AGRICULTURAL SITUATION IN INDIA

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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 thounsand words, may be sent in duplicate, typed in double space on one side of foolscap 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-110 011along with 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.

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STATISTICAL TABLES

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.

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GENERAL SURVEY OF AGRICULTURE

Important Policy Decisions Taken during the Month of June, 2015

Government of India fixed the Minimum Support Prices on 17/06/2015 for Kharifcrops of 2015-16 season as under:

Commodity	Variety	MSP for 2015-16 Season (Rs. per quintal)
Paddy	Common	1410
	Grade A	1450
Jowar	Hybrid	1570
	Maldandi	1590
Bajra	-	1275
Maize	-	1325
Ragi	-	1650
Tur(Arhar)	-	4425*
Moong	-	4650*
Urad	-	4425*
Groundnut-in-shell	-	4030
Soyabean	-	2600
Sunflower Seed	-	3800
Sesamum	-	4700
Nigerseed	-	3650
Cotton	Medium Staple	3800
	Long Staple	4100

* Bonus of ₹ 200 per quintal, over and above the MSP is also payable.

Trends in foodgrain prices

During the month of May, 2015, the All India Index Number of Wholesale Price (2004-05=100) of foodgrains increased by 1.01 percent from 237.1 in April, 2015 to 239.5 in May, 2015.

The Wholesale Price Index (WPI) Number of cereals decreased by 0.56 percent from 231.4 to 230.1 and WPI of pulses increased by 7.54 percent from 264.1 to 284.0 during the same period.

The Wholesale Price Index Number of wheat decreased by 1.34 percent from 216.4 to 213.5 while that of rice decreased by 0.17 percent from 234.0 to 233.6 during the same period.

Rainfall Situation

Cumulative Monsoon Season (June to September) rainfall for the country as a whole during the period 01st June to 24th June, 2015 is 24 percent higher than Long Period Average (LPA). Rainfall in the four broad geographical divisions of the country during the above period was higher than LPA by 52 percent in Central India, 32 percent in South Peninsula, 4 percent in East & North East India and lower than 5 percent in North West India.

Out of a total of 36 meteorological sub-divisions, 29 sub-divisions received excess/normal rainfall and 07 subdivisions received deficient rainfall.

Water Storage in Major Reservoirs

Central Water Commission monitors 91 major reservoirs in the country which have a total live capacity of 157.80 BCM at Full Reservoir Level (FRL). Live storage in these reservoirs as on 25th June, 2015 has been 43.23 BCM as against 38.93 BCM on 25.06.2014 (last year) and 29.70 BCM of normal storage (average storage of the last 10 years). Current year's storage as on 25.6.2015 has been 11 percent higher than last year's and 46 percent higher than the normal storage.

Sowing Position during Kharif 2015

As per latest information available on sowing of crops, around 15.6 percent of the normal area under Kharif crops has been sown upto 26.06.2015. Area sown under all Kharif crops during current year has been 165.62 lakh hectares at All India level as compared to 134.18 lakh hectares in the corresponding period of last year.

Area reported is higher by 3.6 lakh ha. under maize, 1.6 lakh ha. under tur, 1.4 lakh hectare under moong, 1.9 lakh ha. under groundnut, 19.2 lakh ha. under soyabean and 3.4 lakh ha. under cotton. Area coverage is lower by 12.4 lakh ha. under rice and 3.7 lakh ha. under sugarcane as compared to normal area.

Economic Growth

The growth rate of Gross Domestic Product (GDP) at constant (2011-12) market prices is estimated at 7.3 per cent in 2014-15 (provisional estimates), as compared to 6.9 per cent and 5.1 per cent in 2013-14 and 2012-13 respectively, (Table 1).

The growth rate of Gross Value Added (GVA) at constant (2011-12) basic prices for agriculture & allied

sectors, industry sector and services sector are estimated to be at 0.2 per cent, 6.1 per cent and 10.2 per cent respectively, in 2014-15 compared to the corresponding rate of 3.7 per cent, 4.5 per cent and 9.1 per cent respectively, in 2013-14 (Table 1).

The growth rate of GVA at constant basic prices for all four quarters of 2014-15 is estimated at 6.7 per cent (Q1). 8.4 per cent (Q2), 6.6 per cent (Q3) and 7.5 per cent (Q4), compared to the corresponding rate of 7.0 per cent (Q1), 7.5 per cent (Q2) 6.4 per cent (Q3) and 6.7 per cent (Q4) in 2013-14 (Table 2).

The final consumption expenditure as a percentage of GDP increased from 69.8 per cent in 2012-13 to 71.0 per cent in 2013-14 and further to 71.5 per cent in 2014-15. Gross Fixed Capital Formation (GFCF) as a percentage of GDP declined from 31.4 per cent in 2012-13 to 29.7 per cent in 2013-14 to 28.7 per cent in 2014-15.

There has been a decline in the rate of gross domestic saving from 33.9 per cent of the GDP in 2011-12 to 31.8 per cent in 2012-13 and further to 30.6 per cent in 2013-14. This was caused mainly by the sharp decline in the rate of household physical savings.

Agriculture and Food Management

Rainfall

With respect to rainfall situation in India, the year is categorized into four session:winter Season (January-February); pre monsoon (March-May); south west monsoon (June-September) and post monsoon (October-December). South west monsoon accounts for more than 75 per cent of annual rainfall, the actual rainfall received during the monsoon period 01.06.2015 — 17.06.2015, has been 80.7 mm as against the normal at 72.8 mm. Rainfall has been excess/normal in 24 sub-divisions as compared to 8 during the corresponding period last year.

All India Production of Foodgrains

As per the 3rd advance estimates released by Ministry of Agriculture on 13.05.2015 production of total foodgrains during 2014-15 is estimated at 251.1 million tonnes compared to 265.6 million tonnes in 2013-14 and 257.1 million tonnes in 2012-13 (Table 3).

Procurement

Procurement of rice as on 19.06.2015 was 29.9 million tonnes during kharif marketing season (October-September) 2014-15 and procurement of wheat was 27.5 million tonnes during rabi marketing season (April-March) 2015-16 (Table 4).

Off-take

Off-take of rice in April, 2015 was 20.9 lakh tonnes. This comprises 18.3 lakh tonnes under TPDS/NFSA (off take against the allocation for the month of May 2015) and 2.6 lakh tonnes under other schemes. The off-take of wheat was 18.7 lakh tonnes comprising of 17.1 lakh tonnes under TPDS/NFSA (off take against the allocation for the month of May, 2015) and 1.6 lakh tonnes under other schemes.

Stocks

Stocks of foodgrains (rice and wheat) held by FCI as on June 1, 2015 were 63.0 million tonnes, which is lower by 9.8 per cent compared to the level of 69.8 million tonnes as on June 1, 2014 (Table 5).

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

Sector	Growth			Share in GVA		
	2012-13	2013-14	2014-15 (PE)	2012-13	2013-14	2014-15(PE)
Agriculture, forestry & fishing	1.2	3.7	0.2	17.7	17.2	16.1
Industry	2.4	4.5	6.1	32.3	31.7	31.4
Mining & quarrying	-0.2	5.4	2.4	3.0	3.0	2.9
Manufacturing	6.2	5.3	7.1	18.3	18.1	18.1
Electricity, gas, water supply & other utility services	4.0	4.8	7.9	2.4	2.3	2.3
Construction	-4.3	2.5	4.8	8.6	8.3	8.1
Services	8.0	9.1	10.2	50.0	51.1	52.5
Trade, hotels, transport, communication and services related to broadcasting	9.6	11.1	10.7	18	18.8	19.4
Financial, real estate & professional services	8.8	7.9	11.5	19.5	19.7	20.5
Public administration, defence and other services	4.7	7.9	7.2	12.5	12.6	12.6
GVA at basic prices	4.9	6.6	7.2	100.0	100.0	100.0
GDP at market prices	5.1	6.9	7.3	---	---	---

Source: CSO. AE: Advance Estimates

TABLE 2 Quarter-wise Growth of GVA at Constant (2011-12) Basic Prices (in per cent)

Sectors	2013-14				2014-15			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, forestry & fishing	2.7	3.6	3.8	4.4	2.6	2.1	-1.1	-1.4
Industry	4.8	4.0	5.0	4.3	7.7	7.6	3.6	5.6
Mining & quarrying	0.8	4.5	4.2	11.5	4.3	1.4	1.5	2.3
Manufacturing	7.2	3.8	5.9	4.4	8.4	7.9	3.6	8.4
Electricity, gas, water supply & other utility services	2.8	6.5	3.9	5.9	10.1	8.7	8.7	4.2
Construction	1.5	3.5	3.8	1.2	6.5	8.7	3.1	1.4
Services	10.2	10.6	9.1	6.4	8.7	10.4	12.5	9.2
Trade, hotels, transport, communication and services related to broadcasting	10.3	11.9	12.4	9.9	12.1	8.9	7.4	14.1
Financial, real estate & professional services	7.7	11.9	5.7	5.5	9.3	13.5	13.3	10.2
Public administration, defence and other services	14.4	6.9	9.1	2.4	2.8	7.1	19.7	0.1
GVA at basic prices	7.2	7.5	6.6	5.3	7.4	8.4	6.8	6.1

Source: CSO.

TABLE 3 Production of Major Agricultural Crops (3rd Adv. Est.)

Crops	Production (in Million Tonnes)		
	2012-13 (Final)	2013-14 (Final)	2014-15 (3rd AE)
Total Foodgrains	257.1	265.6	251.1
Rice	105.2	106.7	102.5
Wheat	93.5	95.9	90.8
Total Coarse Cereals	40.0	43.3	40.4
Total Pulses	18.3	19.8	17.4
Total Oilseeds	30.9	32.8	27.4
Sugarcane	341.2	352.1	356.6
Cotton	34.2	35.9	35.3

TABLE 4 Procurement in Million Tonnes

Crop	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Rice	34.2	35.0	34.0	31.8	29.9*	-
Wheat@	22.5	28.3	38.2	25.1	28.0	27.5*
Total	56.7	63.4	72.2	56.9	58.0	27.5

#Kharif Marketing Season (October-September), @Rabi Marketing Season (April-March), *Postion as on 19.06.2015.

TABLE 5 Off-Take and Stocks of Foodgrains (Million Tonnes)

Crops	Off-take				Stocks	
	2011-12	2012-13	2013-14	2014-15 (Till April)	June 1, 2014	June 1, 2015
Rice	32.1	32.6	29.2	4.0	20.7	16.5
Unmilled Paddy#					12.4	9.2
Converted Unmilled Paddy in terms of Rice					7.6	6.2
Wheat	24.3	33.2	30.6	3.9	41.6	40.4
Total (Rice & Wheat) (1+3+4)	56.4	65.9	59.8	8.0	69.8	63.0

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

FARM SECTOR NEWS RELEASES

Text of Union Agriculture Minister Shri Radha Mohan Singh at Conference of Food & Agriculture Organization (FAO) at Rome

Shri Radha Mohan Singh, Union Agriculture Minister addresses the 39th session of Conference of Food and Agriculture Organization of the United Nations, 8th June, 2015 at Rome, Italy. The full text is as follows:

"Mr. Chairperson, Distinguished Delegates and dear Friends.

I am delighted to address this august gathering and share with you our experiences in agricultural development and views on the work plan proposed by FAO for the next two years.

However, before I do so, let me take the opportunity to congratulate Mr.Graziano da Silva on his election as DG, FAO for a second term a couple of days back. The unanimous election itself is a testimony to the faith reposed by member nations in his leadership and vision. Let me also take this opportunity to congratulate FAO on successfully completing 70 dedicated years in the service of the poor, marginalized and hungry.

It will be remiss on my part if I do not thank the DG, FAO and his entire team for the excellent arrangements for this conference and for introducing an agenda that highlights the major issues affecting global food security and agricultural development. This conference would, I am sure, serve as the primary global platform for sharing development experiences and knowledge from different countries. I am sure the deliberations here and the outcomes would strengthen FAO in fulfilling its mandate of achieving food and nutritional security for all.

India has to support 17 percent of the world's population on just 2.4 percent of its geographical area and we are conscious of our need for sustainable agricultural development keeping the interest of future generations in mind. Agriculture continues to be a vital component of India's economy contributing over 16 per cent of India's GDP in 2014-15 and providing employment to the majority (55%) of its population. Indian agriculture has achieved self sufficiency and today it takes pride in not only meeting the needs of our population but also playing a major role in agricultural trade.

India is one among the 15 leading exporters of agricultural products in the world with significant exports of cotton, rice, meat, oil meals and sugar. Export competitiveness has also been developed in specialized agricultural products like basmati rice, guar gum and castor.

Responding to shifts in consumption pattern of India's consumers towards high value crops as well as fruit, vegetables and meat, and the price signals emanating from this shift, Indian farmers have began to switch from food-grains to more remunerative and high value crops as well as horticulture and livestock. This in turn has led to increased requirements for investment in agriculture in general and post harvest infrastructure, processing facilities & warehousing in particular. Realising the need to support the farmers and combat the negative impact of climate change and also to safeguard their production from adverse impact of declining international commodity prices, Government of India has launched major programmes for revival of public investment in agriculture, both through targeted schemes of the federal government as well as through greater devolution of resources to the provincial governments. Targeted support to farmers at large and women and small scale family farmers in particular, marginalised and vulnerable sections of the society and the poor through rationalization of subsidies combined with better social safety net through insurance and universal financial inclusion is the cornerstone of our intervention strategy.

In keeping with UN declaration of 2015 as the Year of Soils, and understanding the need to conserve the most primary source of production - soil, we have launched new measures to provide Soil Health Cards to all farmers in the country in a time bound manner. This country-wide exercise in which we intend issuing more than 14 crores cards over a period of 3 years will go a long way in further increasing the production and productivity of Indian agriculture.

At the same time, National Food Security Act has been enacted with the objective of providing food and nutritional security to all by ensuring access to adequate quantity of quality food at affordable prices. At last years' Committee on World Food Security (CFS) we have already made a presentation on the salient features of the Act to the membership and I will desist from reiterating them here. The Act whose implementation costs our government over 20 billion US dollars has already started showing positive results in combating hunger and malnutrition and is the base on which we have build our intervention strategy to fulfil our commitments to the Rome Declaration under International Conference on Nutrition (ICN) last November.

There is no doubt that sustaining an overall agricultural growth rate of about 4 percent over long years is a major challenge in the face of stagnating productivity levels combined with increasing abiotic and biotic stresses which constrain crop yields. We need to focus on research products that can provide us break-through in yields which can be made accessible and affordable for different categories of farmers and for this purpose there is an urgent need to further strengthen the CGIAR institutions to generate technology innovations that can be further up-scaled by national agricultural research systems. FAO must play a vital role in this. FAO remains the premier knowledge depository and partner for its member states in addressing the emerging challenges in agricultural development. It not only provides us with the platform for knowledge sharing and technical support, its initiatives through the various technical cooperation programmes that are oriented to national needs deserve special commendation. However, FAO's role in India and other such Middle Income Countries needs to be reworked and a symbiotic relationship established for an effective partnership ahead. We are glad that FAO is already thinking on these lines and this is reflected in their Medium Term Plan (MTP) and Programme of Work and Budget (PWB).

The MTP and PWB come as a breath of fresh air. The Management has made an honest attempt to list areas of priority and areas of de-emphasis in the document. This is most welcome as it helps us understand and appreciate the way forward and also helps us provide relevant inputs. We commend the Management for this.

We would also like to commend FAO and all the member countries for having reached a consensus on the budget level during the Council meeting, a first for FAO. While we are all happy with this development, I feel it is necessary to flag the need for member nations to appreciate the financial constraints which we have placed on FAO while demanding enhanced performance from it with every passing year. I think the time has come for all of us to reconsider the zero nominal growth model which we have chosen for FAO.

In conclusion, I would like to inform that agricultural growth remains one of the top most priorities for our Government and we are addressing the concerns of our farming community with renewed focus on public and private investments to provide infrastructure, ensure technology transfer to farmers, generate employment both on and off the fields and to sustain agricultural development as well as to strengthen the country's nutritional and food security. We are committed to our farmers, especially small scale family farmers and women farmers and look forward to a fruitful partnership with FAO and with all of you as we dedicate ourselves to the commitment of eradicating hunger and malnutrition with our lifetime.

