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ARTICLES	COMMODITY REVIEWS Foodgrains Commercial Crops
Economics and Marketing of Organic vis-a-vis Inorganic Horticulture in Himachal Pradesh with Particular Reference to Mango,Citrus and Stone Fruit Cultivation in Kangra and Shimla Districts of the State	TRENDS IN AGRICULTURE: Wages & Prices
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Subscription

Inland Foreign
Single Copy : ₹40.00 £ 2.9 or \$ 4.5
Annual : ₹400.00 £ 29 or \$ 45

Available from

The Controller of Publications,
Ministry of Urban Development,
Deptt. of Publications,
Publications Complex (Behind Old Secretariat),
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June, 2018

No. 3

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From Editor's Desk

The 'Agricultural Situation in India' this month is about the Government's various farmer-centric policy initiatives; and the latest update on the general agricultural outlook; what is going on in the agricultural economics and rural economy academia; and the agro-economics field research findings about horticultural sector, and the issues of marketing and processing.

Important initiatives and releases by the Government during the month of May, 2018, shared in the farm sector news are the Cabinet's approval for the continuation of the scheme 'Green Revolution: Krishonnati Yojana' with massive expenditure of Rs. 33,269.976 crore for the financial years viz. 2017-18, 2018-19 and 2019-20; inauguration of the foundation stone of the frozen semen station in Maranga, Purnea district of Bihar by the Union Agriculture Minister under the Rashtriya Gokul Mission with 100% contribution from the Central Government; the Cabinet's approval of an initial corpus of Rs. 5,000 crore for micro irrigation fund with NABARD under Pradhan Mantri Krishi Sinchayee Yojana; release of the 3rd Advanced Estimates of production of major crops for 2017-18. Other agriculture sector related news consists of the release of the Model Agriculture Produce and Livestock Contract Farming and Services (Promotion & Facilitation) Act, 2018 by the Union Agriculture Minister with a vision to integrate farmers with bulk purchasers of their produce for better price realization; the Indian Union Agriculture Minister's meeting with the Deputy Prime Minister and Minister of Agriculture, Nature and Food Quality of Netherlands on the issues of further strengthening the existing partnership between the two countries in agriculture and allied sectors; release of the Second Advanced Estimates of area and production of various horticultural crops for 2017-18 by the Department of Agriculture, Cooperation and Farmers Welfare, etc.

So far as the agricultural outlook of the country is concerned, the Third Advance Estimates show that the foodgrains achieved a record high level production of 279.51 million tonnes in 2017-18, marking a 4.40 million tonnes increase over that of 2016-17's record production of 275.11 million tonnes, which indicates an impressive increase of 19.33 million tonnes over the five yearly average production of 260.18 million tonnes during 2012-13 to 2016-17. This was made possible by record production performance in rice, wheat, maize, millets, gram, and urad.

The wholesale price index of foodgrain decreased by 4.23 percent in April, 2018 as compared to that in April, 2017. The WPI of wheat and pulses showed a declining trend; while there was an improvement in the case of cereals and paddy during the same period. The cumulative pre-monsoon season rainfall in the country has been 10 percent lower than the long period average during 1st March to 30th May, 2018. The present live storage in 91 major water reservoirs in the country was

27.66 BCM as against 31.11 BCM of normal storage based on the average storage of last 10 years. The sowing position during Kharif 2018, upto 1st June 2018, in the country indicates that 72.61 lakh hectares area has been sown as compared to 77.67 lakh hectares during the corresponding period of the last year.

In the academic writings, we are sharing two interesting articles on socio-economic issues related to horticulture sector and migratory Dalit farm workers. The first article deals with various economic and marketing issues of organic as well as inorganic horticultural practices in Himachal Pradesh (HP). More specifically, this article primarily focuses on the economics and marketing of the mango, citrus and stone fruits in two districts of HP, namely, Kangra and Shimla. The study is based on primary data. The study finds lack of marketing and packaging facilities, technical knowledge in adoption of organic methods, limited availability of organic inputs as the major constraints in the success of organic farming in the state. It recommends to accord high priority to create a pool of related scientific experts to handle the issues; ensure strict adherence to APEDA guidelines; giving practical projects to Universities; use of local and indigenous resources; bringing farmers to the centre-stage of activities; and to link organic orchardists with potential markets. The second article discusses the issues of migration and development of Dalits people in Karnataka. The study, on a field evidence collected from the survey of 1800 households for the period 2013-14, reveals that agriculture sector creates seasonal employment in far away villages, urban areas and cities during slack period. But the issue it flags is that even while creating employment and income opportunities for the farm workers, migration exposes nearly one-fourth of the Dalit workers to exploitation.

Agro-Economic research report shared in this issue is a study by AERU, IEG, University of Delhi, Delhi. The objectives of this study are: to examine the growth in area, production and productivity of litchi in select states of India; to evaluate exports potential of litchi from India; to analyze efficiency of various marketing channels in the post-harvest operations of litchi; and to find out the constraints of efficient production, marketing and processing of litchi. To realize these objectives, an additive decomposition model is applied to estimate the relative contribution of area, productivity and their interaction in the change of production during the period from 1991-92 to 2013-14. The policy recommendations of this study highlight the importance of the pre-harvest contractors in the absence of landlords; formation of the producers' group to facilitate production and marketing of litchi; creation of 'litchi hubs' and availability of adequate electricity facility in the concerned hub; improvement of cultivars through traditional as well as modern tools such as bio-tech, bio-informatics, etc., for increase in productivity of litchi.

P. C. Bodh

Farm Sector News

Cabinet approved continuation of Umbrella Scheme 'Green Revolution-Krishonnati Yojana' in Agriculture Sector

The Cabinet Committee on Economic Affairs, chaired by the Hon'ble Prime Minister Shri Narendra Modi, gave its approval for the Umbrella Scheme, 'Green Revolution - Krishonnati Yojana' in agriculture sector beyond 12th Five Year Plan for the period from 2017-18 to 2019-20 with the Central Share of Rs. 33,269.976 crore.

The Umbrella scheme comprises of 11 Schemes/ Missions. These schemes aims to develop the agriculture and allied sector in a holistic and scientific manner to increase the income of farmers by enhancing production, productivity and better returns on produce. The Schemes will be continued with an expenditure of Rs.33,269.976 crore for three financial years, i.e., 2017-18, 2018-19 and 2019-20.

The Schemes that are part of the Umbrella Scheme are:-

(i) Mission for Integrated Development of Horticulture (MIDH), with a total central share of Rs. 7533.04 crore, aims to promote holistic growth of horticulture sector; to enhance horticulture production, improve nutritional security and income support to farm Households.

(ii) National Food Security Mission (NFSM), including National Mission on Oil Seeds and Oil Palm (NMOOP), with a total central share of Rs.6893.38 crore, aims to increase production of rice, wheat, pulses, coarse cereals and commercial crops, through area expansion and productivity enhancement in a suitable manner in the identified districts of the country, restoring soil fertility and productivity at the individual farm level and enhancing farm level economy. It further aims to augment the availability of vegetable oils and to reduce the import of edible oils.

(iii) National Mission for Sustainable Agriculture (NMSA), with a total central share of Rs.3980.82 crore, aims at promoting sustainable agriculture practices best suitable to the specific agro-ecology

by focusing on integrated farming, appropriate soil health management and synergizing resource conservation technology.

(iv) Sub-Mission on Agriculture Extension (SMAE), with a total central share of Rs.2961.26 crore, aims to strengthen the ongoing extension mechanism of State Governments, local bodies, etc., to achieve food and nutritional security and socio-economic empowerment of farmers, to institutionalize programme planning and implementation mechanism, to forge effective linkages and synergy amongst various stake-holders, to support HRD interventions, to promote pervasive and innovative use of electronic / print media, inter-personal communication and ICT tools, etc.

(v) Sub-Mission on Seeds and Planting Material (SMSP), with a total central share of Rs.920.6 crore, aims to increase production of certified / quality seed, to increase SRR, to upgrade the quality of farm saved seeds, to strengthen the seed multiplication chain, to promote new technologies and methodologies in seed production, processing, testing, etc., to strengthen and modernizing infrastructure for seed production, storage, certification and quality, etc.

(vi) Sub-Mission on Agricultural Mechanisation (SMAM), with a total central share of Rs.3250 crore, aims to increase the reach of farm mechanization to small and marginal farmers and to the regions where availability of farm power is low, to promote 'Custom Hiring Centres' to offset the adverse economies of scale arising due to small landholding and high cost of individual ownership, to create hubs for hi-tech and high value farm equipment, to create awareness among stakeholders through demonstration and capacity building activities, and to ensure performance testing and certification at designated testing centers located all over the country.

(vii) Sub-Mission on Plant Protection and Plant Quarantine (SMPPQ), with a total central share of Rs.1022.67 crore, aims to minimize loss to quality and yield of agricultural crops from the ravages of insect pests, diseases, weeds, nematodes, rodents, etc., and to shield our agricultural bio-security

Source: www.pib.nic.in

from the incursions and spread of alien species, to facilitate exports of Indian agricultural commodities to global markets, and to promote good agricultural practices, particularly with respect to plant protection strategies.

(viii) Integrated Scheme on Agriculture Census, Economics and Statistics (ISACES) with a total central share of Rs. 730.58 crore. It aims to undertake the agriculture census, study of the cost of cultivation of principal crops, to undertake research studies on agro-economic problems of the country, to fund conferences/workshops and seminars involving eminent economists, agricultural scientists, experts and to bring out papers to conduct short term studies, to improve agricultural statistics methodology and to create a hierarchical information system on crop condition and crop production from sowing to harvest.

(ix) Integrated Scheme on Agricultural Cooperation (ISAC), with a total central share of Rs. 1902.636 crore, aims to provide financial assistance for improving the economic conditions of cooperatives, remove regional imbalances and to speed up - cooperative development in agricultural marketing, processing, storage, computerization and weaker section programmes; to help cotton growers fetch remunerative price for their produce through value addition besides ensuring supply of quality yarn at reasonable rates to the decentralized weavers.

(x) Integrated Scheme on Agricultural Marketing (ISAM), with a total central share of 3863.93 crore, aims to develop agricultural marketing infrastructure; to promote innovative and latest technologies and competitive alternatives in agriculture marketing infrastructure; to provide infrastructure facilities for grading, standardization and quality certification of agricultural produce; to establish a nation-wide marketing information network; to integrate markets through a common online market platform to facilitate pan-India trade in agricultural commodities, etc.

(xi) National e-Governance Plan (NeGP-A), with a total central share of 211.06 crore, aims to bring farmer centricity & service orientation to the programmes; to enhance reach & impact of extension services; to improve access of farmers to information & services throughout crop-cycle; to build upon, enhance & integrate the existing ICT initiatives of Centre and States; and to enhance efficiency & effectiveness of

programs through providing timely and relevant information to the farmers for increasing their agriculture productivity.

The aforementioned Schemes/Missions focus on creating/strengthening infrastructure of production, reducing production cost and marketing of agriculture and allied produce. These schemes / missions have been under implementation during past few years.

All these schemes/missions were appraised and approved independently as separate scheme/mission. In 2017-18, it has been decided to club all these schemes / missions under one umbrella scheme, namely, 'Green Revolution - Krishonnati Yojana'.

Rashtriya Gokul Mission aims to conserve and develop indigenous breeds to increase milk productivity

Laying the foundation stone of the frozen semen station in Maranga, Purnea, the Union Minister of Agriculture & Farmers Welfare, Shri Radha Mohan Singh said that the frozen semen station is being set up at a cost of Rs 64 crore under the Rashtriya Gokul Mission with 100% contribution from the Central Government. Out of this, Rs 20 crore has already been released. He said the artificial insemination techniques can increase milk production and productivity. Currently, the artificial insemination is being done by CMOFED (Sudha) in Bihar. For artificial insemination, semen from high genetic merit bulls is needed.

He stated that, this is the government, after Independence, has been taking concrete steps for the welfare of farmers at the grassroots level. To improve the condition of farmers, the Hon'ble Prime Minister Shri Narendra Modi has taken a resolution to double their income by 2022 and in order to achieve this, the Ministry of Agriculture and Farmers Welfare is working wholeheartedly.

The frozen semen station in Purnea would be the first state-of-the-art semen production center of the country. The center would include highly modern bull shade, semen processing lab, godown, agricultural equipment, and other facilities. In this, 300 high genetic merit bulls would be kept and 50 lakhs of semen dose would be produced per year. Red Sindhi, Bachaur, Gangatiri, Sahiwal breeds of

cattle would also be kept. With the establishment of this semen station, milk productivity of cows and buffaloes would increase rapidly in the state.

Rashtriya Gokul Mission was initiated in December 2014 with an aim to conserve and develop indigenous breeds. Proposals from Bihar under Rashtriya Gokul Mission in 2015 and 2017 have been approved with a sum of 133.26 crore. Under the scheme, Rs 52.40 crore has been released to the state so far.

Cabinet approved Corpus for Micro Irrigation Fund with NABARD under Pradhan Mantri Krishi Sinchayee Yojana

The Cabinet Committee on Economic Affairs, chaired by the Hon'ble Prime Minister Shri Narendra Modi, on 16th May, 2018, approved an initial Corpus of Rs.5,000 crore for setting up of a dedicated 'Micro Irrigation Fund' (MIF) with NABARD under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

Details:

- The allocation of Rs. 2,000 crore and Rs. 3,000 crore would be utilized during 2018-19 and 2019-20, respectively. NABARD will extend the loan to State Governments during this period, which shall be paid back by the states in 7 years, including the grace period of two years.
- The lending rate under MIF has been proposed at 3% lower than the cost of raising the fund by NABARD.
- This cost shall be met from the ongoing scheme of PMKSY-PDMC by amending the existing guidelines
- The total financial implication of interest subvention comes to about Rs 750 crore.

Benefits:

- The dedicated Micro Irrigation Fund would supplement the efforts of Per Drop More Crop Component (PDMC) of Pradhan Mantri Krishi Sinchayee Yojana in an effective and timely manner.
- With the additional investment for micro

irrigation accessing MIF, innovative composite/ commodity/ community/ cluster based micro irrigation projects/ proposals may bring about 10 lakh ha.

- The Fund would facilitate States to mobilize resources for their initiatives, including additional (top up subsidy) implementation of PMKSY-PDMC to achieve the annual target of about 2 Million ha/year during the remaining period of 14th Finance Commission under Per Drop More Crop Component of PMKSY as recommended by the Group of Secretaries.

Implementation Strategy and targets:

States may access MIF for innovative integrated projects, including projects in the Public Private Partnership (PPP) mode and also for incentivizing micro irrigation through an additional (top up) subsidy over and above the one available under PMKSY-PDMC guidelines and for covering additional areas. It should not be a substitute for State's share in PMKSY-PDMC.

Farmer Producer Organizations (FPOs)/ Cooperatives/State Level Agencies can also access the funds with State Government Guarantee or equivalent collateral. Farmers Co-operatives may access this fund for innovative cluster-based Community Irrigation Projects.

An Advisory Committee to provide policy direction and ensure effective planning, coordination and monitoring along with a Steering Committee for examining and approving the Projects/proposals from State Governments (total cost, eligible loan amount to the State and phasing), coordination and monitoring to ensure time bound implementation of the assisted projects/proposals within approved cost and phasing is proposed to be constituted.

Coverage:

The fund shall have Pan India coverage. With the operation of MIF, it is expected that the States which are lagging behind in adoption of Micro Irrigation would also be encouraged to take advantage of the fund for incentivizing farmers as being done by the good performing States. Besides, community driven and innovative projects to be taken up by the States would bring additional coverage of Micro Irrigation.

Rationale:

The Task Force on Micro Irrigation had estimated a potential of 69.5 m ha under micro irrigation, whereas the area covered so far is only about 10 m. ha (14%). Further, the Group of Secretaries in 2017, emphasized on target of 10 million ha under micro irrigation over the next 5 years, which would require an additional annual coverage of about 1 million ha compared to the present pace of implementation. This can be accomplished by effective utilization of the resources of both PMKSY-PDMC and MIF in any or both of the following manners:

- To facilitate the States in mobilizing the resources for expanding coverage of micro irrigation by taking up special and innovative projects.
- To incentivize micro irrigation beyond the provisions available under PMKSY-PDMC to encourage farmers to install micro irrigation systems.

Department of Agriculture, Cooperation and Farmers Welfare released the 3rd Advance Estimates of production of major crops for 2017-18

The 3rd Advance Estimates of production of major crops for 2017-18 have been released by the Department of Agriculture, Cooperation and Farmers Welfare on 16th May, 2018. The assessment of production of different crops is based on the feedback received from States and validated with information available from other sources.

As per 3rd Advance Estimates, the estimated production of major crops during 2017-18 is as under:

- **Foodgrains** – 279.51 million tonnes (record)
- Rice – 111.52 million tonnes (record)
- Wheat – 98.61 million tonnes (record)
- Nutri/Coarse Cereals – 44.87 million tonnes (record)
- Maize – 26.88 million tonnes (record)
- Pulses – 24.51 million tonnes (record)
- Gram – 11.16 million tonnes (record)
- Tur – 4.18 million tonnes
- Urad – 3.28 million tonnes (record)
- **Oilseeds** – 30.64 million tonnes
- Soyabean – 10.93 million tonnes
- Groundnut – 8.94 million tonnes
- Rapeseed & Mustard – 8.04 million tonnes
- Castorseed – 1.49 million tonnes
- **Cotton** – 34.86 million bales (of 170 kg each)

- **Sugarcane** – 355.10 million tonnes

As a result of near normal rainfall during monsoon 2017 and various policy initiatives taken by the Government, country has witnessed record foodgrains production in the current year. As per Third Advance Estimates for 2017-18, total foodgrains production in the country is estimated at 279.51 million tonnes which is higher by 4.40 million tonnes than the previous record production of foodgrain of 275.11 million tonnes achieved during 2016-17. The current year's production is also higher by 19.33 million tonnes than the previous five years' (2012-13 to 2016-17) average production of foodgrains.

Total production of rice during 2017-18 is estimated at record 111.52 million tonnes. Production of rice has increased by 1.82 million tonnes than the production of 109.70 million tonnes during 2016-17. It is also higher by 5.22 million tonnes than the last five years' average production of 106.29 million tonnes.

Production of wheat during 2017-18 is estimated at record 98.61 million tonnes which is higher by 0.10 million tonnes as compared to wheat production of 98.51 million tonnes achieved during 2016-17. Further, the production of wheat during 2017-18 is higher by 5.28 million tonnes than the average wheat production of the last five years.

Production of nutri/coarse cereals during 2017-18 is estimated at record 44.87 million tonnes which is higher than the average production of the last five years by 3.17 million tonnes. Further, it is also higher by 1.10 million tonnes as compared to their production of 43.77 million tonnes achieved during 2016-17.

Total pulses production during 2017-18 is estimated at record 24.51 million tonnes which is higher by 1.37 million tonnes than the previous year's production of 23.13 million tonnes. The production of pulses during 2017-18 is higher than the last five years' average production by 5.66 million tonnes.

Total oilseeds production in the country during 2017-18 is estimated at 30.64 million tonnes which is lower by 0.64 million tonnes than the production of 31.28 million tonnes during 2016-17. However, the production of oilseeds during 2017-18 is higher by 1.09 million tonnes than the average oilseeds

production of the last five years.

With a significant increase by 49.03 million tonnes over 2016-17, total production of sugarcane in the country during 2017-18 is estimated at 355.10 million tonnes. The production of sugarcane during 2017-18 is also higher by 13.06 million tonnes than the average sugarcane production of 342.04 million tonnes of the last five years.

Production of cotton during 2017-18 estimated at 34.86 million bales (of 170 kg each) is higher by 2.28 million bales than the previous year's production of 32.58 million bales. Further, it is also higher by 1.36 million bales than its average production of 33.50 million bales of the last five years.

Production of jute & mesta during 2017-18 estimated at 10.62 million bales (of 180 kg each) is lower than the production during the 2016-17.

The Union Agriculture Minister released Model Agriculture Produce and Livestock Contract Farming and Services (Promotion & Facilitation) Act, 2018

With a view to integrate farmers with bulk purchasers including exporters, agro- industries, etc., for better price realization through mitigation of market and price risks to the farmers and ensuring smooth agro raw material supply to the agro industries, the Union Finance Minister in the budget for 2017-18 announced preparation of a "Model Contract Farming Act" and circulation of the same to the States for its adoption. Farmer producer organizations (FPOs) have a major role in promoting Contract Farming and Services Contract. On behalf of farmers, they can enter into agreement with the sponsor.

