, the Government may set up cold storage units at accessible distance for every farm to keep the produce safe for longer time in which the grower can sell its produce. Also, fruit processing units should be set up at farm level where the produce which is not sent to the market to be sold can be processed into jams, juices, pickles, wines, etc.

(b) For Jammu & Kashmir, good quality and low cost high-density plants should be provided by the Horticulture Department at panchayat level for widespread availability. Awareness camps and training programmes should also be organized to impart knowledge about the technical aspect of apple cultivation practices. As no grading measures are practiced in J&K, it results in mixed quality of apples in the market, hence affecting revenue generation. Grading and packing machines should be established which are accessible by all farms. The potential of fruit processing industry is untapped in Jammu & Kashmir due to lack of investment in this sphere, leading to wastage of produce which does not get utilized on time. Therefore, accessible fruit processing units should be established. Being the northern most state of the country, the apple belt can get cut off from rest of the nation due to bad weather, causing apple produce to be unable

to reach the market. All weather road infrastructures should be constructed with snow cutting facilities being provided every winter.

(c) For Uttarakhand, inadequate irrigation facility is the biggest hurdle in the way of high-density apple cultivation expansion, despite this state being endowed with natural rivers. Water from river Yamuna should be pumped and used as irrigation source along with developing other irrigation infrastructure. Roads connecting farms and markets are of poor quality and transportation is expensive making it difficult for the final product to reach its destination. Better road connectivity and cheaper modes of transportation should be established. Accessible soil testing labs should be set up in every village so that the growers can stay more aware about their land's quality. Awareness about different diseases in the apple plants and about their subsequent treatments should be imparted to the farmers so that they can efficiently maintain the quality of the plant. Also, good quality plant medicines should be made available to the growers. Good quality and low cost high-density plants should be provided by the Horticulture Department at the panchayat level for widespread availability. Financial support should be provided to the growers in form of subsidies for the installation of anti-hail canons for protection of crop from hail damage. Infrastructure support should be provided to the growers for protection of crop from wild animals.

In conclusion, the sampled apple farms in all three states/UT suffered similar problems in varying degrees, calling for similar yet state/UT specific solutions and suggestions. Growers in Himachal Pradesh should be provided with apple cultivation technology which is in sync with their topography requirements, growers in Jammu & Kashmir should be given with a grading system for their apple produce, and growers in Uttarakhand should be provided with better tools to deal with the problem of scabs in apple plants.

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Commodity Review Foodgrains

Procurement of Rice

The total procurement of rice during kharif marketing season 2022-23 up to 24.07.2023 is 56923 thousand metric tonnes as against 57588 thousand metric tonnes during the corresponding period of last year. The details are given in Table 1. A comparative analysis of

procurement of rice for the period of marketing season 2022-23 (up to 24.07.2023) 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.

				(In thousand metric tonnes)
State	Marketing (up to	g Season 2022-23 24.07.2023)	Corresponding 2	g periodof last year 021-22
	Procurement	Percentage to total	Procurement	Percentage to total
1	2	3	4	5
Andhra Pradesh	2834	5.0	4461	7.7
Telangana	8835	15.5	7394	12.8
Bihar	2817	4.9	3009	5.2
Chhattisgarh	5865	10.3	6165	10.7
Haryana	3977	7.0	3706	6.4
Madhya Pradesh	3093	5.4	3070	5.3
Odisha	5383	9.5	4831	8.4
Punjab	12201	21.4	12548	21.8
Tamil Nadu	2138	3.8	1876	3.3
Uttar Pradesh	4389	7.7	4391	7.6
West Bengal	2337	4.1	2401	4.2
Others	3056	5.4	3738	6.5
All India Total	56923	100.0	57588	100.0

TABLE 1: PROCUREMENT OF RICE IN MAJOR STATES



(In thousand metric tonnes)



Figure 1: Procurement of Rice in Major States





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 26202 thousand metric tonnes as against 18792 thousand metric tonnes during the corresponding period of last year. The details are given in Table 2. 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	Mark RM (upte	eting Season /IS 2023 -24 o 14.07.2023)	Corresponding J RMS	period of last year 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, Govt. of India.



