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Agricultural Situation in India

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The Journal is brought out by the Directorate of economics and statistics, ministry of agriculture. it aims at presenting a factual and integrated picture of the food and agricultural situation in india on month to month basis. the views expressed, if any, are not necessarily those of the Government of India.

NOTE TO CONTRIBUTORS

Articles on the state of Indian Agriculture and allied sectors are accepted for publication in the Directorate of Economics & Statistics, Department of Agriculture & Cooperation monthly Journal "Agricultural Situation in India". The Journal intends to provide a forum for scholarly work and also to promote technical competence for research in agricultural and allied subjects. The articles in Hard Copy as well as Soft Copy (email ID: agri.situation@gmail.com) in MS Word, not exceeding five thousand words, may be sent in duplicate, typed in double space on one side of fullscape paper in Times New Roman font size 12, addressed to the Editor, Publication Division, Directorate of Economics and Statistics, M/o Agriculture, C-1, Hutments, Dalhousie Road, New Delhi-110011, alongwith a declaration by the author(s) that the article has neither been published nor submitted for publication elsewhere. The author(s) should furnish their e-mail address, Phone No. and their permanent address only on the forwarding letter so as to maintain anonymity of the author while seeking comments of the referees on the suitability of the article for publication.

Although authors are solely responsible for the factual accuracy and the opinion expressed in their articles, the Editorial Board of the Journal, reserves the right to edit, amend and delete any portion of the article with a view to making it more presentable or to reject any article, if not found suitable. Articles which are not found suitable will not be returned unless accompanied by a self-addressed and stamped envelope. No correspondence will be entertained on the articles rejected by the Editorial Board.

An honorarium of Rs. 2000 per article of atleast 2000 words for the regular issue and Rs. 2500 per article of at least 2500 words for the Special/Annual issue is paid by the Directorate of Economics & Statistics to the authors of the articles accepted for the Journal.

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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.

GENERAL SURVEY OF AGRICULTURE

(i) Trends in Foodgrain prices

During the month of December 2014, the All India Index Number of Wholesale Price (2004-05=100) of Foodgrains declined by 0.42 percent from 235.8 in Nov., 2014 to 234.8 in Dec., 2014.

The Wholesale Price Index (WPI) Number of Cereals declined by 0.72 percent from 234.8 to 233.1 and WPI of Pulses increased by 1.10 percent from 240.5 to 242.9 during the same period.

The Wholesale Price Index Number of Wheat increased by 1.32 percent from 211.7 to 214.5 while that of Rice declined by 2.08 percent from 245.4 to 240.3 during the same period.

(ii) Weather, Rainfall and Reservoir Situation during January, 2015

Cumulative Winter (January to February) Rainfall for the country as a whole during the period 01st January to 28th January, 2015 is 6% lower than LPA. Rainfall in the four broad geographical divisions of the country during the above period was lower than LPA by (-) 32% in North West India, (-) 38% in East & North East India, (-) 9% in South Peninsula and higher than LPA by 37% in Central India.

Out of a total of 36 meteorological sub-divisions, 25 sub-divisions received excess/normal rainfall and 11 sub-divisions received deficient/scanty rainfall.

Central Water Commission monitors 85 major reservoirs in the country which have a total live capacity of 155.05 BCM at Full Reservoir Level (FRL). Current live storage in these reservoirs as on 29th January, 2015 was 77.36 BCM as against 92.66 BCM on 29.01.2014 (last year) and 76.79 BCM of normal storage (average storage of the last 10 years). Current year's storage is 83% of the last year's and 101% of the normal storage.

As per latest information available on sowing of crops, around 97.1% of the normal area under Rabi crops

have been sown upto 30.01.2015. Area sown under all Rabi crops taken together has been reported to be 596.24 lakh hectares at All India level as compared to 636.04 lakh hectares in the corresponding period of last year.

Area reported was higher by 9.6 lakh ha. under Wheat, 1.9 lakh ha. under Maize, 2.1 lakh ha. under Urad and 1.2 lakh ha. under Moong. Area coverage was lower by 6.0 lakh ha. under Jowar, 6.4 lakh ha. under Gram, 2.9 lakh ha. Under Rapeseed & Mustard, 2.4 lakh ha. under Sunflower, 1.3 lakh ha. under Groundnut and 1.1 lakh ha. in Safflower.

(iii) Price Movement of Onion, Potato and Tomato during January, 2015

The All India average wholesale price of onion during January, 2015 was Rs. 1968/qtl. compared to Rs. 2022/qtl. in December, 2014, showing a marginal decline of 2.67% over the last month. The average wholesale price during January, 2015 was in the range of Rs. 929/qtl. in Indore to Rs. 3811/qtl. in Kozhikode. At the retail level, All India average price of onion in January, 2015 was Rs. 23/kg as compared to Rs. 26/kg. in December, 2014. The average retail price ranged from Rs. 11/kg in Indore to Rs. 44/kg in Ernakulam. Total arrivals of onion during January (29/12/2014—28/01/2015) was 10,04,975 tonnes which was about 27.4% higher than the previous month's arrival and 1.7% lower than the previous year.

In case of potato, the All India average wholesale price during January, 2015 was Rs. 1432/qtl. compared to Rs. 1929/qtl. in December, 2014, showing a decrease of 26% over the last month. The average wholesale price during January, 2015 was in the range of Rs. 476/qtl. in Agra to Rs. 3284/qtl. in Thiruvananthapuram. At the retail level, All India average retail price of potato in January, 2015 was Rs. 18/kg as compared to Rs. 20/kg in December, 2014. The average retail price was in the range of Rs. 7/kg in Bhagalpur to Rs. 33/kg in Thiruvananthapuram. Total arrivals of potato during January, (29/12/2014—28/01/2015) was 14.75.792 tonnes which was about 10.8% higher than the previous month's arrival and 9.6% higher than the previous year.

In respect of tomato, the All India average wholesale price during January, 2015 was Rs. 1739/qtl. compared to Rs. 1742/qtl. in December, 2014, registering a marginal decline of 0.17% over the previous month. The average wholesale price during January, 2015 was in the range of Rs. 640/qtl. in Ranchi to Rs. 3147/qtl. in Ludhiana. At the retail level, All India average price of tomato in January, 2015 was Rs. 21/kg compared to Rs. 23/kg in December 2014. The average retail price ranged between Rs. 10/kg in Ranchi to Rs. 40/kg in Ludhiana. Total arrivals of tomato during January, (29/12/2014—28/01/2015) was 4,17,555 tonnes which was about 38.3% lower than the previous month's arrival and 10.7% higher than the previous year.

Economic Growth

As per the quarterly estimates of Gross Domestic Product (GDP) for the second quarter (July-September) of 2014-15, released by CSO (on November 28, 2014), GDP growth at factor cost at constant (2004-05) prices is estimated at 5.3 per cent as against 5.2 percent in Q2 of 2013-14. Growth rate for the first quarter of 2014-15 was 5.7 percent. The Growth rate during the first half of 2014-15 stood at 5.5 percent. At the sectoral level growth rates are 3.2 per cent for agriculture and allied sectors, 2.2 per cent for industry sector and 7.1 per cent for service sector in Q2 of 2014-15.

TABLE 1: GROWTH OF GDP AT FACTOR COST BY ECONOMIC ACTIVITY (AT 2004-05 PRICES) (per cent)

Sector	Growth			Share in GDP		
	2011-12	2012-13(1R)	2013-14 (PE)	2011-12	2012-13(1R)	2013-14 (PE)
Agriculture, forestry & fishing	5.0	1.4	4.7	14.4	13.9	13.9
Industry	7.8	1.0	0.4	28.2	27.3	26.1
Mining & quarrying	0.1	-2.2	-1.4	2.1	2.0	1.9
Manufacturing	7.4	1.1	-0.7	16.3	15.8	14.9
Electricity, gas & water supply	8.4	2.3	5.9	1.9	1.9	1.9
Construction	10.8	1.1	1.6	7.9	7.7	7.4
Services	6.6	7.0	6.8	57.4	58.8	59.9
Trade, hotels, transport & communication	4.3	5.1	3.0	26.7	26.9	26.4
Financing, insurance, real estate & business services	11.3	10.9	12.9	18.0	19.1	20.6
Community, social & personal services	4.9	5.3	5.6	12.7	12.8	12.9
GDP at factor cost	6.7	4.5	4.7	100.0	100.0	100.0

1R: 1st Revised Estimates; PE: Provisional Estimates, Source: CSO.

TABLE 2: QUARTERLY ESTIMATES OF GDP GROWTH AT CONSTANT (2004-05) PRICES (per cent)

Sectors	2012-13				2013-14				2014-15	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Agriculture, forestry & fishing	1.8	1.8	0.8	1.6	4.0	5.0	3.7	6.3	3.8	3.2
Industry	0.3	-0.4	1.7	2.1	-0.4	2.6	-0.4	-0.2	4.2	2.2
Mining & quarrying	-1.1	-0.1	-2.0	-4.8	-3.9	0.0	-1.2	-0.4	2.1	1.9
Manufacturing	-1.1	0.0	2.5	3.0	-1.2	1.3	-1.5	-1.4	3.5	0.1
Electricity, gas & water supply	4.2	1.3	2.6	0.9	3.8	7.8	5.0	7.2	10.2	8.7
Construction	2.8	-1.9	1.0	2.4	1.1	4.4	0.6	0.7	4.8	4.6
Services	7.2	7.6	6.9	6.3	7.2	6.3	7.2	6.4	6.8	7.1
Trade, hotels, transport & communication	4.0	5.6	5.9	4.8	1.6	3.6	2.9	3.9	2.8	3.8
Financing insurance, real estate and business services	11.7	10.6	10.2	11.2	12.9	12.1	14.1	12.4	10.4	9.5
Community, social & personal services	7.6	7.4	4.0	2.8	10.6	3.6	5.7	3.3	9.1	9.6
GDP at factor cost	4.5	4.6	4.4	4.4	4.7	5.2	4.6	4.6	5.7	5.3

Source: CSO.

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FARM SECTOR NEWS RELEASES

Rabi Sowing

As per Rabi Crops data released by Directorate of Economics and Statistics, Ministry of Agriculture, total area coverage as on today under Rabi crops moves to 530.22 lakh hectares while last year's sowing area was at 557.85 lakh hectare. Wheat's sowing area is at 279.6 lakh hectares as compared to last year's 286.90 lakh hectares. The area under sowing of total Coarse cereals is at 50.12 lakh hectares as compared to last year's 54.99 lakh hectares. The area under sowing of Gram is at 77.81 lakh hectares this year while the last year's figure was 90.66 lakh hectares. Area coverage under Total Pulses is at 124.16 lakh hectares while the last year's sowing area coverage was 134.72 lakh hectares. Similarly sowing area under total oilseeds is at 74.06 lakh hectares as compared to 79.03 lakh hectares last year.

Year end Review of the Ministry of Agriculture for the Year 2014-15

The Immediate challenge to the Ministry of Agriculture when the new Government had taken over, was to sustain the increasing agricultural output of the country in the face of impending deficit rainfall in this year 2014-15. All the requisite preparatory measures were made in coordination with the State Governments to have the District-wise contingency action plans in place and to bring in flexibility in the various schemes in order that the States are enabled to cope with any desired changes in the Approved Action Plans for tackling the situation arising out of deficit rainfall. With the perspective the Central Research Institute for Dry Land Agriculture (CRIDA) in collaboration with State Agricultural Universities and the State Government has prepared crop contingency plans in respect of 576 districts across the country. Further, all necessary and appropriate steps have been taken to meet the seed and fertilizer requirement and to disseminate information and on suitable farming practices to be followed in such a situation.

Strategy to Sustain Agricultural Growth

In order to keep up the momentum gained during the 11th Plan and achieve the targeted growth rate of 4% during the 12th Five Year Plan as also the ensure focused approach and to avoid overlap, all the ongoing 51 schemes of the Department were restructured into five missions viz. National Food Security Mission (NFSM), Mission for Integrated Development of Horticulture Mission (MIDH), National Mission of Oil Seed and Oil Palm (NMOOP), National Mission for Sustainable Agriculture (NMSA), and National Mission on Agricultural Extension & Technology (NMAET); five Central Sector Schemes viz, National Crop Insurance Programme (NCIP), Integrated

Scheme on Agri-Census & Statistics (ISAC&S), Integrated Scheme of Agriculture Marketing (ISAM), Integrated Scheme of Agriculture Cooperation (ISAC) and Secretariat Economic Service; and one State Plan Scheme viz. Rashtriya Krishi Vikas Yojana.

Recognizing the importance of Agriculture Sector, the Government during the budget 2014-15 took a number of steps for sustainable development of Agriculture. These steps include enhanced institutional credit to farmers; promotion of scientific warehousing infrastructure including cold storages and cold chains in the country for increasing shelf life of agricultural produce; Improved access to irrigation through Pradhan Mantri Krishi Sichayee Yojana; provision of Price Stabilisation Fund to mitigate price volatility in agricultural produce; Mission mode scheme for Soil Health Card; Setting up of Agri-tech Infrastructure fund for making farming competitive and profitable; provide institutional finance to joint farming groups of "Bhoomi Heen Kisan" through NABARD; development of indigenous cattle breeds and promoting inland fisheries an other non-farm activities to supplement the income of farmers.

Main Initiatives taken were:

Rashtriya Gokul Mission

India ranks first among the world's milk producing Nations are such 1998 and milk production peaked at 137.97 million tonnes in 2013-14. India has the largest bovine population in the world. The bovine genetic resource of India is represented by 37 well recognized indigenous Breeds of cattle and 13 breeds of buffaloes. Indigenous bovines are robust and resilient and are particularly suited to the climate and environment of their respective breeding tracts. Rashtriya Gokul Mission a project under the National Program for Bovine Breeding and Dairy Development is being launched with the objective of conserving and developing indigenous Breeds in a focused and scientific manner. The potential to enhance the productivity of the indigenous breeds through professional farm management and superior nutrition, as well as gradation of indigenous bovine germplasm will be done with at outlay of Rs. 550 crores.

Rail Milk Network

In order to promote Agri Rail Network for transportation of milk, orders have been placed by AMUL and NDDDB on behalf of Dairy Cooperative Federations for procurement of 36 new Rail Milk Tankers and will be made available by Railways. This will help in movement of milk from milk surplus areas to areas of demand providing dairy farmers with greater market areas.

Other Initiatives:

1. An allocation of Rs. 50 crore for development of indigenous cattle breed has been provided.
2. 'Blue Revolution' for development of inland fisheries beign initiated with a sum of Rs. 50 crore.
3. Target for providing institutional agricultural credit to farmers during 2014-15 has been enhanced to Rs. 8 lakh crore which is expected to surpass.
4. Agriculture credit at a concessional rate of 7% with an interest subvention of 3% for timely repayment will continue during 2014-15.
5. An allocation of Rs. 5,000 crore for 2014-15 has been made for scientific warehousing infrastructure for increasing shelf life of agricultural produce and thereby increasing the earning capacity of farmers.
6. A higher allocation of Rs. 25,000 crore has been made to the corpus of Rural Infrastructure Development Fund during 2014-15 which helps in creation of infrastructure in agriculture and rural sectors.
7. An initial corpus of Rs. 4,000 crore is being created to set up long term rural credit fund in NABARD to give a boost to long term investment credit in agriculture.
8. For ensuring increased and uninterrupted credit flow to farmers and to avoid high cost market borrowings by NABARD an amount of Rs. 50,000 crore during 2014-15 has been made for Short Term Cooperative Rural Credit (STCRC-refinance fund).
9. To improve access to irrigation, Pradhan Mantri Krishi Sichayee Yojana has been initiated with a sum of Rs. 1,000 crore in the year 2014-15.
10. To mitigate price volatility in the agricultural produce a sum of Rs. 500 crore has been provided for Price Stabilization Fund.
11. Government has initiated a scheme for Soil Health Card for every farmer in a mission mode with an initial allocation of Rs. 100 crore in 2014-15.
12. An additional amount of Rs. 56 crore has been made to set up 100 mobile soil testing laboratories countrywide.
13. National Adaptation fund for climate change has been established with an initial allocation of Rs. 100 crore.
14. To protect landless farmers from money lenders 5 lakh joint farming groups of Bhoomiheen Kisan will be financed through NABARD in the current financial year.
15. A Kisan TV - Channel dedicated to agriculture will be launched with the initial allocation of Rs. 100 crores in the current financial year.
16. An initial allocation of Rs. 200 crore has been allocated for establishing Agriculture Universities in Andhra Pradesh and Rajasthan and Horticulture Universities in Telangana and Haryana.
17. An allocation of Rs. 100 crore has been made in the current financial year for setting up of two institutions of excellence in Assam and Jharkhand which will be at par with Indian Agricultural Research Institute, Pusa.
18. An allocation of Rs. 100 crore is made for 2014-15 for setting up Agri-tech Infrastructure Fund with a view to increasing public and private investments in agriculture and making farming competitive and profitable.
19. Various initiatives taken by Government to support agriculture and allied sectors is to sustain the growth rate at 4%.
20. In order to increase profitability for small and marginal farmers, Rs. 200 crore has been earmarked for setting up of 2000 Farmer Producer Organisations.
21. Wage employment under MGNREGA will be mainly used for more productive asset creation substantially linked to agriculture & allied activities.
22. Sum of Rs. 14,389 crore for Pradhan Mantri Gram Sadak Yojana for 2014-15 which will improve access for rural population including farmers.
23. With a view to promoting farmers and consumers interest setting up of a national market will be accelerated by encouraging States to modify their APMC Act and other market reforms.
24. With a view to develop commercial organic farming in the North Eastern Region a sum of Rs. 100 crore has been allocated.