The final Model Act "The...State/UT Agricultural Produce and Livestock Contract Farming and Services (Promotion & Facilitation) Act 2018" has been approved by the Competent Authority and was released on 22nd May, 2018, at Vigyan Bhawan, New Delhi, by Shri Radha Mohan Singh, the Union Agriculture Minister. He also released a book titled "Intrapreneurship and Management for Farmer Producer Companies" prepared by Grant Thornton.

Salient features of Model Contract Farming Act, 2018 are:

- The Act lays special emphasis on protecting the interests of the farmers, considering them as weaker of the two parties entering into a contract.
- In addition to contract farming, services contracts all along the value chain including pre-production, production and post-production have been included.
- "Registering and Agreement Recording Committee" or an "Officer" for the purpose at district/block/ taluka level for online registration of sponsor and recording of agreement provided.
- Contracted produce is to be covered under crop / livestock insurance in operation.
- Contract framing to be kept outside the ambit of APMC Act.
- No permanent structure can be developed on farmers' land/premises
- No right, title of interest of the land shall vest in the sponsor.
- Promotion of Farmer Producer Organizations (FPOs) / Farmer Producer Companies (FPCs) to mobilize small and marginal farmers has been provided.
- FPO/FPC can be a contracting party if so authorized by the farmers.
- No rights, title ownership or possession to be transferred or alienated or vested in the contract farming sponsor, etc.
- Ensuring buying of entire pre-agreed quantity of one or more of agricultural produce, livestock or its product of contract farming producer as per contract.
- Contract Farming Facilitation Group (CFFG) for promoting contract farming and services at village / panchayat level provided.
- Accessible and simple dispute settlement mechanism at the lowest possible level provided for quick disposal of disputes.
- It is a promotional and facilitative Act and not regulatory in nature.

The Union Minister of Agriculture and Farmers Welfare of India met Ms. Carola Schouten, Deputy Prime Minister and Minister of Agriculture, Nature and Food Quality of Netherlands

Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh, on 24th May, 2018, met Ms. Carola Schouten, Deputy Prime Minister and

Minister of Agriculture, Nature and Food Quality, Netherlands in Krishi Bhawan, New Delhi and expressed his desire to further strengthen the existing partnership between the two countries in agriculture and allied sectors.

- Shri Singh reiterated the Government's commitment to double the income of farmers by 2022 and the initiatives taken & stressed on the need for infusing modern technology in India's agriculture. He further added that Netherlands is a global leader in construction of greenhouses as well as in the cultivation of flowers, plants and vegetables, and the diversification of agriculture sector in areas like livestock and plant-cultivation sectors.
- Shri Singh expressed happiness at the regular convening of Joint Working Group, the 5th was held in March 2018, where discussions on a wide range of issues took place and extended the Action Plan till 2021.
- The Union Agriculture Minister said a major success of the Indo-Dutch collaboration has been the commissioning of the Centre of Excellence (CoE) for vegetables at Baramati in Maharashtra. The second CoE for flowers at Talegaon, Maharashtra would be ready soon. Others are in various stages of completion and the focus is on making technology affordable to the small and marginal Indian farmers.
- Shri Singh further said that other identifiable areas of interest for further cooperation such as technology for crop residue management and cooperation in the field of bovine breeding; dairy development, animal health and porcine development, etc., are also being looked into.

Release of 2017-18 Second Advance Estimates of Area and Production of various Horticulture Crops

The Department of Agriculture, Cooperation and Farmers Welfare released the 2017-18(2nd Advance Est.) of Area and Production of Horticulture Crops. These Estimates are based on the information received from different States/UTs in the country.

The following table summarizes the All- India Final Estimates: 2016-17 and 2017-18(2nd Advance Estimates):

Total Horticulture	2016-17	2017-18	% change of 2017-18 (2nd Adv Est.) w.r.t. 2016-17
	Second Adv. Est.		
Area ('000 Ha)	24851	25406	2.23
Production (‘000 Tonnes)	300643	307159	2.17

As per the 2nd Advance Estimates prepared on the basis of information received from State Departments of Horticulture / Agriculture and various agencies like Directorate of Arecanut & Species Development (DASD), Directorate of Cashew & Cocoa Development (DCCD) and National Bee Board (NBB), the total horticulture production of the country is estimated to be 307.2 million tonnes during 2017-18, which is 2.2% higher than the previous year and 8.6% higher than the past 5 years' average production.

The Production of fruits is estimated to be about 94.4 million tonnes which is about 2% higher than previous year production of vegetables is estimated to be about 182 million tonnes which is about 2.2% higher than previous year. Onion production in the current year is likely to be around 218 lakh tonnes in 2016-17(Final Est.), which when compared to 5 years' average is about 8% higher. Potato production is estimated at 503 Lakh Tonnes as against 486 lakh tonnes in 2016-17 (Final Est.) which is about 3.5% higher than the previous year. Tomato production in the current year is likely to be around 220 lakh tonnes as against 207 lakh Tonnes in 2016-17 (Final Est.) which is about 6.6% higher than the previous year.

India makes unprecedented progress in coconut cultivation from mid 2014 to 2018 & becomes the leading country in coconut production and productivity

India has made unprecedented progress in coconut cultivation from mid 2014 to 2018 and now it has become the leading country in coconut production and productivity. Productivity increased to 11516 fruits per hectare in 2017-18 as compared to 10122 in 2013-14. Between 2014 and 2018, 13,117 hectare was brought under new plantation as compared to 9,561 hectare during 2010-2014.

Owing to an increase in production of coconut, India has been exporting coconut oil to Malaysia, Indonesia and Sri Lanka since April 2017. Till March

2017, India was importing coconut oil. Also, for the first time, India has been exporting dry coconut in large quantities to the U.S and European countries. In 2017-18, India exported coconut worth Rs. 1602.38 crore while imports stood at Rs. 259.70 crore.

In coconut producing states, 62403 hectares have been brought under scientific coconut farming methods as compared to 36477 hectare in 2010-14. It is noteworthy that coconut cultivation has spread in new areas. In various states, 13117 hectare new area was brought under coconut cultivation till 2014-18

which was only 9561 hectare in 2010-14.

In 2014-18, 5115 coconut production committees, 430 Coconut Growers' Federation and 67 coconut producing companies have been constituted which in 2010-14 was 4467, 305 and 15, respectively. The income from export of coconut products stood at Rs. 6448 crore during 2014-18 as against Rs. 3975 crore in 2004-2014. Under the skill development program for coconut sector 'Friends of Coconut Tree', 33228 unemployed youths have been trained as compared to 27770 in 2004-14.

General Survey of Agriculture

Trends in Foodgrain Prices

Based on Wholesale Price Index (WPI) (2011-12=100), foodgrains price decreased by (-) 4.23 per cent, in April, 2018 over April 2017. During the same period, the WPI of wheat decline by 0.07 per cent and pulses by 22.46 per cent, whereas WPI of cereals and paddy increased by 0.21 per cent and 3.86 per cent. The WPI of pulses and wheat showed fall of 1.23 per cent and 0.21 per cent, respectively, in April, 2018 over March, 2018. During this period, the WPI of foodgrains, cereals and paddy increased by 0.07 per cent, 0.28 per cent and 0.72 per cent, respectively.

Rainfall and Reservoir Situation Rainfall Situation

Cumulative pre-monsoon Season rainfall for the country as a whole during the period 01st March to 30th May, 2018 has been 10% 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 35% in South Peninsula but lower than LPA by 29% in North-West India, 18% in East & North East India and 9% in Central India.

Out of total 36 meteorological Sub-divisions, 06 met subdivisions received large excess/excess rainfall, 13 subdivisions received normal rainfall and 17 Sub-divisions received deficient/large deficient rainfall.

Water Storage in Major Reservoirs

Central Water Commission monitors 91 major reservoirs in the country which have total live capacity of 161.99 Billion Cubic Metre (BCM) at Full Reservoir Level (FRL). Current live storage in these reservoirs (as on 31st May, 2018) was 27.66 BCM as against 33.67 BCM on 31.05.2017 (last year) and 31.11 BCM of normal storage (average storage of last 10 years). Current year's storage is 82% of last year's storage and 89% of the normal storage.

Sowing Position during Kharif, 2018

As per latest information available on sowing of

Kharif crops upto 01.06.2018, area sown under Kharif crops taken together has been reported to be 72.61 lakh hectares at All India level as compared to 77.67 lakh hectares in the corresponding period of last year. Area reported is higher by 3.5 lakh ha. than the normal area as on date. Area reported has been higher by 4.3 lakh ha. under sugarcane as compared to normal area as on date.

Economic Growth

The second advance estimates (2nd AE) of national income released by Central Statistics Office (CSO) on 28th February 2018, estimated the growth of Gross Domestic Product (GDP) at constant market prices for the year 2017-18 to be 6.6 per cent (Table 1).

The growth rate of GDP at constant market prices was 7.1 per cent (first revised estimate) in 2016-17 and 8.2 per cent in 2015-16 (second revised estimate). The growth in Gross Value Added (GVA) at constant basic prices for the year 2017-18 is estimated to be 6.4 per cent (2nd AE). At the sectoral level, agriculture, industry and services sectors grew at the rate of 3.0 per cent, 4.8 per cent and 8.3 per cent respectively in 2017-18.

As per the quarterly estimates, the growth of GDP at constant prices for third quarter (October-December) of 2017-18 was 7.2 per cent, as compared to the growth of 6.8 per cent recorded in the corresponding quarter of the previous year. The upswing trend of quarterly growth, which started in the second quarter of 2017-18, sustained with an even higher growth in third quarter (Table 2).

The share of total final consumption in GDP at current prices in 2017-18 is estimated at 70.2 per cent, as compared to 69.9 per cent in 2016-17. The fixed investment rate (ratio of gross fixed capital formation to GDP) is estimated at 28.5 per cent in 2017-18, which is the same as in previous two years. The saving rate (measured as a share of gross saving to GDP) for the year 2016-17 was 30.0 per cent, as compared to 31.3 per cent in 2015-16. The investment rate (measured as a share of gross capital formation to GDP) was 30.6 per cent in 2016-17, as compared to 32.3 per cent in 2015-16.

Agriculture and Food Management Rainfall

The cumulative rainfall received for the country as a whole, during the period 1 st March 2018 to 9 th May 2018, has been 13 per cent below normal. The actual rainfall received during this period has been 73.4 mm as against the normal at 84.2 mm. Out of the total 36 meteorological subdivisions, 1 subdivision received large excess rainfall, 7 subdivision received excess rainfall, 11 subdivisions received normal rainfall, 14 subdivisions received deficient rainfall, 3 subdivisions received large deficient rainfall.

All India Production of Foodgrains

As per the 3rd Advance Estimates (AE) released by Ministry of Agriculture & Farmers Welfare on 16th May 2018, the production of foodgrains during 2017-18 is estimated at 279.5 million tonnes compared to 275.1 million tonnes in 2016-17 (Final Estimate) (Table 3).

Procurement

Procurement of Rice as on 1st May 2018, during

kharif marketing season 2017-18 was 32.4 million tonnes whereas procurement of wheat during rabi marketing season 2018-19 was 27.0 million tonnes (Table 4).

Off-take

The off-take of rice all schemes during the month of March, 2018 has been 32.3 lakh tonnes. This comprises 27.9 lakh tonnes under TPDS/NFSA (offtake against the allocation for the month of April 2018) and 4.4 lakh tonnes under other schemes. In respect of wheat, the total offtake has been 23.0 lakh tonnes comprising of 18.4 lakh tonnes under TPDS/NFSA (offtake against the allocation for the month of April 2018) and 4.6 lakh tonnes under other schemes. The cumulative offtake of food-grains during 2018-19 is 5.3 million tonnes (Table 5).

Stocks

The total stocks of rice and wheat held by FCI as on 1st April, 2018 was 43.2 million tonnes compared to 37.8 million tonnes as on 1st April, 2017 (Table 6).

TABLE 1 : GROWTH OF GVA AT BASIC PRICES BY ECONOMIC ACTIVITY AT CONSTANT (2011-12) PRICES (PER CENT)

Sectors	Growth Rate (%)			Share in GVA (%)		
	2015-16 2 nd RE	2016-17 1 st RE	2017-18 2 nd AE	2015-16	2016-17 1 st RE	2017-18 2 nd AE
Agriculture, forestry & fishing	0.6	6.3	3.0	15.4	15.3	14.8
Industry	9.8	6.8	4.8	31.6	31.5	31.0
Mining & quarrying	13.8	13.0	3.0	3.1	3.3	3.2
Manufacturing	12.8	7.9	5.1	18.1	18.2	18.0
Electricity, gas, water supply & other utility services	4.7	9.2	7.3	2.1	2.2	2.2
Construction	3.7	1.3	4.3	8.2	7.8	7.7
Services	9.6	7.5	8.3	53.0	53.2	54.2
Trade, Hotel, Transport Storage	10.3	7.2	8.3	19.0	19.0	19.3
Financial , real estate & prof services	10.9	6.0	7.2	21.9	21.7	21.8
Public Administration, defence and other services	6.1	10.7	10.1	12.2	12.6	13.0
GVA at basic prices	8.1	7.1	6.4	100.0	100.0	100.0
GDP at market prices	8.2	7.1	6.6	---	---	---

Source: Central Statistics Office (CSO).

Notes: 2nd RE: Second Revised Estimates, 1st RE: First Revised Estimates, 2nd AE: Second Advance Estimates

TABLE 2 : QUARTER-WISE GROWTH OF GVA AT CONSTANT (2011-12) BASIC PRICES (PER CENT)

Sectors	2015-16				2016-17				2017-18		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Agriculture, forestry & fishing	2.3	2.7	-2.3	1.0	4.3	5.5	7.5	7.1	2.7	2.7	4.1
Industry	7.9	7.6	10.7	11.0	8.3	6.8	7.1	5.0	0.1	5.9	6.8
Mining & quarrying	11.3	11.4	12.0	12.3	10.5	9.1	12.1	18.8	1.8	7.1	-0.1
Manufacturing	9.7	10.9	14.8	14.2	9.9	7.7	8.1	6.1	-1.8	6.9	8.1
Electricity, gas, water supply & other utility services	2.6	5.6	3.9	7.6	12.4	7.1	9.5	8.1	7.1	7.7	6.1
Construction	4.3	0.2	4.3	4.6	3.0	3.8	2.8	-3.9	1.5	2.8	6.8
Services	9.3	10.2	9.4	9.8	9.4	7.9	6.5	6.3	9.6	7.1	7.7
Trade, hotels, transport, communication and services related to broadcasting	10.5	8.5	10.4	13.1	8.9	7.2	7.5	5.5	8.4	9.3	9.0
Financial, real estate & professional services	10.4	13.3	10.2	8.8	10.5	8.3	2.8	1.0	8.9	6.4	6.7
Public administration, defence and Other Services	5.5	6.6	6.9	6.1	7.7	8.0	10.6	16.4	13.2	5.6	7.2
GVA at Basic Price	7.8	8.4	7.3	8.7	8.3	7.2	6.9	6.0	5.6	6.2	6.7
GDP at market prices	7.8	8.1	7.1	9.1	8.1	7.6	6.8	6.1	5.7	6.5	7.2

Source: (CSO).

TABLE 3 : PRODUCTION OF MAJOR AGRICULTURAL CROPS (3ND ADV. EST.)

Crops	Production (Million Tonnes)					
	2012-13	2013-14	2014-15	2015-16	2016-17 (FINAL)	2017-18 (3 rd AE)
Total Foodgrains	257.1	265.0	252.0	251.6	275.1	279.5
Rice	105.2	106.7	105.5	104.4	109.7	111.5
Wheat	93.5	95.9	86.5	92.3	98.5	98.6
Total Coarse Cereals	40.0	43.3	42.9	38.5	43.8	44.9
Total Pulses	18.3	19.3	17.2	16.4	23.1	24.5
Total Oilseeds	30.9	32.8	27.5	25.3	31.3	30.6
Sugarcane	341.2	352.1	362.3	348.4	306.1	355.1
Cotton#	34.2	35.9	34.8	30.0	32.6	34.9

Source: DES, DAC & FW, M/o Agriculture & Farmers Welfare.

Notes: 3rd AE: 3rd Advance Estimates, # Million bales of 170 kgs. each.

TABLE 4 : PROCUREMENT OF CROPS (MILLION TONNES)

Crops	2012-12	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Rice#	34.0	31.8	32.0	34.2	38.1	32.4	
Wheat@	38.2	25.1	28.0	28.1	23.0	30.8	27.0
Total	72.2	56.9	60.2	62.3	61.1	63.2	27.0

Source: FCI and DFPD, M/o Consumer Affairs, Food and Public Distribution.

Notes: Procurement of rice as on 01.05.2018.

: Kharif Marketing Season (October-September), @ : Rabi Marketing Season (April-March).

TABLE 5 : OFF-TAKE OF FOODGRAINS (MILLION TONNES)

Crops	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19 *
Rice	29.2	30.7	31.8	32.8	34.4	2.8
Wheat	30.6	25.2	31.8	29.1	24.8	2.3
Total (Rice & Wheat)	59.8	55.9	63.6	61.9	59.2	5.3

Source: DFPD, M/o Consumer Affairs, Food and Public Distribution.

Note: up to April 2018.

TABLE 6 : STOCKS OF FOODGRAINS (MILLION TONNES)

Crops	1 st April 2017	1 st April 2018
1. Rice	23.1	24.9
2. Unmilled Paddy#	10.0	7.7
3. Converted Unmilled Paddy in terms of Rice	6.6	5.1
4. Wheat	8.1	13.2
Total (Rice & Wheat)(1+3+4)	37.8	43.2

Source: FCI.

Note: # Since September 2013, FCI gives separate figures for rice and unmilled paddy lying with FCI & state agencies in terms of rice.

Articles

Economics and Marketing of Organic vis-à-vis Inorganic Horticulture in Himachal Pradesh with Particular Reference to Mango, Citrus and Stone Fruit Cultivation in Kangra and Shimla Districts of the State

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Abstract

In recent years, with the advantage of increasing soil health, environmental and human health concern along with the cost benefits, lots of awareness is generated about the cultivation of organic crops. In this regard, the present study is concerned about the economics and marketing of stone fruit, mango fruit and citrus fruit with particular reference to cultivation of organic and inorganic conditions in the state of Himachal Pradesh. The state was divided in various agro climatic zones, viz. low hill and high hill zones. High hills are most suited for stone fruit while low hills are more favourable for mango and citrus fruits. The study is focused particularly on two districts, one is Shimla for stone fruit crop and another is Kangra for mango and citrus fruit crop. In districts Shimla and Kangra, Rampur Block and Indora Block are selected, respectively. This selection was based on the status where both types of organic and inorganic crops were being available for the sake of comparison. This study is based on a sample of 90 households, 15 each for stone fruit, mango fruit and citrus fruit in organic and inorganic conditions. Due to the unavailability of respective data from government record, the help of NGO was sought to procure data. The analysis shows that the ratio of area in which the organic and inorganic crops were cultivated was 1:3. Overall, it was found that the potential of organic crop is quite high in the state. Therefore, government should devise policy to encourage the production of organic crop in future.

Keywords: Organic and inorganic crops, Low hill & high hill Zones, Himachal Pradesh.

Introduction

Over the years, it has become a commonplace to understand and define organic agriculture as farming without synthetic pesticides and conventional fertilizers. This should not be considered as a definition but one of the major characteristics of a socially and environmentally conscious approach to agriculture. Organic farming system is not new in India. It is being followed from ancient times. It has been described as a method of farming system which primarily aims at cultivating land and raising crops in such a way as to keep the soil in good health by the use of organic wastes (crop, animal and farm waste, aquatic waste, bird droppings) and other biological material along with beneficial microbes to release nutrients to crops for sustainable production in an eco-friendly, pollution-free manner.

Inorganic farming is the general way of farming in India today. During 1960s, when the priority

was to increase the aggregate food production for feeding the increasing population, during the Green Revolution, the model of agriculture based on chemical fertilizers and pesticides, helped to achieve self-sufficiency in food production. This was the beginning of the era of chemical fertilizers and pesticides. Agriculture has been transformed into a high input based system and popularized monocrop farming systems which created ecological imbalances. The menace of diseases and pests came as a result of such imbalances as there was sudden departure from multi-cropping system prevalent in past under organic farming system. The continuous and irrational use of chemicals led to immunity in the pests and more powerful chemicals had to be used for controlling the pests. The irony of this practice has been that when the pests were killed it also, simultaneously, killed beneficial insects which preyed on the harmful insects.