Figure 3: Procurement of Wheat in major States

(In thousand metric tonnes)



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 & Public Distribution, Govt. of India.

Commercial Crops

Oilseeds

The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 186.2 in June, 2023 showing a decrease of 1.32 percent over the previous month and a decrease by 14.39 percent over the corresponding month of previous year.

The WPI of all individual oilseeds showed a mixed trend. The WPI of groundnut seed (1.68 percent), gingelly seed (sesamum) (5.09 percent), niger seed (1.59 percent) and safflower (0.68 percent) increased over the previous month. However, the WPI of rape & mustard seed (3.28 percent), cotton seed (2.79 percent), copra (coconut) (6.97 percent), sunflower (2.54 percent), and soybean (1.29 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 145.8 is June, 2023, showing a decrease of 3.12 percent over the previous month. Moreover, it decreased by 28.77 percent over the corresponding month of previous year. The WPI of mustard oil (1.31percent), soybean oil (5.62 percent), sunflower oil (2.77 percent), groundnut oil (0.93 percent), rapeseed oil (1.98 percent), copra oil (1.36 percent) and cotton seed oil (3.46 percent) decreased over the previous month.

Fruits & Vegetable

The WPI of fruits & vegetable as a group stood at 194.3 in June, 2023, showing an increase of 4.57 percent over previous month and a decrease of 13.99 percent over the corresponding month of previous year.

Potato

The WPI of potato stood at 204 in June, 2023, showing an increase of 8.17 percent over the previous month. However, it decreased by 21.27 percent over the corresponding month of the previous year.

Onion

The WPI of onion stood at 144.4 in June, 2023, showing an increase of 11.76 percent over the previous month and a decrease of 4.31 percent over the corresponding month of previous year.

Condiments & Spices

The WPI of condiments & spices (group) stood at 209.7 in June, 2023, showing an increase of 3.05 percent over the previous month and an increase of 17.88 percent over the corresponding month of previous year. The WPI of black pepper increased by 0.12 percent over the previous month, for chillies (dry), it increased by 0.04 percent and for turmeric, the WPI increased by 0.82 percent over the previous month.

Tea

The WPI of tea stood at 168.2 in June, 2023, showing a decrease of 2.04 percent over the previous month and an increase of 2.69 percent over the corresponding month of the previous year.

Coffee

The WPI of coffee stood at 145.7 in June, 2023, showing no change over the previous month. However, there is a decrease of 5.45 percent over the corresponding month of the previous year.

Sugarcane

The WPI of sugarcane stood at 210.1 in June, 2023 showing no change over the previous month. However, there is an increase of 5.16 percent over the corresponding month of the previous year.

Raw Cotton

The WPI of raw cotton stood at 161.7 in June, 2023 showing a decrease of 2.53 percent over the previous month and a decrease of 28.51 percent over the corresponding month of the previous year.