Performance of National Food Security Mission (NFSM)

The performance of National Food Security Mission (NFSM) during 11th Five Year Plan has been assessed through an independent agency. The Mission has helped in widening the food basket of the country with sizeable contributions coming from the NFSM districts. The focused and target oriented implementation of mission initiatives has resulted in bumper production of rice, wheat and pulses. The production of wheat has increased from 75.81 million tonnes in pre-NFSM year of 2006-07 to 94.88 million tonnes during 2011-12 i.e. an increase of 19.07 million tonnes against the envisaged target of 8 million tonnes at the end

of XI Plan. Similarly, the total production of rice has increased from 93.36 million tonnes in pre NFSM year of 2006-07 to 105.30 million tonnes in 2011-12 with an increase of 11.94 million tonnes against the target of 10 million tonnes. The total production of pulses has also increased from 14.20 million tonnes during 2006-07 to 17.09 million tonnes during 2011-12 with an increase of 2.89 million tonnes against the envisaged target of 2 million tonnes. Thus, 33.90 million tonnes of additional production of total foodgrains against the target of 20 million tonnes.

The Mission has been continued during 12th Five Year Plan with inclusion of coarse cereals crops and commercial crops (sugarcane, jute, cotton). The Mission has target of additional production of 25 million tonnes of foodgrains comprising 10 million tonnes of rice, 8 million tonnes of wheat, 4 million tonnes of pulses and 3 million tonnes of coarse cereals by the end of 12th Five Year Plan.

Use of Modern Agricultural Techniques

Government has introduced and is supporting various techniques to sustain growth of agriculture under various Missions/Schemes, such as integrated farming system/cropping system with appropriate resource conservation technologies; development of high yielding pest/disease tolerant crop varieties/hybrids; water use efficiency enhancement through micro irrigation; soil test based balanced and judicious use of fertilizers; dissemination of agriculture related information to the farming community through various ICT enabled delivery channels including SMSs, internet kiosks, farmers portals etc; scientific storage of both perishable and non-perishable produce; precision farming; increasing the reach of farm mechanization by promoting "Custom Hiring Centres", creating hubs for hi-tech & high value farm equipments; promotion of latest technologies on crops specific cultivation; protected cultivation of horticultural products, organic farming etc.

Minimum Support Price of Toria Retained at Last Year's MSP

Government have decided to retain the Minimum Support Price (MSP) of Toria of Fair Average Quality (FAQ) to be marketed in 2015-16 at Rs. 3020 per quintal. This MSP has been fixed on the basis of the normal market price differentials between Toria and Rapeseed/Mustard.

The National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED), Central Warehousing Corporation (CWC), National Cooperative Consumers' Federation of India (NCCF) and Small Farmers' Agri-Business Consortium (SFAC) will continue to act as the Central Nodal Agencies to undertake price support operation of Toria to be marketed in 2015-16.

Department of Agriculture and Cooperation have also asked the above mentioned nodal agencies to extend their full support for undertaking price support operations of Toria to be marketed during the 2015-16.

MSP for Jute

Government of India has fixed the Minimum Support Price (MSP) of TD-5 variety for Raw Jute at Rs. 2400 per quintal for 2014-15 season.

Minimum Support Price (MSP) is in the nature of minimum price for the farmers offered by the Government for their produce in case the market prices fall below that level. If the market offers higher price than the MSP, the farmers are free to sell their produce at market price. Procurement under MSP is undertaken by the designated central agencies and State Governments.

MSP operations are monitored by the Government. Directives are issued to the Procurement Agencies to keep track of market prices of Jute. In the even of market prices falling below the MSP level, the procurement machineries are pressed into operation to procure the quantities of Jute offered by farmers to ensure that farmers get MSP.

Jute Corporation of India (JCI) is the price support agency of the Government of India for Jute. JCI purchases Raw Jute at MSP through its 171 Departmental Purchase Centres (DPCs). JCI also purchase the Raw Jute procured at about 40 centres operated by Cooperatives.

Crop Insurance

To increase the coverage in terms of farmers/area and also to create competition in Crop Insurance field, Government had decided to include private general insurance companies alongwith Agriculture Insurance Company of India Ltd. (AIC) for implementation of National Crop Insurance Programme (NCIP).

With a view to provide insurance coverage & financial support to the farmers in the event of failure of any of the notified crops as a result of non-preventable risks including natural calamities, pests & diseases, adverse weather conditions and to stabilize farm income, Government of India introduced Crop Insurance Schemes since 1985. Improvement, in existing Crop Insurance Scheme to make the same attractive and farmers' friendly with a view to extend the scope and coverage in terms of crop area, crops and risk is continuing process. At present, about 65 crops are covered and more than 25% of cropped area is insured.

Ten private general insurance companies are empanelled for implementation of crop insurance schemes. Details of percentage share of private insurance companies *viz-a-viz* AIC during 2013-14 is as under:—

Company	Farmers Covered		Sum Insured (Rs. in lakhs)	
	Kharif 2013	Rabi 2013-14	Kharif 2013	Rabi 2013-14
AIC	77%	50%	85%	53%
Private Companies	23%	50%	15%	47%

Kisan Call Centres

Kisan Call Centres (KCCs) have been established at 14 locations in the country to provide extension support on telephone to farmers in all States and Union Territories using a nation-wide toll free number 1800 1551. This number is accessible through all mobile numbers of all telecom networks as well as land lines from 6.00 AM to 10.00 PM on all 7 days a week.

The Government has identified IFFCO Kisan Sanchar Limited (IKSL) at Service Provider of Kisan Call Centre Scheme. IKSL has deployed 376 Farm Tele Advisors (FTAs) to respond to the farmers' calls.

The Kisan Call Centres are equipped with the state of the art technology having a number of new features viz. Internet Protocol Private Branch Exchange (IPPBX), redundant Internet bandwidth, 100% call recording/call replay, call barging, voice mail service during call waiting or when KCC is not working and SMS to caller farmers giving a gist of reply given by KCC.

Apart from responding to farmers queries the KCCs also facilitate their registration for availing the SMS services in agriculture and allied areas. Farmer can give up to 8 choices for his preferred crops/activities. This also includes activities under Animal Husbandry, Fisheries & Dairying in addition to Agriculture & Horticulture. Language choice of the farmer is also being taken regarding SMS advisories. Preference of the farmers for receiving market price of selected markets all over the country at desired periodicity with respect to the crops preferred by him is also registered at the KCCs.

The existing 14 Kisan Call Centers are serving the needs of farmers in the entire country. However, the State-wise call flow is being closely monitored at these KCCs. As and when calls increase beyond a threshold in a particular State, decision regarding setting up of a new Kisan Call Center in that State will be taken.

Availability of Foodgrains

The per capita net availability of foodgrains for the year 2011, 2012 and 2013 is given below:—

PER CAPITA AVAILABILITY OF FOODGRAINS (Grams per day)					
Year	Rice	Wheat	Other Cereals	Pulses	Foodgrains
2011	181.5	163.5	65.6	43.0	453.6
2012	190.2	158.4	60.0	41.7	450.3
2013(P)	232.4	183.3	53.2	41.9	510.8

(P) Provisional

Fluctuations in per capita net availability are mainly due to fluctuations in production on account of variations in weather conditions, increasing population, change in stock etc.

Government implements various programmes/schemes viz. Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), Bringing Green Revolution to Eastern India (BGREI) etc. with the objective of increasing production and productivity of rice, wheat and other crops. In addition Indian Council of Agricultural Research (ICAR) and State Agricultural Universities (SAU) have developed a number of improved varieties of foodgrains crops to enhance production and productivity of food crops.

Government has also taken steps for increasing investment, improving farm practices, rural infrastructure and delivery of credit, technology and other inputs, extension, marketing etc. to improve agriculture production and productivity. Other measures taken by the Government include incentivisation through higher Minimum Support Prices of agricultural commodities, increase in credit flow to agriculture sector, interest subvention on crop loans etc.

In addition, Government imports various agricultural commodities to augment their domestic availability.

Assistance of Horticulture

The Government has approved the following interventions viz:

(i) Enhancement of ceiling of seed subsidy to partially recompense the farmer for the additional expenditure incurred in re-sowing and/or purchasing appropriate varieties of seeds in drought notified/deficit rainfall districts. Accordingly, revised seed subsidy valid till 31.3.2015 is as follows:—

Crop	Revised subsidy (Rs./Qtl)*
Rice Hybrid	7500
Rice High yielding variety seeds (HYVs)	1500
Wheat HYVs	1500
Coarse Cereals Hybrid	7500
Coarse Cereals HYVs	2250
Pulses HYVs	3750
Oilseed Hybrid	3750
Oilseed HYVs	1800

* or 50% of cost whichever is less

(ii) Implementation of drought mitigating interventions on perennial horticulture crops with an additional allocation of Rs. 700 crore under Mission for Integrated Development of Horticulture (MIDH):

(iii) Implementation of Additional Fodder Development Programme (AFDP) as a sub-scheme of Rashtriya Krishi Vikas Yojana (RKVY).

(iv) Waiver of duty on import of de-oiled soya extract, groundnut oil cake, sunflower oil cake, canola oil meal, mustard oil cake, rice bran and palm kernel cake to increase availability of animal feed ingredients.

MSP for Cotton

During the current Cotton season 2014-15 prices of Cotton are below MSP in the States of Andhra Pradesh, Telangana and Maharashtra. Details of market prices of Cotton in the major Cotton growing States are as under:

(Rs. Per Quintal)

S. No.	State	Variety	MSP	Ruling Prices	
				Min.	Max.
1.	A.P. & Telangana	Bunny	4050	3850	4050
2.	Maharashtra	Bunny H-4/H6	4050 3950	4000	4200
3.	Gujarat	S-6	4000	4000	4200
4.	North Zone (Punjab/Haryana/ Rajasthan)	J34 (Hyb.) F-414	3950	4100	4600

Domestic Cotton prices depend on a number of factors including previous balance, current supply, current as well as future demand for cotton in both domestic and international markets. At present, Cotton prices in international markets are ruling lower than the prices that

prevailed during the corresponding period last year primarily due to lower demand by China and increased supply from the USA.

The Cotton Corporation of India Limited (CCI) has initiated action for procurement of Cotton from the growers at the Minimum Support Price in 341 centres located in 92 Districts in 11 Cotton growing States.

There is no proposal to increase the MSP of Cotton.

MSP of Copra for 2015 season

The Cabinet Committee on Economic Affairs, chaired by the Prime Minister Shri Narendra Modi, has given its approval to increase the Minimum Support Price (MSP) for Fair Average Quality (FAQ) of "Milling Copra" for 2015 season to Rs. 5550/- per quintal. This is an increase of Rs. 300/- per quintal over the previous year's MSP. The MSP of "Ball Copra" for 2015 season will be Rs. 5830/- per quintal. This is an increase of Rs. 330/- per quintal over the previous year's MSP. The approved prices are as per the recommendations by the commission for Agricultural Costs and Prices (CACAP).

The MSPs of Copra are expected to ensure appropriate minimum prices to farmers and step up investment in coconut cultivation and thereby production and productivity in the country.

The National Agricultural Cooperative Marketing Federation of India Limited (NAFED) would continue to act as the Central Modal Agency to undertake price support operations at the MSP in coconut growing states.

In addition to NAFED, the Central Warehousing Cooperation (CWC), the National Cooperative Consumer Federation of India Limited (NCCF) and the Small Farmers Agri-Business Consortium (SAFC) are also allowed to participate in procurement operations.

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Hybrid Rice Technology Development in Tamil Nadu

DR. K. JOTHI SIVAGNANAM* AND DR. K. MURUGAN

Introduction

The technological innovation in agricultural production plays pivotal role in ensuring food security in the world. Many challenges are faced by agriculture due to land and water scarcity and pressure on natural resources. There is a mismatch between population growth and cultivatable land and this poses a great challenge to the society as a whole. The cultivation of land is on a decreasing scale due to the high population growth. Population growth and land loss are the main problems in the world nowadays. The current population of the world is more than 7 billion and it will be 8 billion in 2030. In India, the government is facing great challenges in ensuring food security for its people in the future. Due to globalization of the economic system, increasing population growth, urbanization and economic growth, demand for foodgrain has been increasing. However, land, water and natural resources are limited and they will be relatively scarce in future.

The Intergovernmental Panel on Climate Change Report estimated that the agricultural yield will be reduced by 30-40 percent in 2050 due to weather conditions in the world. India has been identified as a major risk zone with increase in drought prone area due to adverse impact of climate change (Hindustan Times, 2008). Therefore, India needs to find new varieties for human survival. Indian agricultural scientists have introduced a number of hybrid varieties of different crops in the last two decades. If India had not adopted hybrid varieties, it would have faced food crisis in now and future.

Hybrid rice is one of the new varieties adopted in 1994 in India. The area and production of the hybrid varieties are slowly growing among the many states, which have not even achieved 5 percent level of total rice cultivated area. China has adopted hybrid varieties in 50 percent of the cultivated area, whereas in India, the percentage is rather small. The need for such an increase is reflected in efforts to increase the acreage under the hybrid rice and super rice, which lag behind in yield indicators in mostly rainfed, but has abundant water and natural resources (Roy, 2002). At present, the resources of this region are neglected or under-utilized with poor access to markets, technology and basic infrastructure (Planning Commission, 2005).

When we compare different states, northern states and eastern states are better than southern states in India, in terms of appropriate and efficient crop, soil, water and nutrient management technologies and acceleration of

technology transfer. Tamil Nadu did not follow the new technology properly and spread hybrid varieties in many districts, even after two decades. The lagged technology transfer in agricultural sector is more pronounced in rice cultivation in Tamil Nadu.

Empirical Studies

Several studies have indicated the need for rice research in India. The farm level experiences have shown significant yield advantage of hybrid rice over the best HYV rice varieties. The adoption of hybrid rice is still at a low level (Cheril Casiwan et al. 2003).

A survey conducted among the rice growing farmers in Tamil Nadu by Ramasamy et al. (2003) revealed that the average yield of hybrid rice was 5.27 tonnes/ha., while that of HYV rice was 5.33 tonnes/ha. The study has also shown that there was no significant yield gain from hybrid rice in Tamil Nadu.

In addition to that, the adoption of hybrid rice in Tamil Nadu had very low impact on productivity of rice before 2003. The study highlighted why hybrid rice has not made a dent on the rice production in Tamil Nadu. The results show that there was not much improvement in rice production in the past decade. (Ramasamy, Janaiah and Selvaraj et. al. 2003) The initial experience of farmers who grew hybrid rice in Andhra Pradesh indicated that it was not profitable and the yield rate was declining (Aldas Janaiah, 2003). A study underlined lower profitability in hybrid cultivation and explained the constraints in hybrid rice expansion in Karnataka (Chengappa, Janaiah and Srinivasa Gowda, 2003).

The objective of the study is to indicate the extent of adoption and the level of participation by the different categories of farmers in the cultivation of hybrid rice in Tamil Nadu. Secondly, to assess the overall impact hybrid rice cultivation on rice production and productivity in Tamil Nadu. The main objective of the study is to find out the impact of the hybrid rice technology on overall rice production in Tamil Nadu. The study aimed at estimating growth trends of the area, production and productivity of rice cultivation according to three seasons for the three periods and the study period as a whole used the compound annual growth rate for three reference periods and the whole period of study.

The present paper is divided into three sections. The first section is introductory in nature. The second section describes the status of rice production in Tamil Nadu and the last section provides concluding remarks.

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Status of Rice Cultivation in Tamil Nadu

Rice occupies the most important place in the agricultural sector and the state economy of Tamil Nadu. The increase in rice area and production leads to overall agricultural growth. But in reality, area under rice cultivation has exhibited declining trend and production increased mainly due to modern technology applied in the agricultural sector. As noted already, nearly 48 percent of the area is urbanized. Agricultural is facing many problems due to urbanization

and industrialization. The area under cultivation has declined and of course production has increased, but the supply of foodgrains is not able to meet the demand of the growing population of the state. In Tamil Nadu, the average productivity of rice is less than that in China and other northern states of India. The adoption of HYV seeds accounts for the highest share (above 90 percent) than in bred varieties in Tamil Nadu. But the yield rate is low when compared to other states. Therefore, the farmers should change their attitude and adopt hybrid rice varieties.