The term organic farming was first used by Lord

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Northbourne (1940) in the book, 'Look to the Land Lord'. Northbourne, who embraced the teachings of Rudolph Steiner and biodynamic farming, had a vision of the farm as a sustainable, ecologically stable, self-contained unit, biologically complete, balanced and dynamic living organic whole. According to him, "the best can only spring from that kind of biological completeness which has been called wholeness. If it is to be attained, the farm itself must have a biological completeness; it must be a living entity, it must be a unit which has within itself a balance Organic life. Every branch of work is interlocked with all others. The cycle of conversion of vegetable products through the animal into manure and back to vegetables is of great complexity, and highly sensitive, especially over long periods, to any disturbance of its proper balance. The penalty for failure to maintain this balance is in the long run, a progressive impoverishment of the soil. Real fertility can only be built up gradually under a system appropriate to the conditions of each particular farm, and by adherence to the essentials of that system, whatever they may be in each case, over long periods".

Codex Alimentarius Commission, A joint body of Food and Agriculture Organization and World Health Organization, defines, "Organic agriculture as a holistic food production management system which promotes and enhances agro-ecosystem health, which includes biodiversity, biological cycles and soil biological activity. This is accomplished by using, possibly agronomic, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system".

International Federation of Organic Agriculture Movements (IFOAM), defines, "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved". Organic agriculture is a production management system in which land is cultivated or crops raised in such a way as to avoid or exclude the use of synthetically compounded fertilizers, pesticides, weed control chemicals, and to largely rely on crop rotations incorporating legumes, on-farm and off-farm crop

residues, farm yard manure (FYM), vermicompost, organic waste, and biological pest control to maintain agro-economic system and soil biological activity. It is a system of farming based on integral relationship between soil, plant, water and micro-organisms. The philosophy is to feed the soil rather than the crops to maintain soil health and it is a means of giving back to nature what has been taken from it.

Principles of Organic Farming

The four principles are the roots from which organic agriculture grows and develops. They express the contribution that organic agriculture can make to the world and a vision to improve all agriculture in a global context. The principles apply to agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute food and other goods. They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.

Principle of Health

Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health and integrity of living systems and it is not simply the absence of illness. Immunity, resilience and regeneration are key characteristics of health. In particular, organic agriculture is intended to produce high quality nutritious food that contributes to preventive health care and well-being. In view of this it should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

Principle of Ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops, it is the living soil; for animals, it is the farm ecosystem; for fish and marine organisms, the aquatic environment. Those who produce, process, trade or consume organic products should

protect and benefit the common environment including landscapes, climate, habitats, biodiversity, air and water.

Principle of Fairness

Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings. This principle emphasizes that those involved in organic agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties: farmers, workers, processors, distributors, traders and consumers. Natural and environmental resources that are used for production and consumption should be managed in a way that is socially and ecologically sustainable and should be held in trust for future generations. Fairness requires systems of production, distribution and trade are open, equitable and account for real environmental and social costs.

Principle of Care

Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. Organic agriculture is a living and dynamic system that responds to internal and external demands and conditions. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being. Consequently, new technologies need to be assessed and existing methods required to be reviewed.

1. Indian Scenario

Considering the emerging markets for organic products, the government of India has identified organic agriculture as a major thrust area during the 10th five year plan and allocated Rs. 57 crores for production market development, etc. The Mid-Term Appraisal of the 10th five year plan emphasized the need to promote organic farming due to its high value and export potential. In the international market, there is great demand for commodities like organic tea, coffee, spices, etc. India is a leading producer of these commodities under organic farming system.

Also, India has a competitive advantage in growing organic crops as the majority of the rain-fed areas; the farmers are traditional organic farmers. But the area and production under organic crops is very low. Presently, India has only about 37,000 hectares under organic farming which is only 0.03 percent of the total agricultural area. This is insignificant as compared with other countries like Australia, Argentina and USA, etc., being the leading players of organic farming in the world.

2. Indian Organic Exports

On the export front, the Indian performance has not been very encouraging so far. As per APEDA estimates, total quantity of 6472 tonnes of organic products was exported from seven states in India during 2004. These seven states are Himachal Pradesh, Kerala, Karnataka, West Bengal, Maharashtra and Tamil Nadu. The organic tea and spices are the most important organic exports from India. Other important commodities being exported include fresh fruits, vegetables, rice, coffee, cashew and oil seeds, etc. In total, 31 commodities were being exported from India during the year 2004. As per Org-Marg survey, 2002, the Indian organic products are being exported to Europe, America, Middle East and Australia, etc. The study estimated that demand for Indian organic products would increase to 19081 MT by 2005-06 and 21523 MT by 2006-07.

3. Organic Agriculture in Himachal Pradesh

Himachal Pradesh, with its unique beauty and lush green valleys and snow covered Himalayan ranges, is endowed with diverse forms of flora and fauna inhabiting in each agro-climatic zone. The state has large diversity in food, fodder, vegetables, horticultural, forest and medicinal plants. Existence of traditional farming system, rich indigenous knowledge and low consumption of chemical fertilizers and pesticides, the State offers ample scope for organic agriculture. The National Mission on sustainable agriculture and horticulture development emphasizes promotion of good agriculture practices as necessary components of the agriculture development approaches for which organic agriculture is the best known tool. Therefore, Department of Agriculture, Himachal Pradesh, has come up with a policy framework for promoting organic agriculture in the State.

Keeping in mind the above, the present study is

focussed on economics and marketing of stone fruit, mango fruit and citrus fruit cultivation in organic and inorganic conditions.

Methodology

The study aims at presenting broad scenario of organic farming in the state in respect of selected fruits/fruit groups. For this, the state was divided into various agro-climatic zones and the ones having selected fruit crops (low hill and mid hill zones) was incorporated in the study. District Shimla was taken for stone fruit crop, while District Kangra was taken for Mango and Citrus fruit crops. Further, Rampur Block of District Shimla and Indora Block of District Kangra were taken for having largest area under selected fruit crops. Finally, 15 organic farmers were randomly selected. Along with this, an appropriate sample of 15 inorganic farmers was also taken for the study in order to facilitate the comparison. Thus, the study was based on 45 organic and 45 Inorganic orchardists of the selected crops. While data collected with the help of NGOs, was taken to find out the villages where the programmes under organic agriculture were in progress. Presently, NGOs work directly with farmers for promotion of organic agriculture in the State. The data was collected during 2012-13.

Tools and Techniques

In order to work out the economics of organic fruit growers vis-à-vis inorganic fruit growers, the cost of cultivation as well as cost of production of mango, citrus and stone fruit crops was worked out by using the cost concepts as follows:

Cost A₁: it includes all actual expenses on following items:

- i. Value of hired human labour
- ii. Value of machine labour, owned and hired
- iii. Value of owned bullock labour
- iv. Value of Farm Yard Manure (FYM) owned and purchased
- v. Value of fertilizers
- vi. Value of pesticides and insecticides
- vii. Depreciation of implements and machinery
- viii. Land revenue
- ix. Interest on working capital

Cost A₂ = Cost A₁ + rent paid on leased-in land minus rent received on leased-out land

$$\text{Cost A} = \text{Cost A}_1 + \text{Cost A}_2$$

Cost B = Cost A + imputed rental value of owned land (not of land revenue) + interest on owned fixed capital excluding land

Cost C = Cost B + imputed value of family labour

Cost D = Cost C + management cost @ 10 per cent over Cost C

Cost of fruits production was estimated by using the following formula:

$$CFP = \frac{TC}{QFP}$$

Where, CFP is the cost of fruit production (₹/ Quantity)

TC is the total cost of fruit production (₹/ hectare)

QFP is the quantity of fruit produced (Quantity/ hectare)

Computation of Gross Returns

The gross returns of fruit crops were estimated by using the following method:

$$\text{Gross returns} = \text{Yield of fruit crop} \times \text{Price of fruit}$$

Computation of Net Returns

The net returns over different cost for fruits were calculated by using the following formula:

$$\text{Net returns} = \text{Gross returns} - \text{Total cost}$$

To assess the constraints and motivating factors in adoption of organic fruit crop, farming respondents were asked to read each motivating factors as well as constraints with their rational for its relevance and their opinion on possible of these constraints and motivating factors were sought on a three continuum of 'relevant', partial relevant' and 'irrelevant' with a score of 2, 1 and 0, respectively. Based on this, the scientific relevance score for each constraint was estimated by using the following formula:

$$P = \frac{\sum_{i=1}^N x_i}{2N} \sim (0 \leq P_i \leq 1)$$

Where,

P = Scientific relevance score,

N = Number of key informants,

$X_i=2$ if i^{th} constraint or motivating factor is relevant,
 $X_i=1$ if i^{th} constraint or motivating factor is partial relevant,
 $X_i=0$ if i^{th} constraint or motivating factor is irrelevant.

Limitations

(1) Area under organic horticultural crops still undecided, it is only the area under agricultural land is considered as the area used to horticultural purposes also. Therefore, the produce of such orchards was ambiguously stated as organic fruits. (2) Orchardists practicing traditional horticultural practices are considered as organic fruit crop growers, but this is not the proper way to identify them, because the proper land management procedures are still under worse condition in such situations also. (3) The identification of the area for fruit crops and information of orchardists are still in infancy stage in Horticulture Department. It becomes difficult to properly follow the area under organic fruit crops.

Salient Features of Sample Households

Examination of socio-economic profile of the study area is an integrated part of the study. It shows how a change is inevitable when a country progress on economic development path. The average family size was around more than four people. The literacy percentage is very high in the sample. It varies between 92.27 percent on inorganic stone fruit to 98.60 percent on inorganic mango. Male literacy is higher on all selected fruit growers in comparison to female population. The average size of holding is 1.85, 1.53, 1.92, 1.76, 2.24 and 2.21 hectare, respectively, on organic and inorganic stone fruit, organic mango and inorganic mango, and organic and inorganic citrus fruit. The area under horticulture crops per farm is 1.12 hectare on organic mango, 0.75 hectare on inorganic stone fruit, 1.04 hectare on organic mango, 1.16 on inorganic mango and 1.27 on organic citrus and 1.26 on inorganic citrus fruit. The area under selected crop varies between 37.60 percent on organic mango to 93.94 percent on inorganic stone fruit. The per-farm animal livestock ranges between 1.30 on organic mango and 3.52 on inorganic citrus.

TABLE 1: SALIENT FEATURES OF SAMPLE HOUSEHOLD

S. No.	Contents	Stone Fruit		Mango Fruit		Citrus Fruit	
		Organic	Inorganic	Organic	Inorganic	Organic	Inorganic
1.	Sample Size	15	15	15	15	15	15
2.	Population	Male	36	34	35	34	45
		Female	36	30	29	23	23
		Total	72	64	64	57	68
3.	Family Size	Male	2.40	2.26	2.26	2.40	3.00
		Female	2.40	2.00	2.00	1.60	1.53
		Total	4.80	4.26	4.26	4.00	4.53
4.	Illiteracy percent	Male	1.30	1.50	0.00	0.00	2.94
		Female	4.10	9.30	3.12	3.50	5.88
		Total	2.78	5.15	1.40	1.40	3.92
5.	Literacy percent	Male	96.03	98.50	96.89	100.00	95.60
		Female	95.90	85.20	95.35	96.50	92.70
		Total	95.94	92.27	96.19	98.60	94.62
6.	Total Workforce Percentage	Male	88.88	88.20	80.00	73.50	48.88
		Female	50.00	60.00	68.00	60.86	56.52
		Total	69.44	75.00	75.00	68.42	51.42
7.	Holding Size (Hectare)	1.85	1.53	1.92	1.76	2.24	2.21
8.	Operational Holding Size (Hectare)	1.43	0.98	1.35	1.30	1.71	1.68

S. No.	Contents	Stone Fruit		Mango Fruit		Citrus Fruit	
		Organic	Inorganic	Organic	Inorganic	Organic	Inorganic
9.	Irrigated Land Percentage	59.50	51.40	68.98	74.70	70.42	70.12
10.	Per Farm Area under field crop percentage	0.31	0.23	0.31	0.14	0.44	0.43
11.	Per farm area under horticultural crop	1.12	0.75	1.04	1.16	1.27	1.26
12.	Area under selected crop percentage	84.32	93.94	37.60	77.98	18.62	59.75
13.	Total livestock per farm number	2.73	1.83	2.72	1.80	3.34	3.52

Area and Production of Fruit Crops under Organic and Inorganic Conditions

Himachal Pradesh is blessed with natural wealth. The farming community has been using this wealth since ages here. Farmers have been near to nature in their agricultural practices. Therefore, the history of adoption of organic way of farming has its roots far back to their pre-fathers. Farmers still understand the concept of organic agriculture in this

background. Their forefathers never used chemical fertilizers and poisonous pesticides in their fields. They maintain a balanced and mix farming system which was useful to crop and community. The modern incarnation of organic farming is still a matter of understanding and practice to farmers. They are, with the help of Agriculture Department of Himachal Pradesh, and various NGOs, trying to link themselves to the organic agriculture management system again.

TABLE 2: AGE WISE AREA, NUMBER OF PLANTS AND PRODUCTION OF STONE FRUIT, MANGO FRUIT AND CITRUS FRUIT ON ORGANIC AND INORGANIC CONDITIONS ON SAMPLED FARMERS

(AREA IN HECTARE, PRODUCTION IN QUINTALS)

Age of Plants (in years)	Stone Fruit						Mango Fruit						Citrus Fruit					
	Organic			Inorganic			Organic			Inorganic			Organic			Inorganic		
	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction
0-3 Years	1.04	450	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	220	-
3-5 Years	0.16	60	-	2.20	970	-	-	-	-	0.24	40	-	1.14	405	-	1.28	440	-
Total	1.20	510	-	2.20	970	-	-	-	-	0.24	40	-	1.14	405	-	2.08	660	-
Per Farm	0.08	34	-	0.15	65	-	-	-	-	0.02	2.7	-	0.76	27	-	0.14	44	-
Per Hectare	1.00	425	-	1.00	440	-	-	-	-	1.50	166	-	1.00	355	-	1.00	317	-
5 to10 Years	2.00	785	46.50	0.32	100	20.00	1.36	235	146	-	-	-	0.32	80	13	2.08	450	130
10 to 15 Years	2.16	755	104.25	2.24	7.90	197.50	2.48	350	220	0.32	25	80	0.16	50	47	4.00	1140	596
15 to 20 Years	2.16	870	170.00	2.48	880	215.00	0.80	145	112	1.28	115	310	0.08	25	26	0.80	250	175
20 to 25 Years	1.00	300	107.50	0.24	100	25.00	1.12	210	145	1.80	225	440	0.04	18	20	2.32	750	520
Above 25 Years	6.08	2200	425.00	2.44	1000	180.00	-	-	-	9.96	1070	1620	-	-	-	-	-	-
Total	13.00	5130	853.25	7.72	28.70	637.50	5.76	940	623	13.36	1435	2450	0.60	173	106	9.20	2590	1421
Per Farm	0.86	342	56.88	0.51	191.3	42.50	0.38	62.66	41.53	0.89	95.66	163.33	0.04	11.5	7.06	0.61	172.66	94.73
Per Hectare	1.00	394	65.78	1.00	371	82.50	1.00	163	108	1.00	107	183	1.00	288	176.00	1.00	281	154

Age of Plants (in years)	Stone Fruit						Mango Fruit						Citrus Fruit					
	Organic			Inorganic			Organic			Inorganic			Organic			Inorganic		
	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction	Area	No. of Plants	Prod-uction
Grand Total (Non-bearing and Bearing)	14.20	5640	853.25	9.92	3840	637.50	5.76	940	623	13.60	1475	2450	1.74	528	106	11.28	3250	14.21
Per Farm	0.95	376	56.88	0.66	256	42.50	0.38	62.66	41.53	0.91	98.33	163.33	0.11	35.2	7.06	0.75	216.66	94.73
Per Hectare	1.00	397	60.08	1.00	387	64.29	1.00	1.63	1.08	1.00	1.08	180	1.00	15.1	17.6	1.00	2.88	125.97

TABLE 3: IMPACTS OF ORGANIC FARMING PRODUCTION TECHNIQUES ON THE FRUIT CROPS PRODUCTION AND QUALITY
(PER CENT RESPONDENTS)

Particulars	Organic Stone Fruit			Organic Mango Fruit			Organic Citrus Fruit		
	Increased	Decreased	No change	Increased	Decreased	No change	Increased	Decreased	No change
Production	40	20	40	20	30	50	20	30	50
Quality	Improved	Reduced	No change	Improved	Reduced	No change	Improved	Reduced	No change
Shelf Life	60	5	35	40	10	50	45	5	50
Taste	45	-	55	10	-	90	6	-	94
Shine	30	-	70	10	-	90	10	-	90
Resistance against diseases	40	10	50	30	23	47	50	20	30

Area, production and number of plant of organic and inorganic stone fruit, mango and citrus fruits are given in Table 2. The several problems such as unavailability of suitable inputs on time and marketing of their produce, farmers were raising these trees under organic conditions too. Under stone fruit category, plum was raised by sample organic orchardists. For mango and citrus fruits, farmers were using grafted and improved varieties of fruit crops. In stone fruit crops and mango fruit crops, farmers were either fully organic or inorganic, but for citrus fruit crops, those farmers who were adopted or continuously practicing organic farming method adopted it only for those trees which they were producing for themselves. It showed that they were aware about the bad effects of chemicals to their health which was applied by them in the orchard.

Further Table 3 presents the impact of organic farm production technique on the fruit crop production and quality. It is observed that organic orchardist experienced increase in production in their organic fruit crops which is 40 percent for organic stone fruit crop growers and 20-20 percent, respectively, for organic mango and citrus fruit crop

growers. But they require continuous guidance so that they could attain good production with minimum damage to soil and environment. Organic farming production methods had also helped in the improvement of quality of the fruit crops. Fruit crops' shelf life taste, shine and resistance against disease had increased. But maximum percent of respondents remained passive and expressed no change in the production and quality of organic fruit crops. Till now, in Himachal Pradesh, the area under organic orchards is basically not identified. It is the area only under organic field crops which has been the prime focus. Orchards come by default in the gamut of organic certification in those areas. There needs to be a change in the mind set. Horticultural crops are high cash income source to orchardist in Himachal Pradesh. Therefore, it should not be taken lightly, if it concerns with the organic certification of fruit crops.

Economics of Selected Fruits under Organic and Inorganic Conditions

Economics of fruits cultivation is important aspect to know the cost and returns to orchardist. The comparative cost of cultivation and cost of

production of fruit crop under organic vis-à-vis inorganic condition are presented in Table 4. It was observed that the cost of cultivation and production of fruit crops under organic condition were low in comparison to inorganic fruit crops. There was a difference between the sale price of fruit crops for organic as well as inorganic fruits. But the difference was not much of significance, because there was still lack of marketing facilities for organic fruits in the region. The organic fruit growers were helpless to sell their fruits in conventional markets, where there was no clear demarcation or identification of organic fruits.

TABLE 4: COST OF CULTIVATION OF STONE FRUIT, MANGO AND CITRUS FRUITS IN ORGANIC VIS-À-VIS INORGANIC CONDITION (ONE YEAR CROP CYCLE ON SELECTED FARMS)

(COST IN Rs.)

Particulars	Stone Fruit			Mango Fruit			Citrus Fruit		
	Organic	Inorganic	% difference of inorganic over organic	Organic	Inorganic	% difference of inorganic over organic	Organic	Inorganic	% difference of inorganic over organic
Cost A	27173.71	42674.87	57.04	31741.92	49430.30	55.72	9198.05	47272.97	414.40
Cost B	78652.66	109626.29	39.38	70949.81	111354.76	56.94	87500.45	101317.64	15.79
Cost C	81881.51	16038.20	41.71	75897.72	115995.41	52.83	93342.73	111654.59	19.61
Cost D	90069.66	127642.02	42.14	76392.51	127594.96	67.02	102677.00	122820.04	19.62
Total Production per box / quintal	1288.89 boxes	1651.55 boxes	28.13	108.15 quintal	166.91 quintal	54.33	177.85 quintal	154.45 quintal	-13.15
Cost of Production per box / quintal	5.28 per box	10.01 per box	89.58	706.35 Per quintal	764.45 Per quintal	8.22	577.32 Per quintal	795.20 Per quintal	37.73
Sale Price (Rs. per box / quintal)	156.66 Per box	124.00 Per box	-20.84	1450 Per quintal	1460 Per quintal	0.70	1400 Per quintal	1386.66 Per quintal	-0.95
Gross Returns (Rs. / hectare)	201917.50	204792.20	1.42	156817.50	243688.60	55.39	248990.00	214169.63	-13.98
Net Returns (Rs. / hectare)	111847.84	77150.18	-31.02	80424.99	116094.60	44.35	146313.00	91349.59	-37.56

Cost and Return from Mango

The total cost of inorganic mango fruit was 67.02 percent higher than the organic mango fruit crop. The cost of production of inorganic mango was 8.22 percent higher than organic mango fruit crop.