Raw Jute

The WPI of raw jute stood at 245.5 in June, 2023, showing a decrease of 3.69 percent over the previous month and a decrease of 13.50 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 June, 2023 and May, 2023 is given in Figure 5 and the comparison of WPI during June, 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	June 2023	May 2023	June 2022	Percentage va	riation over the
Commonly	June 2023	Widy, 2025	Julie 2022	Month	Year
Oilseeds	186.2	188.7	217.5	-1.32	-14.39
Groundnut Seed	200.1	196.8	171	1.68	17.02
Rape & Mustard Seed	162.0	167.5	206	-3.28	-21.36
Cotton Seed	170.7	175.6	186.6	-2.79	-8.52
Copra (Coconut)	148.2	159.3	185.8	-6.97	-20.24
Gingelly Seed (Sesamum)	219.0	208.4	184.6	5.09	18.63
Niger Seed	280.4	276.0	234.2	1.59	19.73
Safflower (Kardi Seed)	176.8	175.6	195.1	0.68	-9.38
Sunflower	138.1	141.7	187.7	-2.54	-26.43
Soybean	221.5	224.4	287.5	-1.29	-22.96
Manufacture of Vegetable and Animal Oils and Fats	145.8	150.5	204.7	-3.12	-28.77
Mustard Oil	151.2	153.2	210.2	-1.31	-28.07
Soybean Oil	131.1	138.9	198.6	-5.62	-33.99
Sunflower Oil	126.2	129.8	180.9	-2.77	-30.24
Groundnut Oil	171.2	172.8	176.9	-0.93	-3.22
Rapeseed Oil	119.0	121.4	173.3	-1.98	-31.33
Copra oil	152.7	154.8	174.2	-1.36	-12.34
Cotton seed Oil	122.8	127.2	191.2	-3.46	-35.77
Fruits & Vegetables	194.3	185.8	225.9	4.57	-13.99
Potato	204.0	188.6	259.1	8.17	-21.27
Onion	144.4	129.2	150.9	11.76	-4.31
Condiments & Spices	209.7	203.5	177.9	3.05	17.88
Black Pepper	162.9	162.7	165.4	0.12	-1.51
Chillies (Dry)	238.8	238.7	209.6	0.04	13.93
Turmeric	111.0	110.1	118.3	0.82	-6.17
Теа	168.2	171.7	163.8	-2.04	2.69
Coffee	145.7	145.7	154.1	0.00	-5.45
Sugarcane	210.1	210.1	199.8	0.00	5.16
Raw Cotton	161.7	165.9	226.2	-2.53	-28.51
Raw Jute	245.5	254.9	283.8	-3.69	-13.50





*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 June, 2023 and June, 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	Derivation Arreston Dama
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STATE-WISE PREVAILING AVERAGE DAILY WAGES

(Value in Rs)

							Field	d Labou	IL								Non	1-Agri. Occ	upation
Sr. No.	State	Month & Year	Normal Working Hours	Plou	ghing	Sor	ving	We	eding	Reap Harve	ing & sting	Othe La	r Agri. bour	Tractor	Driver	* Field Labour	Carpent	ter Blacksmi	tth Mason
				Σ	F	М	н	Μ	F	Μ	F	М	F	Μ	F	MF	Μ	Μ	Μ
1	Andhra Pradesh	Feb, 23	8	575	ī	515	396	495	349	463	370	535	374	652	ī		677	586	069
ы	Assam	Feb, 23	8	499	420	438	398	433	395	448	398	443	405	526			536	480	518
ю	Bihar	March, 23	8	392	345	362	322	366	322	383	ī	376	342	471	1		560	541	541
4	Chhattisgarh	March, 23	8	365	240	238	206	212	186	224	192	241	202	402			438	330	411
IJ	Goa	Jan, 23	8	767	767	562	419	700	500	725	525	650	457	1150	ı		1046	800	934
9	Gujarat	Jan, 23	œ	312	NR	282	253	249	249	254	251	158	156	389	ı		499	499	499
~	Haryana	Jan, 23	8	614	500	538	461	506	444	513	460	490	446	611	ı		722	671	780
8	Himachal Pradesh	1 Jan, 23	8	545	ī	499	475	482	471	489	486	454	437	602	1		638	619	621
6	Jharkhand	Jan, 23	8	309	280	301	271	298	264	308	267	298	259	399		not D1	456	444	474
10	Karnataka	March, 23	80	662	391	446	327	374	293	432	321	455	332	623	ı	vequirea	552	510	695
11	Kerala	Jan, 23	80	954	NR	NR	598	NR	607	817	652	777	647	NR			1004	968	1007
12	Madhya Pradesh	May, 23	8	350	263	294	254	268	242	303	272	336	299	410			481	461	492
13	Maharashtra (P*)	June, 22	8	406	283	381	256	356	244	490	NR	378	244	607	ı		500	450	472
14	Odisha	Dec, 22	8	418	383	400	350	367	315	378	264	385	360	537			590	564	597
15	Punjab	Feb, 23	80	493	410	482	440	461	412	489	NR	475	406	495	1		610	591	607
16	Rajasthan	Jan, 23	8	438	325	416	303	386	344	375	339	400	282	521			534	500	589
17	Tamil Nadu	April, 23	8	675	ı	653	327	632	326	734	326	666	345	865	ı		797	707	853
16	Rajasthan	Jan, 23	8	438	325	416	303	386	344	375	339	400	282	521	ı		534	500	589
17	Tamil Nadu	April, 23	80	675	ı	653	327	632	326	734	326	666	345	865	1		797	707	853
18	Telangana	March, 23	8			Z	lot Requ	uired				434	329	NR		443 316	453	439	NR
19	Tripura	Jan, 23	8	419	NR	369	319	364	313	357	300	303	251	491	NR		458	378	361
20	Uttar Pradesh	March, 23	8	345	ı	334	317	323	310	339	317	330	313	NR		Not	555	I	584
21	Uttarakhand	April, 23	8	701	NR	434	396	455	419	460	420	492	432			Required	717	NR	725
22	West Bengal	Jan, 23	œ	424	365	331	306	321	293	339	311	314	286	499	,		480	461	516
Source Note:	:: State Governments 1 Other agricultural lab	our include fi	eld waterpin	g, carry	ring load	, well d	iggers, cl	eanings	silt from w	aterways	andem	ankme	nt, etc.						