TABLE 1: COMPOUND GROWTH RATE OF AREA, PRODUCTION OF RICE IN TAMIL NADU (in Percent)

Period of Study	Area				Production				Yield			
	A	W	S	T	A	W	S	T	A	W	S	T
1985-86 to 1993-94	0.44	0.38	-1.20	0.20	3.01	2.86	0.25	2.57	2.56	2.46	1.47	2.36
1994-95 to 2003-04	-7.47	-3.69	-7.77	-4.57	-9.26	-7.93	-8.27	-8.17	-1.93	-4.40	-0.54	-3.78
2004-05 to 2011-12	1.22	0.06	-0.65	0.21	9.74	11.04	7.65	10.55	8.42	10.98	8.35	10.32
1985-86 to 2011-12	0.58	-0.59	-2.99	-0.64	3.66	2.89	0.16	2.76	3.06	3.50	3.25	3.42

Source: Directorate of Economics and Statistics, Government of Tamil Nadu, Chennai-18.

A indicates Autumn Season, W. indicates Winter Season S. indicates Summer Season and T-indicates Total

Table 1 gives details of the compound growth rate of area, production and yield during three phases of the period of the study and for the period of study as a whole (1985-86 to 2011-12). It is observed that the growth trends in rice production were significantly higher in second post-introduction period of hybrid rice than in pre-introduction period of hybrid rice. Rice production during second post-hybrid rice period was the highest at 10.55 percent than the yield in the pre-introduction period (2.57 percent). It may be noted that the average highest yield of rice was 10.32 percent during second post-hybrid rice period and 2.36 percent during pre-introduction period. But the area under rice cultivation during the pre-and second post-hybrid rice periods was more or less the same during the study period. The results show that the area, production and productivity were exhibiting negative trends during first post-hybrid rice period largely due to *Tsunami*, *Thana effect* and drought.

We find that during autumn season, area under rice cultivation increased to 1.22 percent during second post-introduction hybrid rice period against 0.44 percent during pre-introduction period, but the area declined to -7.47 percent during first post-introduction period, but the area declined to -7.47 percent during first post-introduction period. The production of rice increased to 9.74 percent in second post-introduction period from 3.01 percent in pre-introduction period. But during the first post-introduction period, production exhibited a negative trend of -9.26 percent. The average yield increased to 8.42 percent during 2004-05 to 2011-12 from 2.56 percent during 1985-86 to 1993-94.

During winter season, the area declined to 0.06 percent during 2004-05 to 2011-12 from 0.38 percent in 1985-86 to 1993-94. On the other hand, the production increased to 11.04 percent in second post-introduction period from 2.86 percent in pre-introduction period. In spite of the decline in area, production increased due to HYV seeds and hybrid rice seeds and use of advanced technology. Production was at the highest level during the third phase in the winter season.

During summer season, the area under rice cultivation improved from -1.20 percent in pre-introduction period to -0.65 percent and production witnessed a positive trend and increased from 0.25 percent during 1985-86 to 1993-94 to 7.65 percent during 2004-05 to 2011-12, even though during first phase of post-hybrid rice period (1994-95 to 2003-04), it witnessed a negative trend (-0.82 percent). The yield of rice increased from 1.47 percent in pre-introduction period of 8.35 percent during second post-hybrid rice period but it exhibited a negative trend (-0.54 percent) during the first phase of the post-hybrid rice cultivation (*i.e.* 1994-95 to 2003-04).

At the aggregate level, the area increased marginally from 0.20 percent in pre-introduction phase to 0.21 percent during the second post-introduction period, but declined to -4.57 percent during the first post-introduction period. Production increased to 10.55 percent during 2004-05 to 2011-12 against 2.57 percent during 1985-86 to 2003-04, but it declined to -8.17 percent during 1993-94 to 2003-04. The yield rice increased to 10.32 percent during second post-introduction period from 2.36 percent during

pre-introduction period. But during the first phase of post-introduction period, it witnessed a negative trend (-3.78 percent).

A comparative study of the three seasons (autumn, winter and summer) shows that the area under rice cultivation witnessed a declining trend from 0.58 percent during autumn to -0.59 percent in winter and -2.99 percent in summer. Production, however, witnessed a positive but declining trend with 3.66 percent, 2.89 percent and 0.16 percent during autumn, winter and summer seasons respectively. The average yield rate of rice was 3.06 percent, 3.50 percent and 3.25 percent, respectively during those three seasons. The table reveals that though the area witnessed a declining trend, production witnessed a significant positive trend, especially in the second phase of introduction of hybrid rice.

Generally, production of any agricultural commodity can be changed from one season to another. In the case of rice production, it is basically dependent upon the suitable climatic conditions, adequate availability of water during the season, natural disasters, and pest and disease affliction. The co-efficient of variation in area, production and productivity of rice cultivation in Tamil Nadu during 1985-86 to 2011-12 are presented in the Table 2.

When we look at the three seasons, we find that the majority of the farmers utilized their land for cultivation

mainly during winter than autumn and summer. When we compare the different periods, the area under rice cultivation is more consistent at 3.02 co-efficient of variation in winter season than during autumn (with 8.71 co-efficient of variation) and summer (with co-efficient of variation 1 of 19.73) during 2004-05 to 2011-12. During pre-introduction period, there is steady growth with 8.94 co-efficient of variation in winter season, and the co-efficient of variation was 9.89 and 14.39 in autumn and summer seasons, respectively. A comparative study of pre and post-introduction periods of hybrid rice records that the second post-introduction period was better than pre and first post-introduction period.

The production of rice was more consistent with 9.05 co-efficient of variation in summer season and the co-efficient of variation was 9.93 and 12.32 in winter and autumn seasons, respectively during pre-introduction period of hybrid rice. During the post-hybrid rice period, production was more consistent during summer season with a co-efficient of variation of 23.83 than during autumn with co-efficient of variation of 26.38 and winter season (co-efficient of variation of 37.12). The yield rate of rice was more consistent with 7.83 co-efficient of variation during autumn, whereas, it was 9.19 co-efficient of variation in winter and 19.06 co-efficient of variation in summer season during pre-introduction period of hybrid rice.

TABLE 2: CO-EFFICIENT OF VARIATION IN AREA, PRODUCTION AND PRODUCTIVITY OF RICE IN TAMIL NADU: 1985-86 TO 2011-12

Period	DS	Area in Ha.				Production in Tonnes				Yield (Kg./Ha.)			
		A	W	S	T	A	W	S	T	A	W	S	T
1985-86	Mean	273245	1530510	249883	2053638	904675	4435421	661899	6001994	3314	2907	2706	2929
1993-94	SD	27021	136831	35959	168091	111451	440476	59870	580627	259	267	516	249
	CV	9.89	8.94	14.39	8.19	12.32	9.93	9.05	9.67	7.82	9.19	19.06	8.49
1994-95	Mean	271138	1518403	220954	2010495	1009124	4471056	716920	6197100	3674	2895	3121	3029
2003-04	SD	60438	199154	56250	309430	291952	1222312	220125	1703106	407	513	375	486
	CV	22.29	13.12	25.46	15.39	28.93	27.34	30.70	27.48	11.07	17.71	11.67	16.05
2004-05	Mean	317632	1450809	135371	1903812	1355267	5026829	547185	6929280	4291	3464	4133	3648
2011-12	SD	27658	43752	26710	76100	357508	1866093	130421	2299961	1150	1283	1156	1228
	CV	8.71	3.02	19.73	4.00	26.38	37.12	23.83	33.19	26.80	37.03	27.97	33.66
1986-87	Mean	285616	1502411	205239	1993266	1076868	4623851	648287	6349007	3737	3068	3316	3179
2011-12	SD	46303	145590	63024	217334	321892	1259225	165760	1638939	769	790	910	778
	CV	16.21	9.69	30.71	10.90	29.89	27.23	25.57	25.81	20.59	25.77	27.45	24.46

Source: Directorate of Economics and Statistics, Government of Tamil Nadu, Chennai-18.

NOTE: SD refers to Standard Deviation and CV refers to Co-efficient of Variation.

A indicates Autumn Season, W indicates Winter Season, S Indicates Summer Season and T Indicates Total

Trend and Composition of Hybrid Rice in Tamil Nadu

Hybrid rice has increased significantly in the past two decades in India. The area under hybrid rice has increased more than 28 times during the last two decades. The area under rice cultivation has registered an impressive growth. Considering the entire period, the increase in hybrid rice area is largely due to serious efforts of the

Centres and State Governments in the field. During the last two decades, area under hybrid rice increased from 0.12 percent in 1996 to 3.20 percent of gross rice area in 2008 (Janaiah and Xie, 2010).

In India, the hybrid rice cultivation is not practiced in all the states more or less in an equal manner due to farmer's lack of interest in adopting the hybrid varieties in rice cultivation, lack of coordination and tardy

implementation of schemes. There are wide variation in adopting the hybrid rice cultivation in India. When we look at different states, we find that more than 80 percent of the eastern states have adopted hybrid technology but only 15 percent of northern states and 5 percent of the

southern states adopted the technology respectively. Currently more than 80 percent of the total hybrid rice area is in Eastern Indian states like Uttar Pradesh, Jharkhand, Bihar, Chhattisgarh, Madhya Pradesh, Assam, Punjab and Haryana (Viraktamat, 2010).

TABLE 3: AREA UNDER HYBRID RICE CULTIVATION IN TAMIL NADU: 2006-07 TO 2011-12

(Area in Ha.)

Name of the District	2006-07		2007-08		2008-09		2009-10		2010-11		2011-12	
	Actual	%	Actual	%	Actual	%	Actual	%	Actual	%	Actuals	%
Kancheepuram	248	0.01	361	0.02	523	0.03	—	—	—	—	—	—
Thiruvallur	—	—	—	—	—	—	—	—	—	—	—	—
Cuddalore	10	0.001	120	0.01	210	0.01	0	0.00	1600	0.08	1250	0.07
Villupuram	—	—	—	—	50	0.003	21	0.001	—	—	—	—
Vellore	48	0.002	64	0.004	102	0.01	—	—	—	—	—	—
T.V. Malai	—	—	—	—	50	0.003	77	0.004	1002	0.05	—	—
Salem	70	0.004	150	0.01	200	0.01	155	0.10	155	0.01	—	—
Namakkal	46	0.002	58	0.003	150	0.01	—	—	—	—	—	—
Dharmapuri	5	0.0003	—	—	40	0.002	100	0.01	—	—	—	—
Krishnagiri	—	—	—	—	—	—	55	0.003	—	—	—	—
Coimbatore	—	—	—	—	50	0.003	—	—	—	—	230	0.01
Erode	—	—	—	—	120	0.01	32	0.002	—	—	4.38	0.0002
Trichy	—	—	—	—	20	0.00	—	—	—	—	—	—
Perambalur	100	0.01	—	—	250	0.01	—	—	—	—	—	—
Karur	—	—	—	—	—	—	—	—	—	—	—	—
Pudukkottai	20	0.01	120	0.01	615	0.03	566	0.03	480	0.03	1494	0.08
Thanjavur	116	0.01	—	—	125	0.01	25	0.001	—	—	—	—
Nagapattinam	—	—	20	0.001	1250	0.06	1500	0.08	—	—	247.75	0.01
Thiruvaur	265	0.01	410	0.02	675	0.03	785	0.04	—	—	5530	0.28
Madurai	—	—	20	0.00	20	0.001	—	—	—	—	—	—
Theni	173	0.01	579	0.03	625	0.03	4840	0.26	—	—	1618	0.08
Dindigul	—	—	—	—	—	—	—	—	—	—	—	—
Ramnad	—	—	50	0.003	110	0.01	50	0.003	90	0.005	129	0.01
Sivaganga	—	—	50	0.003	160	0.01	750	0.04	—	—	280	0.01
Virudunagar	—	—	—	—	20	0.001	—	—	—	—	—	—
Tirunelveli	—	—	—	—	280	0.01	—	—	—	—	—	—
Toothukudi	—	—	—	—	80	0.004	—	—	—	—	709	0.04
Kanyakumari	—	—	—	—	—	—	—	—	—	—	—	—
Area under Hybrid Rice	1101	0.06	2002	0.11	5725	0.30	8956	0.49	3327	0.17	11292	0.59
Total Area under Rice in Tamil Nadu	1931397	100.00	1789170	100	1931603	100	1845553	100	1905726	100	1903772	100

Source: Directorate of Economics and Statistics, Government of Tamil Nadu, Chennai-18.

The area covered under hybrid rice cultivation in Tamil Nadu during 2006-07 to 2011-12 is presented in the Table 3. The percentage share of area under hybrid rice cultivation in total area of rice in Tamil Nadu increased to 0.59 percent in 2011-12 against 0.06 percent in 2006-07. That shows the area under hybrid rice cultivation expanded by 0.53 percent between 2006-07 to 2011-12. It also means in a way that the state has not evinced much

interest in hybrid rice technology. Tamil Nadu had only less than one percent of total area under hybrid rice cultivation compared to all-India percentage of 3.5 percent. From the observation, it may be noted that the state could not adopt the hybrid rice technology even after two decades. The technology did not spread to many districts of Tamil Nadu in a big way.

The area expanded under hybrid rice cultivation was only 0.01 percent. Thiruvavur (265 ha.), Kancheepuram (248 ha.), Theni (173 ha.), Thanjavur (116 ha.) and Perambalur (100 ha.). The percentage share of hybrid rice in total area under rice recorded the highest percentage (0.28 percent) in Thiruvavur (5330 ha.), followed by Theni (1618 ha.) and Pudukkottai (1494 ha.) with 0.08 percent, Cuddalore (1250 ha.) with 0.07 percent during 2011-12.

The lowest share was recorded by Erode (4.38 ha.) at 0.0002 percent. Districts like Kancheepuram, Perambalur and Thanjavur stopped cultivating hybrid rice during 2011-12 period. The above empirical evidence shows that many districts adopted hybrid rice varieties only to a small extent. Even today some of the districts in Tamil Nadu like Thiruvallur, Karur, Dindugal, and Kanniyakumari did not adopt the hybrid rice technology, mainly because of lack of awareness among the farmers, small amount of availability hybrid seeds, technical problems, and high cost of cultivation and absence of enthusiasm from government side.

Conclusions

Tamil Nadu is one of the leading states in terms of the socio-political, economic and human development (6th place) in India. The state is one of the well developed Indian States due to sound social sector, better administration and infrastructure, fast growing service sector to be followed by the growing industrial sector (2nd place). But the performance of agriculture sector is not so encouraging due to various constraints like lack of irrigational infrastructural facilities, absence of regular water supply, increasing input costs, migration of labour to non-farm sectors.

Rice production is significantly higher in second post-introduction (10.55 percent) period of hybrid rice than in the pre-introduction period of hybrid rice (2.57 percent). The area under rice cultivation during the pre-and second post-hybrid rice periods was more or less the same during the period. The results shows that the areas, production and productivity exhibited negative trends during first post-hybrid rice period due to *Tsunami thana effect* and drought.

The area increased marginally from 0.20 percent in pre-introduction phase to 0.21 percent during the second post-introduction period. The annual production has

increased from 2.57 percent (1985-86 to 2003-04) to 10.55 percent (2004-05 to 2011-12). The yield has increased from 2.36 percent during pre-introduction period to 10.32 percent during second post-introduction period. The area under rice cultivation witnessed a declining trend from 0.58 percent during autumn to -0.59 percent in winter and -2.99 percent in summer. Production has exhibited a clear declining trend of 3.66 percent, 2.89 percent and 0.16 percent respectively during autumn, winter and summer seasons. The average yield rate was 3.06 percent, 3.50 percent and 3.25 percent, respectively during those three seasons. The area witnessed a declining trend; production witnessed a significant positive trend, especially in the second phase of introduction of hybrid rice. Even after two decades, the technology did not spread all over Tamil Nadu due to lukewarm policy of the government, unfamiliarity with the technology and high cost of cultivation and shortage of labour. Therefore, the farmers did not shift from HYVs to hybrid rice technology in cultivation.

The area under hybrid rice cultivation increased from 0.06 percent in 2006-07 to 0.59 percent in 2011-12. The State has not evinced much interest in hybrid rice technology and had only less than one percent of total area under hybrid rice cultivation compared to that of 3.5 percent in the country as whole. It may be noted that the state did not adopt the hybrid rice technology extensively even after two decades. The technology did not spread to many districts of Tamil Nadu in a big way.