Cost and Return from Citrus Fruits

It was observed from the Table 4 that cost of organic citrus fruit crop was Rs. 102677 per hectare while for

Cost and Return from Stone Fruits

The total cost for organic stone fruit growers was Rs. 90069.66 per hectare, and for inorganic stone fruit growers it was Rs. 127642.02 per hectare, the total cost of inorganic stone fruit was 42.14 percent high than the organic stone fruits. The cost of production for organic stone fruit crop was Rs. 5.28 per box, where for inorganic fruit crop it was Rs. 10.01 per box. The net returns for organic stone fruit crop was Rs. 111847.84 per hectare, and for inorganic stone fruit crop the net return was Rs. 77150.18 per hectare. It shows that the net returns for organic stone fruit crop were 31.02 percent higher than the returns for inorganic stone fruit crop.

inorganic citrus fruit growers it was Rs. 122820.04 per hectare. The inorganic citrus fruit crops' total cost was 19.62 percent higher than that of organic citrus fruit crop. The cost of production for inorganic citrus fruit crop was 37.73 percent, higher than organic citrus fruit crop for citrus orchardist. Organic citrus fruit crop grows return over cost were 37.56 percent more than that of inorganic citrus fruit growers.

The total cost of cultivation and cost of production of organic mango, citrus and stone fruit crop were

less than the fruit crop cultivated under inorganic conditions. This shows that promotion of organic agricultural methods in fruit crop production is good option to reduce costs and increases returns to orchardists. Sustainability of organic methods needs a sound policy framework, proper guidance and marketing facilities to orchardist, so that they can be benefitted from organic agriculture in future.

Distribution and Marketing Channels

Distribution comprises movement of fruit from producer to ultimate consumer. In this process, the fruit has to pass through more than one hand except when it is directly sold to the consumer by the producer which is a rare phenomenon. In this chain, various agencies like grower, pre-harvest contractors, commission agents, wholesaler, retailers, etc., are engaged. This chain of intermediaries / functionaries is called marketing channel. The followings are the channels generally used by selected organic and inorganic fruit growers:

1. Grower to consumer.
2. Grower – Retailer – Consumer
3. Grower – Preharvest Contractor – Wholesaler – Retailer – Consumer
4. Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer
5. Grower – Postharvest Contractor – Retailer – Consumer
6. Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer
7. Grower – Local Wholesaler – Retailer – Consumer
8. Grower – Processor – Consumer.

The price spread is worked out for each channel used by the grower on organic and inorganic conditions.

Price Spread and Marketing Margin

Effective marketing strategy, especially for such a commodity depends mainly on the decision of where, when, how and how much to market? For this, the services of a chain of middlemen and functionaries become inevitable. Each of the functionaries and service has been paid for. The share of consumer's rupee received by the producer depends upon several factors including the channel used. The difference between the price paid by the consumer and that received by the producer consists of marketing costs or marketing margins. As the product moves closer

and closer to the ultimate consumer, the prices per selling unit increases in order to provide for margin to the various intermediaries and functionaries and provide auxiliary service as well. Therefore, to protect the interest of producer and consumers, it is essential to integrate the role of intermediaries. Thus, price spread is a good yard stick for measuring marketing efficiency, i.e., minimum input of various economic resources which will result in satisfaction of goods and service desired by the consumers.

Marketing margins include all costs of assembling, grading, packing, transportation, handling, processing, storage, wholesaling and retailing in the entire process of marketing. The study of marketing margins is very essential in the formation of an appropriate marketing policy. On the one hand, producer deserves a legitimate share in the consumer's rupee, and on the other hand, consumer has to be safeguarded against excessive prices. These twin objectives can best be achieved by ensuring the services of intermediaries and functionaries at reasonable cost.

Price Spread for Stone Fruit

The price spread for stone fruit was worked out by different channels which were actually used by the growers in organic and inorganic condition. The details of cost and margin and channels are presented in Table 5. Table-5 shows that under organic condition, net price received by grower is highest on channel No. 4 (Rs. 130 per box) followed by channel 6 and 7 (Rs. 120 per box each), channel 1 (Rs. 100 per box) and channel 3 (Rs. 80 per box). Fruit is generally sold through pre harvest / post harvest contractor and taking about 12.50 per box of consumer rupees which is higher than the wholesaler margin which is about 8 percent and retailers margin which is about 9 percent. This is because the fruit is very fragile and pre-harvest and postharvest contractors help the producer to send his produce quickly to the market. Whereas in case of inorganic fruit growers, they used only three channels, i.e., four, six and seven and in all channels, seven is the most profitable channel and 42.85 percent of total production sold through this channel and got Rs. 90 per box which is the highest amount among all channels followed by channel 4 (32.43 percent produce sold) and growers got Rs. 75 per box and through channel six sold 24.71 percent of the produce and got Rs. 60 per box. Cost born by grower is highest on channel 7 while 33.14 percent

of consumer rupees, whereas channel 4 and 6 born about 25 percent each of consumer rupee, in these channels, cost born by producer is higher because fruit is fragile and need proper packaging for marketing. 12.50 percent profit borne by pre/post-harvest contractor and same (12.50 percent) margin was taken by the wholesaler and 12.50 percent profit was taken by the retailer in channel 6 and growers

got only 37.50 percent consumer rupees. This channel considered as the worst channel. In channel 7, which can be considered as most profitable channel and profit by wholesaler and retailer is about 9 percent each. Channel 4 for organic and channel 7 for inorganic condition of marketing of plum is the most profitable channel.

TABLE 5: PRODUCERS' SHARE AND MARKETING MARGINS OF STONE FRUIT IN ORGANIC AND INORGANIC CONDITION OF SAMPLED HOUSEHOLD

(Rs. / Box)

S. No.	Particulars	Organic Stone Fruits								Inorganic Stone Fruits							
		Marketing Channel No.								Marketing Channel No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Share of channel in total fruit quantity sold percentage	0.13	0.00	18.24	60.34	0.00	4.99	16.28	0.00	0.00	0.00	0.00	32.43	0.00	24.71	42.85	0.00
2	Net price received by grower	100 (66.67)	-	80 (46.38)	130 (53.78)	-	120 (49.60)	120 (49.60)	-	-	-	-	75 (47.02)	-	60 (37.50)	90 (49.60)	-
3	Expenses incurred by grower or pre harvest / post harvest contractor	50 (33.33)	-	40 (23.19)	40 (16.52)	-	50 (20.66)	80 (33.05)	-	-	-	-	40 (24.08)	-	40 (25.00)	60 (33.14)	-
4	Margin to pre harvest / post harvest contractor	-	-	30 (17.39)	30 (12.40)	-	30 (12.39)	-	-	-	-	-	15 (9.37)	-	20 (12.50)	-	-
5	Price paid by wholesaler	-	-	-	200 (82.64)	-	200 (82.64)	200 (82.64)	-	-	-	-	130 (81.25)	-	120 (75.00)	150 (82.87)	-
6	Margin to wholesaler	-	-	-	20 (8.30)	-	20 (8.26)	20 (8.26)	-	-	-	-	15 (9.37)	-	20 (12.50)	15 (8.29)	-
7	Price paid by retailer	-	-	150 (86.96)	2.20 (90.91)	-	220 (90.91)	220 (90.91)	-	-	-	-	145 (90.62)	-	140 (87.50)	165 (91.17)	-
8	Margin to retailer	-	-	22.50 (22.50)	22 (9.09)	-	22 (9.09)	22 (9.09)	-	-	-	-	15 (9.37)	-	20 (12.50)	16 (8.83)	-
9	Price paid by consumer	150 (100.00)	-	172.50 (100.00)	242 (100.00)	-	242 (100.00)	242 (100.00)	-	-	-	-	160 (100.00)	-	160 (100.00)	181 (100.00)	-

Note: 1. Figures in parenthesis showing the percentage price paid by consumer.

2. Channels are: (1) Grower to consumer, (2) Grower - Retailer - Consumer, (3) Grower - Preharvest Contractor - Wholesaler - Retailer - Consumer, (4) Grower - Postharvest Contractor - Wholesaler - Retailer - Consumer, (5) Grower - Postharvest Contractor - Retailer - Consumer, (6) Grower - Postharvest Contractor - Wholesaler - Retailer - Consumer, (7) Grower - Local Wholesaler - Retailer - Consumer and (8) Grower - Processor - Consumer.

TABLE 6: PRODUCERS' SHARE AND MARKETING MARGINS OF MANGO FRUIT IN ORGANIC AND INORGANIC CONDITION OF SAMPLED HOUSEHOLD

(RS. PER QUINTAL)

S. No.	Particulars	Organic Mango Fruits								Inorganic Mango Fruits							
		Marketing Channel No.								Marketing Channel No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Share of channel in total fruit quantity sold percentage	3.74	4.72	42.91	6.88	0.00	0.00	41.73	0.00	0.00	1.82	31.04	38.22	0.00	7.08	21.81	0.00
2	Net price received by grower	1100 (91.67)	1370 (60.88)	1870 (62.33)	620 (22.96)	-	-	1865 (51.81)	-	-	1165 (59.75)	1220 (54.22)	1680 (46.66)	-	1215 (45.00)	1465 (50.87)	-

S. No.	Particulars	Organic Mango Fruits								Inorganic Mango Fruits							
		Marketing Channel No.								Marketing Channel No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
3	Expenses incurred by grower or pre harvest / post harvest contractor	100 (8.33)	130 (5.77)	130 (4.33)	130 (4.81)	-	-	135 (3.75)	-	-	135 (6.92)	130 (5.78)	120 (3.33)	-	135 (5.00)	135 (4.69)	-
4	Margin to pre harvest / post harvest contractor	0.00	0.00	0.00	750 (27.73)	-	-	0.00	-	-	0.00	150 (6.67)	200 (5.56)	-	150 (5.55)	0.00	-
5	Price paid by wholesaler	0.00	0.00	0.00	1500 (55.55)	-	-	2000 (55.55)	-	-	0.00	0.00	2000 (55.55)	-	1500 (55.55)	1600 (55.55)	-
6	Margin to wholesaler	0.00	0.00	0.00	300 (11.11)	-	-	400 (11.11)	-	-	-	-	400 (11.11)	-	300 (11.11)	320 (11.11)	-
7	Price paid by retailer	0.00	1500 (66.66)	2000 (66.66)	1800 (66.66)	-	-	2400 (66.66)	-	-	1300 (66.66)	1500 (66.66)	2400 (66.66)	-	1800 (66.66)	1920 (66.66)	-
8	Margin to retailer	0.00	750 (33.33)	1000 (33.33)	900 (33.33)	-	-	1200 (33.33)	-	-	650 (33.33)	750 (33.33)	1200 (33.33)	-	900 (33.33)	960 (33.33)	-
9	Price paid by consumer	1200 (100.00)	2250 (100.00)	3000 (100.00)	2700 (100.00)	-	-	3600 (100.00)	-	-	1950 (100.00)	2250 (100.00)	3600 (100.00)	-	2700 (100.00)	2880 (100.00)	-

Note: 1. Figures in parenthesis showing the percentage price paid by consumer.

2. Channels are: (1) Grower to consumer, (2) Grower – Retailer – Consumer, (3) Grower – Preharvest Contractor – Wholesaler – Retailer – Consumer, (4) Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer, (5) Grower – Postharvest Contractor – Retailer – Consumer, (6) Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer, (7) Grower – Local Wholesaler – Retailer – Consumer and (8) Grower – Processor – Consumer.

TABLE 7: PRODUCERS' SHARE AND MARKETING MARGINS OF CITRUS FRUIT IN ORGANIC AND INORGANIC CONDITION OF SAMPLED HOUSEHOLD

(RS. PER QUINTAL)

S. No.	Particulars	Organic Mango Fruits								Inorganic Mango Fruits							
		Marketing Channel No.								Marketing Channel No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Share of channel in total fruit quantity sold percentage	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.09	13.94	0.00	0.00	33.86	39.11	0.00
2	Net price received by grower	1340 (95.70)	-	-	-	-	-	-	-	-	1100 (61.11)	1180 (56.19)	-	-	1270 (43.42)	1480 (47.44)	-
3	Expenses incurred by grower or pre harvest / post harvest contractor	60 (4.30)	-	-	-	-	-	-	-	-	100 (5.56)	80 (3.81)	-	-	80 (2.74)	120 (3.84)	-
4	Margin to pre harvest / post harvest contractor	-	-	-	-	-	-	-	-	-	0.00	140 (6.66)	-	-	150 (5.13)	0.00	-
5	Price paid by wholesaler	-	-	-	-	-	-	-	-	-	-	-	-	-	1500 (51.28)	1600 (51.28)	-
6	Margin to wholesaler	-	-	-	-	-	-	-	-	-	-	-	-	-	450 (15.38)	480 (15.38)	-
7	Price paid by retailer	-	-	-	-	-	-	-	-	-	1200 (66.67)	1400 (66.67)	-	-	1950 (66.67)	2080 (66.67)	-

S. No.	Particulars	Organic Mango Fruits								Inorganic Mango Fruits							
		Marketing Channel No.								Marketing Channel No.							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
8	Margin to retailer	-	-	-	-	-	-	-	-	-	600 (33.33)	700 (33.33)	-	-	975 (33.33)	1040 (33.33)	-
9	Price paid by consumer	1400 (100.00)	-	-	-	-	-	-	-	-	1800 (100.00)	2100 (100.00)	-	-	2925 (100.00)	3120 (100.00)	-

Note: 1. Figures in parenthesis showing the percentage price paid by consumer.

2. Channels are: (1) Grower to consumer, (2) Grower – Retailer – Consumer, (3) Grower – Pre-harvest Contractor – Wholesaler – Retailer – Consumer, (4) Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer, (5) Grower – Postharvest Contractor – Retailer – Consumer, (6) Grower – Postharvest Contractor – Wholesaler – Retailer – Consumer, (7) Grower – Local Wholesaler – Retailer – Consumer and (8) Grower – Processor – Consumer.

Price Spread for Mango Fruit

The price spread for mango fruit was worked out by different channels which was actually used by the sampled grower under organic and inorganic conditions. The details of cost margin and channel used are presented in Table 6. Table 6 shows that net price received by grower in organic condition is channel 3 in which orchardist got Rs. 1870 per quintal and through this channel, 43.91 percent of total fruit was sold, followed by channel 7 in which grower received Rs. 1865 per quintal and 41.73 percent of the total produce sold through this channel. The other channels contributed marginally.

The expenses born by producer is very less in mango fruit because this is less fragile in comparison to stone fruit and picking of mango is done as under reaped condition. The expenses incurred by grower is ranged between 3.75 percent on channel one to 8.33 percent of consumer rupee on channel one. The expenses born by retailer are very high in all channels which are 33.33 percent for all channels. The selling of orchard to pre-harvest contract is not profitable to orchardist. Because this channel is the worst channel considering lowest return to the producer, i.e., channel 4 in which grower got only Rs. 620 per quintal because pre-harvest contractor got about 30 percent of profit of consumer rupees and wholesaler got 11.11 percent of consumer rupees and retailer got 33.33 percent in this condition, farmers got only about 23 percent of consumer rupees.

In case of inorganic condition, the most paying channel is no. 4 in which farmers got Rs. 1680 per quintal and 38.22 percent produce sold through channel followed by channel 7 in which farmers got Rs. 1465 per quintal and 21.81 percent of the total produce sold through channel. Under channel 3, farmers got Rs. 1230 per quintal and 31.04 percent of

the total produce sold through this channel. Other channels are not very popular and contributed marginally. The margin of retailer is very high on organic and inorganic condition.

The above analysis is showing that retailers' margin is very high. Thus there is vast scope for creating more competition in this business. This would not only help the marketing of mango to become more competitive but would also bring the consumer's price down and would reduce the excess profit margins.

Price Spread for Citrus Fruit

The price spread for citrus fruit were worked out by different channels, which was actually used by the sample growers selected on organic and inorganic conditions. The details of the costs and margins used in different channel are present in Table 7. The Table shows that organic citrus growers used only one channel, i.e., channel one in which they got Rs. 1340 per quintal and 100 percent of the total produce sold through this channel. In this condition, no intermediaries is used by organic citrus growers because produce is in small quantities and sold to direct consumer. And in case of inorganic citrus, orchardist used only four channels which are two, three, six and seven. The highest net price received by grower is Rs. 1480 per quintal in channel no. 7 and which was sold 39.11 percent of the total produce followed by channel six in which producer got Rs. 1270 per quintal, and this channel sold 33.86 percent of the total produce, under channel three, grower got Rs. 1180 per quintal and 13.04 percent of the total produce sold through this channel and under channel two, grower got Rs. 1100 per quintal for his produce and this channel sold 13.09 percent of the total produce. Under all channels, margin of retailer was ranged between Rs. 600 in channel three

to Rs. 1040 for channel seven. But the proportion of retailers' margin is 33.33 percent of consumer rupees for all four channels. The price received by grower in different channel is depending on quality, colour, shape and size of the fruit. There is further scope to reduce the excess charge in citrus (Kinnow) marketing.

Problems in Fruit Marketing

Growers were used several channels through which organic vis-à-vis inorganic produce were selling in the market. But there was merely a price difference between the organic as well as inorganic fruit production. Maximum respondents were denying the fact that there was no separate marketing facility

for organic fruit crops. Even proper identification of organic produce in the market was a distant dream. For organic fruit crop growers, no identification of the organic produce happens at market level. Whatever channels they follow, unawareness of the market for organic produce, if these exist somewhere near or far, the storage of produce before marketing, and transportation were the major problem. This is because there has not been any organic certification as such for fruit crops in the study area at present. Identification of land which is producing organic fruits, and farm level awareness and demonstration camps, certification, etc., are not yet practiced properly. Therefore, there is need to join orchardists in a planned way so that they could get benefit from the emerging organic market.

TABLE 8: MAJOR MARKETING PROBLEMS ENCOUNTERED BY FRUIT CROPS GROWERS

(In percent)

Particulars	Stone Fruit		Mango Fruit		Citrus Fruit	
	Organic	Inorganic	Organic	Inorganic	Organic	Inorganic
1. Unawareness of market for organic products at farmer level	73.33 (3)	0.00	80.00 (2)	0.00	70.00 (2)	0.00
2. No difference between organic product and inorganic product at market level therefore no price difference	80.00 (1)	0.00	90.00 (1)	0.00	80.00 (1)	0.00
3. Problem of transportation	60.00 (4)	60.00 (2)	65.00 (4)	25.00 (2)	40.00 (4)	40.00 (2)
4. Problem of storage before marketing	75.00 (2)	70.00 (1)	70.00 (3)	40.00 (1)	50.00 (3)	60.00 (1)

Note: Figures in parenthesis are the rank with respect to percentage.

Constraints and Motivation Factors in Adoption of Organic Agriculture

Constraints and motivating factors are the important aspects of any activity, if it relates to the overall improvement and development of the area of interest. Farmers are mostly concerned with the fertility of their soil, health of their plants and production. Table 9 and Table 10 expressed the constraints and motivating factors among the organic fruit crop growers. The analysis of these Tables is based on scientific scores; the value varies from 0 to 1. The 0 value is for perfectly irrelevant and the value 1 is for perfectly relevant. The values between 0 and 1 are either high, medium or low relevant constraints or motivating factors.

In Table 9, it observed that among organic stone fruit crop growers, the problem of marketing facilities was mostly highlighted and given rank one. Non availability of package of practice for organic fruits, lack of technical knowledge in adoption of organic agriculture management methods, limited availability of organic inputs and fear of decline in fruit crops production came on second, third, fourth and fifth rank, respectively. Organic mango fruit growers gave rank one to the problem of unavailability of package of practice for organic mango fruit crop at farmer's level, while organic citrus fruit crop growers gave rank one to the lack of technical knowledge in adoption of organic agriculture or fruit production management methods.