I wish the conference success in its deliberations.

Thank you."

Union Agriculture Minister Laid the Foundation Stone of Gangatiri Cows' Conservation and Development Center

Union Agriculture Minister, Shri Radha Mohan Singh laid the foundation stone of Gangatiri Cows' Conservation and Development Center at Araji Line, Shahnshahpur in Varanasi on 15th June, 2015. On the occasion, Shri Singh said that the State is known for its many native breeds like Mewati, Kehrigadh, Ponwar etc breeds of cow, buffalo breeds Bhadavri. In the absence of a central program on the protection and promotion of native species, the number of native breeds and their production capacity is no longer consistent.

Agriculture Minister said that the Government for the first time in the Country protects native species under the National Bovain Breeding and Dairy Development program and a new scheme National Gokul Mission have been initiated.

Shri Singh informed that for the development and protection of the indigenous breeds under National Gokul Mission, Uttar Pradesh has been allocated ₹ 37 crore of ₹ 67.13 crore. Under the State plans establishment of Gokul Gram and bull-cow farms are being strengthened. The state so far has been able to spend only ₹ 10 crore of allocated ₹ 37crore.

Agriculture Minister also said that "Uttar Pradesh ranks first in milk production with 24.19 million tonnes of milk produce in 2013-14. Uttar Pradesh is behind many States in milk productivity. The Union Minister expects to see State at first in milk productivity".

Shri Singh also informed that Gangatiri breed has been recognized as a separate breed by NBAGR-ICAR. It is an important breed of Uttar Pradesh and for promotion and conservation of the breed has been carried through Uttar Pradesh Livestock Development Board.

Make Efforts for Bringing the Premium Rates at a Reasonable Level - Shri Radha Mohan Singh

Union Agriculture Minister Shri Radha Mohan Singh addressed the National Conference on Crop Insurance at Bhopal, Madhya Pradesh held on 16th June, 2015. Shri Singh on the occasion said that "the issues of rising premium rates under existing Crop Insurance Programme are being examined and we have to make efforts for bringing the premium rates at a reasonable level which could be affordable to the farmers". Agriculture Minister full text is as follows:

"It gives me great pleasure to participate in the National Conference on Crop Insurance organized to discuss and plan the strategies for empowering farmers by

augmented crop risk management through Crop insurance schemes.

Agriculture continues to be the mainstay of Indian economy. It contributes 16 per cent of GDP, provides 52 per cent of employment and sustains more than 60 per cent of population, produces all the food & nutritional requirements of the nation, important raw materials for some major industries. Heavy dependence on weather conditions and its long production cycle, however, makes agriculture a risky economic activity. Despite Technological and economic advancements the condition of farmers continues to be unstable due to natural calamities and fluctuations in yield as well as price of agricultural produce.

Although farmers are adopting both traditional and improved technological & cultural practices to mitigate the risks in crop production due to uncertainty in the monsoon, crop insurance is considered an important mechanism to effectively address the risk to outputs and income resulting from various natural and manmade events, which are beyond the control of individual farmers. As you are aware Government had started "Comprehensive Crop Insurance Scheme" (CCIS) in 1985 in the country to provide protection to the loanee farmers against their yield losses due to natural calamities. The CCIS had limited scope of coverage and it was replaced with National Agricultural Insurance Scheme (NAIS) w.e.f. Rabi 1999-2000. NAIS was preceded by years of preparation, studies, planning, experiments and trials on a pilot basis. NAIS was conceptualized as a comprehensive tool to cover yield losses due to natural non-preventable risks and provided for greater coverage of farmers both loanees and non-loanees, all food & oilseed crops and annual horticultural/ commercial crops and risk commitment went upto 150 per cent of threshold yield. The premium structure was rationalized by bringing in actuarial premium rate in respect of annual horticultural & commercial crops; and above all scheme is required to operationalise ideally at smaller unit area of insurance upto village panchayat level. However, the scheme could not provide desirable results due to some constraints, mostly operational, faced in implementation of schemes which includes inadequate infra-structure to conduct requisite number of crop cutting experiments (CCEs), delay in settlement of admissible claims on account of late submission of yield data by the State, delay in release of State share towards its committed financial liabilities, phasing out of premium subsidy in respect of small & marginal farmers, larger unit areas of insurance, little interest shown by the financial institutions in ensuring all loanee farmers, lower level of indemnity, inadequate guaranteed yield to compensate adequately, non-coverage of perennial horticultural/ commercial crops, non-coverage of risks of prevented sowing & post harvest losses etc. The scheme could not translate into actuarial regime as conceptualized. Government both Centre and States faced difficulties in their budgeting due to open ended financial liabilities on account of premium subsidy, claims, administrative expenses, bank service charges, publicity expenses etc.

In the meantime, Government also experimented with Yield & Price risk insurance through single instrument namely FIIS, compensation based on Weather parameters under WBCIS, bringing competition by empanelment of private insurance companies, payment of compensation by using double triggers of both weather and yield, payment of localized base damages etc. though different schemes piloted during last 10-12 years.

Based on the evaluation of these pilots and experience gained through implementation of crop insurance schemes, views of stakeholders, States and appraisal agencies, various improvements had been incorporated and a restructured scheme in the name of 'National Crop Insurance Programme' (NCIP) was introduced from Rabi 2013-14. However, Stakeholders including State Government have different opinions about the achievements of crop insurance schemes implemented so far. It may be true, as single crop insurance instrument may not protect the farmers of all regions and areas and even all type of the crops. Accordingly, Government of India has started "National Crop Insurance Programmes (NCIP)" with different components to compensate farmers differently by using different methodology for computing crop losses to farmers. However, some of the States adopted the MNAIS in their States and some State has expressed few reservations about its implementation. Hence, State have been allowed to implement MNAIS or NAIS on their choice.

We in the Ministry have started discussion with States and all stakeholders on further improving upon the insurance product which would not only ensure the farmers against yield loss but also provide security for their income. There are various other issues being deliberated at present in implementation of various crop insurance schemes. The seminar would help us to get necessary inputs to evolve a product which is most acceptable to all stakeholders. I am confident that the deliberations which have taken place in the convention would be helpful in designing the crop insurance schemes which are able to effectively protect the interest of the farming community.

Continuation, Strengthening and Establishment of Krishi Vigyan Kendras in the XII Plan

The Union Cabinet, chaired by the Prime Minister, Shri Narendra Modi, gave its approval for continuation, strengthening and establishment of Krishi Vigyan Kendras (KVKs) with an outlay of ₹ 3900 crore on 17th June, 2015. The scheme envisages continuation of 642 KVKs established till date and establishment of 109 new KVKs in the XII Plan, to carry out its wide range of activities.

The scheme includes initiation of new components namely ICT in agriculture, Farmer FIRST programme, creation of the Farm Innovation Fund, Disaster Management Fund, Technology Information Units, mini seed processing facilities, micro nutrient analysis facilities, solar panels, vKVK and KVK net, specialized KVKs and e-farmers; and extending existing components like Integrated Farming System, rain water harvesting structures, soil and water testing laboratories, minimal processing facilities, carp hatcheries to new KVKs, establishment of 16 new Agricultural Technology Information Centres (ATICs), Network Project on Expert System and New Extension Methodologies and Approaches. The scheme provides support to the Directorates of Extension Education (DEE) of State and Central Agricultural Universities.

The scheme also proposes to enhance the number of Zonal Project Directorates to 11 from the existing eight and creation of one Post of Zonal Project Director and one post of Principal Scientist in each of the three new Zonal Project Directorates.

Krishi Vigyan Kendras (KVKs), a unique model of frontline extension in agriculture, serve as a single window mechanism for addressing the technology needs of farmers with a multidisciplinary approach. KVKs function as knowledge and resource centre at district level and play a very important role in demonstration of Location Specific technologies. They are the links between research and extension and also with farmers, and support the initiative of public, private and voluntary sectors for improving the agricultural economy in a holistic manner.

The KVKs lay strong emphasis on skill development training of rural youth, farm women and farmers, as also provide latest technological inputs like seeds, planting materials and bio-products. They continuously advise farmers on timely crop/enterprise related recommendations, including climate resilient technologies for enhancing their production and income levels. KVKs also diagnose and solve problems emerging from district agro-ecosystems and are perfectly located to lead adoption of innovations.

Approval for Inclusion of Uttarakhand, Jharkhand and Chhattisgarh under National Dairy Plan Phase-I and Extension of Project Period by Two Years upto 2018-19

The Cabinet Committee on Economic Affairs, chaired by the Prime Minister Shri Narendra Modi, has given its approval for:

i. Inclusion of Uttarakhand, Jharkhand and Chhattisgarh in the list of States to be covered under the National Dairy Plan- I (NDP-I).

ii. Extended the implementation period upto 2018-19 in order to achieve key outputs of National Dairy Plan- I.

Jharkhand and Chhattisgarh are newly formed States which are primarily inhabited by tribal population having substantial milch animal population and have the potential for coverage under NDP I. Although Uttarakhand was not included for all the approved components under the scheme NDP-I, the Project Implementation Plan document (a part of EFC memo for NDP-I) included sub projects of Animal Breeding and Strengthening of Semen Stations for implementation in Uttarakhand. At present two projects, that is one on Progeny Testing and the other on Strengthening of Semen Station are under implementation. Considering the potential for implementation of Ration Balancing Programme, Fodder Development and Village Based Milk Procurement System, Uttarakhand has also been included under NDP-I; along with Jharkhand and Chhattisgarh.

Due to the time taken in initiating the implementation of sub projects at End Implementing Agencies (EIAs) level and late approval of NDP-I as mentioned above, it is envisaged that the key outputs of NDP-I as planned would be substantially achieved (e.g. bull production target, sustainability of Pilot AI (Artificial Insemination) Delivery services on full cost recovery basis etc.) with the period of NDP I having been extended up to 2018-19.

NDP-I was approved for implementation in 14 milk potential States by National Dairy Development Board (NDDB) through the EIAs with a total outlay of ₹ 2242 crore for a period of six years from 2011-12 to 2016-17. NDP I is now being implemented in 15 States (after Andhra Pradesh was bifurcated into Andhra Pradesh and Telangana) viz. Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal. This 15 states accounts for more than 90 per cent of the country's milk production, over 87 per cent of the breedable cattle and buffalo population and 98 per cent of the country's fodder resources. However, coverage of NDP I is across the country in terms of benefits accruing from the project.

Union Agriculture Minister Launched Nowcast and Insurance Web-Portals for Farmers

Union Agriculture Minister Shri Radha Mohan Singh, on 18th June, 2015,said that a number of applications which have been completed and passed through all the required checks and audits are now ready for nation-wide rollout. Few of the services that were launched include Insurance Portal and Weather alert service NOWCAST. The Ministers of State for Agriculture, Dr. Sanjeev Kumar Balyan and Shri Mohanbhai Kalyanjibhai Kundariya were also present on the occasion. Brief about the portals are as follows:

The Mission Mode Project in Agriculture under National e-Governance Plan (NeGP-A) aims to achieve

rapid development of agriculture in India through the use of ICT by ensuring timely access to agriculture related information for the farmers of the country. Twelve clusters of services including Information on inputs; Soil Health; Good Agricultural Practices; Weather; Livestock, Fisheries: Marketing: Scheme Information; Training etc. have been identified and development of Web based applications on various components of these services is being undertaken before their roll out in the States with required local customization.

Urgent need for an Insurance Portal enabling speedy processing farmers' queries on Insurance and also their application for Agricultural Insurance cover has been felt in the wake of recent adverse weather conditions in some parts of the country and losses suffered by farmers due to their non-awareness about insuring their crops. As per the prevailing provisions Farmers can insure their crops under 3 schemes viz. National Agriculture Insurance Scheme (NAIS), Modified National Insurance Scheme (MNAIS) and Weather based Crop Insurance Scheme (WBCIS). Besides this, Coconut Palm Insurance Scheme (CPIS) also is applicable in some parts of the country. However, statistics of the year 2014-15 shows that only about 20 per cent gross cropped area was insured. Major reasons behind such low coverage *inter alia* include ignorance among farmers about insurance products & procedures and sometimes inordinately high rates as compared to NAU. Both these factors often work in a vicious cycle to the detriment of farmers.

Therefore, a beginning was made in the year 2012 by having an insurance calculator on the farmers' portal (www.farmer.gov.in). Unfortunately, not much headway could be made because very small time window existed in most States for data entry to be completed well in time before the cut-off date. Therefore, a new web-based Portal (www.farmer.gov.in/insurance) has been developed to enter essential information under 3 major schemes viz. NAIS, MNAIS and WBCIS in an expeditious, accurate and non-repetitive manner. An Insurance Calculator has also been provided along with graphical dashboards with drill down facility down to notified units. The farmers will be able to browse through data-base of agriculture insurance companies to get details of various insurance schemes notified in their area and premium applicable to them. Facility for online entry of various provisions of insurance schemes notified in different districts by the insurance companies and the concerned states would minimize errors and facilitate quick response to online query raised by farmers on different aspects of the scheme. Detailed procedure has also been given on the home page of the Insurance Portal www.farmer.gov.in/insurance. In the second phase an online interface for filing insurance applications and scrutiny of the same by banks is also proposed to be developed.

Information on weather and agro-meteorological advisories are generated and disseminated by India Meteorological Department (IMD) under the Ministry of Earth Sciences through their website and also by their 130 Agro Met Field Units (AMFUs) operating across the country. However, these advisories being generated in advance and cover a larger area, their accuracy always has a limitation due to local agro-ecological variations. To tackle this situation IMD has set up 17 Doppler Radars which feed information into Weather Stations regarding extreme weather situations like thunderstorm, squall, hail etc. 146 of these Weather Stations are regularly generating data for these extreme situations. However, these warnings relating to extreme weather situations generated by IMD are valid for a period of only 3 hours on their website. Farmers in the affected areas (which lie within a radius of 50 Kms. from each of these 146 Weather Stations) could not get this information in time because of limitations in accessing the IMD Website at farm level. Therefore, an innovative initiative has been taken by DAC in the name of NOWCAST. Under this initiative, the extreme weather data originated from IMD is being moved to mKisan portal using a web service. From mKisan Portal warnings regarding extreme weather conditions are automatically and instantaneously transmitted by SMS to farmers located in affected district/blocks. This technological break-through is a collaborative effort between mKisan Portal developed by DAC, weather technologies adopted by IMD and GIS Portal of NIC. Advance Warnings issued so far are also displayed on the Web.

Transfer of 0.5 Acre of Land Belonging to the Central Rice Research Institute, Cuttack to Set-up a Police Station

The Union Cabinet chaired by the Prime Minister, Shri Narendra Modi, on 24th June, 2015, gave its approval for the proposal of the Indian Council of Agricultural Research to transfer 0.5 acre of land belonging to the Central Rice Research Institute (CRRI), Cuttack to the Police Department, Government of Odisha on lease basis for a period of 33 years for establishment of a police station at Cuttack.

A police outpost has been functioning inside the campus of the CRRI, Cuttack since 1982. The Government of Odisha has notified upgradation of this police outpost to that of a police station. The proposed land, after transfer, will be used for construction, establishment and operation of the police station. The new police station will be accessible from the Cuttack-Paradeep road. Establishment of this station at Cuttack, adjacent to the CRRI, would strengthen the security of the Institute and its employees; and would also be beneficial to the people living in the area.

Press Notes: Free Milk to School Children

Union Agriculture Minister Shri Radha Mohan Singh, requested the Chief Ministers of Bihar, Tamil Nadu and Rajasthan to encourage free milk to school children. Union Minister wrote that Karnataka and Madhya Pradesh States have already implemented the availability of free milk products schemes to raise the nutritional level of school children through encouraging cooperatives milks in the Mid- Day Meal schemes. Minister also wrote that in the review meeting it was found that the State Milk Federation have surplus stocks of skimmed milk powder and in the interest of farmers and the country's milk producers, cooperatives purchase of milk has continued.