The results shows that the area under hybrid rice cultivation was only 0.01 percent in Thiruvavur (265 ha.), Kancheepuram (248 ha.), Theni (173 ha.) and Thanjavur (116 ha.) and Perambalur (100 ha.), respectively during 2006-07. The highest percentage of 0.3 percent was achieved in Thiruvavur (5330 ha.), followed by Theni (1618 ha.) and Pudukkottai (1494 ha.) with 0.08 percent, Cuddalore (1250 ha.) with 0.07 percent during 2011-12. Districts like Kancheepuram, Perambalur and Thanjavur stopped the use of hybrid rice during 2011-12. Some of the districts in Tamil Nadu like Thiruvallur, Karur, Dindugal, and Kanniyakumari could not adopt the hybrid rice technology, mainly because of lack of awareness among the farmers, non-availability of hybrid seeds, technical problems, and high cost of cultivation and absence of adequate government support.

REFERENCES

- Hussain M, Hossain M, Janaiah A, (2001), *Hybrid Rice Adoption in Bangladesh: A Socio-economic Assessment of Farmers' Experiences*, Monograph#18, BRAC, Dhaka, and IRRI, Philippines.
- Janaiah A (1995), *Economic Assessment of Hybrid Rice Potential in India: An Ex-ante Study*, Ph.D. Thesis (unpublished), Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, India.
- Janaiah A (2000), *Economic Impact of Crop Management on Productivity and Profitability of Hybrid and HYV Rice in India: Evidences from a Farm-level Study*, Indian Journal of Agriculture Science 70(2).
- Janaiah A, Hossain M (2003), *Can Hybrid Rice Technology Help Productivity Growth in Asian Tropics? Farmers' Experiences*, Economic and Political Weekly, 38(25)

Janaiah A. (2003), The Seed Delivery System in *Andhra Pradesh: Institutional and Policy Issues*, Indian Journal of Agriculture Market, 17(2)

Janaiah A, Hossain M, (2004), *Partnership in the Public Sector Agricultural Research and Development Evidence from India*, Economic and Political Weekly 39(50).

Janaiah A, Otsuka K, Hossain M, (2005), *Is the Productivity Impact of the Green Revolution in Rice Vanishing? Empirical Evidence from TFP Analysis for Rice*, Economic and Political Weekly, 40(53)

Ramesha MS, Hari Prasad AS, Revathi P, Senguttuvel P, Viraktamath BC (2009), *Rice Hybrids Released in India*, Technical Bulletin No. 40, Directorate of Rice Research (ICAR), Hyderabad, India.

Ramasamy (2003), *Rice Production in Tamil Nadu*, Tamil Nadu Agricultural University, Coimbatore, 2003

Srinivasa Rao, K (2013) *Strategies for Enhancing Production, Productivity of Rice in India*, National Institute of Advanced Studies, New Delhi.

Praduman Kumar, Mark W Rosegrant (1994) *Productivity and Sources of Growth for Rice in India*, Economic and Political Weekly, December 31.

Parshuram Samal (2013), *Growth Production, Productivity, Costs and Profitability of Rice in India during 1980-2010*, National Institute of Advanced Studies, New Delhi.

Karunakaran, K R (2013), *Agricultural Research and Development Investment by India and China: A Comparative Analysis with Specific Emphasis on Rice Production*, National Institute of Advanced Studies, New Delhi.

State of Indian Agriculture, (2012-13) Ministry of Agriculture, Government of India, New Delhi.

Seasonal Crop Report (2011-12) Directorate of Economics and Statistics, Government of Tamil Nadu, Chennai.

Commissioner, Commsionarate of Agriculture, Government of Tamil Nadu, Chennai-05

Planning Commission (2005), Government of India, New Delhi.

Changes in Hill Agriculture—A Case Study of Himachal Pradesh

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Agriculture in India has come a long way during the past five decades. The country has come to become a food surplus state from a chronic food deficit state, despite the marked growth in the population during this period. This was made possible due to the fast adoption of Green Revolution technologies by the peasantry coupled with the favourable government policies according a high priority to agriculture in terms of massive investments in infrastructure such as irrigation, power, credit, research and extension, etc. Consequently, the foodgrains production in the country has almost trebled from 82 million tonnes in 1960-61 to 257 million tonnes in 2012-13. The demand for foodgrains is going to increase substantially not only due to the burgeoning population but also to other uses such as feed requirements of the livestock sector and growing demand for some of the cereals for meeting the energy requirements of the country. To meet these demands there is an urgent need to scale up the foodgrain production in the country.

Himachal Pradesh is a small hill state located in the western Himalayas having a total geographical area about 5.6 million hectares (16% of the total geographical area of Western Himalayas) with a population of about 6.2 million. Around 92 % of the total population of the state lives in villages. Agriculture is the mainstay of the rural people. The farming in the state is marginal and fragmented land holdings, undulating topography and cultivation under rainfed conditions as only 18 % of the cultivated area is irrigated. But, the state harbours several 'niche' with potential comparative advantages over plains. This has led to transformation and diversification of agriculture in certain valleys areas of the state. Therefore, the paper examines the changes in hill agriculture by analyzing growth and performance of different crop components over the years.

Methodology

The study is based on secondary data. The secondary data were collected from the state Government publications and different published sources. Information was compiled for estimating population, farm size, area, production, productivity of crops etc. for different periods. Simple mathematical techniques were followed to analyze the collected data.

Results

The results of the study has been divided into different sections and discussed as follows:—

(A) Population Scenario and other Growth

Factors: Most of the increase in the production of foodgrains in the state is being annulled by the growth in population (Table 1). During the past years the production of foodgrains increased by 69.84 per cent, the population of the state increased by 53.40 per cent. Resultantly, the per capita foodgrain production showed an increase of 10.70 per cent during this period. Likewise, the per capita cereal production has increased by 1.0 per cent only. This goes to suggest that we are precariously placed as regards the per capita foodgrain production. As regards the pulse production, the increase in per capita production was much higher at 38 per cent.

TABLE 1 : POPULATION AND FOODGRAIN PRODUCTION

Particulars	1981-82	2011-12	%change
1. Population (lakh)	42.81	65.67	53.40
2. Foodgrains Production (000 tonnes)	930.30	1580.00	69.84
3. Per capita Foodgrains Production (kg/year)	217.36	240.60	10.70
4. Cereals Production (000 tonnes)	914.50	1416.42	54.92
5. Per capita Cereal Production (kg/year)	213.57	215.69	1.00
6. Pulse Production (000 tonnes)	15.80	33.54	112.28
7. Per capita Pulse Production (kg/year)	3.70	5.10	37.83

Growth in Income: An increase in income is a necessary, but not sufficient condition to guarantee good nutrition. The per capita income on current prices has been presented in Table 2. The per capita income on current prices has increased over the years in Himachal Pradesh which increased from Rs. 816 (1971-72) to Rs 74,694 (20012-13) showing an increase of 9053 per cent. The per capita income levels vary considerably in the state. The per capita increase in income indicates that nutritional level of households in the state have increased over the years.

TABLE 2: PER CAPITA INCOME IN HP

Year	Income (Rs)	% change over 1971-72
1971-72	816	—
1981-82	1953	139.34
1991-92	5576	583.33
2001-02	21593	2546.20
2006-07	36783	4407.72
2012-13	74694	9053.68

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Sectoral Contribution: Before the formation of state in 1948 no major attention was paid to the economic development and social welfare of the people in this region. The people were extremely conservative in their outlook, steeped in superstitions and lacking mobility due to the absence of means of transport. The systematic development of resources and their scientific exploitation was started only after the formation of full-fledged state in 1971. The economy of state is based upon agriculture,

horticulture, animal husbandry, forest, cottage industries, tourism and, hydropower generation. The hill economy is mainly agro-pastoral and agriculture is the most important source of livelihoods of majority of the people. (Table 3). It was noticed from the table that contribution of agriculture has decreased over the years from 42 per cent (1985-86) to 22 per cent (2010-11). The contribution of secondary and tertiary sectors had increased over the same period indicating growth in the state economy.

TABLE 3: SECTORAL CONTRIBUTION AND IMPORTANCE OF AGRICULTURE IN STATE ECONOMY (Percent)

Sectors	1985-86	1990-91	1995-96	2000-2001	2010-2011
Primary Sectors					
Agriculture & Animal Husbandry	31.97	26.51	22.19	21.80	15.80
Forestry & Logging	8.80	7.02	5.28	3.60	5.53
Fishing	0.22	0.36	0.32	0.27	0.77
Mining & Quarrying	0.96	1.17	0.88	0.74	0.31
Sub Total (Primary)	41.96	35.05	28.67	26.41	22.41
Secondary Sectors					
Manufacturing	6.70	9.37	12.45	13.66	15.36
Construction	12.62	12.42	13.73	13.33	16.81
Electricity Gas & Water Supply	3.46	4.74	7.27	6.01	8.31
Sub Total (Secondary)	22.78	26.52	33.45	33.01	40.48
Tertiary & Services					
Transport & Communication	2.87	2.86	3.51	4.69	4.30
Tourism Hotels & Restaurants	6.11	6.39	8.32	7.72	9.58
Banking & Insurance	3.02	3.85	4.15	3.56	4.05
Real Estate	6.61	5.59	5.43	4.03	3.60
Public Administration	7.62	8.76	7.00	9.21	6.50
Other Services	9.03	10.98	9.47	11.38	9.08
Sub Total (Tertiary)	35.26	38.43	37.88	40.59	37.11
State Gross Domestic Product	100.00	100.00	100.00	100.00	100.00
	(137192)	(281519)	(648724)	(1130273)	(5469521)

NOTE: Figures in parentheses show State Gross Domestic Products (SGDP) in Million Rupees.

(B) Changes in Land Resource Use Pattern:

Land Use Pattern: Being hilly state, most of the geographical area of the state under snow, passes, river and inhospitable terrains and can be seen from the Table 4. It can be visualized that most of the geographical area of the state (around 80%) is under forests and pastures. The cultivated area accounted for about 14 per cent of the

reported area and about 11 per cent of the total geographical area. There is increase in the land put under non-agricultural uses like roads, buildings, water reservoirs, etc., due to burgeoning needs of infrastructure and over-head facilities for economic development in the state. The limited availability of cultivable land is the basic feature of hill geography. The proportion of cultivable area

declines drastically from 18.53% in 1975-78 to 11.74 per cent during 2007-10 on triennium basis. The pasture and culturable waste land had decreased over the period.

TABLE 4: CHANGES IN THE LAND UTILIZATION PATTERN IN H.P. (Per Cent)

Triennium	1975-78	1995-98	2002-05	2007-10
Forest land	22.25	27.29	23.45	24.07
Barren land	6.80	13.78	11.66	15.22
Non-agri. uses	4.85	5.44	5.65	9.24
Culturable waste	4.47	2.82	3.72	2.87
Pasture	39.69	32.43	34.67	32.60
Misc Trees/groves	1.53	2.04	2.30	1.34
Current fallow	1.76	1.34	1.58	1.29
Other fallow	0.12	0.59	0.82	1.63
Net sown area	18.53	14.25	16.15	11.74

Change in Land Holdings

The number of holdings in the state has been continuously increased due to increasing pressure of population. The

total number of holdings at the state level increased from about 640 thousand in 1971-72 to above 933 thousand in 2005-06 showing around 50 per cent increase. It can be seen from the Table 5 that the number as well as area operated under marginal and small holdings indicated marked increase clearly showing the perpetual sub-division and fragmentation of medium and large holdings into marginal and small holdings. Average size of holding which was 1.54 ha. (1971-72) got reduced to 1.04 ha. (2005-06). Due to lack of effective checks on sub-division of holdings and intense attachment of people to landed property, there is unstoppable proliferation of marginal and small holdings in the state. The preponderance of marginal and small holdings has their economic and social implications. Un-economic size of holding has become as a major hurdle in the way of introducing new and improved agricultural technology and limits the scope for mechanization. The increase in number of holdings of marginal and small farmers in the absence of other employment opportunities could lead to increase in number of persons employed in agriculture which, in turn, result in environmental and ecological hazards on account of over-exploitation of agricultural resources.

TABLE 5: PATTERN OF CHANGE IN LAND HOLDINGS IN H.P. (1970-71 TO 2000-01)

Census Year	Marginal (<1 ha.)		Small (1-2 ha.)		Others		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
1971-72	61.55	20.45	20.63	22.71	17.82	56.82	620943	930860
1980-81	55.30	14.92	22.03	20.43	15.16	27.08	637081	980425
1990-91	63.82	21.26	19.96	23.29	11.26	25.51	833793	1009766
2000-01	67.30	25.70	19.10	25.00	13.60	49.30	913914	978756
2005-06	68.10	26.65	18.70	25.20	12.47	47.92	933383	968345

Cropping Pattern: Cropping pattern indicates effect on production and growth. The main foodgrain crops grown in the state are rice, wheat, maize and pulses. Wheat is the most important *rabi* crop and ranks first in the state which alone accounts for 38-40 per cent of the total cropping area. Table 6 indicates that the trend of area of different foodgrains over the years. The area under foodgrains decreased from 39.24% in 1972-73 to 38.22% in 2010-11. This may be due to shifting of areas of cash crops. Maize is grown in *Kharif* season in the state and the area under this crop increased from 262 thousands hectares in 1970-71 to 296 thousands hectares in 2010-11. This crop is mostly grown under rain fed conditions in the state. Paddy is another important crop of *Kharif* season and is generally grown on irrigated lands. The area under this crop decreased from 11.55 per cent in 1972-73 to 9.93 per cent during 2010-11 of the area under foodgrains.

TABLE 6: TRENDS IN AREA OF MAJOR FOODGRAIN CROPS, 1970-71 TO 2010-11 ('000 hectares)

Crops	1970-71	1980-81	1990-91	2000-01	2008-09	2010-11
Wheat	318.5	354.7	376.3	366.50	366.59	352.52
Maize	261.7	281.7	319.1	301.30	300.15	295.44
Paddy	97.9	92.5	84.9	80.60	78.57	76.70
Barley	42.3	36.0	29.3	25.00	22.51	21.24

This crop is labour intensive and shows a declining trend over the years which could be attributed to the scarcity of labour during peak periods. Pulses in the state occupied only 8.50 per cent of area to the total foodgrains areas during 1970-71 which declined to 2.74 per cent during 2010-11. The area under pulses decreased from

72 thousands hectares in 1970-71 to 21 thousands hectares in 2010-11. There was a slight decrease in area under foodgrains over the years. This could be due to shift in area from foodgrains to the cultivation of cash crops.

Cropping Intensity: Agricultural intensification holds a great promise as an instrument to meet food needs. The intensive cultivation in the state is possible only in the valleys and other low lying areas. During the period from 1970-71 to 2005-06, the cropping intensity increased from 165 to 187 per cent. The cropping intensity of marginal and small farms increased over the period. The cropping intensity of marginal farms was noticed higher compared to small farms indicating inverse relationship between farm size and area sown. This may be due to the more intensive use of their lands by the marginal farmers compared to small farms (Table 7).

TABLE 7: CROPPING INTENSITY OF MARGINAL AND SMALL FARMS

Year	Farm Size		
	Marginal	Small	Total
1970-71	167.6	163.4	165.0
1980-81	177.9	171.8	169.3
1991-92	184.6	177.3	177.3
2005-06	187.3	179.5	183.4

(C) Production Scenario of Crops

Production of Foodgrain Crops: Production of foodgrains crops for different periods is given in Table 8. It can be seen that the production of major cereals has increased over the years, while the production of millets and pulses showed a declining trend. However, the rate of growth of major cereals in the state was not significant to match the rate of growth of population. Therefore, in order to meet the increasing demand for foodgrains, there is a need to increase the production of these crops through intensive introduction of improved agricultural technology. It was observed that the production of different crops has not followed the sustained growth over the period. There was also shift in area from barley, other cereals and pulses towards other crops. The overall growth in foodgrain production at the state level was around 1.73 per cent that was just equal to population growth rate of 1.76 per cent (2001 census). Further, there was limited scope to bring additional area under foodgrain crops; hence, in future the emphasis needs to be given to increase the productivity of crops.

TABLE 8: TRENDS IN PRODUCTION OF MAJOR FOODGRAIN CROPS, 1970-71 TO 2012-13 (000' tonnes)

Crops/Crop Groups	1970-71	1980-81	1990-91	2007-08	2012-13
Wheat	336.4	442.6	601.7	562.01	544.44
Maize	405.9	518.0	655.0	682.62	730.18
Paddy	88.5	104.0	106.5	121.45	105.20
Barley	55.2	52.4	43.8	30.62	30.27
Other cereals	28.5	21.6	24.4	6.33	6.33
All Cereals	914.5	1138.6	1420.3	1403.03	1416.42
Gram	—	5.1	2.2	1.37	1.40
Other pulses	15.8	13.7	10.5	36.26	32.14
All Pulses	15.2	18.8	12.7	37.63	33.54
Foodgrains	930.30	1157.4	1433.3	1440.66	1449.96

Productivity: The productivity of cereal crops has been depicted in Table 9. The average productivity of different cereal crops does not showed any definite trend over the years. As against this, the pulses had a negative growth in productivity because of their cultivation on unirrigated, marginal lands and low use of inputs compared to wheat, maize and paddy. The productivity of different crops is less than their production potential. Therefore, there is a need to adopt improved varieties, expansion of irrigation, increased use of inputs, mechanization etc. by the farmers. However, yields of most of these crops registered positive growth during the past three decades. Maximum gain in the yields of these crops was observed during the 1990-91 whereas this gain became slower during the 2000-01.