TABLE 9 : CONSTRAINTS IN ADOPTION OF ORGANIC AGRICULTURE

(Score)

Particulars	Organic Stone Fruit	Organic Mango Fruit	Organic Citrus Fruit
1. Lack of technical knowledge in adoption of organic agricultural management methods	0.83 (3)	0.86 (2)	0.95 (1)
2. Package of Practice for Organic fruit crops production is not available	0.90 (2)	0.93 (1)	0.93 (2)
3. Fear of decline in fruit crops production	0.70 (5)	0.60 (5)	0.76 (4)
4. Lack of markets and marketing facilities	0.95 (1)	0.80 (3)	0.80 (3)
5. Limited availability of Organic Inputs	0.80 (4)	0.73 (4)	0.76 (4)

Note: Figures in parenthesis are the rank with respect to score.

TABLE 10 : MOTIVATING FACTORS IN ADOPTION OF ORGANIC AGRICULTURE

(Score)

Particulars	Organic Stone Fruit	Organic Mango Fruit	Organic Citrus Fruit
1. Organic agriculture improves the soil health	0.86 (1)	0.80 (2)	0.76 (2)
2. Improves production	0.80 (3)	0.80 (2)	0.40 (4)
3. High prices of chemical inputs	0.43 (5)	0.60 (4)	0.60 (3)
4. Environmental and Human health concerns	0.83 (2)	0.90 (1)	0.83 (1)
5. State Government Initiatives	0.66 (4)	0.4 (5)	0.20 (5)
6. Support of NGOs	0.86 (1)	0.76 (3)	0.40 (4)

Note: Figures in parenthesis are the rank with respect to score.

Table 10 reports the Motivating factors explained by sample orchardists. Organic stone fruit growers gave first rank to the soil health benefits of organic agriculture method. Then environment and human health concerns, improve production, because state government is popularizing organic farming and high prices of inorganic chemical inputs came second, third, fourth and fifth position, respectively. For organic mango fruit crop growers, environmental and human health concerns came on first rank, which motivate them to go for organic agricultural methods. The same concerns were also

observed by organic citrus fruit crop growers.

To sum up, there are many constraints and motivating factors in the adoption of organic agriculture production methods, but a few were considered in the above analysis. The orchardists are aware of the likely consequences of application of chemical fertilizers and poisonous pesticides on their farm, their environment and health. They wanted to go for organic agriculture, but they are limited by the technical facilities at the farm level and most obvious marketing facilities for organic produce.

Conclusion

Farmers in Himachal Pradesh have been traditionally dependent on Organic way of farming. The farm communities in low hills valleys and high mountains still maintain a rich pool of indigenous technological knowledge of agricultural practices. Much of this knowledge pertains to managing scarce resources to improve soil fertility, soil moisture, irrigation, crop seeds varieties and about mixed farming to cope with unpredicted climate condition. However, institutional interventions focusing on agriculture development for improving food and income security of farmers, encouraged replacement of these organic practices by the inorganic options. Over the past decades, there has been considerable planned thrust on diversification of farming to fruit farming, vegetable farming and floriculture which helped improve food and farm income of farming households. But side by side, farmers have started experiencing new problems such as decline in organic matter of the farmlands, increasing diseases in the crops and increasing cost of cultivation, etc.

Over the past one decade, individual farmers, farmers' groups, department of agriculture and the agriculture and horticulture universities of the State have been engaged in some efforts towards organic agriculture. Himachal Pradesh Krishi Vishvavidyalaya (CSK HPKV) has opened a separate Organic Agriculture Department to conduct research programmes in this field. Department of Agriculture, Government of Himachal Pradesh has come up with the policy on Organic Agriculture recently. Different NGOs and certification agencies are working in this field in the State at present. All these efforts are in the direction to give maximum benefits to farmers in the State. It was observed that the cost of cultivation and cost of production of Organic mango, citrus and stone fruit crops were less than the same fruit crops cultivated under Inorganic conditions in the study area. This shows that promotion of organic agricultural methods in fruit crop production is a good option to reduce cost and increase returns to orchardists.

The impact of organic farming production methods on the fruit crop production and quality was also presented. It is observed that organic orchardists experienced increase in production in their organic fruit crops, 40 per cent for organic stone fruit crop growers and 20-20 per cent, respectively, for organic mango and citrus fruit crop growers. But

they required continuous guidance so that they could attain good production with minimum damage to soil and environment. Organic farming production methods had also helped in the improvement of quality of the fruit crops. Fruit crops shelf life, taste, shine and resistance against diseases had increased as expressed by respondents.

But maximum per cent of respondents remained passive and expressed no change in the production and quality of organic fruit crops. This was due to the lack of proper quality assessment and production enhancement programmes for organic fruit crops in the study area.

There were several marketing channels through which Organic vis-à-vis Inorganic fruit crop growers were selling their produce in market in the study area. But there was merely a price difference between the organic as well as inorganic fruit crops. Maximum respondents were denying the fact that there was any separate marketing facility for organic fruit crops. Even proper identification of organic produce in the market was a distant dream. Therefore, there is a need to join orchardists in a planned way so that they could get benefits from the emerging organic market.

There were many constraints and motivating factors among organic orchardists in the study area. Constraints like lack of marketing facilities, unavailability of packaging facility for organic produce, lack of technical knowledge in the adoption of organic methods and limited availability of organic inputs highlighted most by respondents. In Motivating factors, soil health improvement benefits, environment and human health benefits, production improvement, state government and NGOs efforts and discouraging high prices of chemical inputs expressed loudly by respondents in the study area. Farmer's level demonstration and capacity building efforts are inevitably required to sustain the experiences and beliefs of organic orchardists.

Suggestions and Policy Implications

The area and production under Organic fruit crops could be increased, if initiate properly with target groups. This requires a strategy and policy vision, which would not only cluster the orchardists, but create a mechanism to value the organic produce of the orchardists also. Till now, it is observed that in

Himachal Pradesh, the area under organic orchards is basically not identified. It is the area under organic field crops which has been in prime focus. Orchards come by default in the gamut of organic certification in those areas. There has to be a change in the mind set, if horticultural crops have to be cultivated. Horticultural crops are source of high income for the orchardists in Himachal Pradesh. Therefore, it should not be taken lightly, if orchards come under organic certification and find suitable national as well as international markets for their certified organic fruit crops.

However, Government efforts to promote Organic Horticulture, so far, are limited. Only encouraging vermicompost pits among orchardists is not the complete process in adoption of organic agriculture/horticulture production management. To help Himachal Orchardists to utilise full potentials of organic horticulture, the state will have to have a clear vision and a well defined mission with strategies for developing organic horticulture in Himachal Pradesh.

The following suggestive policy steps could be taken to develop the Organic Horticultural Policy Vision in Himachal Pradesh

1. There is a need to develop a policy to promote organic horticulture in Himachal Pradesh, with clear objectives, processor and scope.
2. There is a need to form a pool of experts from all disciplines of sciences to work jointly in this direction.
3. Guidelines of Agricultural and Processed Food Products Export Development Authority (APEDA) should be followed while working practically in this direction.
4. Practical projects can be given to Universities, so that the emerging researchers can work progressively in the field of organic horticulture development in Himachal Pradesh.
5. Importance should be given to local resources

and indigenous knowledge in the promotion of organic horticulture.

6. Ultimately, the prime focus must be on orchardists and their capacity building in organic horticulture.
7. A planned strategy is required to link organic orchardists with potential markets for organic produce.

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Rural Household Migration and Development of Dalit in Karnataka

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Abstract

In India, most of the rural people depend on agricultural sector. Agriculture provides seasonal employment to rural people. During the slack period, rural people migrate to other villages, urban areas and cities. The main objective of this paper is to investigate Dalits migration status in rural Karnataka. The study period is 2013-14. It is found that almost all villages had a minimum of one and maximum of 37 households who migrated during the study period. Due to lack of work in villages, most of the households migrated to other villages, towns and cities. Migration provides a lot of opportunities to rural people. It provides them number of more working days and good wages which enhance their cultural activities at their destination places. Nearly half of the migrated people improved their family economic condition after migration. Our study show that some of the Dalits faced exploitation and some faced different kind of problems at the destination places.

Key words: Migration and development, Dalit, Karnataka.

Introduction

In rural India, villagers are migrating from village to village and urban areas in search of a livelihood and better employment opportunities. Dr. B.R. Ambedkar suggested that the rural Dalit had to shift from village to urban areas to avoid caste (social) discrimination. Most of the rural educated Dalits are migrating from village to urban areas in general and particularly in selected villages of Karnataka. In order to survive, Dalits often migrate in search of work. The main reason for this migration is lack of land ownership combined with the limited employment opportunities available in their village, which forces them to leave their village in search of work elsewhere. Another general cause of migration is economic and social hardships, such as drought and famine, caste exploitation, low wages, and caste domination in the state. Dalits do not have the resources needed to get through such periods, as they are often refused loans even at high interest rates and are unable to turn to their equally challenged Dalit relationship for help. These marginal castes prefer migration to permanent establishment in new communities since such an endeavour would require vast resources and would result in the loss of their existing social networks (Nagarjuna et al 2010). Migration results due to both push factors and pull factors.

Existing Migration Theories

The push factors force a person, to leave the place/village and go to some other place/village due to various reasons. The general push factors are poverty, unemployment, low productivity, poor economic conditions, lack of opportunities in the place/village, the non-availability of alternative source of income in the village. These are very important factors for migration. This kind of migration is prominent in developing countries. The pull factors are for migrants' better livelihood, employment, wage, amenities, and better working conditions at work places. According to Jayaraj (2013), migration increased too many opportunities in the urban areas and in other version, migration induced by the failure of the labour market in the villages. Upadhya and Mario (2012) expressed that the migration will provide remittance, investments, knowledge, cultural activities and all of these contribute to development of the migrant's family. The migration will help personal development and this leads to improve in the individual capabilities. The author concluded that the migration resources, both tangible and intangible, the process of social and economic development in developing nation/state. In the same manner, Srivastava and Sasikumar (2003) emphasized the importance of migration. Migrants in the destination are earning good

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Acknowledgement: This paper is a part of completed research project entitled "Assessment of Socio Economic Capabilities of Dalit Households in Karnataka". We thank ICSSR, New Delhi for sponsoring this project.

income, and this leads to increase in expenditure and investment in households and community levels. In the same manner, the migrant's labourers live in deplorable conditions in the destination places due to lack of basic amenities like water, shelter, health, education and sanitations. In addition to that due to lack of bargain capacity, some time migrants are compelled to work in low paid jobs. Keshri and Bhagat (2012) find that, in rural areas, particularly SCs and OBCs had higher chances of migration temporarily to urban area in India.

Research Methodology

The study is focusing on Karnataka state. The sample respondents were drawn by using multistage random sampling technique. In the first stage, entire state was divided into three main regions, namely, North,

Central, and South Karnataka. In the second stage, two districts in each region with highest SC population were selected. The selected districts are Belagavi (Belgaum) and Kalaburagi (Gulbarga) in North Karnataka; Chitradurga and Davanagere in Central Karnataka; and Mysuru and Tumakuru in South Karnataka. In third stage, two villages were selected from each district based on highest SC population. The selected villages are: Harugeri (Population 5,846) and Mugalkhoda (5,579) in Belagavi district; Srinivas Saradgi (4,374) and Ravoor (3,794) in Kalaburagi; Naikanahatti (2,759) and Adivala (2,692) in Chitradurga; Towdur (3,387) and Uchangidurga (2,823) in Davanagere; Sosale (5,084) and Muguru (2,995) in Mysuru; Madalur (1,951) and Kodigenahalli (1,764) in Tumakuru (Table1). In the final stage, in each village, 150 sample households were selected randomly. The total sample size is 1,800.

TABLE 1 : POPULATION DETAILS OF THE SELECTED VILLAGES

(in Numbers)

Regions	Districts	Name of the Village	Population	SC Population	Share of SC population in the total population	Share of village In the District's population
North Karnataka	Belagavi	Harugeri	28754	5846	20.3	1.30
		Mugalkhoda	25835	5579	21.6	1.24
	Kalaburagi	Srinivas saradagi	7523	4374	58.1	0.89
		Ravoor	12117	3794	31.3	0.77
Central Karnataka	Chitradurga	Naikanahatti	15545	2759	17.7	0.83
		Adivala	7550	2692	35.7	0.81
	Davanagere	Towdur	6113	3387	55.4	1.07
		Uchangidurga	9781	2823	28.9	0.89
South Karnataka	Mysuru	Sosale	7260	5084	70.0	1.34
		Muguru	8393	2995	35.7	0.79
	Tumakuru	Madalur	6518	1951	29.9	0.45
		Kodigenahalli	7075	1764	24.9	0.41

Source: Karnataka Census, 2011.

Review of Literature

Nadkarni (1997) explained about the elite and the Dalits. The study suggests that ritual hierarchy and ideas of caste relations have already vanished in urban India and in future, it will also be vanished in rural areas. And in addition to that the study found that, the members of the Madiga and Holey caste (Dalits) groups' people in Karnataka state still follow their traditional occupations. The study noted that urbanization is very important for Dalits to

escape from Untouchability (caste discrimination), oppression and discrimination.

According to Hazra (2012) rural poor are moving towards urban areas to improve their living standards of life and in searching for better livelihood opportunities. Poverty, job searching, and family influence have been the main push factors towards out-migration. Searching for better employment opportunities, prior migrants and availability of better educational facilities have been

identified as the key pull factors behind migration.

Narain (2012) investigated the impact of rural migration of agricultural labourers of Bihar. The study attempted to find the factors which are responsible for migration of labourers of Bihar to a far flung area of South Assam (Cachar) and its impact on the economic condition of the migrant labourers of Bihar. The study selected 200 sample Bihar labourers working in Silchar employed in different institutions. The migrations of rural labourers of Bihar are both permanent as well as seasonal in nature. The study identified the nature of work for migrants which are: weavers, bricks kiln workers, rice godown workers, while permanent migration includes workers who get regular work throughout the year and acquire handsome income from the work. The root cause of migration is socio-economic class structure of an agrarian society that has been one of the major causes of migration. The study found that most of the migrants from Bihar to Assam belong to lower and depressed sections of the society who are the worst victims of exploitation of landlords and big farmers. The down trodden people's condition is very vulnerable in Bihar state, the study clearly identified that migrants were moving from village to city.

Akthar and Abdu (2012) investigated rural landless labour and marginal farmers and found that migration is the only source of livelihood. According to the authors, every year, thousands of people across the region leave their native villages in search of food and employment. The authors reviewed the relationship between Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and migration and they found that MGNREGS provided employment to villagers and it improved their economic status. The author also found that migration leads to the breakdown of social life.

Lamani and Honakeri (2012) focused on migration in Bijapur taluk of Karnataka state. According to their findings, most of the scheduled caste and rural people migrated from Bijapur to other neighboring states like Maharashtra, Goa and Andhra Pradesh. The study had chosen villages with highest SC population in Bijapur taluk. The selected villages are: Arakeri, Jalageri, Baratagi, Hanchinal PH, Babaleshwar and Ainapur. In each village, the study selected 20 respondents and the total sample size was 120. The main findings of the

study are: Lack of work opportunity in the villages, and unemployment was very high among the scheduled caste households. Due to these reasons, Dalits were migrated in search of their livelihood. In Bijapur taluk; villagers migrated seasonally, during drought years and during other calamities. In the destination places, skilled workers get more income and non skilled labours get low wages. Most of the respondents faced different kinds of problems in the migrant places.

Turkhade (2012) emphasized migration, impact and relevance of remittance on rural areas. The author brought out two views; one is negative impact of labour loss in the sending areas and its disruptive effect on the local economy. The second view considers that migration can have a positive impact on the development at the local, regional and national levels. The impact of migration and remittances on agriculture and rural employment depends directly on patterns of expenditure, investment and labour allocation of migrant households, and indirectly on the multiplier effects of remittances and changes in the labour, goods and services markets. The study finds that migrants' economic condition is better than the non-migrants in the village.

Migration and Dalits

In India, most of the rural Dalit people depend on agriculture sector for their livelihood. Agriculture provides seasonal employment to rural Dalits. During the slack season, rural Dalits usually migrate from one village to other villages, urban areas and cities. In our study, 93 (1668) per cent of the households did not migrate during 2013-14, whereas seven (132) per cent of the households migrated during the same period. Among the villages, Kodigenahalli households (37) migrated to a higher extent as compared to other villages, followed by Srinivasa Saradagi (19) and Towdor (17) (Table 2). From these villages, a minimum of one (Uchangidurga) household and a maximum of 37 (Kodigenahalli) households had migrated during the study period. Our study results shows that lack of work (63) in their villages, better income (35), and low wage in the villages (32) and more opportunities (4) in other villages/cities (Table 3) are the reasons for migration. Most of the young boys (56) of the family migrated, followed by head of the household (44), all family members (11), son and daughter (8), household head and wife (4), daughter (4) and household head and son (1) (Table 3) have migrated.

TABLE 2 : DO YOU/YOUR FAMILY MEMBERS MIGRATED?

Village/District	Yes	No	Total
Harugeri	4	146	150
Mugalkhoda	9	141	150
Belagavi	13	287	300
Ravoor	6	144	150
Srinivasa saradagi	19	131	150
Kalaburagi	25	275	300
Adivala	5	145	150
Nayakanahatti	3	147	150
Chitradurga	8	292	300
Uchangidurga	1	149	150
Towdor	17	133	150
Davanagere	18	282	300
Muguru	2	148	150
Sosale	15	135	150
Mysuru	17	283	300
Kodigenahalli	37	113	150
Madalur	14	136	150
Tumakuru	51	249	300
Total	132	1668	1800

Source: Primary data, 2014.

TABLE 3 : PARTICULARS OF MIGRATION

Village/ District	Reasons for migration					Who is migrated in your family?								
	Lack of work	Wage is very less in the village	Better income	More opportunities	Total	Household head	Household head and wife	Household head and son	Wife	Son	Son and Daughter	Daughter	All family members	Total
Harugeri	1	0	3	0	4	1	0	0	0	3	0	0	0	4
Mugalkhoda	0	6	3	0	9	5	0	0	0	4	0	0	0	9
Belagavi	1	6	6	0	13	6	0	0	0	7	0	0	0	13
Ravoor	1	1	4	0	6	3	0	0	0	3	0	0	0	6
Srinivasa saradagi	6	10	2	1	19	11	0	1	1	6	0	0	0	19
Kalaburagi	7	11	6	1	25	14	0	1	1	9	0	0	0	25
Adivala	2	0	1	2	5	1	0	0	0	0	2	0	2	5
Nayakanahatti	3	0	0	0	3	1	0	0	0	0	0	1	1	3
Chitradurga	5	0	1	2	8	2	0	0	0	0	2	1	3	8
Uchangidurga	0	1	0	0	1	0	0	0	0	1	0	0	0	1
Towdor	8	4	4	1	17	4	1	0	1	4	0	0	7	17
Davanagere	8	5	4	1	18	4	1	0	1	5	0	0	7	18

Village/ District	Reasons for migration					Who is migrated in your family?								
	Lack of work	Wage is very less in the village	Better income	More opportunities	Total	Household head	Household head and wife	Household head and son	Wife	Son	Son and Daughter	Daughter	All family members	Total
Muguru	1	0	1	0	2	0	0	0	0	2	0	0	0	2
Sosale	3	1	11	0	15	3	0	0	0	9	0	3	0	15
Mysuru	4	1	12	0	17	3	0	0	0	11	0	3	0	17
Kodigenahalli	28	5	4	0	37	10	3	0	0	17	6	0	1	37
Madalur	10	4	0	0	14	5	0	0	2	7	0	0	0	14
Tumakuru	38	9	4	0	51	15	3	0	2	24	6	0	1	51
Total	63	32	33	4	132	44	4	1	4	56	8	4	11	132

Destination places and Dalits

In general, there is less caste exploitation in the destination places. Our study results reveal that nearly 23 (30) per cent of Dalits faced exploitation in destination places. Among all villages, the Kodigenahalli (10) households faced social discrimination as compared to other villages and followed by Srinivasa Saradagi (8) and Towdor (5) (Table 4). According to Hazra (2012), most of the migrants were downtrodden and backward communities from backward regions such as Bihar, Orissa, UP and they traveled long distance together to seek wage employment as labourers in construction of roads, irrigation project, commercial and residential complexes, etc. Due to various reasons, Dalits were migrated to other places. According to our study, most of the migrants were found to be migrated for short-term (48), followed by long-term (37), medium term (30) and permanent (17) in study villages of Karnataka (Table 4). The contractor or middle men or broker gives some advance money to pay for the labour family. Table 5 shows that nearly 17 (22) per cent of the households received advance

money before reaching the destination places. The advances received are high in Towdor and Srinivasa Saradagi (Table 5) villages. This advance money is used for their necessary grocery and to repay their old debts. Usually villagers are migrating from rural to rural; rural to urban and rural to city. Our primary study data shows that the majority of the households migrated from villages to a city (64), Towns (51) and villages (17) and these details are presented in Table 5. Villagers are migrating long distance. The average distance is 200 km (The average distance derived by total distance is migrated by 12 village migrants households divided by total migrants (112). And the highest average distance is 534 km that falls under Harugeri village and the lowest average distance is 30 km from Muguru village (Table 6). There was not much of work exploitation in the destination places in general and particularly in the study villages. Nearly 94 (124) per cent of the households reported that there was no work exploitation in the destination places and remaining four (8) per cent of the households reported that exploitation happened in their case (Table 6).