The text of letter written to States Chief Ministers is as followed:

"You may be aware of School Milk Programme running successfully across the developed world which encourages children to consume dairy products and maintain a balanced diet regime. Milk, yoghurt, cheese, buttermilk and other milk products that are important from the point of view of good nutrition and balanced diet, are provided to school children under the programme.

2. The Department of Animal Husbandry, Dairying & Fisheries in a meeting held on 15th June 2015, reviewed the situation in respect of procurement and sale of milk in the country. In the meeting, it was observed that there are surplus stock of skimmed milk powder with the State Milk Federation. The higher stocks of milk products with the cooperatives have resulted in reducing the working capital. In the interest of farmers and milk producers' of the country, the cooperatives have continued procuring milk but they are working under severe constraint of working capital.

3. Government of Karnataka's project titled "Ksheerabhagya" scheme during the year 2012-13 aimed at supplying milk to schools thereby ensuring clean and hygienic food to children. The scheme continues to progress and give good results. Even the Government of Madhya Pradesh had recently launched a similar scheme in the State in which milk will be provided to schools and anganwadis.

4. You may be aware that Milk contributes close to a third of the gross income of rural households and in the case of those without land it contributes, it estimates nearly half of their gross income. Further, 90 per cent of farmers have a herd size of 2 or less and 69 per cent of the dairy farmers are small & marginal. Introducing school milk scheme would help farmers and milk cooperatives owned by farmers a ready and steady market for their produce.

I would appreciate if your Government launches a similar milk programme in the Mid Day Meal scheme, addressing the issue of child malnutrition in the country by utilizing milk powder from the cooperatives which will help in enhancing nutrition of school children as well as improving their retention."

Foundation Stone of IARI Jharkhand to be laid by PM on June 28th

A premiere institute for development and research in agricultural sector, Indian Agriculture Research Institute (IARI), Jharkhand will soon have thousand acre campus to give fillip to agriculture in the region. Foundation stone of the campus of Institute was laid by the Prime Minister, Shri Narendra Modi on 28th June, 2015 at Goriya Karma village in Barhi, Hazaribagh, Jharkhand. Union Agriculture Minister, Shri Radha Mohan Singh also graced the occasion.

IARI-Jharkhand would achieve inclusive agricultural growth through Integrated Farming Systems (IFS) in the region. It will be achieved through multi-disciplinary research centered around 3 major schools viz. School of Natural Resource Management, School of Crop Improvement & Protection, and School of Horticulture and Forestry with integrated Animal Sciences, Basic Sciences and Social Sciences components for catering to the local farming system needs of the region. The institute will attract the cream of post graduate and doctoral students from all over India and abroad to conduct region specific research.

The major regional challenges will be addressed by the IARI, Jharkhand, through prioritized thrust areas of research, integrated with post-graduate education and extension programs, thereby leading to:

- Improved soil health, water use efficiency (WUE) and management of both surface and ground water resources in the high rainfall (1200-1600 mm) regions through multidisciplinary research.
- Research on crop diversification to double the production in rice-fallow seasons
- Improvement of nutritional security and profitability of the farm families in the tribal belts thorough appropriate horticultural technologies
- Development of region-specific integrated farming systems
- Focus on fast adoption of technologies through location-specific need-based extension strategies and mechanisms.
- Higher agricultural education for human resource development beginning with 10 post graduate students from 2015-16 in Soil Science, Water Science &Technology, Agronomy, Horticulture and Genetics disciplines.
- Collaboration within NAREES and international organizations for making effective use of cutting edge technologies to boost regional capacities and economy of the farmers
- Ensuring an overall social impact in terms of employment generation through best skilled

scientific, technical, administrative and supporting manpower

- Fuel and promote technology-driven growth of agro-industries through first generation entrepreneurs of the region to provide a fillip for the Make in India initiative of the Government. This would also develop ancillary industries for rural employment and economic empowerment
- Usher in Evergreen Revolution for productive, profitable and sustainable agriculture through quality post graduate education and gender-equity ensuring total prosperity in the region.

IARI - the seat of Green Revolution- has played a pivotal leadership role of transforming Indian food production system from "ship to mouth" to "self-reliant sustainable agriculture". Trained human resource, extension methodologies and initiatives to take the technologies to farmers for improved agricultural productivity and production are the hallmarks of this century old institution.

For enabling Evergreen Revolution, the Government of India has taken up a mission to initiate the process of establishing a state of the art Indian Agricultural Research Institute for higher agricultural education and research in the state of Jharkhand - one of the resource endowed eastern states with typical ecologies and economy, thereby leading to a holistic, inclusive and profit oriented agriculture for the entire nation.

IARI- Jharkhand will Help in Meeting the Challenges in the Field of Agriculture in Eastern Part of the Country: Union Agriculture Minister Shri Radha Mohan Singh

The Prime Minister called upon farmers to raise the level of pulses production in the country, to help make India self-sufficient in pulses. Invoking former Prime Minister Shri Lal Bahadur Shastri's call "Jai Jawan, Jai Kisan," Shri Narendra Modi asked every farmer to try and grow pulses on a part of his land. He also mentioned steps being taken by the Union Government for the pulses sector. He said pulses were an important part of the diet of the common man. The Prime Minister was speaking after laying the Foundation Stone of the Indian Agricultural Research Institute, on 28th June, 2015, at Barhi in Jharkhand.

Shri Modi also said that the need of the hour was a second green revolution, without any delay, in eastern India. He said that the Union Government was therefore committed to the development of this region. The Prime Minister further said that animal husbandry and fisheries were equally important for the agriculture sector. He further added that the Government has decided to pay special attention to the dairy sector in Jharkhand.

The Union Agriculture Minister, Shri Radha Mohan Singh while welcoming the Prime Minister Shri Narendra Modi at the foundation laying ceremony of the IARI in Jharkhand, said that it was the need of hour to set up a second IARI in Jharkhand on the lines of IARI, Pusa, New Delhi. The Union Minister said that the Institute at Jharkhand will help in meeting the challenges in the field of agriculture in the State in a scientific manner.

The Institute would help in developing this Economic Zone in a scientific manner. The Minister added that the announcement of setting up of a second IARI in the country was made in the General Budget of the year 2014-2015 and he thanked the Prime Minister that the setting up of such an Institute was made possible under his leadership and guidance.

Soon after this announcement in the Budge-2014-2015, the Ministry of Agriculture and the State Government of Jharkhand went into action to identify the land for the second IARI and this activity was completed within a year's time. And that is how, the Minister added that this laying of Foundation Stone for IARI was possible.

ARTICLES

Priority Sector Lending and Situation of Agricultural Credit in India

SAKSHI SHARMA*

Abstract

Priority sector lending is lending to the sections of society which in the absence of such a special dispensing scheme might not get adequate credit.It is a fundamental step towards economic growth and development of the country.A major initiative has been taken by Reserve Bank of India recently by stipulating the percentage of credit disbursed for small and marginal farmers which constitute 85 percent of land holdings in India .The efforts of the priority sector have led to dramatic increase in employment generation, agriculture production and economic upliftment across the society. In this paper we study the trend in priority sector lending by commercial banks of India and especially focus on the credit disbursal and its status in the agriculture as well as its allied sectors.

Introduction

"The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little."- Franklin Roosevelt

In a country where 50 per cent of the population works in agriculture and allied activities, 29 percent of its population is below the poverty line, and only 35 percent of the citizens have access to banking facilities,priority sector lending is a fundamental step to bring about economic development through inclusion. Post reform period has seen an increase in the economic growth of the nation as well the agriculture sector in all.

During the agricultural year July, 2012- June, 2013, rural India had an estimated total of 90.2 million agricultural households. These agricultural households were about 57.8 percent of the total estimated rural households of the country during the same period.

Nearly 85 percent of the total land holdings consist of small and marginal farmers. (below 2.00 ha.) as per the census in 2010-11 against 83.29 in 2005-06 and the operated area at 44.58 percent in the current Census as against the corresponding figure of 41.14 percent in 2005-06.[1] The large holdings (10.00 ha. & above) were 0.70 percent of total number of holdings in 2010-11 with a share of 10.59 percent in the operated area as against 0.85 percent and 11.82 percent respectively in 2005-06 census.The small and marginal farmers hold small uneconomical pieces of land and often fall into the trap of borrowing from non-institutional lenders. The results of the NSSO survey[2] (70th round) show that non-institutional agencies played a major role in advancing credit to the households, particularly in rural India. The non-institutional agencies had advanced credit to 19 percent of rural households, while the institutional agencies had advanced credit to 17 percent households. In urban India, the picture is different; the institutional agencies appear to have played a major role, advancing credit to 15 percent of households against 10 percent by non-institutional agencies. Apart from the problem of credit availability to small and marginal farmers, these farmers are unable to properly market their produce. For inclusive growth that we wish to attain, it is very essential that we reach to this section of farmers.

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[1] Agriculture census of India (2010-11)

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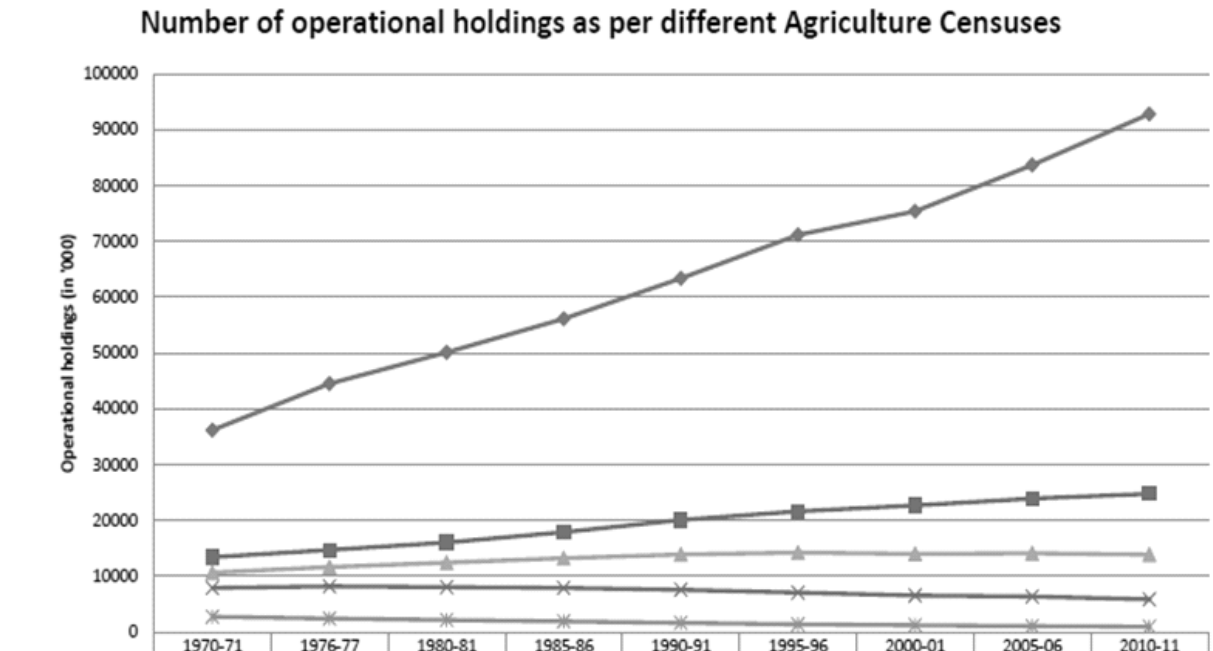
[2] The National Sample Survey Office (NSSO), Ministry of Statistics and Programme Implementation has released the key indicators of debt and investment in India, generated from the data collected during January 2013 to December 2013 in its 70th round survey

FIGURE 1 Chart Showing the Number of Operational Holdings Across Different Years



	1970-71	1976-77	1980-81	1985-86	1990-91	1995-96	2000-01	2005-06	2010-11
Marginal	36200	44523	50122	56147	63389	71179	75408	83694	92826
Small	13432	14728	16072	17922	20092	21643	22695	23930	24779
Semi-Medium	10681	11666	12455	13252	13923	14261	14021	14127	13896
Medium	7932	8212	8068	7916	7580	7092	6577	6375	5875
Large	2766	2440	2166	1918	1654	1404	1230	1096	973

Source: Agriculture Census 2010-11

Priority sector lending is a specific area set by the RBI for banks to limit a specific portion of their overall credit for specific lending which includes lending to agriculture, small scale industries as well as weaker sections of the society. This section of society may not get adequate credit in the absence of this special dispensing scheme. This entails overall development and growth of the economy in comparison to only the financial sector.

At a meeting in July 1968 which was under the National Credit council, it was clearly demarcated that commercial banks should increase their overall share of lending to agriculture and small scale industries. In order to channelize the credit flow of credit towards the priority sector RBI formulated a credit policy. Later on specific targets were set by the central banks which were supposed to be met by the individual banks.RBI has demarcated various categories of priority sector lending which are as follows:

- Agriculture
- Micro and small Enterprises
- Education
- Housing
- Export credit

As per the latest guidelines of RBI(April 23,2015) the following sectors have also been included in the purview of Priority Sector Lending:

- Renewable Energy
- Social Infrastructure
- Medium Enterprises

A specific target of 40 per cent of net bank credit has been outlined for lending to the priority sector by domestic commercial banks. Alongwith this a sub-target of 18 per cent has been stipulated for lending to the Agricultural sector, another 10 percent have been stipulated for lending to weaker sections.

With respect to foreign banks target of 32 per cent of net bank credit has been stipulated for lending to the priority sector. Of this, the aggregate credit to small-scale industries sector should not be less than 10 per cent of the net bank credit and that to the export sector should not be less than 12 per cent of the net bank credit.

TABLE 1 TARGETS FOR PRIORITY SECTOR LENDING (AGRICULTURE)

Categories	Domestic commercial banks / Foreign banks with 20 and above branches	Foreign banks with less than 20 branches
Total Priority Sector	40 percent of Adjusted Net Bank Credit or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher. Foreign banks with 20 branches and above have to achieve the Total Priority Sector Target within a maximum period of five years starting from April 1, 2013 and ending on March 31, 2018 as per the action plans submitted by them and approved by RBI	40 percent of Adjusted Net Bank Credit or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher; to be achieved in the phased manner by 2020.
Total Agriculture	18 percent of ANBC or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher. Within the 18 percent target for agriculture, a target of 8 percent of ANBC or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher is prescribed for Small and Marginal Farmers, to be achieved in a phased manner i.e., 7 per cent by March 2016 and 8 per cent by March 2017.	No specific target. Forms part of total priority sector target

The table above shows the targets set by RBI for Priority Sector Lending by domestic as well as foreign banks. It is noteworthy that foreign banks which have more than 20 branches have been brought at par with domestic banks in a phased manner stating from April 1, 2013. They have to declare an action plan in order to achieve these sub targets. Priority Sector norms for foreign banks having less than 20 branches are more relaxed thereby meaning that they do not have sub-targets to meet.

Although there is doubling of food grain production to almost 264 million tons in 2014 however there is hardly any improvement in the lives of poor and marginal farmers who continuously work hard and feed the country. Taking a cognizance of these facts,according to the latest report by the working group RBI (April 23, 2015) focus will be on channelizing facility of credit to segments that get sidelined in the absence of specific targets. These specifically include small and marginal farmers, micro enterprises and the weaker sections while broadening the scope to include other underserved categories of national priority, such social infrastructure, renewable energy, medium sized enterprises.

In view of this,8percent of the total 18 percent for credit to agriculture will have to be specifically set aside by the banks for lending to small and marginal farmers in a phased manner i.e., 7 per cent by March 2016 and 8 per cent by March 2017.

Small and Marginal Farmers will include the following:

- Farmers with landholding of up to 1 hectare are considered as Marginal Farmers. Farmers with a landholding of more than 1 hectare and upto 2 hectares are considered as Small Farmers.
- Landless agricultural labourers, tenant farmers, oral lessees and share-croppers.
- Loans to Self Help Groups (SHGs) or Joint Liability Groups (JLGs), i.e. groups of individual Small and Marginal farmers directly engaged in Agriculture and Allied Activities, provided banks maintain disaggregated data of such loans.
- Loans to farmers' producer companies of individual farmers, and co-operatives of farmers directly engaged in Agriculture and Allied Activities, where the membership of Small and Marginal Farmers is not less than 75 per cent by number and whose land-holding share is also not less than 75 per cent of the total land-holding.