States of Andhra Pradesh and Telangana do not give operation-wise details as they furnish data for the group
 P* - Provisional as the State has not furnished data for its all districts.
 NR: Not Reported

2. Prices

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

						(All Price	es in Rupees)
Commodity	Variety	Unit	State	Centre	Jun-23	May-23	Jun-22
Wheat	PBW 343	Quintal	Punjab	Amritsar	2050	2100	2020
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	2280	2165	2040
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	2489	2400	2058
Jowar	-	Quintal	Maharashtra	Mumbai	4150	4250	3400
Gram	No III	Quintal	Madhya Pradesh	Sehore	4612	4752	4415
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1950	2150	2440
Gram Split	-	Quintal	Bihar	Patna	6730	6700	6450
Gram Split	-	Quintal	Maharashtra	Mumbai	6200	6000	6100
Arhar Split	-	Quintal	Bihar	Patna	11950	11780	9240
Arhar Split	-	Quintal	Maharashtra	Mumbai	12500	10500	9400
Arhar Split	-	Quintal	NCT of Delhi	Delhi	11000	10500	9600
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	12200	11000	8300
Gur	-	Quintal	Maharashtra	Mumbai	4800	4800	4500
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	4700	4900	4800
Gur	Balti	Quintal	Uttar Pradesh	Hapur	3200	3240	2975
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	5400	5350	6600
Mustard Seed	Black	Quintal	West Bengal	Raniganj	6500	6500	6600
Mustard Seed	-	Quintal	West Bengal	Kolkata	5650	5600	7450
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	5300	5150	7500
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	5300	5250	7150
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	2750	3000	3400
Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	3750	3750	3500
Castor Seed	-	Quintal	Telangana	Hyderabad	NT	NT	NT
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	12850	12750	9750
Copra	FAQ	Quintal	Kerala	Alleppey	7700	8300	8400
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	7000	6800	6500
Groundnut	-	Quintal	Maharashtra	Mumbai	11200	11000	10000
Mustard Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1885	2015	2460
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1825	1687	2310
Groundnut Oil	-	15 Kg.	Maharashtra	Mumbai	2550	2420	2320
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2800	2900	2750
Linseed Oil	-	15 Kg.	Uttar Pradesh	Kanpur	2215	2250	2330
Castor Oil	-	15 Kg.	Telangana	Hyderabad	2625	2475	2700
Sesamum Oil	-	15 Kg.	NCT of Delhi	Delhi	2400	2400	2600
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	4400	4300	3500
Coconut Oil	-	15 Kg.	Kerala	Cochin	1815	1890	2100