TABLE 4 : PARTICULARS OF CASTE EXPLOITATION AND TYPE OF MIGRATION

Village/District	Caste exploitation in destination places			Type of Migration				Total
	Yes	No	Total	Short term	Medium term	Long term	Perma- nent	
Harugeri	0	4	4	1	1	2	0	4
Mugalkhoda	3	6	9	6	2	1	0	9
Belagavi	3	10	13	7	3	3	0	13
Ravoor	1	5	6	4	1	1	0	6
Srinivasa saradagi	8	11	19	4	11	4	0	19

Village/District	Caste exploitation in destination places			Type of Migration				
	Yes	No	Total	Short term	Medium term	Long term	Perma- nent	Total
Kalaburagi	9	16	25	8	12	5	0	25
Adivala	0	5	5	0	4	0	1	5
Nayakanahatti	1	2	3	0	1	1	1	3
Chitradurga	1	7	8	0	5	1	2	8
Uchangidurga	1	0	1	1	0	0	0	1
Towdor	5	12	17	9	5	2	1	17
Davanagere	6	12	18	10	5	2	1	18
Muguru	0	2	2	0	0	0	2	2
Sosale	1	14	15	3	2	3	7	15
Mysuru	1	16	17	3	2	3	9	17
Kodigenahalli	10	27	37	12	2	20	3	37
Madalur	0	14	14	8	1	3	2	14
Tumakuru	10	41	51	20	3	23	5	51
Total	30	102	132	48	30	37	17	132

Source: Primary data, 2014.

TABLE 5 : PARTICULARS OF ADVANCE MONEY IN DESTINATION PLACES

Village/ District	Employers pay advance			Destination places			
	Yes	No	Total	Village	Town	City	Total
Harugeri	0	4	4	1	0	3	4
Mugalkhoda	2	7	9	1	4	4	9
Belagavi	2	11	13	2	4	7	13
Ravoor	3	3	6	1	1	4	6
Srinivasa saradagi	6	13	19	2	9	8	19
Kalaburagi	9	16	25	3	10	12	25
Adivala	0	5	5	0	2	3	5
Nayakanahatti	1	2	3	1	1	1	3
Chitradurga	1	7	8	1	3	4	8
Uchangidurga	1	0	1	0	0	1	1
Towdor	6	11	17	8	8	1	17
Davanagere	7	11	18	8	8	2	18
Muguru	0	2	2	1	1	0	2
Sosale	0	15	15	0	3	12	15
Mysuru	0	17	17	1	4	12	17
Kodigenahalli	3	34	37	1	17	19	37
Madalur	0	14	14	1	5	8	14
Tumakuru	3	48	51	2	22	27	51
Total	22	110	132	17	51	64	132

Source: Primary data, 2014.

TABLE 6 : PARTICULARS OF DISTANCE AND WORK EXPLOITATION IN DESTINATION PLACE

Village/District	Distance from Village to destination place			Work exploitation in the destination places		
	Number of households	Total distance	Average distance	Yes	No	Total
Harugeri	4	2095	524	0	4	4
Mugalkhoda	9	2540	282	2	7	9
Belagavi	13	4635	357	2	11	13
Ravoor	2	800	400	1	5	6
Srinivasa saradagi	12	3443	287	3	16	19
Kalaburagi	14	4243	303	4	21	25
Adivala	5	874	175	0	5	5
Nayakanahatti	3	715	238	0	3	3
Chitradurga	8	1589	199	0	8	8
Uchangidurga	1	350	350	0	1	1
Towdor	16	6170	386	2	15	17
Davanagere	17	6520	384	2	16	18
Muguru	2	60	30	0	2	2
Sosale	13	2000	154	0	15	15
Mysuru	15	2060	137	0	17	17
Kodigenahalli	36	2269	63	0	37	37
Madalur	9	1045	116	0	14	14
Tumakuru	45	3314	74	0	51	51
Total	112	22361	200	8	124	132

Source: Primary data, 2014.

Migration and Development

Migration provides more employment opportunities to rural people. It provides more work days and good wage rate and enhances cultural activities in the destination places. Our study results show that nearly 48 (63) per cent of the households improved their family condition after they migrated (Table7). The improvement is high in Kodigenahalli (22) followed by Sosale (7), Towdor (7) and Srinivasa Saradagi (7). Among the migrant households, Just improved (43) households are higher as compared to improved (6) and not much change (4) households (Table7). Our study results further reveal that some of the migrated people faced wage problem. After completion of work, contractors were not given wages in time. They delayed weeks together and some wage amount were not paid. That was very bad experience for them. Some people were unable to speak Hindi language and consequently they

faced lot of language problem. Few of the migrants were unable to eat food properly due to their habits. In the same manner, most of the migrants were unable to sleep during nights due to lack of comfortable house. This is very bad experience for them. In destination place, sometimes there was no sufficient work for migrants. Due to this they stayed jobless. In this way, they lost their wage money. Few of migrants faced torture. The contractors torture the migrants to complete the three days work within two days. There were no sufficient drinking water facilities in destination places. And also for taking bath, water was very scarce in many times. There was also sanitation problem in destination places. There was no toilet facilities in work places and women were waiting hours together for using toilet. Due to this reason, women got many diseases in destination places. At the same time, the contractor abused them for not completing the work in time.

TABLE 7 : MIGRATION AND FAMILY ECONOMIC CONDITION

Village/District	Improvement in family condition			What is the status			
	Yes	No	Total	Improved	Just improved	No change	Total
Harugeri	3	1	4	1	2	0	3
Mugalkhoda	5	4	9	1	4	0	5
Belagavi	8	5	13	2	6	0	8
Ravoor	2	4	6	1	1	0	2
Srinivasa saradagi	7	12	19	5	2	0	7
Kalaburagi	9	16	25	6	3	0	9
Adivala	3	2	5	0	3	0	3
Nayakanahatti	3	0	3	0	2	1	3
Chitradurga	6	2	8	0	5	1	6
Uchangidurga	0	1	1	0	0	0	0
Towdor	7	10	17	2	5	0	7
Davanagere	7	11	18	2	5	0	7
Muguru	0	2	2	0	0	0	0
Sosale	7	8	15	2	5	0	7
Mysuru	7	10	17	2	5	0	7
Kodigenahalli	22	15	37	4	15	3	22
Madalur	4	10	14	0	4	0	4
Tumakuru	26	25	51	4	19	3	26
Total	63	69	132	16	43	4	63

Source: Primary data, 2014.

Conclusion

In India, most of the rural people depend on agriculture and allied activities. Agriculture sector provides seasonal employment for rural people. During the slack period, rural people migrate to other villages, urban areas and cities. Our study shows that 132 household members were migrated during study period. The study results show that due to lack of work in villages, most of the households migrated to cities, towns and villages. The study results further show that nearly one-fourth of Dalits faced exploitation in the destination places. Migration provides a lot of opportunities to rural people. It provides more working days and good wages and enhances cultural activities in the destination places. Nearly half of the migrant households' economic conditions improved and this helped them to survive in study period. If they would not migrate they would have faced lots of economic problems in their villages. Almost all the migrants faced different problems in destination places.

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Agro-Economic Research

Litchi Production, Marketing and Processing in Bihar and India*

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India, being a home to a wide variety of fruits, holds a unique place in the world in terms of fresh fruit production. Among the tropical and sub-tropical fruits, litchi is one of the most delicate fruits with short duration. World litchi production is estimated to be around 2.11 million tons, with more than 95 per cent of the area and production in Asia. The top five world litchi producing countries are China, India, Taiwan, Thailand and Vietnam. In 2014, India's contribution in the world production of litchi was 24 per cent; it was preceded by China (57 per cent) and followed by Vietnam, Madagascar and Thailand. While the most of litchi produced in China and India is consumed domestically, Vietnam exports up to 40 per cent of its production. However, India can offer market for a longer period as it matures in different producing states (Tripura, Assam, Bengal, Bihar, Jharkhand, Uttaranchal, and North Punjab) in different period. The gaps in infrastructure, however, cause huge loss and inefficiency in the post harvest operation of litchi. Processing often associated with perishable fruit with short duration is a labour intensive proposition that can generate huge employment opportunities; however, processing facilities in litchi are grossly inadequate.

The assessment of gap in infrastructure requires analysis of supply chain of litchi production and processing. Therefore, the present study, coordinated with Agro-Economic Research Centre in Bhagalpur, has following objectives:

- i. To analyze temporal growth in area, production and productivity of litchi in important states of India
- ii. To assess exports potential of litchi from India
- iii. To understand efficiency in the post harvest operations of litchi in different marketing channels.
- iv. To identify constraints in efficient production, marketing and processing of litchi

Findings on Production and Exports of Litchi

Area, production and productivity of litchi have increased during the reference period (1991-92 to 2013-14). The growth in litchi production during the period (1991-92 to 2013-14) has three distinct phases with break in the year 1997-98 and 2005-06 (see Appendix Table 1). In the Phase I, (1991-92 to 1997-98) production and yield of litchi grew at a rate of 10.95 and 8.29 per cent, respectively. In the subsequent period (1998-99 to 2004-05), production and yield of litchi declined; though area under litchi continues to increase (1.10 per cent). In the Phase III (2005-06 to 2013-14), the trend in area under litchi continues to increase (3.65 per cent). The CAGR in yield and production was also positive during the period. Among different litchi producing states, Bihar accounted for the largest share in area (37-53 percent) and production (40-78 percent) in all periods; though productivity has declined in the state during the same period. The productivity of litchi has increased significantly in the states of Assam, Punjab and West Bengal.

With the help of additive decomposition model, the relative contribution of area, productivity and their interaction in the change in production between 1991-92 and 2013-14 has been estimated in major litchi producing states of India including the nation as a whole. The same is presented below as equations 1 to 6.

$$\text{India} = 30.31 \text{ (Yield effect)} + 50.07 \text{ (Area effect)} + 21.46 \text{ (Interaction)} \text{ ----- (1)}$$

$$\text{Assam} = 64.74 \text{ (Yield effect)} + 11.71 \text{ (Area effect)} + 23.04 \text{ (Interaction)} \text{ ----- (2)}$$

$$\text{Bihar} = -115.44 \text{ (Yield effect)} + 287.22 \text{ (Area effect)} - 74.68 \text{ (Interaction)} \text{ ----- (3)}$$

$$\text{Punjab} = 73.48 \text{ (Yield effect)} + 10.40 \text{ (Area effect)} +$$

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15.78 (Intraction) ----- (4)

Tripura = 385.59 (Yield effect) – 26.40 (Area effect) – 259.55 (Intraction)----- (5)

West Bengal = 23.08 (Yield effect) + 33.98 (Area effect) + 42.97(Intraction)---- (6)

The equations show that, in the states like Assam, Punjab and Tripura, yield has major contribution in the change in litchi production. However, area effect in litchi production is the highest in Bihar, followed by WB, Assam and Punjab. Whereas at country level, around 50 per cent of increase in total production has been due to change in area and 30 per cent due to change in the yield of litchi during the reference period (1991-2014).

Historically, India has been the biggest exporters of litchi. In the past two decades, export of litchi increased (with some fluctuations) from 1993-94 and it reached maximum during 2006-07. Subsequently, in the last phase (Phase III, 2005-06 to 2013-14), exports started to decline. Exports basket of litchi has changed significantly from the high unit valued countries (Saudi Arabia, France, United States, Bahrain, Kuwait) to the low unit valued countries (Bangladesh, Nepal, Kuwait). Incidentally, exports of litchi have been elastic (15 out of 19 yrs) to unit value of exports from India. Some desired analysis for litchi at international level could not be undertaken as separate trade statistics for litchi is not available. Some reasons for present state of exports of litchi were increase in domestic demand, lack of initiative for export facilities, high perishability and non-acceptability of sulphitation (process for prolonging freshness of litchi) in international market.

Findings on Price, Perishability and Supply Chain of Litchi

There are different stages of litchi production: inflorescence, flowering, fruit bearing and maturity. In Bihar, the period between inflorescence and flowering usually comes during the months of February-March. Primary survey found that around 3-9 per cent of litchi is spoiled during the period and more spoilage happens due to biotic stress. In the second period, between flowering and fruit bearing stage, the larger volume of production is lost (2 to 11 per cent) due to abiotic stress like heat waves and winds (Easterly winds). In the third period,

between fruit bearing and maturity stage (in the month of May), abiotic factors like long stretch of westerly winds among others are the main factor for perishability (6 to 8.25 percent) of the fruit. Thus abiotic stress like heat waves and winds are major reasons for spoilage of litchi on field. The wastage of litchi in the post harvest operation varies between 16.25 to 19.50 per cent as seen in sample districts. This was due to low shelf-life of fruits and inadequate post harvest infrastructure.

Unlike other agricultural produce marketed surplus of litchi is quite high (75 per cent of litchi produced). The marketing of litchi from producers to consumers takes different routes (see Appendix Box I). Farmer's share in consumer's expenditure for litchi depends on the length of route, market functionaries involved and similar other factors. The primary information shows that four of such routes (Channel I to IV) are for alternate domestic markets, one is for external market (Channel V) and two for processing of litchi (Channel VI and VII). In the marketing of litchi, pre-harvest contractors (PHCs) are very important and with alteration of market channels, their role varies in production and marketing of litchi. Around 86 percent of litchi produced in sample districts is marketed through the PHCs.

The PHC is absent in one such marketing channel and interestingly growers' share in consumer's expenditure has been the maximum (50%) in this market channel. This requires high involvement of producers in marketing of litchi, but only around 10 percent of litchi is sold through this channel. The marketing of litchi is dominated (43 percent) by the channel wherein producer's share in consumer's rupees is minimal (around 25 percent). The dominance of PHC despite poor gain to growers, suggests weak involvement of growers in litchi trade. Moreover, this indicates presence of 'absent landlord' in litchi orchard.

Again producer's share in the consumer's rupee for litchi was good in the channel catering to exports, but exports are more about 'A' grade of litchi. The exports of litchi are also decreasing. The inferior quality (B and C grade) of litchi are generally processed, producers' share in the processors' expenditure for litchi was also good; however, less than 5 per cent of total marketable surplus in sample districts undertook this route. Nevertheless the

location of processing industry is highly skewed.

To measure market efficiency, different ratios exist; these are about differential treatment of producer's price, marketing cost, marketing margin and consumer's price in the ratio. The method, suggested by Acharya and Agarwal, also considers loss of litchi in the process of marketing. Alternate methods of market efficiency were worked out for litchi.

Price of litchi in the wholesale market of Delhi is available in kilogram; whereas it is the number of pieces in the growing region. The PHCs in the most cases purchase litchi on the basis of fruit laden trees in the orchard. Thus price of litchi for PHC is approximation of number of litchi in plants and the orchard. Litchi is available in Delhi's market from May to July as produce from Bihar, Uttarakhand and Punjab reaches to Delhi and harvesting period in each of these states graduates marginally. In the wholesale market (Azadpur) of Delhi, prices are determined by closed-auction. The margin in the wholesale and retail market varies during the marketing period (May-July). The downward rigidity of retail price in season of abundance was observed in primary survey. The high margin at retail market is due to high waste of fruits at the level of vendors.

Constraints on Production, Marketing and Processing of Litchi

According to Garret, the first rank constraint in production of litchi in sample households was wide fluctuation in temperature followed by lack of quality manure/fertilizer/bio-fertilizer, quality insecticide/pesticide, older litchi plants and complexities in availing government facilities including credit. The top constraint in marketing of litchi was the dominance of middlemen PHCs and their 'far from perfect' behaviour (ranging from monopoly to duopoly). This was accompanied with absence of big market, lack of transparency, high transportation cost, insufficient cold storage and pack houses, dearth of litchi producers' associations in Bihar (unlike Uttarakhand) and similar other factors.

Though litchi is highly perishable, it has limited processing capacity in Bihar and distribution of same is highly skewed. The constraints experienced by sample processors pertaining to production,

marketing and infrastructure aspects of litchi. These were lack of climate resistant varieties, inadequate knowledge for use of non-eatable parts of litchi, lack of cold-chains at major points (airport or railway stations), absence of information network to keep track of raw material prices and its availability for processing.

The infrastructural bottleneck for limited processing units of litchi are many, some examples are: low supply of electricity (average 10 hrs.), supply with low voltage, high hiring charge for reefer van, lack of temperature controlled pack houses, lack of trained labour, technicians and chemists. The other constraints are: difficulties in assessing policy benefits due to procedural bottlenecks, reducing amount of subsidy on reefer van, non-availability of variety of horticultural produce in the region to run factories round the year.

In view of the above findings on dominance of PHCs in production and marketing of litchi, the low share of litchi growers in consumers' price, increase in area despite decrease in productivity of litchi in Bihar, low and skewed investment in processing of litchi and decreasing exports of litchi; there is sufficient scope of intervention in production, marketing and processing of litchi.

Suggestions and Policy Direction

The policy recommendations suggest removal of the above mentioned constraints in production and marketing of litchi. It ranges from commodity specific research institute in the Ministry of Agriculture and Farmers Welfare to Division of MSME and APEDA in different Ministries of Government of India and other stakeholders of litchi in India and Bihar. The suggestions specific to litchi are in following sub-heads.

The 'Absent Landlord' and dominance of PHC

In many areas including Bihar, farm lands are too small to provide livelihood throughout the year, therefore, farmers leave their land and move to urban places for better livelihood and facilities. The frequency of such 'absent landlord' is high. The land owner away to distant places has to depend on share croppers / tenant for cultivation of seasonal crops. Tenants / share croppers are often associated with dangers of losing land; therefore, area under orchards is on rise. Litchi is increasingly preferred

over mango and similar other fruits, since harvesting period of litchi is short and this perfectly coincide with the period of summer vacation in institutions of East India. On account of such conveniences, area under litchi is on rise despite decrease in productivity of litchi. For 'absent landlords', security of land is more important than gain from litchi orchards.¹

The arrangement of growers with PHC, however, does not require any written agreement and unlike tenancy system, this has not yet attracted researchers and policy makers' attention². However, any development policy for litchi must recognize presence of 'absent landlord' and importance of PHC in production and marketing of litchi in Bihar and India. One of the important externality of 'absent landlord' is old orchards and decrease in productivity of litchi. The PHCs should help orchard owners in adoption of many productivity enhancing practices in the litchi orchards. Some examples are: trimming and pruning of plants, removal of weeds, and treatment of orchard with compost, organic manures and bio-pesticides. They may help orchard owners in rejuvenation of old orchards.

Presence of Producers' Group

With the increased number of small holdings and relatively higher marketed surplus of production of litchi, one or other form of collectives becomes important. Limited number of producers' groups for litchi exists. The agricultural officials, extension service providers must encourage formation of producer's group or collective (as it is in Uttarakhand). The 'producers' group must campaign to make farmers aware of prices in distant market, specifications (as provided by APEDA) of products of different grade (A, B & C) of litchi. The producers group should also be aware of international quality specifications (HACCP) for litchi³ and upgrade skill for better sorting, grading, packaging in post-harvest management.

The higher unit value for exports can be obtained by exporting organic litchi to niche markets (developed countries). In fact most of cultivation of

litchi in Tripura and Assam is without fertilizers, farmers and producers group should be aware of its importance and certificate of an agency would facilitate its production and marketing. The Union government in the recent budget (2018-19) has also announced multiple facilities for producers' organizations / companies. They should step in creating better market infrastructure for litchi.

Infrastructure for Marketing and Processing of Litchi

The market infrastructure for litchi consists of pack houses with pre-cooling chambers at production clusters (ensures cooling within 5-6 hours of harvest), cold chain, reefer vans, specialized fumigation chamber in producing areas. Since litchi occupies an important place in some districts, a collective like 'Litchi Hub' is suggested for creation of suitable infrastructure facilities. Incidentally, there are Agri-Export Zones in litchi growing areas (including Bihar) but there is deficiency of infrastructure facilities as that of a Common Facility Centre (CFC).