The domestic banks which are unable to meet this target have to contribute to rural Infrastructure Development Fund(RIDF) whereas in case of foreign banks failing to meet the target have contribute to the Small Industries Development bank of India(SIDBI)

The domestic scheduled commercial banks, having shortfall in priority sector contribute to Rural Infrastructure Development Fund (RIDF) and in the event of failure to attain the stipulated targets and sub-targets, foreign banks are required to contribute to the Small Industries Development Bank of India

With respect to Agricultural credit a special committee Swarnakar Committee was set up to look into

the problems faced by the farmers to avail agricultural loans and to facilitate the procedures an processes to avail the same.The committee recommended simple and uniform application and application procedure across all banks .NABARD was directed to oversee the application process .It also suggested a single window remittal system ,increase in rural posts in banks and consequent up gradation of their skills to deal with the same.

Credit to Agriculture is classified into two groups:

- Direct Credit
- Indirect Credit

Direct Credit Includes the following:

I. Loans to Farmers or individual farmers who are engaged in agriculture or its allied activities (e.g. fishery, dairy etc.)

II. Farmers for pre harvest and post harvest activities and also for transporting their farm produce.

III. Small and Marginal farmers for purchase of land for agricultural purposes.

IV. Farmers indebted to non institutional lenders

V. Loans to PACS and Farmer Credit Societies

VI. Export Credit

VII. Loans to corporate including farmers producer companies

Indirect Credit includes the following:

I. Loans to borrowers and dealers of Fertilizers, pesticides, cattle feed and other agricultural inputs.

II. Loans for setting up Agriclinics and Agri research centres.

III. Loans for construction or setting up of storage houses (warehouses, silos, godowns)

IV. Loans to MFIs to grant loans to farmers for agriculture and allied activities.

As per the latest guidelines (April 23,2015) based on the internal working committee group of RBI the distinction between direct and Indirect Agriculture has been dispensed with.

The survey reported that 52 percent of households in the country were indebted, with levels of indebtedness varying from 93 percent in Andhra Pradesh and 82.5 percent in Tamil Nadu to 37 percent in Chhattisgarh and 17.5 percent in Assam. The average amount of outstanding loan was highest for Kerala (₹ 2,13,600) followed by Andhra Pradesh (₹ 1,23,400) and Punjab (₹ 1,19,500).

TABLE 2 COMPARATIVE TABLE SHOWING PRIORITY SECTOR ADVANCES BY PUBLIC, PRIVATE AND FOREIGN BANKS.

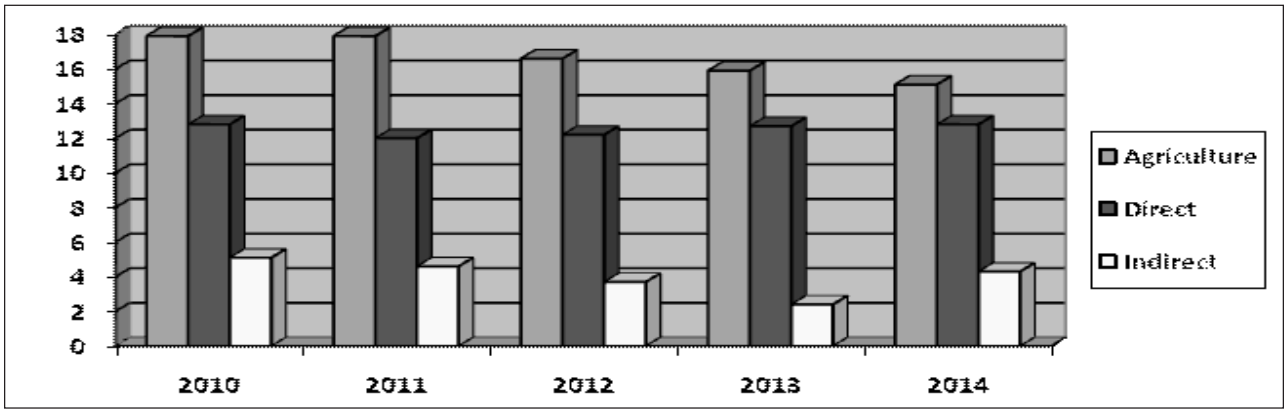
(Amount Billion Rs.)

Year	Public Sector Banks	Private Sector Banks	Foreign Sector Banks
2013	12,822(36.2)	3,274(37.5)	849(35.2)
2014	16,190(39.4)	4,645(43.9)	907(35.8)

SOURCE: RBI annual Report 2013-14,Figures in brackets are percentages to ANBC or CE of OBE, whichever is higher, in the respective groups.

As indicated from the above table public sector banks have not been able to meet the stipulated target of 40 percent SCBs have although there is an increase in percentage as compared to the previous years. In 2013 Public sector banks were only able to give 36.2 percent of their credit to the priority sectors while in 2014 it rose to 39.4 percent almost close to the stipulated target of 40 percent.However for the private sector banks, they have crossed the minimal limits in 2014 set by RBI. They were able to provide 43 percent of their Adjusted Net bank Credit to the Priority Sector.

FIGURE 2 PERCENTAGE TO ANBC[2] CREDIT TO AGRICULTURE AND ITS BREAK UP



SOURCE :Author's own work as per data from Economic Survey of India (2014-15).

[2] Adjusted Net bank Credit

TABLE 3 NUMBER OF BRANCHES OF SCHEDULED COMMERCIAL BANKS IN INDIA .

As on 31st March	Rural	Semi urban	Urban	Metro	Total
2009	31476	19126	15273	14325	80200
2010	32943	20855	16686	15446	85480
2011	33905	23114	17599	16419	91037
2012	36356	25797	18781	17396	98330
2013	37953	27219	19327	17844	102343

SOURCE: Department of Financial Services: Financial inclusion report

The above table shows the progress of commercial banks with respect to the number of offices in these respective areas. It can be seen that the number of offices of banks in the rural areas is higher as compared to the metropolitan or urban areas .It clearly highlights the agenda of financial inclusion by banks and increasing their presence in the rural areas is one of the major steps in this regard. Nearly 5,300 rural branches were opened during the last one year. Out of these, nearly 4,600 branches were opened in unbanked rural centres (Tier V and Tier VI centres). There have been immense efforts to enable priority sector lending especially through rural expansion.

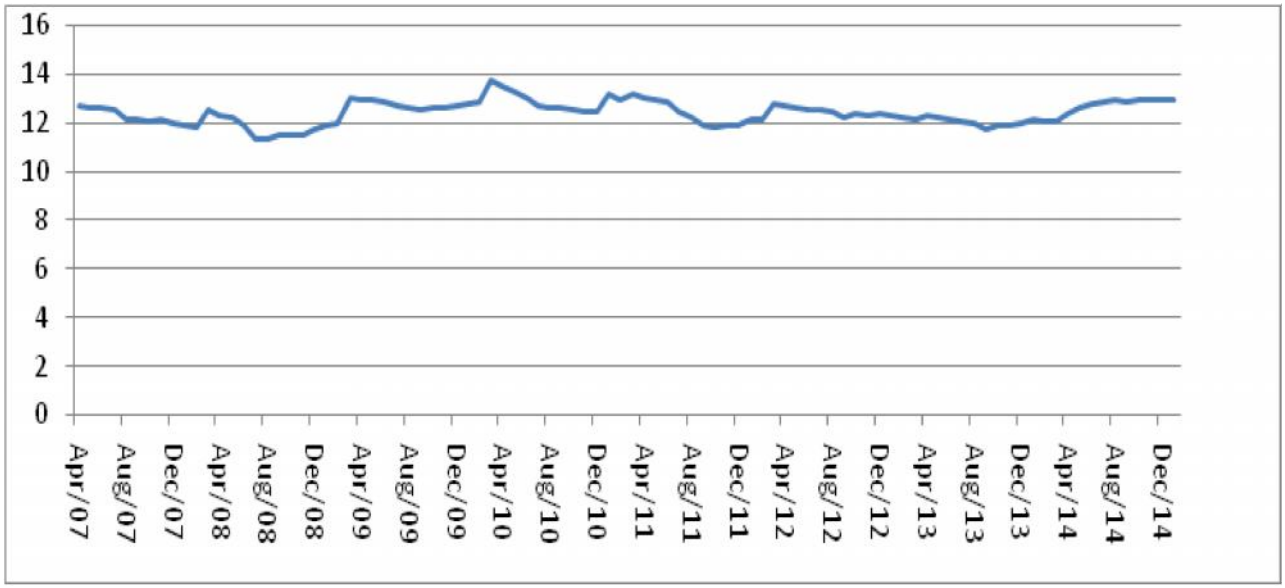
TABLE 4 GROWTH OF ADVANCES TO PRIORITY SECTOR OVER THE YEARS

Yr.	1969	2005	2006	2007	2008	2009	2010	2011	2012	2013
I	5.04	4007.7	5467.7	7037.5	8247.7	9674.1	11384.0	13373.3	14909.1	16952.6
II	14.0	36.7	37.2	36.5	34.9	34.8	35.1	33.9	32.3	32.2
III	15.0	38.1	38.2	37.4	35.6	35.4	35.6	34.5	32.9	31.2

I: SCB's advances to priority sector (billion ₹)
II: Share of priority sector advances to total credit of SCB's
III: Share of Priority sector advances as a percentage of total non -food credit of SCB's
SOURCE: Progress of Commercial banks in India, RBI

The table above depicts the total advances by Scheduled Commercial Banks to priority sector. It shows the transition to an increase in share of PSL as a percentage of total credit. In 1969 this total share was a minimal of only 14 percent, however the values after the year 2005 indicate a drastic shift in the total percentage .This is mainly attributed to the vigorous and determined efforts by RBI and the governments to increase the credit flow in this direction.

FIGURE 3 CHART SHOWING THE PERCENTAGE OF AGRICULTURE AND ALLIED ACTIVITIES CREDIT AS A PERCENTAGE OF TOTAL NON -FOOD CREDIT.



SOURCE: Author's own calculation based on data from RBI.

The graph above shows the percentage of agriculture credit by scheduled commercial banks as a percentage of total non food credit .It is evident from the above figure that this percentage has always been well above 10 percent in past few years of study.

In an Agriculture based economy agriculture credit is one of the main drivers of growth of the entire economy .Government fixes overall targets for Agriculture credit bank wise.

According to Annual report (2012-13) by RBI as on March 31, 2013 domestic banks (both public and private) were below the target of priority sector lending. During this period, 16 of the 26 public sector banks, 10 of the 20 private sector banks and 2 of the 41 foreign banks could not achieve the target of overall public sector lending.

For the year 2013-14(Annual report RBI 2013-14) this target was fixed at Rs.7000 Billion. Another major inititiative that has been taken up in this regard is that banks which have met their individual targets can sell priority sector lending certificates to foreign banks having less than 20 branches and which have not been able to meet the stipulated targets.

TABLE 5: TARGET AND ACHIEVEMENT FOR AGRICULTURAL CREDIT

(Amount in ` billion)

Year	Target	Achievement
2010-11	3750	4,683
2011-12	4750	5,110
2012-13	5000	6,074
2013-14	7000	7,116

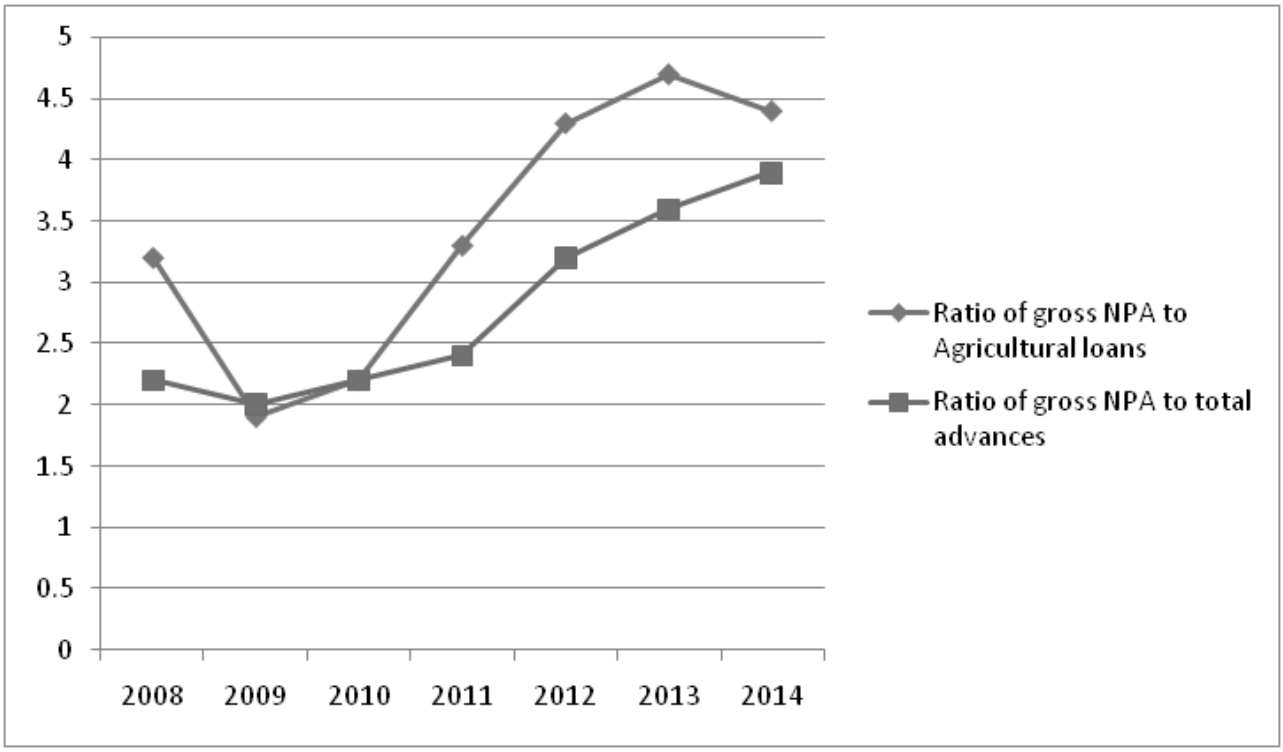
SOURCE: RBI annual report 2013-14.

The growth in NPA, post 2008 global crisis, in the priority as well as non priority sectors has been quite high.

TABLE 6 NPA AGRICULTURE LOANS(RS. MILLION)

Year	Agriculture Loans	Gross NPA	Ratio of gross NPAs to agriculture loans
2008	3081	97	3.2
2009	3774	72	1.9
2010	4636	104	2.2
2011	5072	167	3.3
2012	5802	248	4.3
2013	6248	302	4.7
2014	7792	340	4.4

FIGURE 4 GROSS NPA RATIO



SOURCE: Author's own work based on data from RBI.,Handbook of Statistics on the Indian Economy.

The figure above clearly indicates the surging level of NPA of agriculture loans as compared to total NPA levels of Scheduled Commercial Banks.The Government introduced the interest subvention scheme for short term crop loans. However Interest subvention scheme as an incentive to farmers for prompt repayment has not helped in improving the asset quality in the agriculture sector. The ratio of Non-performing assets in Agricultural loans has been increasing steadily over the past few years. The recovery of Agricultural advances was about 75% during the past few years and needs to be improved further.

Recent Changes

There have been many novel concepts in this sector ever since the independence to face credit disbursal challenges. Self Help groups -Bank linkage programme is one of the most successful programme in this regard, which promotes inclusion through microfinance. Farmer Cooperatives, joint liability groups (JLGs) have proved to be of immense support to the farmers wanting to avail credit. Banks from time to time have taken up many new initiatives like the Kisan Credit Card (KCC), General Credit card (GCC) and Interest Subvention Schemes.