TABLE 9: PRODUCTIVITY OF PRINCIPAL CROPS IN HIMACHAL PRADESH (Tonnes/ha.)

Crop	1970-71	1980-81	1990-91	2000-01	2007-08	2010-11
A. Food crops						
I. Cereals						
Wheat	1.06	1.25	1.60	1.78	1.56	1.13
Maize	1.55	1.84	2.05	1.40	1.56	1.84
Paddy	0.90	1.12	1.25	0.30	2.09	1.38
Barley	1.30	1.46	1.49	1.07	0.94	1.08
Other cereals	0.52	0.61	1.11	0.55	0.53	0.52
Gram	—	0.33	0.65	0.52	0.52	0.55
Other pulses	0.36	0.32	0.29	1.11	0.99	0.69
All Pulses	1.06	0.32	0.32	0.78	0.67	0.62
Total foodgrains	1.55	1.25	1.64	1.02	1.77	1.42

Vegetable Production: During the last two decades (1990 onwards), Himachal Pradesh has made noticeable progress in the production of vegetable crops. The area and production of vegetables in the state has increased (Table 10). As a result, the cropping pattern in the state

has changed with the cultivation of off-season vegetable crops. The production of vegetables in the state has increased from 64 thousand tonnes in 1970-71 to a record level of 1581 thousand tonnes during 2012-13. This increase was attributed to area expansion as a result of major emphasis accorded to implementation of minor irrigation schemes in different parts of the state. Further, the introduction and adoption of new hybrids of vegetable crops by the farmers fuelled high growth in vegetable production.

TABLE 10: TRENDS IN AREA, PRODUCTION & YIELD OF VEGETABLE CROPS

Year	Area (Hectares)	Production (Tonnes)	Yield (Quintals/ha.)
1970-71	NA	64000	NA
1980-81	NA	83000	NA
1990-91	23000	368000	160.00
2000-01	32000	580000	181.25
2007-08	52053	991442	190.46
2010-11	83490	1581000	189.36
Compound Growth	5.14*	6.56*	3.26*
Rate (1990 onwards)	(0.35)	(0.34)	(0.17)

*Significant at 1% level. Figures in parentheses are standard errors of growth rates, NA=not available.

Net Availability of Cereals and Pulses: The foodgrain production gets reflected more clearly in the net availability of the foodgrains. Changes in per capita net availability of cereals and pulses over the years are given in Table 12. In the per capita net availability of the foodgrains, no definite trend was observed over the years. The per capita per day net availability of the foodgrains increased from 449 gm in 1960 to around 453 gm in 2012. However, highest increase was noticed in 1990. It has come down from 476 gm to 453 gm per day worrying scenario in a state from the nutritional perspective where a sizeable chunk of the total population is vegetarian. The protein deficiency resulting from such a scenario is going to have major health repercussions in general in the long run.

TABLE 12: TRENDS OF PER CAPITA NET AVAILABILITY OF CEREALS AND PULSES (GRAMS PER DAY)

Year	Cereals	Pulses	Total
1960	384.1	65.5	449.6
1970	403.1	51.9	455.0
1980	379.5	30.9	410.4
1990	435.3	41.1	476.4
2000	422.7	31.8	454.5
2007	407.4	35.5	442.9
2012	419.5	34.8	453.3

Scope of Crop Intensification: Given that the scope for expansion in area under the plough is very limited, the role of crop intensification can hardly be overemphasized in feeding the growing population. This has been aptly captured by the figures in Table 13. The net sown area and gross cropped area was almost same over time and no significant change was noticed. Cropping intensity increased from 169 percent (1980-81) to 184 Percent (2010-11). A small increase in the net as well as gross irrigated area was observed over the study period. The irrigation intensity over the years shown a declined trend.

TABLE 13: EXTENT OF CROP INTENSIFICATION

Particulars	1980-81	1990-91	2000-01	2005-06	2010-11
1. Net Sown Areas (000 ha.)	572.8	574.1	549.6	539.9	538.41
2. Total Cropped Area (000 ha.)	949.1	980.9	955.6	944.1	940.60
3. Cropping Intensity (%)	169.3	177.3	179.5	183.4	184.3
4. Net irrigated Area (000 ha.)	91.82	99.74	102.66	107.55	93.55
5. Cross Irrigated Area (000 ha.)	155.90	166.80	135.70	120.55	105.58
6. Irrigation Intensity (%)	169.79	167.23	133.04	112.09	112.86

Challenges and Opportunities in Increasing Foodgrains Production

The main challenges of sustaining foodgrain production to meet the demand for ever growing population are as under:

- (1) The production of foodgrains has to be increased in the rainfed areas. In rainfed areas, there are large fluctuations in the production of foodgrains due to the variations in the rainfall. The incidence of insect pest/disease further causes huge cropped losses. So, there is a need to identify appropriate location specific management strategies to increase production of crops.
- (2) The main challenge in the foodgrains is the stagnation of yield level due to the limited use of HYV seeds, less and imbalance use of fertilizer and micronutrients due to which they could not benefit from harvest to desired level. Therefore, there is a need of efficient management of natural resources encompassing optimal use of water and chemical inputs.

- (3) The proliferation of marginal and small holdings is another important challenge in raising the foodgrains production. More than 80 percent of the total holdings are less half a hectare in the state. These holdings are increasingly becoming economically non-viable.
- (4) Another import challenge is to bridge the extension gap between the available technology and its actual adoption by the farmers.

Besides, challenges that are facing agriculture in general and foodgrains sector in particular, the opportunities to reap benefits also in plenty. It can be concluded that major stress should be given on development irrigation, dissemination of new technology, pests and disease control measures for increasing production and productivity of crops.

REFERENCE

- Anonymous, "Statistical Outlines of Himachal Pradesh", Directorate of Economics and Statistics Govt. of HP Shimla (Various issues).
- Anonymous, Annual Season and Crop Reports and Agriculture Census, Directorate of Land Records, Govt. of HP Shimla (Various issues).
- Sarkar (2001) National Food Security Perspectives with a Global vision, *Indian Farming*, Vol. 50(10):29-36.
- Richard O. Musebe and Praduman Kumar (2002), Dietary pattern and nutritional status of rural households in Maharashtra. *Agricultural - Economic Research Review*, 15(2).
- Sharma, K D, A. S. Saini, M. S. Pathania, and Harbans Lal (2004). *System Oriented Socio-economic Assessment of Transitions in Hill Agriculture-NATP Project Report*, Department of Agricultural Economics, CSK HPKV. Palampur, Research Publication No 27, PP 100.
- Singh, Joginder (2003), Food Security may be a Myth. *The Tribune* 25th August, 2003.
- Swaminathan, M. E. (1974). *Essential of Food and Nutrition*. Second edition. Ganesh and Company, Madras.
- Swaminathan, M.S. (1996). Science and technology for sustainable food security, *Indian Journal of Agricultural Economics*. 51 (1&2).

AGRO-ECONOMIC RESEARCH

Problems and Prospects of Oilseeds and Oil Palm Production in Andhra Pradesh*

Introduction

India is blessed with diverse Agro-ecological conditions ideally suited for growing nine oilseeds crops. *Viz* Groundnut, Rapeseed, Mustard, Sunflower, Sesame, Soyabean, Castor, Linseed, Niger and two perennial oilseeds crops (Coconut and Oil palm) besides secondary oilseeds crops such as Maize and Cotton. India occupies a prominent position and 4th largest edible oil economy in the world. The area under oilseeds was 272.24 lakh ha. and 324.71 lakh tonne of production in India (2010-11). Among Indian states major share in area reported from Madhya Pradesh 25.82% followed by Rajasthan 20.15%, Maharashtra 13.29%, Gujarat 10.63%, Andhra Pradesh 9.52% and Karnataka 5.96% remaining 14% of area covered by rest of Indian states. On the other hand highest share of production reported from Madhya Pradesh 26.62% top of the list followed by Rajasthan 19.15%, Gujarat 13.41%, Maharashtra 13.32%, Andhra Pradesh 6.68% and Karnataka 4.04% respectively during TE 2010-11. Major oilseed crops are Soyabean, Rapeseed, Mustard and Groundnut and the production accounting for about 90% of total oilseeds production in the country. The states of Karnataka, Andhra Pradesh and Maharashtra are major Sunflower producing states while Rajasthan, West Bengal, Madhya Pradesh and Gujarat states are reported the sesame was the major oil seed crop (TE 2010-11). There was a significant increase in the edible oilseeds production. Whereas the per capita edible oil demand is raising more than the supply. So there is a big gap between domestic production and consumption and this gap filled by liberal imports mainly from the countries of Malaysia and Indonesia.

1.2 Role of Agriculture in State Economy

Andhra Pradesh is agrarian character considered as one of the most progressive state with respect of agriculture development. The state maintaining high levels of crop production compared to several other Indian states. Andhra Pradesh is the 4th largest of Indian states in geographical area and 5th in population 84.6 millions (2011 provisional census). The total geographical area of the state is 275.04 lakh ha. and 22.7% area covered with forests. Total cropped area and net sown area of 146.14 lakh ha. and 112.88 lakh ha. and the role of agricultural sector in the

state economy is very significant and the largest provider of employment having 29.9 million work force as much as 19.5 million (65%) are agricultural workers and the State Domestic Product for the year 2010-11 is 20.23%. so agriculture is the chief source of income and back bone of overall development in state economy. Two important rivers of India the Godavari and Krishna flow through in Andhra Pradesh providing irrigation. The main sources of irrigation are canals, tanks, tube wells and dug wells. The Gross and Net area irrigated by all sources covered 71.53 lakh ha. and 50.34 lakh ha. in the state (2010-11). Tube wells and canals had covered the largest irrigation constituted 49% and 34% of total irrigated area. Rice is a major food crop and staple food of the state and other important foods crops are Jowar, Maize, Ragi and Pulses. Moreover commercial crops are also shown the recorded growth of production namely Oilseeds, Tobacco, Cotton, Sugarcane and horticultural crops. So agriculture is the bed rock of states economy. Green Revolution is the base to increase the production and productivity levels of food grains in the state exclusively Rice cultivation, which is also reflected at the national level, the state which is ranked 3rd in food grain production continuously reported during 2005-06, 2006-07, 2007-08, 2008-09.

1.3 Importance of Oilseeds in State Agriculture:

Andhra Pradesh is one of the most important state in the country growing oilseed crops, the area and production have been magnificently increased over a period of 50 years. The major oilseed crops grown in the state are Groundnut, Sunflower and Oil palm. The area under edible oil seed crops was found to be 13.41 lakh ha. And has reached to 24.72 lakh ha. On the other hand the production has gone up from 7.92 lakh tones to 30.74 lakh tones between 1960-61 to 2010-11 in Andhra Pradesh. Geographically Andhra Pradesh state consisting three regions, namely Telangana, Rayalaseema and Coastal Andhra. Rayalaseema region constituting four districts Kadapa, Kurnool, Ananthapur and Chittoor from these four districts large number of farmers are grown largest area cultivated under oilseed crops. Firstly the study crop of Groundnut is the major oil seed crop grown during Kharif season which is rainfed mainly concentrated in Rayalaseema region.

TABLE 1.1 MAJOR OILSEED CROPS IN ANDHRA PRADESH WITH THEIR CONCENTRATION 2009-10

S.No.	Crop	Area	Total	% area	Production	T. Prod.	%	Predominant districts
1.	Groundnut	11.09	13.01	85	7.10	10.06	70	Anathapur, Kurnool, Chittoor, Kadapa, Mahaboobnagar.
2.	Sunflower	2.97	3.50	84	2.17	2.70	80	Kurnool, Ananthapur, Kadapa, Prakasam, Mababoobnagar.
3.	Palmoil	0.42	0.44	95	8.93	9.17	97	West Godavari, East Godavari, Krishna, Vizianagaram, Khammam.

Source: Season and Crop Report, Andhra Pradesh 2009-10, Directorate of Economics and Statistics, Government of Andhra Pradesh, Hyderabad.

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Sunflower is another important edible oilseed crop, selected as a one of the study crop and the oil is considered as premium than other edible oils. 84% of area and 80 per cent production concentrated in the districts of Kurnool, Ananthapur, Kadapa from Rayalseema region besides Mahabubnagar and Prakasam from Telangana and Andhra region. Further Oilpalm crop also considered as a study crop, 95% of area and 97 per cent of production reported from the districts of West Godavari, East Godavari, Krishna and Vizianagaram from Coastal Andhra and Khammam district from Telangana region in Andhra Pradesh state.

1.4 Problems in Oilseeds Production

1. Inadequate supply of quality or improved seed.
2. Input subsidy like fertilizers, micro nutrients and plant protection chemicals are not sufficient, sub standards and delayed.
3. Extension services are poor, namely disease management, post harvest care besides field demonstrations, propagate new technology, HYV, new practices etc.
4. Inadequate Procurement facilities by the government agencies in Andhra Pradesh.
5. In sufficient storage and processing infrastructure.
6. Oilseed crops grown in rain fed and poor soils except oil palm crop in the state. So the production is low and fluctuating every year.

1.5 Objectives of the Study

1. To examine trends and pattern of growth of different edible oilseeds over time and across states/districts and identify the sources of growth in edible oilseeds output in the state.
2. To determine the impact of price and non-price factors influencing the supply response behaviour and demand for edible oilseeds and oil palm in the state.
3. To identify major constraints in the edible oilseeds and oil palm cultivation and suggest policy options to increase oilseeds production and productivity in the state.

2. Coverage, Sampling Design and Methodology

In order to meet the first three objectives of the study firstly an attempt was made to collect large quantity of data and analysed from secondary source related to Area, Production and productivity of oilseeds. The study identified the competing crops against the study crops rainfall data, farm harvest price and market Support Price. Examine trends and pattern of growth rates of major edible oilseeds of the state and districts in different periods,

cropping pattern, impact of price factors and marketing facilities have been analysed. The study identify the major constraints in edible oilseeds in the state. Household survey has conducted the study crops of (Ground nut, Sunflower and Oil palm) farmers through structured questionnaire and analysed.

Multi stage purposive sampling method used for Selection of districts based on acreage and yield the study covered three edible oilseeds crops (Groundnut, Sunflower and Oil palm) and each selected crop three districts were selected. According to study design the study crop of Groundnut found the district of Mahabubnagar (HH), Ananthapur (HL) and Srikakulam (LH). In the case of Sunflower Prakasam district (HH), Kurnood (HL) and West Godavari reported (LH) where as Oil palm crop we found West Godavari districts (HH), Vizianagaram (HL) and Nellore (LH). Further Major oilseed producing mandals were selected through these districts and appropriate number of villages are also selected for household survey. From each selected village an appropriate number of farmers representing different farm categories such as marginal 10-1 ha., small 1-2 ha., medium 2-10 ha. and large more than >10. With minimum of 20 households in each category. 475 sample households have been selected for the study from different farm size categories in 9 selected districts in the state.

2.1 Overview of Oilseed Sector: Current Status and Growth Behaviour

Rice, Coarse Cereals, Pulses, Groundnut, Soyabean, Sunflower, Oilpalm, Cotton and Sugarcane are major agricultural crops in Andhra Pradesh and the Food crops grown area had declined drastically from 9.70 mil. ha. to 6.72 mil. ha. (TE 1973-74 to TE 1993-94) further it had slightly increased to 7.17 mil. ha. (TE 2009-10). Rice is a major food crop and the area had increased up to TE 1983-84. Further it had declined to 3.7 and 3.2 million hectares during the periods TE 1993-94 and TE 2003-04. After that it had slightly increased 3.94 million ha. Another major food crop is Pulses area has significantly increased 1.36 mil. ha. to 1.94 mil. ha. (TE 1973-74 to TE 2009-10). The cropped area under Coarse Cereals) have been declined continuously of all estimated periods in the state. Andhra Pradesh is contributing second largest area and production of oilseeds in India and Major oil seed crops are Groundnut, Sunflower, Soyabean and Oilpalm. Sunflower and Soyabean crops area have been increasing between the estimated periods (TE 1973-74 to TE 2009-10) whereas Groundnut crop area have been fluctuating among study periods in the State. On the other hand area under cotton crop has been significantly increased in the same period. The state Gross Cropped Area (GCA) and Net Cropped Area (NCA) have marginally increased except TE 1993-94 and TE 2003-04. Gross Irrigated Area (GIA) and Net Irrigated Area (NIA) have been continuously

increased over all estimated periods of the study except TE 2003-04 in the state.