A profitable post harvest infrastructure also requires availability of adequate electricity in the concerned hub. To promote domestic trade of litchi, one or two bogies from certain litchi growing railway stations may be attached to train destined towards major consumer centres like Delhi and Mumbai. To harness higher unit value of litchi exports to Europe and similar developed country, air transport of good quality of litchi (organic) may be subsidized.

Litchi is highly perishable and therefore, this does not attract investment since invested capital remains useless for the large part of year (litchi processing is for few months only), supply of electricity is often discontinuous. Investment of processing in organized sector is generally compatible to Hazard Analysis and Critical Control System (HACCP), Sanitary and Phytosanitary Standards (SPS) and TQM norms; however, this is not the case of processing facilities in unorganized sector and their activity shatters confidence of produce in national and international markets. Technical efficiency of

¹ Considering volatility in asset (gold) prices, land is increasingly considered as a mean of security for generations (present and future).

² Attention is in the sense of reports, laws and documents against the arrangement of tenancy. The present law in Bihar for land tenancy barred ordinary people to provide land on tenancy. This was upheld and even stringent rule for the use of land under tenancy was suggested by various experts and committees. Reference: Report of the Expert Committee on Land Leasing, Niti Ayog, GOI, March 2017.

³ Farmers group should be aware of the process of extending life of litchi harvested; for example sulphitation is not accepted at international levels.

these units needs to be improved⁴. These units may be encouraged to follow the HACCP, SPS and TQM standards. The processing activity at village level should be recorded, monitored and certified by a designated body (semi-government with producer group), so that it can be part of the larger value chain.

Due to the perishable nature of litchi and poor economics of processing, the litchi processing needs various incentives. The incentives to litchi processing can be in the form of tax holidays for investment in litchi processing and creation of post harvest infrastructures (like reefer vans, pack houses). The Union budget 2018-19 has provided some benefits to MSME sector, hope this includes processing and post harvest infrastructure for litchi. The investment for tetra pack units (TPUs) may be promoted by subsidizing it around litchi growing areas like Muzaffarpur and Vaishali for supply of litchi concentrates to distant regions like Jaipur, Pune and Mumbai.

Institutions and Facilities related to Litchi

One of the important reasons for decreasing productivity of litchi is the climate sensitivity of crop, deterioration in quality, i.e., size of seed versus pulp in fruit. Nevertheless certain varieties of litchi continue to dominate over generations (more than 70 yrs) and we know dangers of growing old varieties⁵. In spite of these challenges, there is hardly any improvement in varieties and planting materials, though large germplasm of litchi are reported to exist in the country. The study advocates for increase in

productivity of litchi with improvement of cultivars through traditional and modern tools (bio-tech, bio-informatics, genetic engineering).

The institutes concerned with litchi may look into use of parts other than pulp. In fact there is evidence of use of seeds of litchi. The commodity specific institutes may organize periodical training for skill upgradation of local technicians/chemists in litchi producing and processing areas. The commodity specific institute of ICAR, Plant Genetic Resource Institute, and similar other institute/ organizations (APEDA) must address concerns related to litchi. They may take lead role in increasing productivity and developing domestic and external market of litchi.

There are institutions responsible for marketing, logistics and processing of litchi. They should provide extension services so that people dealing with post harvest operation of litchi know the best way to handle it. On a similar line, technology for alternate storage (CA and MA) must be standardized. The facilitative institutions related to litchi (AEZs / CFCs) may be provided with a laboratory for residue analysis.

Production marketing and processing of litchi involves some government facilities. Transaction costs in availing some of these facilities are often high. The success stories at various levels (farmers, PHCs, traders, processors) should be documented to evoke a sense of pride within the stakeholders. Adoption of suggestions mentioned above may reverse the existing trend in litchi.

Appendix

TABLE 1 : MAJOR LITCHI PRODUCING STATES AND DISTRICTS IN INDIA

State	Districts
Assam	Dibrugarh, Goalpara, Sonitpur, Lakhimpur, Jorhat, Golaghat, Kamrup, Nalbari, Barpeta, Bongaigaon, Nagaon
West Bengal	Mushirdabad, 24- Parganas, Nadia, 24- Parganas South Malda, Uttar Dinajpur, Dakshin Dinajpur, Hoogli
Uttarakhand	Udham Singh Nagar, Champawat, Nainital, Dehradun, Tehri Garhwal, Pauri Garhwal, Haridwar
Bihar	Muzaffarpur, Vaishali, East Champaran, West Champaran, Sitamarhi, Sheohar, Samastipur, Bhagalpur
Chhattisgarh	Korba, Raigarh, Surguja, Jashpur, Surajpur, Balrampur, Koriya, Narayanpur

⁴ The technology for litchi processing may be developed to the extent of increasing its possible use for processing other fruits grown in the region.

⁵ The old varieties often attract disease (like rust for litchi) and pest.

State	Districts
Tripura	West Tripura, North Tripura, South Tripura, Dhalai Tripura
Himachal Pradesh	Kangra (Palampur, Panchrukhi, Dharmshala), Sirmour (Paonta Sahib, Dhaula kuan)
Jharkhand	Ramgarh, Ranchi, Hazaribagh, Gumla
Odisha	Sambalpur, Debagarh (Deogarh), Sundergarh, Rayagada, Koraput
Punjab	Pathankot, Gurudaspur, Hoshiarpur

Source: Directorate of Horticulture of different states and APEDA, Ministry of Commerce & Industry, Govt. of India

TABLE 2 : LITCHI PRODUCING DISTRICTS IN BIHAR ACCORDING TO GROUPS OF AREA AND PRODUCTION
(1 TON = 1 MT = 1000 KG)

S.No.	Area (ha)	Production (MT)	Districts
1.	More than 1,300	More than 10,000	Muzaffarpur, Vaishali, Sitamarhi, East Champaran, West Champaran, Katihar
2.	600 - 1,300	5,000 - 10,000	Samastipur, Purnea, Siwan, Gopalganj, Saran, Sheohar, Darbhanga, Madhubani
3.	100 - 600	1,000 - 5,000	Begusarai, Bhagalpur, Saharsa, Araria, Kishanganj, Khagaria, Munger, Jamui, Madhepur, Supaul
4.	Less than 100	Less than 1,000	Sheikhpura, Lakhisarai, Banka

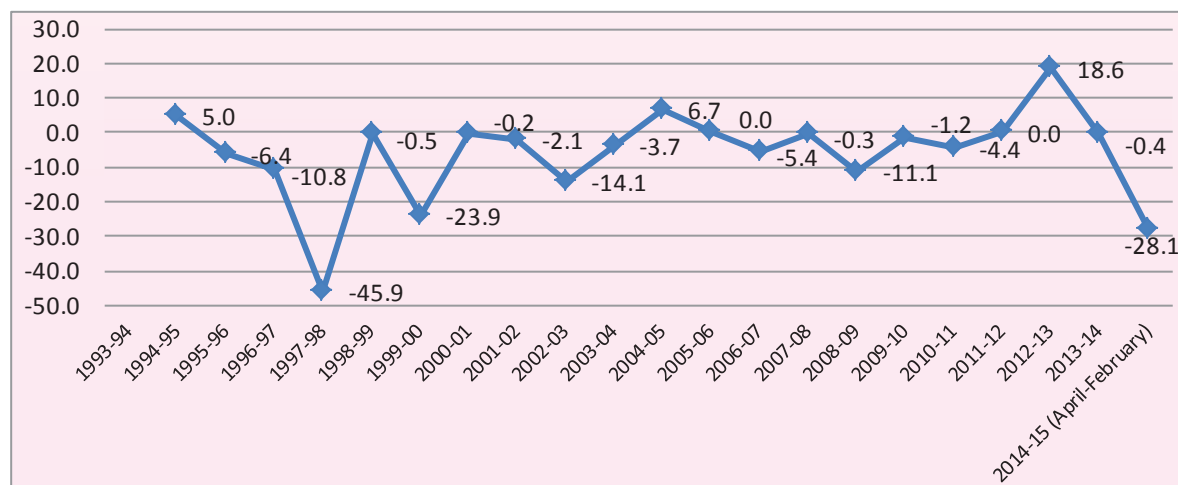
Source: AERC, Bhagalpur

TABLE 3 : PHASE-WISE GROWTH AND INSTABILITY OF LITCHI AT THE NATIONAL LEVEL
(AREA '000 HA; PRODUCTION '000 TONS; YIELD TON/HA)

Phase		Mean	SD	CV	CAGR	Instability Indices (%)	
						Ratio method	CDV index
Phase I 1991-92 to 1997-98	Area	53.20	3.60	6.77	2.69	9.41	6.46
	Production	335.46	72.22	21.53	10.95	6.49	4.29
	Yield	6.30	1.28	20.27	8.29	9.44	5.62
Phase II 1998-99 to 2004-05	Area	56.01	2.42	4.33	1.10	7.19	4.23
	Production	421.93	47.69	11.30	-2.49	18.62	11.29
	Yield	7.56	1.13	14.93	-3.60	25.44	14.89
Phase III 2005-06 to 2013-14	Area	74.32	7.60	10.23	3.65	1.32	0.93
	Production	479.99	75.44	15.72	5.14	4.27	3.20
	Yield	6.44	0.39	6.07	1.53	4.34	3.17
All phases 1991-92 to 2013-14	Area	62.32	11.15	17.88	2.46	6.05	7.78
	Production	418.33	88.64	21.19	4.06	11.30	11.74
	Yield	6.74	1.08	15.96	1.63	14.23	15.80

Source: Calculated from Horticulture Crops Estimates, NHB, MoA&FW, Government of India

Figure 1. Elasticity of Exports to unit Price of Litchi from India



Box I. Some Marketing Channels for litchi in Bihar

Channel I: Growers—Preharvest Contractor (PHC)--Wholesale Buyers--Retail Traders--Consumers (G-PHC-WB-RT-C)

Channel II: Growers--Wholesale Buyers--Retail Traders--Consumer (G-WB-RT-C)

Channel III: Growers--PHC--Wholesale Buyers (Through commission agent, CA)--Retail Traders--Consumer (G-PHC-WB-RT-C)

Channel IV: Growers--PHC--Commission Agents--Retail Traders--Consumer (G-PHC-CA-RT-C)

Channel V: Growers--PHC--Middlemen--Export Merchants (G-PHC-MM-EM)

Channel VI: Growers---PHC---Processing Industry (G-PHC-PI)

Channel VII: Growers---Processing Industry (G-PI)

TABLE 4A : EFFICIENCY OF DIFFERENT MARKETING CHANNELS IN LITCHI

(In Rs. per '000 pieces of Litchi)

S.No.	Particulars	Channel - I	Channel - II	Channel - III	Channel - IV
1.	Retailer's sale price or consumer's purchase price (Pc)	900.00	886.00	756.80	829.00
2.	Total marketing costs (MC)	159.00 (17.67)	160.60 (18.13)	175.00 (23.12)	178.00 (21.48)
3.	Total margins of intermediaries (MM)	503.50 (55.94)	277.65 (31.34)	316.80 (41.87)	289.25 (34.89)
4.	Net price received by producers (FP)	237.50 (26.39)	447.75 (50.54)	265.00 (35.02)	361.75 (43.64)
5.	Total loss in value of litchi (TL)	100.45	117.77	90.21	105.14
6.	Value added, VA (1-4)	662.50	438.25	491.80	467.25
7.	Producers share in consumer INR in percent, (4/1)	26.38	50.54	35.02	43.64
8.	Index of Marketing Efficiency				
a.	Traditional method, (TMEI) (3/2)	3.17	1.73	1.81	1.63

S.No.	Particulars	Channel - I	Channel - II	Channel - III	Channel - IV
b.	Shepherd's method (SMEI) (1/2)	5.66	5.52	4.32	4.66
c.	Modified Marketing Efficiency (MMEI) , (6/2)	4.17	2.73	2.81	2.63
d.	Acharya's method (4/{2+3+5}) (AMEI)	0.35	0.81	0.46	0.63

Note: Figures in parentheses are percent of items in the retail price of litchi. Value of loss is part of retailers' price and marketing cost of litchi.

Source: Calculated from primary data.

TABLE 4B : EFFICIENCY OF DIFFERENT MARKETING CHANNELS IN LITCHI

(In Rs. per '000 pieces of Litchi)

S.No.	Particulars	Channel - V	Channel - VI	Channel - VII
1.	Retailer's sale price or consumer's purchase price (Pc)	638	322	239
2.	Total marketing costs (MC)	115 (18.01)	165 (51.34)	148 (61.92)
3.	Total margins of intermediaries (MM)	302 (47.33)	168 (52.17)	0
4.	Net price received by producers (FP)	448	232	239
5.	Total loss in value of litchi (TL)	95.5	48.9	42.2
6.	Value added, VA (1-4)	190	90	0
7.	Producers share in consumer INR in percent, (4/1)	70.2	72.1	100
8.	Index of Marketing Efficiency			
a.	Traditional method, (TME) (3/2)	2.62	1.02	0
b.	Shepherd's method (SME) (1/2)	5.55	1.95	1.62
c.	Modified Marketing Efficiency (MME) , (6/2)	1.65	0.54	0
d.	Acharya's method (4/{2+3+5}) (AME)	0.87	0.61	1.25

Note: Figures in parentheses are percent of items in retail price of litchi. Value of loss is the part of retailers' price and marketing cost.

Source: Calculated from primary data.

COMMODITY REVIEWS

Foodgrains

During the month of April, 2018, the Wholesale Price Index (Base 2011-12=100) of cereals and foodgrains increased by 0.28 per cent and 0.07 per

cent, respectively, whereas the prices of pulses by decreased (-) 1.23 per cent compared to March, 2018.

ALL INDIA INDEX NUMBER OF WHOLESALE PRICES

(Base Year 2011-2012=100)

Commodity	Weight (%)	WPI for the Month of April, 2018	WPI for the Month of March 2018	WPI A year ago	Percentage change during	
					A month	A year
1	2	3	4	5	6	7
Paddy	1.43	153.3	152.2	147.6	0.72	3.86
Wheat	1.028	140.9	141.2	141.0	-0.21	-0.07
Jowar	0.067	118.0	118.2	131.6	-0.17	-10.33
Bajra	0.086	127.0	126.8	153.8	0.16	-17.43
Maize	0.189	118.0	117.4	135.5	0.51	-12.92
Barley	0.014	138.9	140.8	144.5	-1.35	-3.88
Ragi	0.007	213.5	220.8	252.8	-3.31	-15.55
Cereals	2.824	144.8	144.4	144.5	0.28	0.21
Pulses	0.639	120.8	122.3	155.8	-1.23	-22.46
Foodgrains	3.465	140.4	140.3	146.6	0.07	-4.23

Source: Office of the Economic Adviser, DIPP.

The following Table indicates the State-wise trend of Wholesale Prices of cereals during the month of April, 2018.

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Rice	Rising	Uttar Pradesh	Kerala		Jharkhand
		Gujarat			West Bengal
		Karnataka			
Wheat	Rising	Madhya Pradesh	West Bengal	Gujarat	Jharkhand
		Gujarat	Maharashtra		Karnataka
		Uttar Pradesh			
		Punjab			
		Rajasthan			
Jowar	Rising	Madhya Pradesh	Gujarat	Karnataka	Rajasthan
		Maharashtra		Uttar Pradesh	

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Bajra	Rising	Gujarat Karnataka Maharashtra Delhi	Uttar Pradesh	Rajasthan	
Maize	Rising	Gujarat Madhya Pradesh Karnataka	Jharkhand Rajasthan	Uttar Pradesh	

Procurement of Rice

1.05 million tonnes of rice (including paddy converted into rice) was procured during April 2018 as against 1.12 million tonnes of rice (including paddy converted into rice) procured during April,

2017. The total procurement of rice in the current marketing season i.e 2017-2018, up to 27.04.2018 stood at 32.24 million tonnes, as against 33.67 million tonnes of rice procured, during the corresponding period of last year. The details are given in the following table :

PROCUREMENT OF RICE

(In Thousand Tonnes)

State	Marketing Season		Corresponding		Marketing Year			
	2018-19		Period of last Year		(October-September)			
	(upto 27.04.2018)		2016-17		2016-17		2015-16	
	Procurement	% age to Total	Procurement	% age to Total	Procurement	% age to Total	Procurement	% age to Total
1	2	3	4	5	6	7	8	9
Andhra Pradesh	3048	9.45	2989	8.87	3725	9.78	4326	12.65
Chhatisgarh	3206	9.94	4022	11.94	4022	10.56	3442	10.06
Haryana	3966	12.30	3570	10.60	3583	9.40	2861	8.36
Maharashtra	161	0.50	246	0.73	309	0.82	230	0.67
Punjab	11832	36.70	11052	32.82	11052	29.00	9350	27.33
Tamil Nadu	683	2.12	141	0.42	144	0.38	1191	3.48
Uttar Pradesh	2874	8.91	2354	6.99	2354	6.18	2910	8.50
Uttarakhand	38	0.12	706	2.10	706	1.85	598	1.75
Others	6436	19.96	8597	25.53	12210	32.04	9301	27.19
Total	32244	100.00	33677	100.00	38105	100.00	34209	100.00

Source: Department of Food & Public Distribution.

Procurement of Wheat

The total procurement of wheat in the current marketing season, i.e., 2018-2019 up to 27-04-2018,

is 24.54 million tonnes against 22.27 million tonnes of wheat procured, during the corresponding period of last year. The details are given in the following table :

PROCUREMENT OF WHEAT

(In Thousand Tonnes)

State	Marketing Season 2018-19 (upto 27.04.2018)		Corresponding Period of last Year 2017-18		Marketing Year (April-March)			
	Procurement	% age to Total	Procurement	% age to Total	2017-18		2016-17	
					Procurement	% age to Total	Procurement	% age to Total
1	2	3	4	5	6	7	8	9
Haryana	7597	30.95	6682	30.00	7432	24.11	6722	29.32
Madhya Pradesh	4322	17.61	4549	20.42	6725	21.82	3990	17.40
Punjab	10254	41.78	9814	44.06	11706	37.98	10645	46.42
Rajasthan	821	3.35	604	2.71	1245	4.04	762	3.32
Uttar Pradesh	1485	6.05	612	2.75	3699	12.00	802	3.50
Others	64	0.26	11	0.05	18	0.06	9	0.04
Total	24543	100.00	22272	100.00	30825	100.00	22930	100.00

Source: Department of Food & Public Distribution.

Commercial Crops

Oilseeds

The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 138.4 in April, 2018 showing a decrease of 0.2% over the previous month and an increase of 6.5% over the year. The WPI of copra (coconut) increased by 2.8%, sunflower by 2.7%, soyabean by 1.0% and rape & mustard seed by 0.5% over the previous month. WPI of niger seed decreased by 5.5%, groundnut seed by 4.1%, cotton seed by 2.4%, gingelly seed by 1.5%, safflower (kardi seed) by 0.9% and over the previous month.

Manufacture of Vegetable and Animal oils and Fats

The WPI of manufacture of vegetable and animal oils and fats as a group stood at 118.8 in April, 2018 showing an increase of 1.7% and 10.8% over the previous month and year respectively. The WPI of cotton seed oil increased by 1.5%, soyabean oil by 1.5%, copra oil by 0.9%, and mustard oil by 0.3% over the previous month. The WPI of groundnut oil decreased by 0.9% and sunflower oil by 0.5% over the previous month. The WPI of rapeseed oil shows no change over the previous month.

Fruits & Vegetable

The WPI of fruits & vegetable as a group stood at 142.6 in April, 2018 showing an increase of 7.8% and 9% over the previous month and year respectively.

Potato

The WPI of potato stood at 167.1 in April, 2018 showing an increase of 28% and 67.9% over the previous month and year respectively.

Onion

The WPI of onion stood at 122.6 in April, 2018 showing a decrease of 22.1% over the previous month and an increase of 13.6% over the year.

Condiments & Spices

The WPI of condiments & spices (group) stood at 127.4 in April, 2018 showing a decrease of 0.5% over the previous month and an increase of 0.6% over the year. The WPI of black pepper decreased by 3.6%, turmeric by 1.8% and chillies (dry) by 0.2% over the previous month.

Raw Cotton

The WPI of raw cotton stood at 102.9 in April, 2018 showing a decrease of 0.6% and 7.7% over the previous month and year respectively.

Raw Jute

The WPI of raw jute stood at 166.1 in April, 2018 showing an increase of 0.2% over the previous month and a decrease of 1.7% over the year.