TABLE 7 FLOW OF AGRICULTURE CREDIT (TARGET AND ACHIEVEMENT)UNDER KISAN CREDIT CARD (KCC) IN INDIA(2007-2008 TO 2013-2014)

(Rs. in Crore)

Year	Target	Achievement
2007-08	225000	254657
2008-09	280000	301908
2009-10	325000	384514.2
2010-11	375000	468177.43
2011-12	475000	511029.09
2012-13	575000	607375.62
2013-14	700000	730765.61

SOURCE: Indian Statistical data

Under the Pradhan Mantri Jan DhanYojana overdrafts have been extended by banks up to Rs 5,000 . PMJDY accounts will be eligible for classification under priority sector advances ('others' category) as also weaker sections, provided the borrowers' household annual income does not exceed Rs 60,000 for rural areas and Rs 1,20,000 for non-rural areas. Under PMJDY, the overdraft facility is permitted to Aadhar enabled accounts after "satisfactory operation" of accounts for six months.

Bank	No. of accounts		
	Rural	Urban	Total
Public Sector Bank	533	451.47	984.47
Regional Rural Bank	184	32.98	216.98
Private Sector Banks	32	20.12	52.12
Total	749	504.57	1253.57

SOURCE:Progress report PMJDY January ,2015.

To further channelize the flow of credit in the targeted sections an Adjusted Priority sector lending mechanism has been proposed .It has been noticed that there is a major regional disparity in allotment of PSL. It has been pointed out that primarily southern and western states have largely benefited from PSL credit while North eastern,central and eastern state have been on the back foot while availing PSL services. Under the Adjusted PSL mechanism additional weight age shall be given to deprived sectors and districts of the country. Likewise it has been proposed to incentivize these sectoral achievements for banks.

Budgetary Highlights and Likely Impact on Agriculture

In the budget 2015, the focus on farm credit continued to be a priority of the government. A target of Rs. 8.5 lakh crore for farm credit has been outlined which will be provided by Bank networks.This implies an increase in farm credit target as compared to previous years. In addition to this it has been outlined that financial support will be provided to improve irrigation and soil health for enhancing agricultural productivity. It has also been proposed to form a unified agriculture market at the national level where small and marginal farmers can also market their produce. It will have a long term impact in forming the agriculture market trade, changing the intermediation level, price stability and providing better valuation of the produce for the farmers.

Conclusion

Though the Indian banking Sector received accolades for being resilient to the global shocks, but they need to go further in terms of providing inclusive growth to the society through an increased purview of priority sector lending. Though they face risk pertaining to NPAs, but a systematic and strategically formulated approach to credit and recovery will eventually relieve them of the short term losses.

A major initiative has been taken to set aside special amounts for small and marginal farmers which amount to large percentage of farmers in the country .The efforts of the priority sector have led to dramatic increase in employment generation and economic upliftment across the society.A vast increase in Agricultural production has been reported along with substantial capital formation in fields .Food grain production has been self sufficient despite

an exponential population growth. Rural India can be the potential growth driver of the economy and this potential can only be harnessed if we invest in Agricultural value chain and value creation.

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Impact of Mechanization in Agriculture and Comparative Economics : An Empirical Evidence from Bihar

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1.1 Introduction

Traditionally, humans and animals were used for field operations and processing activities. As a result of introduction of mechanical powers, the process of farm mechanization began. Adoption of agricultural tools/ machinery and other implements provide technology to facilitate agriculture by efficient utilization of inputs, besides reducing drudgery. Traditionally, Indian farmers relied on equipments, which were simple and could be easily fabricated by village craftsmen. Since introduction of mechanical power, agricultural engineering started gaining importance, and thus, organized professional activities started. It is generally believed that the benefits of modern farm technology have been availed by large farms only. Even farmers with small holdings utilize selected improved farm equipments on 'custom hiring basis' to improve productivity and thus, ultimate increase in quantum of production. Such use of improved farm implements and equipments is preferred with a view to reduce cost of production also.

Equipments for : (i) tillage, (ii) sowing, (iii) irrigation (iv) plant protection, and ; (v) threshing - have widely been accepted by them. In such endeavour and response towards mechanization, Bullock drawn steel plough and disc harrow/ cultivator have been adopted more by the small and semi-medium groups of farm holders. It is, however, interesting to note that 'adoption of improved mechanization inputs' has been low in the country. In regard to the uses of irrigation pumps to tractors, it varied from 13.85 per cent to 1.78 per cent. The adoption percentages were 1.78 for tractor, 13.85 for irrigation pumps, 2.15 for thresher and 23.00 per cent for bullock drawn harrow/ cultivator.

It is to be noted here that the mechanical power threshers were introduced in the late sixties and by seventies; they became very popular, even amongst small farmers. It was more particularly used for threshing wheat crop. Because of utility of grains, as well as Bhusha, thresher design in India required a separate threshing principle to that of designs of European and American countries. The R & D efforts of the scientists led to the development of 'spike tooth threshing mechanism' with 'aspirator blower', which has, since been universally accepted in power threshers. As far as manufacturing of agricultural machineries, tools and implements is concerned, the country is well equipped to meet the requirement of Indian farmers. India has been exporting farm implements. Tractors, irrigation pumps, engines, plant protection machinery, processing and dairy equipments are manufactured by organized sectors. On the other hand, (i) hand tools, (ii) bullock, and; (iii) tractor drawn machineries are manufactured by 'unorganized small scale industries (UOSSIs)'. Traditional tools and implements are mainly fabricated by village artisans. The Bureau of Indian Standards (BIS) is mandated to ensure quality manufacture and marketing of agricultural machinery. The Bureau also issues ISI quality certificate marks. The Government of India has established Farm Machinery Training & Testing Centre (FMTTC) to promote quality farm machinery. For items which are linked to safety and health hazards, it is mandatory to have minimum safety standards built into the design or in the installation of machinery during operation. However, merely establishment of FMTTC, mandatory provisions of safety, issuing of quality certificates and ISI mark, etc., will not change the scenario of Indian agricultural sector. To ensure positive effects of farm mechanization on increase in productivity, reducing cost of cultivation and achieve comparative economics of labour and machinery, farmers (particularly marginal and small), need to be promoted and incentivized for using farm machineries in their day to day agricultural practices. Favourable effects of farm mechanization on agricultural production also depend on the general willingness and high degree of responsiveness of farmers towards adopting mechanization as far as possible.

Having understood the desirability and need of farm mechanization, policy efforts have been made (from time to time) , by the Government of India. It mainly focused on promoting Mechanization in Eastern India through two Central Sector Schemes, namely: (i) Promotion and Strengthening of Agricultural Mechanization through

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Training, Testing and Demonstration (PSAMTTD) and; (ii) Post-Harvest Technology and Management (PHTM) during the 11th Five Year Plan. In addition, Mechanization is also being promoted under various other programmes, like : Macro Mod Management of Agriculture (MMA), Rashtriya Krishi Vikash Yojana (RKVY), National Horticulture Mission (NHM), National Food Security Mission (NFSM).

1.2 Objectives of the Study

In view of this increased focus on Mechanization of Agricultural Growth in the eastern region, the present study intends to assess/ examine the following objectives: (i)To assess the pattern of mechanization at the crop level and effect on costs incurred (ii)To assess the comparative economics of labour and machinery in the region and (iii) To suggest measures (if any), on the basis of field survey.

1.3 Methodology

With a view to address the objectives of the study, tabular analysis supplemented with economic analysis (wherever possible), has been followed as the broad empirical methodology. Major data sources for the study were primary data surveys in Bihar. This has been supplemented with the farm level data of the cost of cultivation studies, which gave operation wise labour use details for secondary data analysis. For primary survey multi-stage sampling method has been adopted. As all the districts in Bihar were covered under some of the/any of the Mechanization Programmes (comprising; (i) PSAMTTD and (ii) PHTM, so in due consultation with the Co-ordinator of this study, i.e., IEG, University of Delhi- 110 007, at the first stage, Bhagalpur district (covered under Mechanization Promotion Programme in the state during the 11th Five-Year Plan) was selected. The district had performed well in terms of physical and financial targets and achievements. At the second stage, based on secondary information obtained from Agriculture Department's sources, two villages/cluster of villages were chosen in two different blocks of the district. One such village/cluster of villages was, where level of agricultural mechanization was very low or negligible, while the other, where mechanization level was higher. In this way, Chandpur Deshari, Chandpur Kaneri and adjoining villages under Jagdishpur block were selected as village having no/less agricultural mechanization and Mohanpur, Sojour- Gobarain cluster of villages under Shahkund block of the district, were identified as village with higher degree of mechanization. At the third stage, a complete listing of all the households using machinery for farm operations was made. At the fourth stage of sampling, out of this complete listing, 50 households (HHs) were selected randomly from each of the two sets of villages. Due care was taken to maintain proportionate sample size from the existing farm classes of the enlisted farm households.

TABLE 1 DISTRIBUTION OF THE SAMPLE HOUSEHOLDS (HHs) BY FARM SIZE CLASSES AND SET OF VILLAGES CHOSEN

A	High Mechanized Strata/ Villages				
	Marginal	Small	Medium	Large	Total
	17	10	12	11	50
B	Low/Less Mechanized Strata/Villages				
	28	14	04	04	50
Total(A+B)	45	24	16	15	100

SOURCES: Field Survey data

1.4 Reference Period

Reference period of secondary data used in this study was 2001-02 to 2009-10. For primary data, it was 2008-09 to 2010-11.

1.5 Extent of Farm Machinery Use

In this section of the paper, data have been analyzed for core to the extent of farm machinery use (by type). It includes: (i) manual, (ii) animal operated, (iii) power operated, (iv) tractor operated, and; (v) self propelled machines/implements. Analysis has been made to evince the following facts: (a) number of farmers using the machinery, (b) number of farmers owning the machinery, (c) (i) as per cent of total number of farmers, (i.e. 100), and (ii) No of farmers owning machinery as percentage of total number of farmers (i.e., 100).

On having a glance on data in the table, it is envisaged that quite a large number of farmers used manual, tractor and power operated machineries (99%, 90% and 89%) respectively. However, few of the surveyed households (HHs) owned power and tractor operated machineries (11% & 7%) respectively. Most of the sample Households (Hhs) owned manual and animal operated machineries (28% & 21%) respectively (Table No.- 2).

TABLE 2 EXTENT OF FARM MACHINERY USE

Machinery type	No. of farmers using the machinery (1)	No. of farmers owning the machinery (2)	Total no farmers (3)	(1) as % of (3)	(2) as % of (3)
Manual	99	28	100	99.00	28.00
Animal operated	59	21	100	59.00	21.00
Power operated	89	11	100	89.00	11.00
Tractor operated	90	07	100	90.00	07.00
Self Propelled	---	---	---	---	---

PRIMARY SOURCE: Field level data.

1.6 Farmers Using Machinery : Operation-wise

This section of the paper seeks to examine number and percentage distribution of farmers using machinery (operation wise). The operations from ploughing to 'transportation and marketing' and 'any other' have been taken into consideration for analysis. Data in the table draws attention towards the fact that most of the farmers using animal, manually operated, power operated and tractor operated machineries were meant for operations like: (i) transportation and marketing, (ii) weeding, (iii) plant protection, (iv) harvesting, (v) threshing, (vi) irrigation, and; (vii) ploughing (21 percent, 100 percent, 68 percent, 100 percent, 83 percent, 100 percent and 90 percent) respectively. Manually operated sowing and plant protection machineries and power operated irrigation devices (diesel pump sets) were also prominently used by surveyed farmers (94, 68 and 100 number) respectively (table 3). As far operation wise distribution of farmers using machineries is concerned, while only 10 per cent and 6 per cent of the sample households used animal operated and power operated machineries for ploughing and sowing respectively, 79 per cent also used tractor operated implements in 'transportation and marketing operations' (table-4).

TABLE 3 NUMBER OF FARMERS USING MACHINERY - OPERATION-WISE

Operation	Animal Operated	Manually Operated	Power Operated	Tractor Operated	Any Other	Total
Ploughing	10	--	--	90	--	100
Sowing	--	94	6	--	--	100
Irrigation	---	---	100	---	---	100
Weeding	---	100	---	---	---	100
Plant Protection	---	68	---	---	---	68
Harvesting	---	100	---	---	---	100
Threshing	17	83	---	---	---	100
Transportation and Marketing	21	---	---	79	---	100
Any other	---	---	---	---	---	---

Primary source : Field level data.

TABLE 4 PERCENTAGE DISTRIBUTION OF FARMERS USING MACHINERY- OPERATION-WISE

Operation	Animal Operated	Manually Operated	Power Operated	Tractor Operated	Any other	Total
Ploughing	10	--	--	90	--	100
Sowing	--	94	6	--	--	100
Irrigation	---	---	100	---	---	100
Weeding	---	100	---	---	---	100
Plant Protection	---	100	---	---	---	68
Harvesting	---	100	---	---	---	100
Threshing	17	83	---	---	---	100
Transportation and Marketing	21	---	---	79	---	100
Any other	---	---	---	---	---	---

PRIMARY SOURCE : Field level data.

1.7 Time Use of Machine

In this section of the paper, attempt has been made to enumerate operation wise total number of hours of usage (both in quantitative and percentage terms). Operation wise hours of machine usages have been calculated in cases of : (i) animal operated, (ii) manually operated, (iii) power operated, and; (iv) tractor operated activities and machines. Data in the table clearly displays that in case of animal operated devices, ploughing took maximum time (35 hours/ha) and operation of harvesting was ahead in manually operated machines (125.20 hrs/ha). Irrigation and ploughing were the main operations that took quite larger hours/ha by power (means diesel) operated and tractor operated machines (32 and 7.10 hrs/ha) respectively. Threshing and sowing operations by animal operated and manually operated machines were also found to have taken longer hours (16 hrs/ha 110 hrs/ha and 74.20 hrs/ha) respectively (table-5). In percentage terms, it is revealed that usage of machines in case of ploughing, weeding, plant protection and harvesting by animal operated and manually operated machines were maximum (83.14 percent,

100 percent, 100 percent and 100 percent) respectively. Irrigation and 'transportation and marketing' showed highest distribution of power operated and tractor operated machine usages (100 percent and 31.03 percent) respectively. Other activities like: (a) transportation and marketing, (b) sowing by animal and manually operated machines), (c) sowing (by power operated source) and ; (d) ploughing (by power and tractor operated machines) also got more hours of usages (68.97 percent, 95.24 percent, 4.76 percent and 16.86 percent) respectively (table no.- 6). It will be desirable to note that here power operated means not necessarily electric power driven machines/ implements, but it represents diesel energy driven tools/ machines. In the year 2011-12, along with ploughing, seed spreading operation was also undertaken by such small diesel power driven implements to very small extent in mechanized cluster of villages.

TABLE 5 TOTAL NUMBER OF HOURS OF USAGE - OPERATION-WISE

Operation	Animal Operated	Manually Operated	Power Operated	Tractor Operated	Any Other
Ploughing	35	--	--	7.10	--
Sowing	--	74.20	3.71	--	--
Irrigation	---	---	32.00	---	---
Weeding	---	32.00	---	---	---
Plant Protection	---	16.00	---	---	---
Harvesting	---	125.20	---	---	---
Threshing	16	110.00	---	---	---
Transportation and Marketing	10	---	---	4.5	---
Any other	---	---	---	---	---

PRIMARY SOURCE : Field level data.

NOTE: Total Number of hours = Number of days × Number of hours a day.

TABLE 6 PERCENTAGE DISTRIBUTION OF NUMBER OF HOURS OF USAGE - OPERATION-WISE

Operation	Animal Operated	Manually Operated	Power Operated	Tractor Operated	Any Other	Total
Ploughing	83.14	--	--	16.86	--	100
Sowing	--	95.24	4.76	--	--	100
Irrigation	---	---	100	---	---	100
Weeding	---	100	---	---	---	100
Plant Protection	---	100	---	---	---	100
Harvesting	---	100	---	---	---	100
Threshing	12.70	87.30	---	---	---	100
Transportation and Marketing	68.97	---	---	31.03	---	100
Any other	---	---	---	---	---	100

PRIMARY SOURCE : Field level data.