2.2 Factors underlying Changes in Cropping Pattern

The study found over last few decades in the state significant changes have been observed in grown area under specific crops namely Rice, Maize, Cotton, fruits and vegetable crops and oilseed crops of Soybean, Sunflower and Oil palm crops in the state due to extend the irrigation facilities, government policies and schemes, marketing facilities change in tastes and preferences are the major factors responsible for frequent changes in cropping pattern in the study period of the State.

3.1 Growth Trend in Area, Production and Yield of Major Oilseeds:

The study found that the growth rates have been fluctuating in different periods. Annual average area and production of oilseeds had increased in 1970's, 1980's and 1990's but declined in 2000's. The Compound Annual Growth Rate (CAGR) of area and production of oilseeds have exhibited negative growth (-3.10) and (-2.10) in 1970's and 1980's and positive growth rate (5.20) and (0.10) per cent in 1980's and 2000's. The similar fall and rise in growth of production and yield of oilseeds is also noticed the production growth (-3-20%) in 1970's (8.7%) in 1980's (-2-50%) 1990's and (5.90%) in 2000's. the yield growth rate is reported the highest in the period 2000's. Across the districts Ananthapur, Kadapa and Kurnool districts from Rayalaseema region and Nizamabad and Adilabad from telangana region percentage share of area under oilseeds to total oilseeds, had increased between the periods TE 1993-94 to TE 2009-10. On the other hand production had marginally increased from 23-56 lakh tones to 27.47 lakh tones and the districts of Ananthapur, Mahabubnagar, West Godavari, East Godavari and Nizamabad revealed the share of oilseeds production increased marginally between TE 1993-94 to TE 2009-10 in the state due to extend the oil palm production in coastal Andhra region. The Groundnut crop area and production reported the highest which accounts for about 66 per cent and 57 per cent of total oilseed crops (Kharif and Rabi) (TE 2009-10) and similar trend was noticed regarding oil production in the state.

3.2 Variability in Area, Production and Yield of Major Oilseed Crops, Groundnut vis-a-vis Competing Crop (Maize) and Sunflower vis-a-vis Competing Crop (Cotton)

Groundnut is the major edible oilseed crop, while 'Maize' was found to be its major competing crop. Average Annual Compound Growth rate in area and production of Groundnut crop have been fluctuating exhibited negative trend is 1950's, 1970's, 1990's and 2000's except 1960's and 1980's in the state. In the case of Sunflower crop the average area and production growth declined in 1990's further it has increase 1.0 and 3.0 per cent in 2000's.

Whereas the competing crop (cotton) area and production continuously increased during 1970's to 2000's and the Cotton crop shown the highest CAGR than Sunflower crop in the state during the period 1951-52 to 2009-10.

3.3 Inter District Variation in Irrigated Area under Groundnut Crop

The study found out of 22 district 6 districts achieved significant positive growth in area under Groundnut crop. The districts of Prakasam, Nellore, Karimnagar, Cuddaph and Medak in 1980's and the period 1990's Nizamabad district in 2000's West Godavari, Prakasam, Ranga Reddy, Mahabubnagar and Adilabad district achieved significant growth registered in Andhra Pradesh. Whereas across the districts only two districts reported significant positive growth in area under Groundnut crop (1981-82 to 2009-2010). In the case of production Adilabad, Prakasam, Kadapa, Karimnagar and Nellore districts obtained the highest CAGR, in 1990's Nizamabad, Adilabad and Medak obtained significant positive CAGR. During 2000's Mahabubnagar, West Godavari and Prakasam districts had highest CAGR whereas total period (1981-82 to 2009-10) only Adilabad district achieved significant CAGR in Groundnut production of the state. Out of 22 district from period to period growth rate had been fluctuated across the districts in the case of area production and yield. Finally only Adilabad district registered significant positive growth in area, production and yield of all estimated periods in Andhra Pradesh (1980's, 1990's, 2000's and 1981-82 to 2009-10).

3.4 Sources of Growth in Output of Oilseeds in the State

With the help of decomposition analysis, the relative contribution of area, yield and interaction towards the change in total production of oilseeds and competing crop has been assessed (Groundnut and Maize). The assessment helped us to know the growth in production related into three effects *i.e.* area effect, yield effect and interaction effect. The study found that the area and production reported a positive relation of total oilseeds in the state. The study districts Ananthapur and Srikakulam revealed the area effect is the cause to change the production, but in Mahabubnagar yield effect played vital role to increase production of total oilseeds. In the case of period-ITE 1983-84 to 1993-94 study districts and the state, area effect was found to be the highest except Mahabubnagar (yield effect) under Groundnut crop. Whereas period II (TE 1993-94 to 2009-10) yield effect was dominant factor to change in production of Groundnut under Ananthapur and Mahabubnagar districts. In the case of total period (TE 1983-84 to 2009-10) yield effect was dominant in Mahabubnagar district and other two districts Srikakulam and Ananthapur area is the major source of growth of Groundnut production in the state.

On the other hand the study crop of Groundnut major competing crop in (Maize) area played a major role in three study districts and the interaction played a vital role to total output of Maize in TE 1993-94 to TE 2009-10. Period I change in Maize output mainly influenced the yield effect in Srikakulam and Ananthapur but Mahabubnagar district reported the area effect. On the other hand period II (TE 1993-94 to 2009-10) Srikakulam and Ananthapur district interaction effect was found to play a key role to change the output of Maize in the state. On the whole overall area effect played a key role to change the total oilseeds as well as Groundnut production in the state except Mahabubnagar district (yield effect).

3.5 Variability in Monthly/Annual Prices of Major Oilseeds in the State

The study recognized the Price is the major factor influence the growth in area and production of oilseeds crops in the state. The growth in Farm Harvest Prices (FHP) under groundnut increased of all three estimated periods TE 1998-99 to TE 2000-01 and TE 2009-10. Similar trend revealed in the case of MSP of all three estimated periods. The annual wholesale price and co-efficient of variation of wholesale price of Groundnut is more than the Maize (competing crop). Whereas, the average monthly price per quintal of maize was relatively more in November and December of the reference year (2012). In the case of Sunflower crop price in terms of C.V. was higher than the Competing crop Cotton. So the price also major factor to change area and production of edible oilseeds in the state.

4.1 Problems and Prospects of Oilseeds Production an Empirical Analysis

Socio-Economic Status of Sample Households

The household survey was conducted in three selected crops Groundnut (250), Sunflower (150) and Oilplam (75) from 26 villages covered all farmer groups. Approximately average size of entire sample was 4.2 to 4.8 members and average level of education 8 years. Area under irrigation to GCA was found to be good (96.94%) followed by groundnut (37.25%) and Sunflowers crop (41.9%) respectively. Small extent of area was found to be leasing in land and payment of rent also fixed in cash and Tube well was the major source of irrigation. The study crop of Groundnut cultivated mostly in unirrigated and the average yield under Kharif and Rabi seasons estimations were 11.72 quintals and 16.5 quintals per hectare whereas under irrigated area the average yield was 21.56 quintal per ha. Respectively. In the case of Oil plam mostly irrigated (96%) and the average yield was 15.85 quintal per ha. So it may conclude the dryland groundnut production is less than the irrigated land of our sample districts.

4.2 Production, Retention and Marketed Surplus Pattern of Oilseeds

Significant variations in both Kharif and Rabi regarding market prices and retention on groundnut crop among farmer groups in the state. Price have been changing between the seasons, nearly 6 to 7 per cent of production retained for use of seed and household consumption. The main competing crop for Groundnut was found to be Maize per HH average production, retention and sale of price of sample HH under sunflower crop experienced the same trend. The main competing crop of Sunflower was found to be Cotton. About the oil palm total production sent to collection centres by the farmers for sale, no retention was reported and the market price depends on International Oil palm Prices. Majority of farmers expressed that there is no competing crop of Oilpalm so far.

4.2.1 Comparative Economics/Profitability of Oilseeds Vis-a-vis Competing Crops

The study estimated the income of the sample farmers, per hectare Groundnut net income was found to be Rs. 28,971, whereas the competing crop Maize was Rs. 37,710 per hectare. In the case of Sunflower crop the average net income per household to be 23,973, whereas the competing crop Cotton net income Rs. 35,262 per hectare in the study area. Highest net income under Groundnut crop as well as competing crop (Maize) received from marginal farmers whereas the Sunflower crop highest net income derived from medium farmers and in the case of competing crop cotton from marginal farmers. So the competing crop of Maize and cotton obtained the highest income than Groundnut and Sunflower crop.

4.2.2 Yield and Technology Gap Analysis:

The sample crop of groundnut the average HH actual yield was found to be lowest 17.21 quintal per hectare. The average potential yield (36.00) and average experimental yield 30.00 quintal per hectare. Thus the yield gap-I, potential yield-experimental yield (36.00-30.00) = (6.00q/ha). Whereas, yield gap II potential yield-Actual farm yield 36.00-17.21 = 18.79Q/ha. The yield gap III experimental farm yield—Actual yield 30.00-17.21 = 12.79 P/Q. The yield gap II was found to be the highest in the study regions. The technology index is same in all farmers groups under groundnut crop. in the case of Sunflower the average farm yield gap 1.50 Q/ha whereas yield gap II was highest 5.30 Q/ha and the yield gap III was found to be 3.80 Q/ha. So the yield gap II was found to be highest and lower in yield gap I of the study period. So there is a need to enhancing the level of actual yield of both the above sample crops through adequate supply of quality or improved seed in time. Irrigation facilities, supply of subsidy inputs and reduce the price fluctuations in the market are necessary.

The study found out of 250 groundnut farmers 94% expressed of sample farmers used HYV seeds and 62% seed supplied by the agricultural department. 81 per cent of farmer expressed marketing in the major problem and 68 per cent reported unaware about MSP under groundnut crop. Regarding sunflower crop, all sample farmers used HYV seeds and availability of major source of seeds as market. Inadequate market facilities and unaware about MSP expressed by major sample farmers. In the case of Oilpalm crop total area covered by HYV plants and 97% of farmers followed recommended doses of fertilizers and pesticides and very less problems about marketing.

4.2.3 Marketing Pattern of Oilseeds:

Groundnut farmers were positively and responded about 64% of production sale to commission agents and village traders because they pay higher prices than existing MSP. Maize crop is the competing crop 49 per cent of production sale to local traders and 27% share to commission agents. NAFED is the only government agency to purchase the production of above two oilseeds at low quantity reported by the sample farmers. In the case of Sunflower, largest output sold (49%) to private companies (Contract agreement) and remaining 66% sold to local village traders. Government agency and commission agents. Private companies are only paid the highest price than other agencies. Cotton is the major competing crop and 57% of output sold Government agency APMC and 43% sold to commission agents and price is more or less same, regarding oil palm production 67% of output sold to private companies and 33% sold at government agency (AP OILFED) these two agencies procure total oil palm production and the price more or less same per quintal.

4.2.4 Sources of Technology and Market Information:

About technology State Agriculture department played a key role, the study crop of groundnut farmers (63%) expressed. The department only provide the extension services. 87% of farmers answered that the market information known through fellow farmers followed by commission agents and print and electronic media. In the case of sunflower sample farmers expressed about market information mixed response was observed. Agriculture department is the major source to provide extension services. In the case of Oilpalm total farmers said that the seed supplied by the State Horticulture department, extension services are provided through A.P. Oilfed and Private factories and information about market and price of the product are also known through Horticulture department from time to time, print media and T.V.

4.2.5 Perceived Constraints in Cultivation of Oilseeds

Groundnut farmers have expressed major constraints firstly agro-climatic factors like variation in temperature,

low and in consistent rainfall low level of irrigation facilities and unfertile lands are the major cause for uncertain production. Secondly institutional and economic constraints are high input costs like fertilizer and pesticides, shortage of human labour, inadequate seed supply, irregular and low supply of electricity in day time. Inadequate government agencies to purchase the output, exploitation of market intermediaries like commission agents and village traders. Inadequate storage facilities and processing industries at nearest place and poor knowledge about crop insurance. On the other hand the study found major constraints under sunflower cultivation mainly inadequate supply of seed, extreme variations in temperature, irregular power supply, price variations, lack of processing industries exploitation of village level traders, unaware about MSP, post harvest problems like birds infestation, shortage of human labour, lack of processing facilities. In the case of oil palm cultivation, major constraints mainly extreme variation in temperature, high input costs, shortage of labour, irregular power supply, unaware about new technologies, lack of grading in oilpalm output at the sale point in sufficient oilpalm companies near by the production.

4.2.6 Suggestions

Groundnut, Sunflower and Oilpalm Crops

The Department of Agriculture and other agencies have to consider these recommendations for Groundnut first to promote and implement soil test based fertilizer and improve the quality seed supply sufficiently in time at subsidy prices. The government should protect the remuneration price while falling below the minimum support price and extend the government agencies to purchase the total production. Extend the extension services, farm mechanization and post harvest technologies which are improve the production as well as reduce the cost of cultivation. Extend the storage marketing facilities and processing industries. To maintain power supply at least 10 hours a day time.

Where as the Sunflower crop, the department should supply improved varieties/HYV at 50% subsidy linkage of NREGS, implementation of crossing technology at flowering stage invention of post harvest technology provide the irrigation facilities like electric bore wells and subsidies to the farmers. About Oilpalm crop firstly reduce the import of Palmoil through imposition of higher import duties scarcity of labour is the major problem and they suggested that linkage of NREGS and oil palm cultivation. To invent the post harvesting tools and technology by the horticultural department.

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COMMODITY REVIEWS

Foodgrains

During the month of December, 2014 the Wholesale Price Index (Base 2004-05 = 100) of Pulses increased by 1.00%,

Cereals declined by 0.72% and foodgrains declined by 0.42% respectively over the previous month.

ALL INDIA INDEX NUMBER OF WHOLESALE PRICES

(Base: 2004-2005 = 100)

Commodity	Weight (%)	WPI for the Month of December, 2014	WPI for the Month of November, 2014	WPI A Year ago	Percentage change during	
					A month ago	A year ago
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rice	1.793	240.3	245.4	230.1	-2.08	4.43
Wheat	1.116	214.5	211.7	219.9	1.32	-2.46
Jowar	0.096	290.7	290.7	252.8	0.00	14.99
Bajra	0.115	237.1	242.8	252.5	-2.35	-6.10
Maize	0.217	233.4	230.6	254.0	1.21	-8.11
Barley	0.017	235.4	230.0	221.5	2.35	6.28
Ragi	0.019	324.5	319.1	326.8	1.69	-0.70
Cereals	3.373	233.1	234.8	230.2	-0.72	1.26
Pulses	0.717	242.9	240.5	229.4	1.00	5.88
Foodgrains	4.09	234.8	235.8	230.1	-0.42	2.04

Source: Office of the Economic Adviser, M/o Commerce and Industry.

The following Table indicates the State-wise trend of

Wholesale Prices of Cereals during the month of December, 2014.

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Rice	Falling	Assam	Jharkhand Kerala U.P.	Haryana	
Wheat	Rising	Haryana Karnataka U.P.			Jharkhand
Jowar	Rising	A.P. Gujarat		Rajasthan	Karnataka
Bajra	Rising	A.P. Gujarat Haryana Rajasthan		Karnataka	
Maize	Rising & Falling	Haryana U.P.	Jharkhand Karnataka	Rajasthan	

Procurement of Rice

4.01 million tonnes of Rice (including paddy converted into rice) was procured during December, 2014 as against 4.60 million tonnes of rice (including paddy converted into rice) procured during December, 2013. The total

procurement of Rice in the current marketing season *i.e.* 2014-2015, up to 31.12.2014 stood at 14.61 million tonnes, as against 15.63 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 2014-15		Corresponding Period of last Year		Marketing Year (October-September)			
	(upto 31.12.2014)		2013-14		2013-14		2012-13	
	Procure- ment	Percentage to Total	Procure- ment	Percentage to Total	Procure- ment	Percentage to Total	Procure- ment	Percentage to Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	386	2.64	1323	8.46	3722	11.76	6464	19.00
Chhattisgarh	1363	9.33	2337	14.95	4290	13.56	4804	14.12
Haryana	1995	13.66	2396	15.33	2406	7.60	2609	7.67
Maharashtra	58	0.40	47	0.30	161	0.51	192	0.56
Punjab	7781	53.26	8105	51.84	8106	25.62	8558	25.16
Tamil Nadu	4	0.03	55	0.35	684	2.16	481	1.41
Uttar Pradesh	489	3.35	294	1.88	1127	3.56	2286	6.72
Uttarakhand	151	1.03	119	0.76	463	1.46	497	1.46
Others	2383	16.31	958	6.13	10678	33.75	8129	23.89
Total	14610	100.00	15634	100.00	31637	100.00	34020	100.00

Source: Department of Food & Public Distribution.