WHOLESALE PRICE INDEX OF COMMERCIAL CROPS

(Base Year : 2011-12=100)

Commodity	Latest April, 2018	Month March, 2018	Year April, 2017	% Variation Over	
				Month	Year
Oilseeds	138.4	138.7	129.9	-0.2	6.5
Groundnut Seed	109.6	114.3	139.8	-4.1	-21.6
Rape & Mustard Seed	136.8	136.1	130.6	0.5	4.7
Cotton Seed	134.4	137.7	154.5	-2.4	-13.0
Copra (Coconut)	215.3	209.4	134.6	2.8	60.0
Gingelly Seed (Sesamum)	128.1	130.1	116.4	-1.5	10.1
Niger Seed	169.5	179.4	201.6	-5.5	-15.9
Safflower (Kardi Seed)	137.8	139.0	126.0	-0.9	9.4
Sunflower	107.2	104.4	104.2	2.7	2.9
Soyabean	157.5	156.0	126.8	1.0	24.2
Manufacture of vegetable and animal oils and fats	118.8	116.8	107.2	1.7	10.8
Mustard Oil	119.7	119.3	118.1	0.3	1.4
Soyabean Oil	114.3	112.6	103.0	1.5	11.0
Sunflower Oil	106.9	107.4	102.5	-0.5	4.3
Groundnut Oil	103.3	104.2	119.0	-0.9	-13.2
Rapeseed Oil	109.8	109.8	109.7	0.0	0.1
Copra Oil	176.9	175.4	142.6	0.9	24.1
Cotton Seed Oil	110.3	108.7	98.3	1.5	12.2
Fruits & Vegetables	142.6	132.3	130.8	7.8	9.0
Potato	167.1	130.5	99.5	28.0	67.9
Onion	122.6	157.3	107.9	-22.1	13.6
Condiments & Spices	127.4	128.0	126.6	-0.5	0.6
Black Pepper	139.9	145.1	171.2	-3.6	-18.3
Chillies (Dry)	125.1	125.4	108.6	-0.2	15.2
Turmeric	122.4	124.7	110.1	-1.8	11.2
Raw Cotton	102.9	103.5	111.5	-0.6	-7.7
Raw Jute	166.1	165.7	168.9	0.2	-1.7

Statistical Tables

Wages

1 DAILY AGRICULTURAL WAGES IN SOME STATES (CATEGORY-WISE)

(In Rs.)

State	District	Centre	Month & Year	Daily Normal Working Hours	Field Labour		Other Agri. Labour		Herdsman		Skilled Labour		
					M	W	M	W	M	W	Carpenter	Black Smith	Cobbler
Andhra Pradesh	Krishna	Ghantasala	Nov, 17	8	350	300	400	NA	250	NA	NA	NA	NA
	Guntur	Tadikonda	Nov, 17	8	305	275	325	NA	275	NA	NA	NA	NA
Telangana	Ranga Reddy	Arutala	Jan, 18	8	600	258	435	NA	NA	NA	450	500	NA
Karnataka	Bangalore	Harisandra	Sep, 17	8	360	340	400	350	400	300	600	450	NA
	Tumkur	Gidlahali	Sep, 17	8	250	200	250	200	250	NA	300	280	NA
Maharashtra	Bhandara	Adyal	Oct, 17	8	200	150	250	150	200	150	350	250	200
	Chandrapur	Ballarpur	Feb, 18	8	300	150	300	150	200	NA	250	200	150
Jharkhand	Ranchi	Gaitalsood	Nov, 17	8	230	230	230	230	230	230	317	317	NA

1.1 DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Assam	Barpeta	Laharapara	Apr, 17	250	250	250	250	250	250	350	250	350	250	350
				NA	NA	200	200	200	NA	NA	NA	NA	NA	NA
Bihar	Muzaffarpur	Bhalui Rasul	June, 17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Shekhpura	Kutaut	June, 17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chhattisgarh	Dhamtari	Sihava	Feb, 18	NA	NA	NA	160	300	175	250	200	200	200	200
				NA	NA	NA	150	180	NA	NA	NA	100	NA	NA
Gujarat*	Rajkot	Rajkot	Oct, 17	248	254	235	223	203	197	488	475	463	475	463
				NA	200	229	216	197	178	NA	NA	NA	NA	NA
	Dahod	Dahod	Oct, 17	293	293	164	164	164	NA	371	321	286	321	286
				NA	250	164	164	164	NA	NA	NA	NA	NA	NA

1.1 DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)-CONTD.

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Carpenter	Black Smith	Cobbler
Haryana	Panipat	Ugarakheri	Oct, 17	M	8	400	400	NA	NA	400	NA	550	400	NA
				W	8	NA	300	NA	NA	300	NA	NA	NA	NA
Himachal Pradesh	Mandi	Mandi	June, 16	M	8	NA	182	182	182	182	182	300	300	NA
				W	8	NA	182	182	182	182	182	NA	NA	NA
Kerala	Kozhikode	Koduvally	Oct, 17	M	4-8	960	800	NA	800	968	NA	900	NA	NA
				W	4-8	NA	NA	650	650	650	NA	NA	NA	NA
	Palakkad	Elappally	Oct, 17	M	4-8	NA	500	NA	500	500	NA	650	NA	NA
				W	4-8	NA	NA	300	300	300	NA	NA	NA	NA
Madhya Pradesh	Hoshangabad	Sangarkhera	Oct, 17	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Satna	Kotar	Oct, 17	M	8	200	200	200	200	200	200	300	300	300
				W	8	NA	200	200	200	200	200	NA	NA	NA
	Shyampurkala	Vijaypur	Oct, 17	M	8	NA	300	300	300	NA	300	300	300	NA
				W	8	NA	300	300	300	NA	300	NA	NA	NA
	Bhadrak	Chandbali	Dec, 17	M	8	300	200	300	300	300	250	450	350	300
				W	8	NA	200	250	250	250	200	NA	NA	NA
Odisha	Ganjam	Aska	Dec, 17	M	8	300	250	250	300	350	250	500	350	350
				W	8	NA	200	200	200	250	200	NA	NA	NA
Punjab	Ludhiyana	Pakhowal	Aug, 17	M	8	480	480	NA	NA	400	NA	480	480	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan	Barmer	Kuseep	Feb, 18	M	8	NA	NA	400	NA	NA	500	700	500	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	300	NA
	Jalore	Sarnau	Feb, 18	M	8	NA	NA	NA	300	NA	NA	350	300	NA
				W	8	NA	NA	NA	300	NA	NA	NA	NA	NA
Tamil Nadu*	Thanjavur	Pulvarnatham	Dec, 18	M	8	NA	344	NA	333	368	NA	500	350	NA
				W	8	NA	142	141	139	137	NA	NA	NA	NA
	Tirunelveli	Malayakulam	Dec, 18	M	8	NA	NA	NA	NA	425	NA	NA	NA	NA
				W	8	NA	150	175	175	NA	NA	NA	NA	NA
Tripura	State Average		Oct, 17	M	8	361	323	311	317	304	306	359	324	275
				W	8	NA	256	256	252	253	280	NA	NA	NA

1.1 DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)-CONCLD.

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Skilled Labours		
Uttar Pradesh*	Meerut	Ganeshpur	Oct, 17	M	8	300	277	255	255	266	NA	450	NA	NA
				W	8	NA	272	240	231	240	NA	NA	NA	NA
	Auraiya	Auraiya	Oct, 17	M	8	170	175	185	307	171	NA	500	NA	NA
				W	8	NA	NA	185	307	171	NA	NA	NA	NA
	Chandauli	Chandauli	Oct, 17	M	8	200	200	200	NA	200	NA	400	NA	NA
				W	8	NA	200	200	NA	200	NA	NA	NA	NA

M - Man

W - Woman

NA - Not Available

NR - Not Reported

* States reported district average daily wages

PRICES

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

Commodity	Variety	Unit	State	Centre	Apr-18	Mar-18	Apr-17
Wheat	PBW 343	Quintal	Punjab	Amritsar	1675	1675	1625
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1735	1625	1625
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1758	1770	1621
Jowar	-	Quintal	Maharashtra	Mumbai	2400	2300	2200
Gram	No III	Quintal	Madhya Pradesh	Sehore	3102	3425	5371
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1430	1425	1350
Gram Split	-	Quintal	Bihar	Patna	5400	5500	7000
Gram Split	-	Quintal	Maharashtra	Mumbai	4700	5000	7600
Arhar Split	-	Quintal	Bihar	Patna	5750	5700	7500
Arhar Split	-	Quintal	Maharashtra	Mumbai	5500	5800	6200
Arhar Split	-	Quintal	NCT of Delhi	Delhi	5900	5600	6100
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	5500	5800	6400
Gur	-	Quintal	Maharashtra	Mumbai	4000	4500	4000
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	4800	4800	4200
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2200	2250	2850
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3400	3320	3400
Mustard Seed	Black	Quintal	West Bengal	Raniganj	NR	3800	4300
Mustard Seed	-	Quintal	West Bengal	Kolkata	4100	4200	4200
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4025	4300	5250
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	4250	4400	4620
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1450	1650	2100
Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	2560	2560	2750
Castor Seed	-	Quintal	Telangana	Hyderabad	3900	4000	4200
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	7400	7400	6500
Copra	FAQ	Quintal	Kerala	Alleppey	13250	12250	8750
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	5600	5300	5000
Groundnut	-	Quintal	Maharashtra	Mumbai	4800	5200	6600
Mustard Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1300	1305	1335
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1400	1400	1430
Groundnut Oil	-	15 Kg.	Maharashtra	Mumbai	1270	1300	1550
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1740	1865	1875

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

Commodity	Variety	Unit	State	Centre	Apr-18	Mar-18	Apr-17
Linseed Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1425	1425	1335
Castor Oil	-	15 Kg.	Telangana	Hyderabad	1320	1350	1455
Sesamum Oil	-	15 Kg.	NCT of Delhi	Delhi	1545	1550	1525
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2500	2150	2550
Coconut Oil	-	15 Kg.	Kerala	Cochin	2790	2580	1905
Mustard Cake	-	Quintal	Uttar Pradesh	Kanpur	1715	1700	1775
Groundnut Cake	-	Quintal	Telangana	Hyderabad	2714	2929	2929
Cotton/Kapas	NH 44	Quintal	Andhra Pradesh	Nandyal	4350	4400	5400
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	NT	NT	4300
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	4075	3925	3600
Jute Raw	W 5	Quintal	West Bengal	Kolkata	4075	3975	3650
Oranges	-	100 No	NCT of Delhi	Delhi	750	750	583
Oranges	Big	100 No	Tamil Nadu	Chennai	600	600	500
Banana	-	100 No.	NCT of Delhi	Delhi	458	500	350
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	676	675	605
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	87000	100000	80000
Almonds	-	Quintal	Maharashtra	Mumbai	66000	72000	70000
Walnuts	-	Quintal	Maharashtra	Mumbai	72000	75000	95000
Kishmish	-	Quintal	Maharashtra	Mumbai	15200	18000	11000
Peas Green	-	Quintal	Maharashtra	Mumbai	3800	3000	3400
Tomato	Ripe	Quintal	Uttar Pradesh	Kanpur	600	600	600
Ladyfinger	-	Quintal	Tamil Nadu	Chennai	1500	1500	2000
Cauliflower	-	100 No.	Tamil Nadu	Chennai	1500	1300	2000
Potato	Red	Quintal	Bihar	Patna	950	750	800
Potato	Desi	Quintal	West Bengal	Kolkata	1250	1100	650
Potato	Sort I	Quintal	Tamil Nadu	Mettupalayam	2590	1587	2100
Onion	Pole	Quintal	Maharashtra	Nashik	600	850	400
Turmeric	Nadan	Quintal	Kerala	Cochin	12000	12000	15000
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	12000	11800	8800
Chillies	-	Quintal	Bihar	Patna	11000	11000	11500

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

Commodity	Variety	Unit	State	Centre	Apr-18	Mar-18	Apr-17
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	36000	37500	48000
Ginger	Dry	Quintal	Kerala	Cochin	14200	13500	12000
Cardamom	Major	Quintal	NCT of Delhi	Delhi	77500	78000	127500
Cardamom	Small	Quintal	West Bengal	Kolkata	105000	100000	120000
Milk	Buffalo	100 Liters	West Bengal	Kolkata	5200	5200	3800
Ghee Deshi	Deshi No 1	Quintal	NCT of Delhi	Delhi	76705	73370	37019
Ghee Deshi	-	Quintal	Maharashtra	Mumbai	46200	46000	50000
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	39600	39500	37750
Fish	Rohu	Quintal	NCT of Delhi	Delhi	12500	13000	14500
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	43000	36500	34000
Eggs	Madras	1000 No.	West Bengal	Kolkata	3750	4000	3330
Tea	-	Quintal	Bihar	Patna	21300	21300	21250
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	38000	38000	36000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	23000	23000	35000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	13500	13500	29000
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	4000	4100	4300
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	1900	2100	3350
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	14200	14100	13300
Rubber	-	Quintal	Kerala	Kottayam	10900	11000	12500
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	56000	56000	32700

3. WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2018

Commodity	Variety	Country	Centre	Unit	JAN	FEB	MAR	APR
CARDAMOM	Guatemala Bold Green	U.K.	-	Dollar/MT	18500	19500	19500	19500
				Rs./Qtl	117642	126477	126887	130065
CASHEW KERNELS	Spot U.K. 320s	U.K.	-	Dollar/MT	11535	11346	11368	10823
				Rs./Qtl	73351	73593	73973	72187
CASTOR OIL	Any Origin ex tank Rotterdam	Netherlands	-	Dollar/MT	1612	1652	1602	1567
				Rs./Qtl	10251	10716	10427	10451
CHILLIES	Birds eye 2005 crop	Africa	-	Dollar/MT	5800	4800	4800	4800
				Rs./Qtl	36882	31133	31234	32016
CLOVES	Singapore	Madagascar	-	Dollar/MT	7900	8100	7750	7750
				Rs./Qtl	50236	52537	50429	51693
COCONUT OIL	Crude Phillipine/ Indonesia, cif Rotterdam	Netherlands	-	Dollar/MT	1365	1260	1095	1115
				Rs./Qtl	8680	8172	7125	7437
COPRA	Phillipines cif Rotterdam	Phillipine	-	Dollar/MT	769	716	681	672
				Rs./Qtl	4890	4644	4431	4479
CORRIANDER		India	-	Dollar/MT	1650	1650	1650	1650
				Rs./Qtl	10492	10702	10737	11006
CUMMIN SEED		India	-	Dollar/MT	3300	3300	3000	3000
				Rs./Qtl	20985	21404	19521	20010
MAIZE		U.S.A.	Chicago	C/56 lbs	355	367	386	390
				Rs./Qtl	887	935	987	1022
OATS		CANADA	Winnipeg	Dollar/MT	340	327	291	286
				Rs./Qtl	2164	2123	1895	1905
PALM KERNAL OIL	Crude Malaysia/ Indonesia, cif Rotterdam	Netherlands	-	Dollar/MT	1255	1140	1030	970
				Rs./Qtl	7981	7394	6702	6470
PALM OIL	Crude Malaysian/ Sumatra, cif Rotterdam	Netherlands	-	Dollar/MT	685	663	680	665
				Rs./Qtl	4356	4297	4425	4436
PEPPER (Black)	Sarawak Black lable	Malaysia	-	Dollar/MT	5000	5000	4800	4800
				Rs./Qtl	31795	32430	31234	32016
RAPESEED	Canola	CANADA	Winnipeg	Can Dollar/MT	485	511	516	533
				Rs./Qtl	2500	2610	2602	2765
	UK delivered rapeseed, delivered Erith(buyer)	U.K.	-	Pound/MT	275	276	272	288
				Rs./Qtl	2482	2500	2484	2657
RAPESEED OIL	Refined bleached and deodorised ex-tanks, broker price	U.K.	-	Pound/MT	669	697	652	665
				Rs./Qtl	6039	6313	5954	6135
SOYABEAN MEAL	UK produced 49% oil & protein ('hi-pro') ex-mill seaforth UK bulk	U.K.	-	Pound/MT	305	337	339	363
				Rs./Qtl	2753	3053	3096	3349
SOYABEAN OIL		U.S.A.	-	C/lbs	33	32	32	30
				Rs./Qtl	4625	4574	4589	4410

3. WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2018-CONTD.

Commodity	Variety	Country	Centre	Unit	JAN	FEB	MAR	APR
SOYABEANS	Refined bleached and deodorised ex-tanks, broker price	U.K.	-	Pound/MT	651	657	647	630
				Rs./Qtl	5877	5951	5908	5812
		U.S.A.	-	C/60 lbs	941	1032	1041	1045
				Rs./Qtl	2196	2457	2486	2558
	US NO.2 yellow	Netherlands	Chicago	Dollar/MT	385	423	426	444
				Rs./Qtl	2451	2744	2772	2958
SUNFLOWER SEED OIL	Refined bleached and deodorised ex-tanks, broker price	U.K.	-	Pound/MT	724	727	723	735
				Rs./Qtl	6536	6585	6602	6780
Wheat		U.S.A.	Chicago	C/60 lbs	435	451	486	496
				Rs./Qtl	1015	1074	1161	1214

Source: - Public Ledger

FOREIGN EXCHANGE RATES

Currency	JAN	FEB	MAR	APR
CanDollar	51.57	51.11	50.48	51.84
UKPound	90.27	90.58	91.32	92.25
USDollar	63.59	64.86	65.07	66.7

Crop Production

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING JULY, 2018

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, Castorseed, Sesamum, Cotton, Mesta, Sweet Potato, Turmeric, Sannhemp, Nigerseed, Onion, Tapioca.	Autumn rice.
Assam	Winter Rice, Castorseed.	Autumn Rice, Jute.
Bihar	Autumn Rice, Winter Rice, Jowar (K) Bajra, Maize, Ragi, Small Millets (K) Tur (K), Groundnut, Castorseed, 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, Castorseed, Sesamum, Cotton, Sannhemp.	—
Himachal Pradesh	Summer Rice, Jowar (K), Bajra, Ragi, Small Millets (K) Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Sesamum, Sennhemp, Sumer Potato (Plains).	Winter Potato (Hills).
Jammu & Kashmir	Autumn Rice, Jowar (K) Bajra, Small Millets (K), Urad (K), Mung (K), Winter Potato, Ginger, Tobacco, 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, Castorseed, Sesamum, Cotton, Mesta, Sweet Potato, Turmeric, Sannhemp, Nigerseed, Onion, Tapioca.	—
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, Castorseed, Sesamum, Cotton, Jute, Mesta, Sweet Potato, Turmeric, Sannhemp, Nigerseed.	—
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, Castorseed, Sesamum, Cotton, Jute, Mesta, Sannhemp, Nigerseed.	—

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING JULY, 2018-*CONTD.*

State	Sowing	Harvesting
(1)	(2)	(3)
Manipur	Winter Rice, Tur (K), Sesamum (K), Sweet Potato, Maize.	—
Orissa	Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Summer Potato (Plains), Chillies (Dry), Groundnut, Castorseed, 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, Castorseed, Sweet Potato, Turmeric, Sannhemp.	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, Castorseed, Cotton Sannhemp.	—
Tamil Nadu	Autumn Rice, Jowar (K), Bajra, Ragi, Small Millets (K), Tur (K), Urad (K), Summer Potato (Hills), Chillies (Dry), Groundnut, Castorseed, Sesamum, Cotton, Sannhemp, Onion, Tapioca.	Jowar (R), Summer Potato (Hills), Chillies (Dry), Sesamum, Cotton, Sannhemp.
Tripura	Winter Rice, Urad (K), Mung (K), Sesamum.	Onion, Autumn Rice.
Uttar Pradesh	Autumn Rice, Winter Rice, Jowar (K), Bajra Maize, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Groundnut, Castorseed, Sannhemp, Nigerseed, Tapioca.	Small Millets (R), Chillies (Dry).
West Bengal	Autumn Rice, Winter (Rice), Tur (K), Ginger, Chillies (Dry).	Chillies (Dry), Sesamum.
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.	—

(K)--Kharif

(R)--- Rabi

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Note to Contributors

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Abbreviations used

N.A. – Not Available.

N.Q. – Not Quoted.

N.T. – No Transactions.

N.S. – No Supply/No Stock.

R. – Revised.

M.C. – Market Closed.

N.R. – Not Reported.

Neg. – Negligible.

Kg. – Kilogram.

Q. – Quintal.

(P) – Provisional.

Plus (+) indicates surplus or increase.

Minus (–) indicates deficit or decrease.