1.8 Farm Machinery Usage and Costs Incurred : Ploughing and Seed bed Preparation

In this section of the paper, efforts have been made to grasp operation wise usage of farm machineries (both in absolute and percentage terms). Total number of hours and total cost (machine and source of power wise), have been calculated. Data related to (i) animal operated plough, disc harrow and cultivator, (b) power tiller operated rotavator, and; (c) tractor operated plough, disc harrow, cultivator and rotavator have been analyzed in this section. Data in tables clearly denote higher number of hours and larger total costs (in absolute number and percentages) used and incurred in ploughing and seed bed preparation by animal operated machines (35 hrs, ₹ 7,650 and 63.59%) respectively. In case of tractor operated plough, time required in the operation, as a result costs incurred, came down significantly both in absolute and percentage terms (7.10 hrs, ₹ 4146.40, 16.71% and 35.15%) respectively (table no.- 7 & 8). Percentages of total number of hours and total cost have been calculated from their respective totals. Total number of hours has been enumerated by

multiplying number of hours per day with number of days in the crop season.

TABLE 7 PLOUGHING AND SEED-BED PREPARATION (ABSOLUTE NO.)

Source of Power	Machine	Total Number of hours	Total Cost
Animal operated			
	Plough	35	7650.00
	Disc Harrow	---	---
	Cultivator	----	---
Power tiller operated			
	Rotavator	---	---
Tractor Operated			
	Plough	7.10	4146.40
	Disc Harrow	---	---
	Cultivator	---	---
	Rotavator	---	---
Total		42.5	11796.40

PRIMARY SOURCE : Field level data.

Total No of hours = No of hrs per day x No of days in the crop season

TABLE 8 PLOUGHING AND SEED-BED PREPARATION (IN %)

Source of Power	Machine	Total Number of hours	Total Cost
Animal operated			
	Plough	82.35	63.59
	Disc Harrow	---	---
	Cultivator	----	---
Power tiller operated			
	Rotavator	---	---
Tractor Operated			
	Plough	16.71	35.15
	Disc Harrow	---	---
	Cultivator	---	---
	Rotavator	---	---
Total		10.00	100.00

PRIMARY SOURCE : Field level data.

1.9 Sowing and Planting

In this section of the paper, attempt has been made to evolve total number of hours and total costs (in absolute and percentage terms both), source of power wise for sowing and planting. There is sufficient data to believe that adoption of mechanized practices in operations like sowing and planting- is very low in case of surveyed farmers. Only 4.76 per cent of total number of hours and 21.05 per cent of total cost were devoted to seed drill used through power tiller/tractor operated. Manually operated seed drill shared 74.20 hrs/ha that costed Rs. 7,413 in total. On the other hand, power operated seed drill operation incurred the expenditure of ₹ 1,976 only i.e., 26.66 per cent of the manually operated machine (table Nos. 9 & 10). 95.24 per cent of the total number of hours was found to have been devoted in manually operated seed drill operation. It means levels of mechanization in sowing and planting activities were very low.

TABLE 9 SOWING AND PLANTING (ABSOLUTE NO.)

Source of Power	Machine	Total Number of hours	Total Cost
Manually operated			
	Seed drill	74.20	7413.00
Animal operated			
	Seed drill	---	---
	Drill plough	---	---
	Mustard drill	---	---
	Row planter	---	---
	Sugarcane planter	---	---
	Potato Planter	--	---
Power tiller/Tractor operated	Seed drill	3.71	1976.00
	Zero till drill	---	---
	Sugarcane Planter	---	---
	Potato planter	---	---
	Cultivator	---	---
	Rotavator	---	---
Total		77.91	9389.00

PRIMARY SOURCE : Field level data.

TABLE 10 SOWING AND PLANTING (IN %)

Source of Power	Machine	Total Number of hours	Total Cost
Manually operated			
	Seed drill	95.24	78.95
Animal operated			
	Seed drill	---	---
	Drill plough	---	---
	Mustard drill	---	---
	Row planter	---	---
	Sugarcane planter	---	---
	Potato Planter	--	---
Power tiller/Tractor operated	Seed drill	4.76	21.05
	Zero till drill	---	---
	Sugarcane Planter	---	---
	Potato planter	---	---
	Cultivator	---	---
	Rotavator	---	---
Total		100.00	100.00

PRIMARY SOURCE : Field level data.

1.10 Irrigation, Weeding and Inter Culture

In this section of the paper, exercises have been undertaken to dig up source of power-wise time consumed and total costs incurred in regard to farm machinery usages. Source of power includes : (i) manually operated, (ii) animal operated, (iii) power tiller/tractor operated, and; (iv) self propelled. Calculations have been made both in absolute and percentage terms. Flat out, it could be seen that cent per cent irrigation operation was done by diesel pump set. However, weeding and inter-culturing were undertaken by cent per cent manually operated devices. All in total 32 hours were required for irrigating 1 ha. of cropped land that costed ₹ 4,267.66. No farm household was found to have used electric pump for irrigation (table Nos.- 11 and 12). In weeding and inter culturing operations also, 32 hours by manually operated exercises were needed. It costed ₹ 1,250/- only, means only ₹ 39.06/hr was the remuneration of labourers for this purpose (table nos. - 13 & 14).

TABLE 11 IRRIGATION (ABSOLUTE NO.)

Source of Power	Machine	Total Number of hours	Total Cost
	Diesel Pump	32	4267.66
	Electric Pump	---	---
Total		32	4267.66

TABLE NO. 12 IRRIGATION (IN %)

Source of Power	Machine	Total Number of hours	Total Cost
	Diesel Pump	100.00	100.00
	Electric Pump	---	---
Total		100.00	100.00

PRIMARY SOURCE : Field level data

TABLE 13 WEEDING AND INTER-CULTURE (ABSOLUTE NO.)

Source of Power	Total Number of hours	Total Cost
Manually operated	32	1250
Animal operated	---	---
Power tiller/Tractor Operated	---	---
Self Propelled	---	---
Total	32	1250

TABLE 14 WEEDING AND INTER-CULTURE (IN %)

Source of Power	Total Number of hours	Total Cost
Manually operated	100.00	100.00
Animal operated	---	---
Power tiller/Tractor Operated	---	---
Self Propelled	---	---
Total	100.00	100.00

PRIMARY SOURCE : Field level data

1.11 Plant Protection Equipment and Harvesting

Having scrutinized the collected data, it is revealed that plant protection equipments were cent per cent manually operated. Harvesting operation, particularly for paddy, was found to have been totally performed by manual sickle. Manually operated plant protection equipments did take 16 hours of time that costed ₹ 384/- No other source of power was used for plant protection equipment (table Nos. 15 & 16). As far harvesting operation is concerned, only manual sickle was found to have been used. It took nearly 125.20 hrs/ha. and costed ₹ 3870/- (table Nos- 17 & 18). It is to be noted that 'the harvester and reaper machine' etc., were made available in the surveyed areas through Farm Machinery Bank in the late 2011-12, and the primary data collected was confined to the last crop season, i.e., paddy. It might be due to this, that no machinery was found to have been used in harvesting operation. Longer time usage in harvesting by manual sickle clearly reveals low level of mechanization in the area/region.

TABLE 15 PLANT PROTECTION EQUIPMENT (ABSOLUTE NO.)

Source of Power	Total Number of hours	Total Cost
Manually operated	16	384.00
Animal operated	---	---
Power tiller/Tractor Operated	---	---
Self Propelled	---	---
Total	16	384.00

TABLE 16 PLANT PROTECTION EQUIPMENT (IN %)

Source of Power	Total Number of hours	Total Cost
Manually operated	100	100
Animal operated	---	---
Power tiller/Tractor Operated	---	---
Self Propelled	---	---
Total	100	100

PRIMARY SOURCE : Field level data

TABLE 17 HARVESTING (ABSOLUTE NO.)

Source of Power	Total Number of hours	Total Cost
Manually Sickle	125.20	3870.00
Animal operated gnut/ potato digger	---	---
Tractor Operated reaper	---	---
Self- Propelled reaper	---	---
Total	125.20	3870.00

TABLE 18 HARVESTING (IN %)

Source of Power	Total Number of hours	Total Cost
Manually Sickle	100	100.00
Animal operated gnut/ potato digger	---	---
Tractor Operated reaper	---	---
Self Propelled reaper	---	---
Total	100	100.00

PRIMARY SOURCE : Field level data.

1.12 Threshing

Having a glance on data in the table, it can be inscribed that cent per cent threshing operation (in case of paddy) was done by paddy thresher, which required 126 hours in threshing full quantum of grain grown/hectare of land. Out of the total grain threshed, 91.57 per cent was done manually, whereas 8.43 per cent of threshing operation was undertaken by animal power. All in total, it costed Rs. 3724/- only (table Nos.- 19 & 20). It is to be again noted here that in this section, information and data of the crops grown in the last crop season only (means paddy), have been obtained and analyzed. It is, therefore, the use of thresher only could be observed in this case. Though machines like, combine harvester and thresher were available in the recently established Farm Mechanization Bank. However, as a result of non-familiarity of the farmers with the use of these machines, and in absence of a full time trained mechanical operator of these machines, their usage was limited.

TABLE 19 THRESHING (ABSOLUTE NOS.)

Source of Power	Total Number of hours	Total Cost
Power operated thresher	---	----
Tractor operated thresher	---	---
Paddy thresher	126.00	3724.00
Maize thresher	---	---
Groundnut thresher	---	---
Any other (Specify)	---	---
Total	126.00	3724.00

TABLE 20 THRESHING (IN %)

Source of Power	Total Number of hours	Total Cost
Power operated thresher	---	----
Tractor operated thresher	---	---
Paddy thresher	100	100
Maize thresher	---	---
Groundnut thresher	---	---
Any other (Specify)	---	---
Total	100	100

PRIMARY SOURCE : Field level data.

1.13Transportation and Marketing

Data help us to show the general idea that more time was devoted (10 hours), means 68.67 per cent of the total usage in transporting the agricultural produces for marketing by animal operated device. Total cost incurred in animal operated transport device stood at ₹ 600.25/- per ha, i.e., ₹ 60.02/- per hour. Tractor operated trolley was used only for 4.50 hours that incurred a cost of ₹ 392.90. It means per hour cost incurred in machine driven device (₹ 87.31) is higher than animal operated device. In percentage terms, the share of costs incurred in animal operated and tractor trolley were 60.44 and 39.56 respectively (Table Nos. 21 & 22). Percentages of total hours devoted for these two modes of transportation and marketing were calculated at 68.97 and 31.03 respectively.

TABLE 21 TRANSPORTATION AND MARKETING (ABSOLUTE NO.)

Source of Power	Total Number of hours	Total Cost
Animal Operated	10.00	600.25
Tractor trolley	4.50	392.90
Total	14.50	993.15

TABLE 22 TRANSPORTATION AND MARKETING (IN %)

Source of Power	Total Number of hours	Total Cost
Animal Operated	68.97	60.44
Tractor trolley	31.03	39.56
Total	100.00	100.00

PRIMARY SOURCE : Field level data.

Conclusively, it can be congenitally mentioned that if general conditions of roads in remote rural areas are improved and larger use of tractor trolleys are preferred, then costs of transportation and marketing will be certainly reduced to a greater extent.

1.14 Suggested Action Points

On the basis of analytical discussions and primary data based observations made through the preceding sections, the following generalized Suggested Measures can be appropriately suggested:

1. Higher costs of mechanized farming, particularly in wheat, are due to good number of irrigation and threshing operations. It could be reduced to some extent by exploring and developing low cost irrigation infrastructure.
2. Zero tillage (particularly in wheat), saves about 1 and half hour of time required for preparing one hectare of land. It also helps in reducing the consumption of diesel by about 20 litres required in sowing wheat/ hectare of land. So, zero tillage method needs to be popularized and promoted.
3. In the areas/regions of low agricultural mechanization, emphasis should be given on establishing Farm Machinery Banks on district/commissionery levels.
4. In view of the increasing number of farmers willing to adopt mechanization in their agricultural practices, the areas/ regions where Farm Mechanization Banks are already in existence, the number of particular type of machines/implements should be increased.
5. As Power tillers or 2WTs (two-wheel tractors) perform the same tasks as 4WTs, and these are more effective and desirable for marginal and small holdings, so use of Power Tillers (PTs) needs to be assisted and promoted. Formal Credit Agencies/ Institutions, NABARD should readily come forward to provide desired credit to farmers for Power Tillers.
6. Even farmers with small holdings wish to use selected improved farm equipments through custom hiring to increase productivity, and to reduce cost of production. So, demonstration and on 'the field training' should be given/arranged on regular intervals in regard to uses of machines and animals drawn steel plough, disc harrow/cultivators, seed drill, row planter, etc.
7. With a view to overcome the problems of scarcity and/resource to hire machines/tools, Users Group of Farmers 'Co-operative Societies should be formed under mechanization schemes. Further, it should be linked with banks through Micro Finance Lending.
8. In comparatively low mechanized villages/ areas, some of the prominent impediments were non-availability of assured source of irrigation and very poor power supply position, particularly for agricultural operations. To remove these constraints, separate electricity feeders for rural areas be given on priority basis.
9. Mechanized practices in agricultural operations (particularly sowing, planting, etc.), have crept in. But, its level is very low. So, there is need to make farmers more responsive towards mechanization of agriculture by suitably explaining and properly training them about the comparative advantages and usage of agricultural tools, machineries and equipments.
10. Tractor for "Farm Machineries Bank" should be made available on permanent basis.

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Economic Analysis of Growth and Instability of Major Crops in Agriculture : Evidence from Telangana

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Abstract

This paper examines the performance of agriculture in terms of growth and instability of yield, area and production of major crops in Teleagan. It was estimated using the compound growth function. The study is based on time-series data secondary data were collected for a period of 29 years from 1983 to 2012-13. The data were compiled from various published sources. These included various issues of International Crops Research Institute for the Semi-Arid Tropic (ICRISAT), Statistical Abstract, and Districts Domestic Product of Andhra Pradesh. The growth analysis a distressing picture in post reforms period while is augmented in same period rendering the agricultural sector of Telangana as unsuitable. The various cause of low growth rate has analyzed. In the study concluded with some policy implications.

Introduction

Telangana is the twelfth largest state in India in terms of area. It was separated from Andhra Pradesh as a 2nd June 2014. The role of agriculture sector in state economy is very significant. It has produced only 30 percent of the income and 78 % of the working population is dependent on directly and indirectly in agriculture and mostly dependent on rainfall. Monsoon and seasonal condition play a major role in the agriculture production. The contribution of agriculture and livestock under primary sector to the state Gross Domestic Product for the year 2012-13 is 13.67 per cent (BES of Andhra Pradesh, 2012-13). But its total influence through forward and backward linkages with others sectors come much larger. It contains a great deal of demand for industrial products and also influences the service sector. Therefore, agriculture growth is pivotal growth. Realizing this aspect, concerted efforts were initiated in sixties to modernize the sector by adopting modern technology which marked the onset of green revolution in agriculture (Dantwala, 1991). Bhalla (2007) found that during green revolution the later 1960s only few crops got promoted by new technology such as wheat, rice, maize, jowar and bajra. But after economic reform, agriculture growth rate has declined because of lack of public investment in infrastructure. Then another study found that modern technology and liberalization there have been fluctuation in agriculture production rendering an intense debate on agriculture growth and instability in India since it has direct implication for food supply management and macroeconomic stability (Chand and Raju 2009).

Instability and productions and output to growth rate in relations to green revolutions studied, in the Indian context, Indian agricultural at aggregate level and we have contradictory evidence regarding the impact of green revolutions on instability. There are some studies (Sen, 1967) was the first to study the relation between growth and variability of productivity and also the others important studies are Mehra, 1981; Hazell, 1982; Ray, 1983; Nadkarini and Deshapande, 1984; Rao et al., 1988) which concluded that instability has been increased in Indian agricultural during post green revolutions period due to adoptions of modern technology. The contesting evidence was lent by studies like Mahendradev (1987), Ravi Kumar et al. (2003) Sharma et al. (2006), Chand and Raju (2009) and Bhall and Singh (2012) who concluded that growth and instability declined during green revolutions and liberalizations period.