Procurement of Wheat

The total procurement of wheat in the current marketing season *i.e.* 2014-2015 up to June, 2014 is 27.99 million

tonnes against a total of 25.04 million tonnes of wheat procured during last year. The details are given in the following table:

PROCUREMENT OF WHEAT

(In Thousand Tonnes)

State	Marketing Season 2014-15		Corresponding Period of last Year		Marketing Year (April-March)			
	(upto 30.06.2014)		2013-14		2013-14		2012-13	
	Procurement	Percentage to Total	Procurement	Percentage to Total	Procurement	Percentage to Total	Procurement	Percentage to Total
1	2	3	4	5	6	7	8	9
Haryana	6495	23.20	5873	23.45	5873	23.41	8665	22.71
Madhya Pradesh	7094	25.34	6325	25.26	6355	25.33	8493	22.26
Punjab	11641	41.58	10878	43.44	10897	43.43	12834	33.64
Rajasthan	2159	7.71	1268	5.06	1268	5.06	1964	5.15
Uttar Pradesh	599	2.14	683	2.73	683	2.72	5063	13.27
Others	6	0.02	13	0.05	16	0.06	1129	2.96
Total	27994	100.00	25040	100.00	25092	100.00	38148	100.00

Source: Department of Food & Public Distribution.

COMMERCIAL CROPS

Oilseeds and Edible Oils The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 202.5 in December, 2014 showing a decrease of 0.6 percent over the previous month. However, it increased by 0.1 percent over the previous year. The WPI of Niger Seed (5.1 percent), Soyabean (4.7 percent), Sunflower Seed (3.2 percent) and Rape & Mustard Seed (1.9 percent) increased over the previous month. However, the WPI of Copra (6.2 percent), Gingelly seed (4.1 percent), Groundnut seed (3.1 percent) and Cotton Seed (1.5 percent) decreased over the previous month. Safflower seed remained unchanged over the previous month.

The Wholesale Price Index (WPI) of Edible Oils as a group stood at 144.1 in December, 2014 showing an increase of 0.1 percent over the previous month. However, it decreased by 3.0 percent over the previous year. The WPI of Soyabean Oil (3.2 percent), Copra Oil (2.1 percent), Groundnut Oil (1.8 percent), Mustard Oil (1.3 percent), Sunflower Oil (1.3 percent) and Gingelly Oil (0.9 percent) increased over the previous month. However, the WPI of Cotton seed oil (2.1 percent) decreased over the previous month.

Fruits & Vegetable The Wholesale Price Index (WPI) of Fruits & Vegetable as a group stood at 250.5 in December, 2014 showing a decrease of 5.4 percent over the previous month. However, it increased by 11.7 percent over the previous year.

Potato The Wholesale Price Index (WPI) of Potato stood at 304.3 in December, 2014 showing a decrease of 28.6 percent over the previous month. However, it increased by 59.4 percent over the previous year.

Onion The Wholesale Price Index (WPI) of Onion stood 350.6 in December, 2014 showing an increase of 2.5 percent over the previous month. However, it decreased by 20.5 percent over the previous year.

Condiments & Spices The Wholesale Price Index (WPI) of Condiments & Spices (Group) stood at 305.5 in November, 2014 showing an increase of 0.8 percent and 16.0 percent over the previous month and over previous year, respectively. The WPI of Chillies (Dry) and Turmeric increased by 4.4 percent and 2.9 percent over the previous month, respectively. However, WPI of Black Pepper (0.7 percent) decreased over the previous month.

Raw Cotton The Wholesale Price Index (WPI) of Raw Cotton stood at 191.8 in December, 2014 showing an increase of 0.2 percent over the previous month. However, it decreased by 16.4 percent over the previous year.

Raw Jute The Wholesale Price Index (WPI) of Raw Jute stood at 299.1 in December, 2014 showing an increase of 3.2 percent and 10.1 percent over the previous month and over the previous year, respectively.

Commodity	Latest	Month	Year	Percentage Variation Over	
	December, 14	November, 14	December, 13	Month	Year
<i>Oil Seeds</i>	202.5	203.7	203.5	-0.6	0.1
Groundnut Seed	205.8	212.3	194.1	-3.1	9.4
Rape & Mustard Seed	198.3	194.6	195.5	1.9	-0.5
Cotton Seed	173.1	175.7	178.0	-1.5	-1.3
Copra (Coconut)	173.1	184.5	133.6	-6.2	38.1
Gingelly Seed (Sesamum)	411.5	428.9	486.8	-4.1	-11.9
Niger Seed	201.9	192.1	178.4	5.1	7.7
Safflower (Kardi Seed)	121.8	121.8	156.4	0.0	-22.1
Sunflower	181.3	175.6	196.0	3.2	-10.4
Soyabean	196.6	187.8	223.8	4.7	-16.1
<i>Edible Oils</i>	144.1	143.9	148.3	0.1	-3.0
Groundnut Oil	167.7	164.7	177.3	1.8	-7.1
Cotton Seed Oil	171.9	175.5	181.2	-2.1	-3.1
Mustard & Rapeseed Oil	159.4	157.4	156.2	1.3	0.8
Soyabean Oil	153.0	148.2	159.4	3.2	-7.0
Copra Oil	143.7	140.8	125.6	2.1	12.1
Sunflower Oil	125.3	123.7	128.5	1.3	-3.7
Gingelly Oil	176.5	174.9	190.3	0.9	-8.1
<i>Fruits & Vegetables</i>	250.5	264.8	237.0	-5.4	11.7
Potato	304.3	426.3	267.5	-28.6	59.4
Onion	350.6	342.1	430.4	2.5	-20.5
<i>Condiments & Spices</i>	307.8	305.5	263.3	0.8	16.0
Black Pepper	765.4	770.6	596.8	-0.7	29.1
Chillies (Dry)	323.6	310.1	290.9	4.4	6.6
Turmeric	235.6	229.0	213.1	2.9	7.5
Raw Cotton	191.8	191.5	229.1	0.2	-16.4
Raw Jute	299.1	289.7	271.6	3.2	10.1

STATISTICAL TABLES

Wages

I. 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	Carpen-ter	Black Smith	Cobbler
					M	W	M	W	M	W	M	M	M
Andhra Pradesh	Krishna Guntur	Ghantasala Tadikonda	Sep., 14	8	333.3	250	400	NA	250	NA	300	NA	NA
			Sep., 14	8	262.5	200	300	NA	250	NA	NA	NA	NA
Telangana	Ranga Reddy	Arutala	Aug., 14	8	241.6	183.3	NA	NA	NA	NA	NA	NA	NA
Karnataka	Bangalore Tumkur	Harisandra Gidlahali	Dec., 13	8	250	200	200	175	200	180	300	250	NA
			Dec., 13	8	175	165	180	170	180	170	200	180	NA
Maharashtra	Nagpur Ahmednagar	Mauda Akole	Feb., 12	8	100	100	NA	NA	NA	NA	NA	NA	NA
			Feb., 12	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jharkhand	Ranchi	Gaitalsood	April, 12	8	100	100	NA	90	90	NA	58	58	NA

1.1 DAILY AGRICULTUREAL 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		
												Carpen-ter	Black Smith	Cobbler
Assam	Barpeta	Loharapara	Aug., 14	M	8	250	250	250	250	250	200	350	250	350
				W	8	NA	NA	200	200	200	NA	NA	NA	NA
Bihar	Muzaffarpur	Bhalui Rasul	June, 12	M	8	130	120	80	130	150	120	200	180	250
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Shekhpura	Kutaut	June, 12	M	8	NA	NA	185	NA	185	NA	245	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chhattisgarh	Dhamtari	Sihaba	Oct., 14	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gujarat	Rajkot	Rajkot	Jan., 14	M	8	209	225	150	170	147	150	360	360	240
				W	8	NA	169	150	179	145	142	NA	NA	NA
	Dahod	Dahod	Jan., 13	M	8	100	100	100	100	100	NA	200	144	150
				W	8	NA	100	100	100	100	NA	NA	NA	NA
Haryana	Panipat	Ugarakheri	Nov., 14	M	8	350	350	350	300	300	NA	NA	NA	NA
				W	8	NA	250	250	250	250	NA	NA	NA	NA
Himachal Pradesh	Mandi	Mandi	Dec., 14	M	8	NA	162	162	162	162	NA	260	240	240
				W	8	NA	162	162	162	162	NA	650	NA	NA
Kerala	Kozhikode	Koduvally	July, 14	M	4-8	920	550	NA	550	760	NA	NA	NA	NA
				W	4-8	NA	NA	450	450	500	NA	NA	NA	NA
	Palakkad	Elappally	July, 14	M	4-8	450	400	NA	NA	433	NA	NA	NA	NA
				W	4-8	NA	NA	300	NA	300	NA	NA	NA	NA
Madhya Pradesh	Hoshangabad	Sangarkhera	Oct., 14	M	8	200	200	200	200	150	150	350	350	NA
				W	8	NA	200	200	200	150	150	NA	NA	NA
	Satna	Kotar	Oct., 14	M	8	280	150	150	150	200	150	300	300	300
				W	8	NA	150	150	150	150	150	NA	NA	NA
	Shyampurkala	Vijaypur	Oct., 14	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA

Contd.

1.1 DAILY AGRICULTUREAL 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		
												Carpen-ter	Black Smith	Cobbler
Odisha	Bhadrak	Chandbali	June, 14	M	8	250	250	NA	250	262.5	250	300	250	250
				W	8	NA	NA	NA	200	212.5	200	NA	NA	NA
	Ganjam	Aska	June, 14	M	8	250	200	NA	250	270	200	400	300	200
				W	8	NA	100	100	150	110	100	NA	NA	NA
Punjab	Ludhiana	Pakhowal	June, 20 13	M	8	265	270	270	270	260	NA	325	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan	Barmer	Vishala	Feb, 14	M	8	310	310	NA	NA	NA	100	400	300	300
				W	8	310	310	NA	NA	NA	NA	NA	NA	300
	Jalore	Panwa	Feb., 14	M	8	NA	NA	NA	NA	NA	200	350	300	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Thanjavur	Pulvathnam	Oct., 14	M	8	NA	307.14	NA	300	308.23	NA	NA	NA	NA
				W	8	NA	NA	113.91	125	121.25	NA	NA	NA	NA
Tamil Nadu*	Tirunelveli	Malayakulam	Oct., 14	M	8	NA	300	NA	NA	417.65	NA	NA	NA	NA
				W	8	NA	135	149	143.5	300	NA	NA	NA	NA
Tripura	State Average	March, 12		M	8	238	201	203	209	207	199	253	235	240
				W	8	NA	154	152	154	154	149	NA	NA	NA
	Meerut	Ganeshpur	Apr., 14	M	8	250	231	231	NA	234	NA	365	NA	NA
				W	8	NA	181	196	181	191	NA	NA	NA	NA
Uttar Pradesh*	Aruaiya	Auraiya	Apr, 14	M	8	NA	NA	NA	NA	150	NA	250	NA	NA
				W	8	NA	NA	NA	NA	150	NA	NA	NA	NA
	Chandauli	Chandauli	Apr., 14	M	8	NA	NA	200	200	200	NA	350	NA	NA
				W	8	NA	200	200	200	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

(Month end prices in Rupees)

Commodity	Variety	Unit	State	Centre	Dec-14	Nov-14	Dec-13
Wheat	PBW 343	Quintal	Punjab	Amritsar	1500	1500	NA
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1550	1520	1600
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1660	1548	1750
Jowar	—	Quintal	Maharashtra	Mumbai	2200	2250	2550
Gram	No. III	Quintal	Madhya Pradesh	Sehore	2850	2550	2400
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1260	1310	1425
Gram Split	—	Quintal	Bihar	Patna	4420	4440	4670
Gram Split	—	Quintal	Maharashtra	Mumbai	3900	3800	5000
Arhar Split	—	Quintal	Bihar	Patna	6900	6885	6740
Arhar Split	—	Quintal	Maharashtra	Mumbai	6800	6750	6800
Arhar Split	—	Quintal	NCT of Delhi	Delhi	6075	6065	6355
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	7700	7700	6400
Gur	—	Quintal	Maharashtra	Mumbai	3400	3600	3400
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	4650	4650	4300
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2250	2100	2375
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3340	3275	3300
Mustard Seed	Black	Quintal	West Bengal	Raniganj	3850	3650	3900
Mustard Seed	—	Quintal	West Bengal	Kolkata	4400	4400	4200
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4260	4150	4160
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	—	—	3670
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1200	1500	1500
Cotton Seed	MCU5	Quintal	Tamil Nadu	Coimbatore	2000	2000	1550
Castter Seed	—	Quintal	Andhra Pradesh	Hyderabad	3900	3750	3600
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	—	13550	5680
Copra	FAQ	Quintal	Kerala	Alleppey	9150	8800	7300
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	4500	4500	3800
Groundnut	—	Quintal	Maharashtra	Mumbai	5100	5200	6400
Mustard Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1200	1174	1230
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1380	1305	1275
Groundnut Oil	—	15 Kg.	Maharashtra	Mumbai	1275	1275	1230
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1290	1275	1260
Linseed Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1189	1476	1290
Castor Oil	—	15 Kg.	Andhra Pradesh	Hyderabad	1305	1260	1245
Sesamum Oil	—	15 Kg.	NCT of Delhi	Delhi	1900	1880	1375
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2805	2775	3075
Coconut Oil	—	15 Kg.	Kerala	Cochin	1965	1875	1553
Mustard Cake	—	Quintal	Uttar Pradesh	Kanpur	1780	1600	1850
Groundnut Cake	—	Quintal	Andhra Pradesh	Hyderabad	3000	3143	2571
Cotton/Kapas	NH 44	Quintal	Andhra Pradesh	Nandyal	3800	3650	4300
Cotton/Kaps	LRA	Quintal	Tamil Nadu	Virudhunagar	3116	—	—
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	3125	3095	2900
Jute Raw	W 5	Quintal	West Bengal	Kolkata	3075	3045	2850
Oranges	—	100 No.	NCT of Delhi	Delhi	417	458	458

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

Commodity	Variety	Unit	State	Centre	Dec-14	Nov-14	Dec-13
Oranges	Big	100 No.	Tamil Nadu	Chennai	360	365	480
Oranges	Nagpuri	100 No.	West Bengal	Kolkata	—	—	410
Banana	—	100 No.	NCT of Delhi	Delhi	292	292	250
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	484	483	445
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	60000	59000	57000
Almonds	—	Quintal	Maharashtra	Mumbai	67000	67000	60000
Walnuts	—	Quintal	Maharashtra	Mumbai	67000	67000	65000
Kishmish	—	Quintal	Maharashtra	Mumbai	22000	21000	13000
Peas Green	—	Quintal	Maharashtra	Mumbai	4500	4600	4500
Tomatoes	Ripe	Quintal	Uttar Pradesh	Kanpur	1025	775	1600
Ladyfinger	—	Quintal	Tamil Nadu	Chennai	3000	2500	2600
Cauliflower	—	100 No.	Tamil Nadu	Chennai	1500	1700	1300
Potatoes	Red	Quintal	Bihar	Patna	1000	2100	1280
Potatoes	Desi	Quintal	West Bengal	Kolkata	1440	2060	1460
Potatoes	Sort I	Quintal	Tamil Nadu	Mettupalayam	—	2752	2815
Onions	Pole	Quintal	Maharashtra	Nashik	1400	1100	1250
Turmeric	Nadan	Quintal	Kerala	Cochin	11000	11000	10000
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	8400	8500	9400
Chillies	—	Quintal	Bihar	Patna	9900	9200	8000
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	67000	66000	49000
Ginger	Dry	Quintal	Kerala	Cochin	20000	22000	19500
Cardamom	Major	Quintal	NCT of Delhi	Delhi	130000	140000	125000
Cardamom	Small	Quintal	West Bengal	Kolkata	115000	115000	95000
Milk	Cow	100 Liters	NCT of Delhi	Delhi	—	—	—
Milk	Buffalo	100 Liters	West Bengal	Kolkata	3600	3600	3600
Ghee Deshi	Deshi No. 1	Quintal	NCT of Delhi	Delhi	28681	30682	28681
Ghee Deshi	—	Quintal	Maharashtra	Mumbai	40000	40000	30500
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	35900	36640	30600
Fish	Rohu	Quintal	NCT of Delhi	Delhi	9200	10000	10000
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	29000	28200	30000
Eggs	Madras	1000 No.	West Bengal	Kolkata	4500	4500	4500
Tea	—	Quintal	Bihar	Patna	21000	21000	20000
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	34000	34000	13000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	30000	30000	26000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	15500	15500	14000
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	4650	4600	2870
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	3550	3600	2800
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	3900	3900	3700
Rubber	—	Quintal	Kerala	Kottayam	10700	10300	15000
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	29900	29800	29000