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

Commodity	Variety	Unit	State	Centre	Jun-23	May-23	Jun-22
Mustard Cake	-	Quintal	Uttar Pradesh	Kanpur	2700	2640	3100
Groundnut Cake	-	Quintal	Telangana	Hyderabad	NT	NT	NT
Cotton/Kapas	NH 44	Quintal	Andhra pradesh	Nandyal	6600	6750	11200
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	6000	5500	8700
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	5750	5775	6325
Jute Raw	W 5	Quintal	West Bengal	Kolkata	5750	5775	6475
Oranges	Big	100 No	Tamil Nadu	Chennai	2000	2100	2000
Oranges	Nagpuri	100 No	West Bengal	Kolkata	NT	NT	NA
Banana	-	100 No.	NCT of Delhi	Delhi	500	500	417
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	610	580	550
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	60000	60000	76000
Almonds	-	Quintal	Maharashtra	Mumbai	75000	75000	68000
Walnuts	-	Quintal	Maharashtra	Mumbai	100000	100000	95000
Kishmish	-	Quintal	Maharashtra	Mumbai	20000	18000	16000
Peas Green	-	Quintal	Maharashtra	Mumbai	7800	7000	7400
Tomato	Ripe	Quintal	Uttar Pradesh	Kanpur	3800	1000	3600
Ladyfinger	-	Quintal	Tamil Nadu	Chennai	3000	2500	2000
Cauliflower	-	100 No.	Tamil Nadu	Chennai	4500	2300	2000
Potato	Red	Quintal	Bihar	Patna	1380	1270	1350
Potato	Desi	Quintal	West Bengal	Kolkata	1500	1500	2200
Potato	Sort I	Quintal	Tamil Nadu	Mettuppalayam	4626	3637	4163
Onion	Pole	Quintal	Maharashtra	Nashik	1000	600	1250
Turmeric	Nadan	Quintal	Kerala	Cochin	11000	11000	10500
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	11800	11600	12000
Chillies	-	Quintal	Bihar	Patna	22350	22100	17800
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	47400	47700	47100
Ginger	Dry	Quintal	Kerala	Cochin	27000	27000	16000
Cardamom	Major	Quintal	NCT of Delhi	Delhi	57600	57500	57500
Cardamom	Small	Quintal	West Bengal	Kolkata	160000	150000	130000
Milk	Buffalo	100 Liters	West Bengal	Kolkata	7500	7500	6500
Ghee Deshi	Deshi No 1	Quintal	NCT of Delhi	Delhi	62031	62031	59363
Ghee Deshi	-	Quintal	Maharashtra	Mumbai	78000	73000	40000
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	47400	45600	47000
Fish	Rohu	Quintal	NCT of Delhi	Delhi	12000	12000	12500
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	70000	90000	74000
Eggs	Madras	1000 No.	West Bengal	Kolkata	5630	5440	5620
Tea	-	Quintal	Bihar	Patna	25400	25400	27400
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	10682	11050	9588
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	46000	46000	48000

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

Commodity	Variety	Unit	State	Centre	Jun-23	May-23	Jun-22
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	28000	27000	23000
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	9650	9750	8600
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	4650	4750	4200
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	13300	13300	13200
Rubber	-	Quintal	Kerala	Kottayam	13000	13300	15800
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	95000	93000	90000
Paddy	2716	Quintal	Andhra pradesh	Vijayawada	2300	2300	2200
Paddy	Basmati	Quintal	Punjab	Amritsar	NA	NA	NA
Paddy	No III	Quintal	Uttar Pradesh	Kanpur	2150	2175	1460
Paddy	Common	Quintal	West Bengal	Kolkata	2040	2040	1940