However, looking at the problems from a macro perspective angle, overlooks many peculiarities at regional level since the social-economic and agro-climatic conditions vary from one region to another. Thus, there is need to study the instability at much disaggregate levels so that policy implications will be more relevant. In case of Telangana new state that there is has been divergent growth and instability in agricultural sector in post reforms period, but the source of instability is paid due importance. However, the analysis has not been extended to post reform period when it comes to the agricultural sector of Telangana. In this paper intends to bridge the gap by analyzing the growth and instability in case of Telangana in pre and post reform period. However, the specific objectives of the study area as follows i) to the analyze trends in the growth of area, production and productivity of selected agricultural crops in two sub periods, ii) to measure the extent of instability in area, production and productivity of selected agricultural crops in Telangana, (iii) to explore the sources of instability in area and production.After a brief introduction, the study deals with methodologies and data sources in the second section. The third section is devoted to discussion on reforms in agriculture; the fourth section reveals the results and discussions on results. The study finally concludes with some policy implications.

Data and Methodology

The study is based on time-series data secondary data were collected for a period of 29 years from 1983-84 to 2012-13. The data were compiled from various published sources.

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These included various issues of International Crops Research Institute for The Semi-Arid Tropic (ICRISAT), Statistical Abstract, and Districts Domestic Product of Andhra Pradesh. Compound growth rates of area of these crops were estimated to assertion change in cropping pattern in the state.

Growth Rate Analysis

The study for measuring the growth rate of area, production and Yield use the method of compound growth rate. The formula of estimating compound growth rate is explained as

The growth rate formula in the study is written as:

$$Y_t = Y_o(1 + r)^t \quad \text{(1)}$$

Taking logs of both sides, we get the equation (1) as

$$Log\ Y_t = log Y_o + t\ log\ (1+r)$$

Again, taking the term log (1+ r) us 'ß' and log Y_o as K we can write the equation as:

$$Log\ Y_t = K + ßt \quad \text{(2)}$$

Where Y is the concerned variable area for which the growth rate is being calculated and 'r','t' and 'ß' represent compound growth rate time and exponential growth rate respectively. Thus the exponential growth includes the compound growth rate plus one.

Therefore, we need to figure out the compound growth rate from the exponential growth rate and for that we use the formula of being r = (antilog ß - 1) *100.

Measuring Instability

The instability index developed by Parthasarathy (1984) is used to measure the magnitude of instability. The growth rate and instability of export and import of these two forms is estimated. The instability index is written as:

$$I = \frac{\sqrt{\sum_{i=1}^{n} \text{Log}\,\widehat{Y_t} - \text{Log}\,\widehat{Y_t}}}{n - k}$$

Where 'I' is the instability index 'n' and 'k' imply a number of observations and estimated parameters. This index is unit free and a good measure of instability in the case of time series data. Sen (1989) pointed out that the measure of instability based on exponential time trend is scale free and can be readily used for cross comparisons. Parthasarthy (1986)Chand and Tewari (1991) and Wasim (2007) they also used this method for measuring instability of Indian exports and imports of agricultural commodities.

Results and Discussion

Growth Rate of Area, Productions and Yield of Major Crops and Crop Groups

From Table 1 we look at impact of liberalizations trade of agriculture in Telangana, at much disaggregate levels. The analysis is initiated taking major crops of Telangana,It was analysis growth rate of area, production and yield of all major crops for two periods i.e., pre and post reform period. The result for area shows that except maize, sugar caneand cotton almost all the crops experienced decelerationpost reform period. However, in post reform period the growth rate of most of the crops decelerated except cotton. The reason behind such a dismal pictures is that pre reform period the farmers were cultivating different corps together and that used to act as coping strategy to weather anomalies i.e., drought and flood thereby minimized the crops loss. So there was high crops diversification. But, post liberalizations in 1991 and subsequent year the government encouraged the high value crops instead of those traditional crops which are considered as drought tolerant or flood resistant. In 1997, the eighth five year plan initiated on special foodgrains productions programme, namely 'integrated programme for rice development' restrictions on export of common rice were lifted in 1992.Again the competing demand after neoliberal policies of 1991 and subsequent years for industrializations, urbanizations and rural habitations and so on led to synchronizations of cultivable area (Bhalla and Singh, 2012). The area under maize shows higher growth rate, only because of diversions area from crops cultivations.

TABLE 1GROWTH RATES OF AREA, PRODUCTION AND PRODUCTIVITY OF MAJOR CROPS OF TELEAGANA

(Per hectare)

Crops	Area			Production			Productivity		
	1983-92	1992-2002	2003-2012	1983-92	1992-2002	2003-2012	1983-92	1992-2002	2003-2012
1	2	3	4	5	6	7	8	9	10
Rice	0.96	0.86	2.23	2.34	1.00	3.95	0.82	0.00	0.80
Wheat	-1.95	0.92	-0.66	-0.35	2.42	3.83	0.21	-0.4	3.54
Jowar	-2.31	-2.25	-1.44	-1.01	-1.05	-2.89	0.04	1.12	0.89
Millet	-5.27	-1.07	-3.73	-5.52	0.12	-3.25	0.01	0.08	0.12
Maize	-0.44	2.54***	0.03	2.42***	3.08***	1.19*	0.89	0.44	0.89
Cereal	-1.11	0.16	0.02	1.53	1.25	0.62	0.31	0.57	0.93

1	2	3	4	5	6	7	8	9	10
Groundnut	1.68*	-3.13	0.86*	2.75	-2.82	3.76***	-0.11	1.61	1.16
Pluses	-0.87	0.75***	-1.54	-0.38	1.56	0.72	-0.05	2.64	1.04
Oilseeds	1.05*	-2.24	-1.7	3.11	-2.54	1.49	0.95	1.12	1.47
Sugarcane	1.98	4.67*	1.12	2.3	1.85	-0.71	-1.23	-0.85	0.75
Cotton	5.08***	2.16***	3.57***	5.54	2.67	3.05	3.98	0.42	0.37

SOURCE: www.icrisat.com and statically Abstract of Andhra Pradesh various issues.

NOTE: ***denotes significant at 5 per cent * denotes significant at 1 per cent.

The analysis of growth rate production shows that jowar, rice and wheat were experiencing decline in pre-reform period which again exacerbated in post reforms period. Other crops except millets experienced decelerations in post liberalizations compare to pre reforms period. Maize was the only one crop which maintained a positive and high growth trend in both the periods and maize experience accelerations though not great extent. The growth rate of maize decelerated when compared to reforms performance but the gap is very big. It shows that maize is the only crop that has been benefitted from reforms periods. Somehow,as in maize and rice is also getting benefited though the area has declined. The probable reason cited earlier that trade liberalization brought the crop concentration instead of diversification as expected leading to stabilization of production of maize while rice is preferred to other crops in case there is a crop loss in case of maize cultivation due to errant weather condition. Unlike other crops, maize is drought resistant crop that requires less water to grow. Again, the support pricing for maize is effective as rice. However, deceleration of production performance of other crops in post reform period reflects the fact that reform was not in favour of agricultural growth in Telangana. Again, the analysis of growth rate of yield tells the same dismal story of production and area in the post reform period. Except maize and rice all other crops experienced deceleration in post reforms period. Since the yield is kg per hectare production it reflects the combined effect of both area and production.

Source of Low Growth Rates

The analysis in last sections shows shocking estimate in agriculture particularly post reforms period. In order to find the valid reasons and explore further into the possibilities of revival of agriculture growth we analyze the use of various inputs and some others factors at different points of the time that covers reforms period.

TABLE 2 CHANGING PATTERN OF INPUT USE AND OTHERS FACTORS

Year	Net crop area	Gross crop area	Net irrigated area	Gross irrigated area	Fertilizer (NPK)	Barren land	Non-Agriculture land
1980s	4463	4964	1122	1458	33042	72.0	75.2
1990s	4059	4725	1396	1838	69366	63.7	83.3
2000-04	3985	4660	1412	1864	80754	66.7	87.8
2005-09	4093	5075	1700	2412	122660	91.3	91.3
2010-11	4039	4867	222665	333200	139042	98.1	98.1
2011-12	4066	4971	220513	318227	143998	100.5	100.5
2012-13	4053	4919	197124	284123	148954	103.0	103.0

SOURCE:www.icrisat.com and statistics abstract of Andhra Pradesh various issues.

The table 2 brings out an obvious association of declining productions and productivity with declining input use and some factors. The area under cultivation including both net sown and gross area reveal that the declining pattern of the gross cropped area gets improved after 2000, if we compare the figure between 2012 and 1983 then the reason for low growth rate comes out. In 1980s the gross cropped area was 4964 thousand hectare which after ups and down in between increased to 5075 thousand hectare. In case of net crop area there is a declining trend during the same period 1980 to 2012-13. Thus the decline in net sown area is three times more than the increased in gross cropped area which renders negative returns of production. Again looking at ratio of gross irrigated area to gross cropped area (percentage of gross cropped area irrigated) we get a very disappointing fact. Bhalla and Singh (2009) in their study indicated that when compared with other states it is found that the states like Bihar, Assam, West Bengal, Madhya Pradesh, Andhra Pradesh and Tamil Nadu etc. are having more proportion of cultivable land under assured irrigation. Increasing diversion of agricultural land to non-agriculture use due to undue industrialization and urbanization and increasing trend of barren land appears alarming. It is observed that the non-agricultural

use of land increase by more 50 per cent 1980 to 20012-13. Similarly the amount of barren land has also increased 103.00 two decades and three years.

Change in Cropping Pattern

Crop diversification acts as mechanism for reducing farmers' risk in unpredictable agriculture. However, this decision of the farmer of making the process in which crop specialization/ concentration is incorporated may lead to highly unstable income due to variance in yield, production or price for particular crop (World Bank, 1998). It is acknowledge that the farmers allocated area across different crops based on their relative profitability (Gulati and Sharma 1997). However, in case of study in India, it was found that pace of cropping pattern changed slowly post reform period compared to pre reform period (Bhalla and Singh 2012).

TABLE 3 CHANGING IN CROPPING PATTERN OF TELANGANA

(Per hectare)

Crops	1980s	1990s	200-04	2005-09	2010-11	2011-12	2012-13
Rice	22.6	25.8	24.4	28.2	40.7	28.5	33.5
Wheat	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Jowar	23.8	14.9	9.9	4.8	5.7	6.0	6.5
Millet	3.1	1.1	0.8	0.4	0.3	0.3	0.4
Maize	6.0	6.5	10.3	11.8	10.5	11.4	13.5
Cereal	59.3	49.2	46.0	45.6	45.7	41.8	43.7
Groundnut	14.5	16.4	9.3	7.9	8.2	8.0	10.7
Sesam	1.3	1.5	1.4	0.8	0.5	0.5	0.7
Pluses	15.4	13.9	16.1	13.6	18.0	9.4	10.9
Oilseeds	15.1	17.3	13.9	12.4	10.2	10.8	10.5
Sugarcane	0.7	1.0	1.5	1.8	1.4	2.0	1.3
Cotton	4.2	10.8	13.7	18.0	25.5	22.6	20.8

SOURCE: www.icrisat.com and statistics abstract of Andhra Pradesh various issues

Looking at cropping pattern changes in case of Telangana, it is apparent that there was efficient allocation of areas to others crops though, rice accounted for a bulk share of 50 percent. However, after reform, that trend reversed as there has been completely a concentration in cropping pattern, where in rice accounted for more than 65 percent of gross cropped area. This has implication for agricultural growth and suitability and food security. Because rice is a kind of crop that requires standing water on the field and it is suitable for areas getting about 669.5mm of rainfall during the growing period. However, Telangana is rain deficient state where more than 65 % of its cultivated land is dependent on crops whose fate is dependent on the whims of weather. Thus, crop concentration exposed the farmers to great or weather risk. Drought and floods are common phenomenon in Telangana agriculture. In 2003-04, there was a severe drought in Telangana and so also in 2012. The low diversification of crops and changing cropping pattern towards rice is also a major source of low growth of agriculture production.

Instability of Area, Production and Productivity

The results are shown in Table 4. In cases of area trend instability was declining in pre reform period except for maize. But post reform period it is on raising trend for most of the crops. However, maize is a lone in experiencing positive trend but it is not significant. Rice does not experience any significant changes through both the periods.

TABLE 4 INSTABILITY OF AREA, PRODUCTION AND PRODUCTIVITY OF MAJOR CROPS OF TELENGANA

(Per hectare)

Crops	Area			Production			Productivity		
	1983-92	1992-2002	2003-2012	1983-92	1992-2002	2003-2012	1983-92	1992-2002	2003-2012
1	2	3	4	5	6	7	8	9	10
Rice	0.07	0.07	0.08	0.10	0.11	0.09	0.01	0.04	0.02
Wheat	0.04	0.03	0.06	0.10	0.07	0.10	0.02	0.11	0.07
Jowar	0.00	0.00	0.10	0.06	0.06	0.04	0.01	0.03	0.03

1	2	3	4	5	6	7	8	9	10
M.Millet	0.06	0.03	0.06	0.11	0.10	0.15	0.00	0.01	0.00
Maize	0.01	0.02	0.03	0.03	0.04	0.11	0.01	0.02	0.04
Cereal	0.03	0.04	0.04	0.06	0.08	0.09	0.00	0.01	0.03
Groundnut	0.05	0.03	0.03	0.09	0.08	0.05	0.07	0.18	0.03
Pulses	0.01	0.01	0.06	0.08	0.09	0.07	0.05	0.06	0.01
Oilseeds	0.03	0.02	0.02	0.08	0.07	0.05	0.02	0.04	0.04
Sugarcane	0.08	0.13	0.14	0.09	0.05	0.13	0.03	0.05	0.02
Cotton	0.03	0.07	0.05	0.11	0.10	0.09	0.03	0.06	0.04

SOURCE: www.icrisat.com and statisticsabstract of Andhra Pradesh various issues.

When it comes to production we also observed the same kind of trend as in case of area. Maize production does not experience any significant decline in instability in both the periods while other crops except M.Millet production experiences decline in instability in post reform period. Among these groundnut and Pluses see a huge increase in instability in production in post reform period. The analysis of yield shows the same picture in the sense that most of the crops experiences rise in instability. This gives testimony to the fact in post reforms period the instability of area, production and yield declined for most of the crops.

Conclusion and Policy Implications

The analysis of growth and instability of agriculture in Telangana as revealed by major crops has shown a disappoint picture. Following are the broad finding that emerged from the analysis.

(a) First, Incidences of subsequently of reforms period have not provided any improvement in agricultural sector. Most of the crops experienced a negative growth rates in post reform period except maize.

(b) Second, the irrigation development has been very slow and consequently, much of the cultivated land is still rainfed in Telangana. The source of low growth particular in reforms period have been attributed to poor irrigation intensity, decline in net sown area, gross irrigated area and meager use of fertilizer and other inputs. There has been an alarming decline in net sown area and rising trend of use of land for non agricultural purposes.

(c) The cropping pattern is highly skewed towards maize and crop diversification is very low making it subsistence agriculture in the sense that if there is a natural calamity the entire crop is lost.

(d) The analysis of instability figures estimated that there has been an increase in instability in area, yield and production in post reform period compared to pre-reform period except maize. Since the cropping pattern in Telangana is highly skewed towards maize and there has been diversion of cropped area towards maize cultivation, which stabilized its fluctuations and sustained growth rate in area, yield and production.

The policy implications suggest that the decline in public investment in the form of irrigation, water management and drought and flood control should be reversed. Declining trend of gross cropped area as well as net sown area set the alarm and immediate measures should be taken to either raise the proportion or stabilize them. At the same time irrigation facilities should be enhanced. In many irrigated command areas, effective irrigated area has declined due to deterioration in the distribution of infrastructure.

The crop diversification should be encouraged. The direct incentives like providing the seeds and other inputs at cheaper rate should be undertaken. The poor extension services hinder the adoption of new varieties and techniques. Because of asymmetric information and lack of infrastructure puts the farmers in great trouble when there is natural calamity like drought or submergence of crops due to flood. Yield stabilizing measures should be prioritized. Development of market infrastructure with adequate support pricing, setting up of cold storage, weather insurance, better contact with development authorities or extension services and so on can minimize the production risk of the farmers. Since the study concluded a negative relationship between growth and instability, the growth rate of production and yield can be augmented with minimizing instability.