3. MONTH-END WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2014

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cardamom	Guatemala Bold Green	U.K.	—	Dollar/M.T.	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	9000.00	12000.00
Cashew Kernels	Spot U.K. 320s	U.K.	—	Rs./Qtl	56079.00	55818.00	54216.00	55008.00	53010.00	54072.00	54054.00	54549.00	54729.00	55287.00	55665.00	75576.00
				Dollar/lbs	3.46	3.44	3.46	3.40	3.48	3.55	3.55	3.52	3.60	3.68	3.60	3.55
				Rs./Qtl	47516.61	47022.08	45938.06	45800.88	45175.83	47007.79	46992.15	47021.72	48249.09	49824.15	49074.26	49276.81
				Dollar/M.T.	7648.65	7614.88	7623.07	7497.06	7673.14	7837.34	7802.62	7763.90	7876.39	8114.12	7918.99	7835.03
				Rs./Qtl	47658.74	47227.49	45921.37	45822.03	45194.79	47086.74	46862.54	47057.00	47896.33	49845.04	48978.95	49345.02
Castor Oil	Any Origin ex tank	Netherlands	—	Dollar/M.T.	1600.00	—	1700.00	1675.00	1650.00	1655.00	1675.00	1675.00	1703.00	1753.00	1752.00	1753.00
	Rotterdam			Rs./Qtl	9969.60	—	10240.80	10237.60	9718.50	9943.24	10060.05	10152.18	10355.94	10768.68	10836.12	11040.39
	ASTA cif	India	—	Dollar/M.T.	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00	—	—	—	—	—
				Rs./Qtl	9346.50	9303.00	9036.00	9168.00	8835.00	9012.00	—	—	—	—	—	—
Chillies	Birds eye 2005 crop	Africa	—	Dollar/M.T.	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00
Cinnamon Bark	—	Madagascar	—	Rs./Qtl	25547.10	25428.20	24698.40	25059.20	24149.00	24632.80	24624.60	24850.10	24932.10	25186.30	25358.50	25821.80
				Dollar/M.T.	1100.00	1100.00	1100.00	1276.00	1276.00	1276.00	1276.00	1276.00	1276.00	—	—	—
				Rs./Qtl	6854.10	6822.20	6626.40	7798.91	7515.64	7666.21	7663.66	7733.84	7759.36	—	—	—
Cloves	Singapore	Madagascar	—	Dollar/M.T.	13250.00	12600.00	12600.00	12600.00	12600.00	12800.00	12800.00	12800.00	9900.00	9900.00	10500.00	10500.00
				Rs./Qtl	82560.75	82176.50	75902.40	77011.20	74214.00	76902.40	76876.80	77580.80	60201.90	60815.70	64942.50	66129.00
Coconut Oil	Crude	Netherlands	—	Dollar/M.T.	1280.00	1420.00	1355.00	1375.00	1385.00	1360.00	1285.00	1075.00	1210.00	1250.00	1220.00	1195.00
	Phillipine/Indonesia			Rs./Qtl	7975.68	8806.84	8162.52	8404.00	8157.65	8170.88	7717.71	6515.58	7358.01	7678.75	7545.70	7526.11
	Phillipines cif	Philippine	—	Dollar/M.T.	806.50	895.50	851.00	867.00	873.00	854.00	806.50	692.00	762.00	759.00	768.50	746.00
	Rotterdam	India	—	Rs./Qtl	5025.30	5553.89	5126.42	5299.10	5141.97	5130.83	4843.84	4194.21	4633.72	4662.54	4753.17	4698.31
Corriander	—			Dollar/M.T.	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00	1500.00	2000.00	2000.00	2000.00	2000.00
				Rs./Qtl	9346.50	9303.00	9036.00	9168.00	8835.00	9012.00	9009.00	9091.50	12162.00	12286.00	12370.00	12596.00
Cummin Seed	—	India	—	Dollar/M.T.	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00
				Rs./Qtl	14019.75	13954.50	13554.00	13752.00	13252.00	13518.00	13513.50	13637.25	13682.25	13821.75	13916.25	14170.50
Fennel seed	—	India	—	Dollar/M.T.	2600.00	2600.00	2600.00	2600.00	2600.00	2600.00	2600.00	2600.00	2600.00	—	—	—
				Rs./Qtl	16200.60	16125.20	15662.40	15891.20	15314.00	15620.80	15615.60	15758.60	15810.60	—	—	—
Ginger	Split	Nigeria	—	Dollar/M.T.	1800.00	1800.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2250.00
				Rs./Qtl	11215.80	11163.60	13855.20	14057.60	13547.00	13818.40	13813.80	13940.30	13986.30	14128.90	14225.50	14170.50
Groundnut kernels	US 2005, 40/50	European	—	Dollar/M.T.	1250.00	1250.00	1220.00	1200.00	1180.00	1180.00	1180.00	1200.00	1230.00	1370.00	1450.00	1425.00
		Ports		Rs./Qtl	7788.75	7752.50	7349.28	7334.40	6950.20	7089.44	7087.08	7273.20	7479.63	8415.91	8968.25	8974.65
Groundnut Oil	Crude Any Origin cif	U.K.	—	Dollar/M.T.	1500.00	1500.00	1500.00	1180.00	1180.00	1180.00	1180.00	1180.00	1180.00	1200.00	1200.00	1200.00
	Rotterdam			Rs./Qtl	9346.50	9303.00	9036.00	7212.16	6950.20	7089.44	7087.08	7151.98	7175.58	7371.60	7422.00	7557.60
Lentils	Turkish Red Split	U.K.	—	Pound/M.T.	606.12	599.09	602.12	594.90	597.93	588.72	—	—	—	—	—	—
	Crop 1+1 water			Rs./Qtl	6201.78	6203.91	6112.00	5890.21	6022.02	—	—	—	—	—	—	—
Maize	—	U.S.A.	Chicago	C/56 lbs.	427.50	455.50	484.50	503.50	472.50	441.00	362.50	359.50	329.50	375.25	378.25	408.25
				Rs./Qtl	1046.85	1110.23	1147.02	1209.42	1093.73	1041.26	855.63	856.32	787.45	905.93	919.41	1010.47
Oats	—	Canada	Winnipeg	Dollar/M.T.	465.48	569.22	445.04	446.35	368.48	362.40	355.63	400.28	367.97	397.39	339.04	364.86
				Rs./Qtl	2900.41	3530.30	2680.92	2728.09	2170.35	2177.30	2135.91	2426.10	2237.63	2441.17	2096.96	2297.89
Palm Kernel Oil	Crude	Netherlands	—	Dollar/M.T.	1170.00	1375.00	1350.00	1300.00	1245.00	1235.00	1120.00	845.00	935.00	965.00	980.00	935.00
	Malaysia/Indonesia			Rs./Qtl	7290.27	8527.75	8132.40	7945.60	7333.05	7419.88	6726.72	5121.55	5685.74	5928.00	6061.30	5888.63
Palm Oil	Crude	Netherlands	—	Dollar/M.T.	855.00	950.00	923.00	903.00	875.00	873.00	820.00	723.00	710.00	740.00	715.00	655.00
	Malaysian/Sumatra			Rs./Qtl	5327.51	5891.90	5560.15	5519.14	5153.75	5244.98	4924.92	4382.10	4317.51	4545.82	4422.28	4125.19

3. MONTH-END WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2014—Contd.

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
PEPPER (Black)	Sarawak Black lable	Malaysia	—	Dollar/M.T.	—	—	—	—	—	—	9600.00	10000.00	10000.00	10000.00	10000.00	10000.00
RAPSEED	Canola	Canada	Winnipeg	Rs./Qtl	423.80	415.50	458.20	445.80	466.50	483.30	438.00	424.20	400.10	444.40	429.90	443.40
RAPSEED	UK delivered	U.K.	—	Dollar/M.T.	2366.92	2316.83	2502.23	2472.41	2535.43	2715.66	2448.42	2368.73	2196.95	2438.87	2345.10	2411.21
RAPSEED OIL	Rapeseed, delivered	U.K.	—	Pound/M.T.	278.00	304.00	325.00	330.00	273.00	269.00	258.00	240.00	232.00	225.00	242.00	245.00
RAPSEED OIL	Refined bleached and deodorised	U.K.	—	Pound/M.T.	2857.84	3147.01	3251.30	3390.42	2689.32	2751.60	2632.89	2413.20	2303.06	2211.75	2353.69	2417.91
SOYABEAN MEAL	U.K. produced 49% oil & protein	U.K.	—	Rs/Qtl	668.00	681.00	706.00	711.00	675.00	657.00	607.00	590.00	578.00	636.00	627.00	615.00
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	6867.04	7049.71	7062.83	7304.81	6649.45	6720.45	6194.44	5932.45	5737.81	6251.88	6098.20	6069.44
SOYABEAN OIL	—	U.K.	—	Pound/M.T.	366.00	410.00	412.00	384.00	371.00	343.00	311.00	338.00	342.00	354.00	345.00	323.00
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	3762.48	4244.32	4121.65	3945.22	3554.72	3508.55	3173.76	3398.59	3395.03	3479.82	3355.47	3187.69
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	37.10	41.20	4073	42.50	39.63	40.65	36.20	32.86	32.62	34.18	33.48	31.77
SOYABEAN OIL	—	U.K.	—	Pound/M.T.	5094.99	5631.71	5407.68	5725.11	5144.59	5382.72	4791.88	4389.58	4371.90	4627.69	4563.91	4409.93
SOYABEAN OIL	—	U.K.	—	Pound/M.T.	652.00	695.00	683.00	686.00	645.00	646.00	614.00	578.00	693.00	572.00	617.00	610.00
SOYABEAN OIL	—	Netherlands	—	Rs/Qtl	6702.56	7194.64	6832.73	7047.96	6353.90	6607.93	6265.87	5811.79	6879.41	5622.76	6000.94	6020.09
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	563.90	492.20	504.70	517.30	523.00	463.60	60	453.10	415.90	453.90	454.60	447.30
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	3513.66	3052.62	3040.31	2161.74	3080.47	3077.90	2784.38	2746.24	2529.09	2788.31	2811.70	2817.10
SOYABEAN OIL	—	U.S.A.	—	C/lbs Rs/Qtl	1269.25	1407.25	1440.00	1468.50	1497.75	1415.75	1201.00	1119.75	936.75	1043.00	1047.00	1027.00
SUNFLOWER SEED OIL	Refined bleached and deodorised	U.K.	—	Pound/M.T.	2902.49	3203.09	3183.56	3294.00	3237.58	3121.64	2647.25	2490.76	2090.57	2351.42	2376.58	2373.77
TALLOW	High grade delivered	U.K.	—	Rs./Qtl	710.00	752.00	696.00	720.00	693.00	680.00	683.00	637.00	654.00	665.00	712.00	706.00
TALLOW	—	U.K.	—	Rs./Qtl	7298.80	7577.88	6962.78	7397.74	6826.74	6955.72	6970.02	6495.04	6492.26	6536.95	6924.91	6967.51
TURMERIC	Madras finger spot/cif	India	—	Rs./Qtl	465.00	445.00	445.00	445.00	420.00	405.00	400.00	350.00	350.00	350.00	350.00	350.00
WALNUTS	Indian light halves	U.K.	—	Pound/M.T.	4780.20	4606.64	4451.78	4571.93	4137.42	4142.75	4082.00	3519.25	3474.45	3440.50	3404.10	3454.15
Wheat	—	U.S.A.	—	C/60 lbs	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00
Wheat	—	U.S.A.	—	C/60 lbs	5296.35	5271.70	5120.40	5195.20	5006.80	5106.10	5151.85	5168.85	—	—	—	—
Wheat	—	U.S.A.	—	C/60 lbs	83576.40	84161.76	81332.52	83527.62	80088.63	83161.77	—	—	—	—	—	—
Wheat	—	U.S.A.	—	C/60 lbs	551.50	600.00	696.75	676.50	638.75	575.50	530.75	539.50	480.25	538.25	562.00	648.50
Wheat	—	U.S.A.	—	C/60 lbs	1261.16	1365.68	1540.38	1517.46	1380.74	1268.94	1169.88	1200.06	1071.79	1213.47	1275.68	1498.92

Source : Public Ledger

Crop Production

4. SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING FEBRUARY, 2015

State	Sowing	Harvesting
1	2	3
Andhra Pradesh	Summer Rice, Ragi (R) Sugarcane	Winter Rice Jowar (K), Maize (R) Ragi (K), Wheat Gram, Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Winter Potato (Plains), Sugarcane, Chillies (Dry), Tobacco, Castorseed, Linseed, Cotton, Turmeric, Onion (2nd Crop) Coriander.
Andhra Pradesh	Assam Autumn Rice, Summer Potato	Gram Urad (R), Winter Potato, Tobacco, Rapeseed & Mustard, Linseed, Cotton.
Bihar	Summer Rice, Winter Potato (Plains),	Wheat, Barley, Gram, Winter Potato (Plain), Rapeseed & Mustard, Sugarcane, Linseed.
Gujarat	Sugarcane.	Jowar (R), Wheat, Gram Tur (K), Other Rabi Pulses, Winter Potato, Sugarcane, Ginger, Chillies (Dry), Tobacco, Castorseed, Rapeseed & Mustard, Cotton, Turmeric, Onion.
Himachal Pradesh	Winter Potato (Hills)	—
Jammu & Kashmir	Sugarcane, Onion	Winter Potato.
Karnataka	Summer Rice, Mung (R), Sugarcane.	Winter Rice, Jowar (R), Maize (R), Wheat, Barley, Gram, Tur (K) Other Kharif Pulses, Potato, Sugarcane, Black Papper, Tobacco, Castorseed, Rapeseed & Mustard, Linseed, Cotton, Turmeric Cardiseed.
Kerala	Summer Rice, Tur (K), other Rabi Pulses (Kulthi), Sugarcane, Sesamum	Winter Rice, Urad (R), Sugarcane, Cotton, Sweet Potato. Madhya Pradesh Sugarcane, Onion, Jowar (R), Wheat, Barley, Small Millets (R), Gram, Tur, Urad (R), Mung (R), Ohter Rabi Pulses, Winter Potato (Hills) Sugarcane, Ginger, Chillies (Dry), Tobacco, Castorseed, Rapeseed & Mustard, Linseed, Cotton, Sweet Potato, Turmeric, Sannhemp, Cardiseed, Onion.
Maharashtra	Sugarcane.	Jowar (R), Wheat, Barley, Gram, Tur (K), Urad (R), Mung (R), Other Rabi Pulses, Winter Potato (Plains), Sugarcane, Chillies (Dry), Tobaco, Castorseed, Rapeseed & Mustard, Linseed, Cotton, Cardiseed.
Manipur	Jute	Wheat, Castorseed, Rapeseed & Mustard, Turmeric. Orissa Sugarcane, Chillies (Dry). Bajra (R), Winter Potato (Plains), Chillies (Dry), Rapeseed & Mustard.
Punjab and Haryana	Sugarcane, Tobacco, Onion, Potato	Potato, Sugarcane, Rapeseed & Mustard, Turmeric, Haryana Rajasthan, Sugarcane, Gram, Tur (K), Winter Potato (Plains), Sugarcane, Castorseed, Rapeseed & Mustard, Linseed.
Tamil Nadu	Summer Rise, Jowar (R), Sugarcane,	Winter Rice, Jowar (R), Bajara, Ragi, Small Millets (K), Gram, Tur, Urad (K) Mung (K), Other Rabi. Pulses (Kulthi), Winter Potato, Sugarcane, Black Papper, Tobacco, Castor seed, Sesamum, Cotton, Turmeric, Onion.
Tripura	Sugarcane.	Gram, Urad (R), Mung (R), Other Rabi Pulses, Winter Potato (Plains), Sugarcane, Chillies (Dry), Rapeseed & Mustard, Sweet Potato.
Uttar Pradesh	Summer Rice, Small Millets (R), Sugarcane, Tobacco. Jute, Tapioca (1st Crop).	Winter Potato (Plains), Sugarcane, Ginger, Castorseed, Rapeseed & Mustard, Sweet Potato. Tobacco.
West Bengal	Summer Rise, Sugarcane, Sesamum, (2nd Crop).	Tur (K), Urad (R), Mung (R), Other Rabi Pulses, Winter Potato Sugarcane, Ginger, Chillies (Dry), Tobacco Sesamun, (1st Crop), Rapeseed & Mustard.

(K)—Kharif (R)—Rabi

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List of other Publications of the Directorate

Periodicals

Agricultural Prices in India

Agricultural Wages in India (Bilingual)

Cost of Cultivation of Principal Crops

District-wise Area and Production of Principal crops in India

Year Book of Agro-Economic Research Studies

Land Use Statistics at a Glance (Bilingual)

Farm Harvest Prices of Principal crops in India

Agricultural Statistics at a Glance

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