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

Crop Production

SOWING AND HARVESTING	OPERATIONS NORMALLY I	N PROGRESS DURING]	ULY, 2023
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State	Sowing	Harvesting
(1)	(2)	(3)
Andhra Pradesh	Winter Rice, Jowar (K), Bajra, Maize (K), Ragi (K), Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Chillies (Dry), Groundnut, Castor seed, Sesamum, Cotton, Mesta, Sweet Potato, Turmeric, Niger seed, Onion, Tapioca.	Autumn Rice.
Assam	Winter Rice, Castor seed.	Autumn Rice, Jute.
Bihar	Autumn Rice, Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Groundnut, Castor seed, Sesamum, Cotton, Jute, Mesta.	Jute.
Gujarat	Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Tobacco, Groundnut, Castor seed, Sesamum, Cotton, Sunn Hemp.	-
Himachal Pradesh	Summer Rice, Jowar (K), Bajra, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Sesamum, Sunn Hemp, Summer Potato (Plains).	Winter Potato (Hills).
Jammu & Kashmir	Autumn Rice, Jowar (K), Bajra, Small Millets (K), Urad (K),Mung (K),Winter Potato, Ginger, Tobbaco, Sesamum, Jute, Onion.	Tobacco, Sesamum, Onion.
Karnataka	Autumn Rice, Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur(K), Urad (K), Mung (K), Other Kharif Pulses, Winter Potato (Plains), Summer Potato (Plains), Black Pepper, Chillies (Dry), Tobacco, Groundnut, Castor seed, Sesamum, Cotton, Mesta, Sweet Potato, Turmeric, Sunn Hemp, Nigerseed, Kardi seed, Onion, Tapioca.	Summer Rice, Maize, Sweet Potato, Sunn Hemp.
Kerala	Ragi, Sweet Potato, Tapioca.	Sesamum, Tapioca.
Madhya Pradesh	Autumn Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur(K), Mung (K), Other Kharif Pulses, Summer potato, Ginger, Chillies (Dry), Tobacco, Groundnut, Castor seed, Sesamum, Cotton, Jute, Mesta, Sweet Potato, Turmeric, Sunn Hemp, Niger seed.	Onion.
Maharashtra	Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur(K), Urad (K), Mung (K), Other Kharif Pulses, Summer Potato (Plains), Chillies (Dry), Tobacco, Groundnut, Castor seed, Sesamum, Cotton, Jute, Mesta, Sunn Hemp, Niger seed.	-
Manipur	Winter Rice, Tur(K), Sesamum(K), Sweet Potato, Maize.	-

State	Sowing	Harvesting
(1)	(2)	(3)
Orissa	Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Summer Potato (Plains), Chillies (Dry), Groundnut, Castor seed, Cotton, Mesta.	Chillies (Dry).
Punjab and Haryana	Autumn rice, Summer Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Groundnut, Castor seed, Sweet Potato, Turmeric, Sunn Hemp.	Small Millets (K), Potato.
Rajasthan	Autumn rice, Jowar (K), Bajra, Maize, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Groundnut, Castor seed, Sesamum, Cotton, Sunn Hemp.	-
Tamil Nadu	Autumn Rice, Jowar (K), Bajra, Ragi, Small Millets (K), Tur (K), Urad (K), Summer Potato(Hills), Chillies (Dry), Groundnut, Castor seed, Sesamum, Cotton, Sunn Hemp, Onion, Tapioca.	Jowar (R), Summer Potato (Hills), Sugarcane, Chillies (Dry), Sesamum, Cotton, Sunn Hemp.
Tripura Uttar Pradesh	Winter Rice, Urad (K), Mung (K), Sesamum. Autumn Rice, Winter Rice, Jowar (K), Bajra, Maize, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Goundnut, Castor seed, Sesamum, Jute, Mesta, Sweet Potato, Turmeric, Sunn Hemp, Niger seed, Tapioca.	Onion, Autumn Rice. Small Millets (R), Chillies (Dry).
West Bengal	Autumn Rice, Winter Rice, Tur (K), Ginger, Chillies (Dry).	Autumn Rice, Maize, Chillies (Dry), Sesamum, Jute _.
Delhi	Summer Rice, Jowar (K), Bajra, Maize, Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Summer Potato (Plains), Chillies (Dry), Cotton, Sweet Potato.	Winter Potato (Plains), Onion.
Andaman & Nicobar	Autumn Rice, Winter Rice.	-

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING JULY, 2023

(K)- Kharif (R)- Rabi

Note to Contributors

The Journal brought out by the Economics, Statistics and Evaluation Division, Ministry of Agriculture & Farmers Welfare aims at presenting an integrated picture of the food and agricultural situation in India on month to month basis. The views expressed are not necessarily those of the Government of India.

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- Typescript should be arranged in the following order: title, abstract, introduction, data or methodology, text, conclusions, policy suggestions, and references.

- c) Abstract (with keywords) is required and should not exceed 300 words in length.
- d) The title page should contain the title, author name(s) and institutional affiliation (s).
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