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AGRO-ECONOMIC RESEARCH

Impact of National Food Security Mission (NFSM) on Input use, Production, Productivity and Income in Gujarat

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I. Background

Global agri-food systems are undergoing a rapid transformation towards higher-value products, stricter food standards and closer international and vertical integration. The ramifications for trade flows, industry structure, competitiveness and social welfare may be far reaching but are not yet well understood. Developing countries like India in particular face technical and institutional constraints, potentially impending a successful participation in emerging value chains. This may have implications for poverty, food security and sustainable development. The global food and nutrition security is in question today with ever-increasing food prices resulting from adverse climatic effects on agricultural production, rise in oil prices, increasing use of grains for biofuels and significant reduction in public spending on agricultural sector over the last three decades. At the same time, world has experienced an unprecedented increase in population during the past century, with a billion people added every decade during the last three decades alone. Thus, changes in food availability, rising commodity prices and new producer-consumer linkages have crucial implications for the livelihoods of poor and food-insecure people. In fact, global food prices witnessed a very sharp increase in 2007 and they continue to rise. Initially it was thought that the increase in food prices was a part of their cyclical nature, aggravated by the adverse impact of weather on production in some parts of the world. However, the continuing surge and the high level of global food prices seen so far till 2008 make it abundantly clear that the recent trend cannot be attributed to any volatility of international prices and there are fears that food prices may stay at these levels or may rise even further. The increase has been particularly very sharp for staple foods. Since 2007, two rounds of food price hikes have contributed to millions of people being hungry or malnourished. These increases in prices of staple foods have led to emergencies and rationing in a large number of countries and there are frequent reports of food riots from various parts of the globe, particularly in under-developed and developing countries, and the picture is turning gloomier day by day. This is causing worldwide concern.

India plays a very important role by its contribution in world food production. It accounts for 10.6 percent of total world's total cereals production (rank third next to China and USA) and 25.5 percent of world's total pulses production (rank first) in 2011. India's size in terms of food consumers is also many times larger than the average size of the rest of the countries, except China, and accounts for 16.7 percent of the world's food consumers. Another important dimension of food security in India is that a large number of rural households in India are food grain producers, a fact which has got positive implications for food access. Food and nutrition security has remained one of the top priorities of policy planners in post-Independence India. Due to deep-rooted poverty, rapidly growing population, low agricultural productivity and resultant food and nutritional insecurity during early independence periods, country had to give high priority to make our population food secure which would in turn mean economic growth and reduce poverty. India has made impressive strides on the agricultural front during the last four decades. Food grains production increased more than five times from 50.82 million tonnes (mt) in 1950-51 to about 264.77 mt in 2013-14 (see, Fig. 1) Virtually all of the increase in the production resulted from yield gains rather than expansion of cultivated area under food grains, which remain stagnant at around 125 million hectares since last more than four decades (since 1973-74). The country has followed a multi-pronged strategy to improve and sustain food and nutrition security. The strategy includes (i) strong support for raising food production, (ii) stable supply of some food staples and (iii) making food available at affordable prices. This strategy embraces several instruments that cover generation and adoption of technology, better availability of inputs, institutional credit, subsidy on farm inputs, improved infrastructure, expansion of irrigation, institutional reforms and mechanism, competitive markets, remunerative prices for farmers/producers, public procurement, system of buffer stocks, open market sales, supply of food through public distribution system, nutrition interventions and trade policy.

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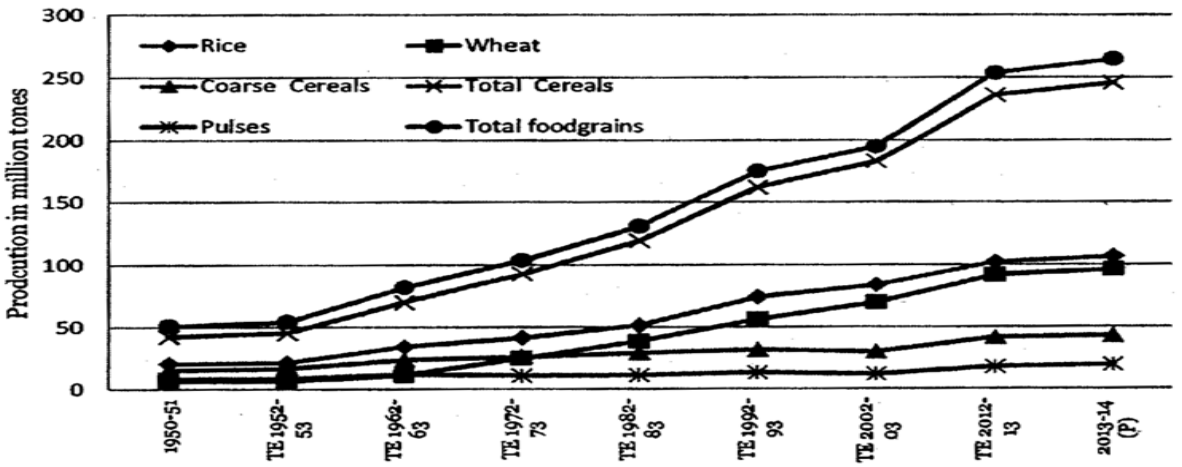
Fig. 1: Production of Foodgrains in India (1950-51 to 2013-14)



However, despite the impressive growth and development, India is still home to the largest number of poor people of the world and accounts for about one-fifth of the world' poor (20.6% share of world's poorest in 2013). Food availability and price stability, which are considered as a good measure of food security till 1970, were achieved through green revolution and PDS, however the chronic food security which is primary associated with poverty, still persisted in the country. In addition to this, per capita per day availability of food grains in India is almost stagnant during last decade. Though physical access to food was achieved, economic access at micro-level lagged behind indicating food and nutritional insecurity. One in every three malnourished children in the world lives in India. Accordingly, to the NFHS of India, 55 percent children living in rural areas suffer from malnutrition compared to 45 percent of children in urban areas. Rural poverty and food insecurity at household level remain pronounced, despite pervasive government interventions. Therefore, issue of ensuring food and nutritional security for the masses has occupied a central place in recent policy debates in India.

The experience of last three decades (1981 to 2010) indicate that the growth rate of food grains production decreased from 2.7 per cent per annum during the period 1986-97 to 0.9 per cent per annum during 1996-2008. The yield growth rate of food grains also decreased from 3.1 per cent to 1.0 per cent during the same time period. The decadal growth indicates that foodgrains production rate declined from 2.7 in 1980s to 2.1 percent during 1990s to 1.9 percent in 2000s. The productivity rate of growth during corresponding period was 2.9, 2.1 and 1.6 percent respectively. Whereas growth in area under foodgrains declined at the rate of 0.2 percent during 1980s and 0.1 percent during 1990s, while same had increased marginally during 2000s at the rate of 0.3 percent per annum. Thus, declining growth of food grains production was partly contributed by the decline in area but largely by the decline in rate of yield. There was also decline in growth in the production of other agricultural commodities. This is clearly reflected in the decelerated agriculture growth from 3.5 per cent during 1981-82 to 1996-97 to around 2 per cent during 1997-98 to 2004-05. Nevertheless, there have been signs of improvement during the recent years. The significant and reverse turn in agricultural production occurred mainly due to the implementation of important programs, such as Rashtriya Krishi Vikas Yojana (RKVY), National Food Security Mission (NFSM), National Horticultural Mission (NHM), various sub-schemes and substantial increase in the state agricultural outlay on agriculture.

The structural change initiated by the reform process in the early 1990s completely transformed the Indian economy. This is evident from the remarkable increase in annual GDP growth rate from 5.3 per cent in 1990-91 to 8.9 percent achieved during 2010-11, which latter lower down to 4.7 percent in 2013-14. The process of reforms transformed the services sector much more than that of manufacturing and agricultural sector. As per the estimates of Department of Economics and Statistics 2014, services sector's contribution in the GDP increased from 49.60 per cent in 1990-91 to 59.90 per cent in 2013-14, as against drastic decline from 24.90 per cent to 13.9 per cent by the agricultural sector during the same time period. Even share of manufacturing sector had remained around 26.1 per cent during 2013-14. The above statistics clearly indicates the transformation of the Indian economy from traditional agrarian to service oriented Indian economy. In the midst of this transformation from agriculture to services, it is very interesting to highlight the revelation by the National Sample Survey (NSS) 66th Round (GOT, 2012-13) that still, more than half of the Indian rural workforce continues to opt agriculture for their livelihood. Despite half of the population working in agriculture, Indian economy was encountering a situation where supply of food grains fell short of demand for consumption, mainly due to rising population.

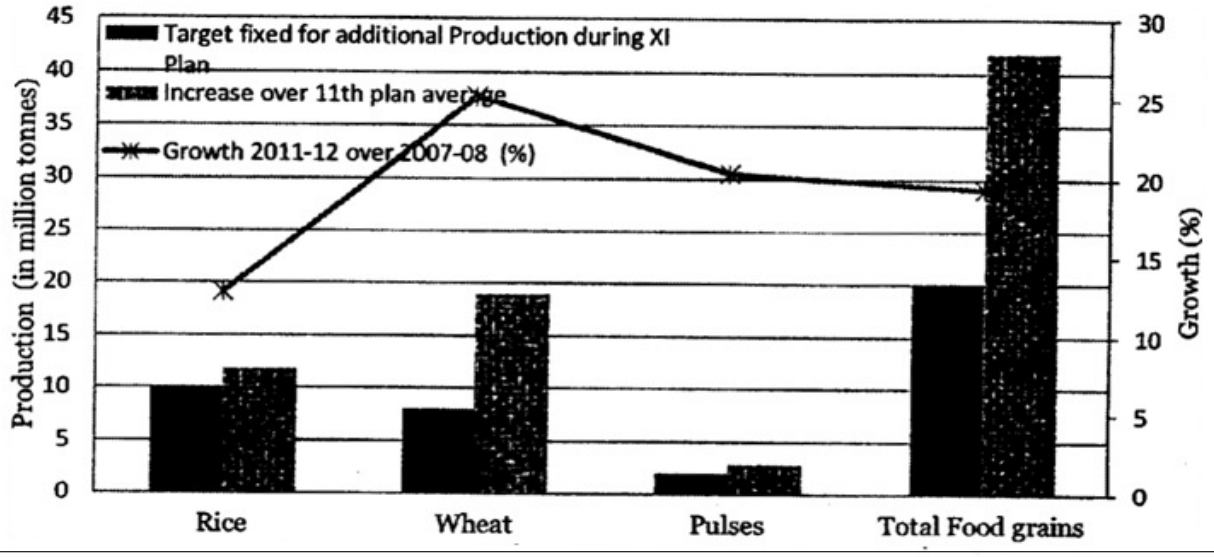
Launching of National Food Security Mission

In order to combat the challenge of deficit food availability in the country, the Government of India launched NFSM in 2007-08 at the beginning of 11th Five Year Plan (FYP). The NFSM Programme targeted to escalate production of rice, wheat and pulses by 10, 8, and 2 million tonnes, respectively by the end of 11th FYP. The mission had adopted twofold strategy to bridge the demand-supply gap. First strategy was to expand area and the second was to bridge the productivity gap between potential and existing yield of food crops. Expansion of area approach was mainly confined to pulses and wheat only and rice was mainly targeted for productivity enhancement. The chief measures adopted to augment the productivity included: (1) acceleration of quality seed production; (2) emphasizing INM and IPM; (3) promotion of new production technologies; (4) supply of adequate and timely inputs; (5) popularizing improved farm implements; (6) restoring soil fertility; and (7) introduction of pilot projects like community generator and blue bull. A total amount of Rs 4500 crores have been spent under NFSM during the 11th FYP.

As stated above, NFSM aimed to escalate production of rice, wheat and pulses by 10, 8 and 2 million tonnes, respectively by the end of Eleventh Five Year Plan. Generating employment opportunities was also a key objective. The NFSM target was to enhance farm profitability so that the farming community retains its confidence in farming activity. With these strategy and goals, NFSM was implemented in 561 districts in 27 states in the country (GOI 2013). Along with the NFSM, RKVY programme was also launched during the same time period. In addition, there were several other state and Centrally Sponsored Programmes running parallel with the NFSM programme. Aided by all the above efforts of the Central and State governments, rice production during the end of 11th Five Year Plan increased by 11.94 mt, wheat production by 19.07 mt and pulses production by 2.89 mt as compared to the production during the year 2006-07 (see, Fig. 2).

The main feature of NFSM has been the promotion of proven agriculture technologies to the farmers in relatively less productive districts. Several technologies and agriculture practices, including improved seeds, planting techniques, resource conservation tolls and technologies, nutrient and soil management, etc. have been delivered through the Mission during the last six years. Timely availability of critical inputs was accomplished through various interventions under the mission for which the response of farmers has been very enthusiastic.

Fig. 2: Target and Achievement of NFSM during XI Plan period



After achieving the goal of increasing foodgrains production by 20 million tonnes during XIth Plan period under NFSM, new targets have been set to produce additional 25 mt of foodgrains by 2016-17: 10 mt of rice, 8 mt of wheat, 4 mt of pulses, and 3 mt of coarse cereals. The main focus is on cropping systems and on small and marginal farmers through development of farmer producer organizations (FP0s) and creating value chain and providing market linkages.

Background of NFSM in Gujarat

The NFSM is in operation in 27 states of the country including Gujarat. NFSM-Rice, NFSM-Wheat NFSM-Pulses and NFSM-Coarse Cereals are being implemented in the state. During the first two years of XIIth five year plan period, no district in the state was covered under NFSM-Coarse Cereal programme (see, Table 1). It was included in the year plan of 2014-15. During the year 2014-

15, out of 33 districts in the state, total 26 districts of the state were covered under NFSM. Out of 26 districts covered under NFSM, all districts were covered for NFSM-Pulses, 02 districts were covered for NFSM-Rice, 05 districts were covered for NFSM-Wheat and 08 districts are covered for NFSM-Coarse Cereal crops. Out of 33 districts in the state, total 26 districts of the state were covered under NFSM. Out of 26 districts covered under NFSM, all were covered for pulses, 02 were covered for rice, 05 were covered for wheat and 08 districts were covered for coarse cereals crops during the year 2014-15.

TABLE 1: YEARWISE NUMBER OF DISTRICTS COVERED UNDER NFSM IN GUJARAT)

Year	Total districts in State	Yearwise district covered under NFSM			
		Wheat	Paddy	Pulses	Coarse Cereals
2007-08	26	04	02	11	-
2008-09	26	04	02	11	-
2009-10	26	03	02	11	-
2010-11	26	04	02	26	-
2011-12	26	04	02	26	-
2012-13	26	04	02	26	-
2013-14 (since 13.08.2013)	33	05	02	26	-
2014-15	33	05	02	26	08

The NFSM is extended to 12th Five Year Plan due to its success in achieving the targeted goal of production enhancement. It is essential to evaluate and measure the extent to which the programme and approach has stood up to the expectations. Therefore, the present study was undertaken with following specific objectives.

Objectives of the Study

a) To analyse the trends in area, production, productivity of rice, wheat and pulses in the selected NFSM districts in Gujarat;

b) To analyse the socio-economic profile of NFSM beneficiary vis-a-vis NFSMNon beneficiary farmers in Gujarat;

c) To assess the impact of NFSM on input use, production, income and employment among the beneficiaiy farmers in Gujarat;

d) To identify factors influencing the adoption of major interventions (improved technologies) under NFSM in Gujarat; and

e) To identify the constraints hindering the performance of the programme in Gujarat.

II. Data and Methodology

The study is based on both secondary as well as primary level data. The secondary data on area, production and productivity of crops and related parameters were collected from various publications of Ministry of Agriculture, Government of India and as well as office of the Director of Agriculture, Government of Gujarat, Gandhinagar, related websites, research reports, papers, presentations. The primary survey data were obtained from selected sample farmers from two NFSM-Wheat districts of the State. For the selection of farmers, a multi-stage sampling design was employed. At the first stage, two NFSM-wheat districts were selected. For the selection of district, crop production triennium average (TE) in the NFSM districts for the last three years period for which latest data were available was arranged in descending order. Out of the districts which were included in NFSM Wheat during last three years, top crop production NFSM-Wheat district and bottom crop production NFSM-Wheat district was selected for the survey for each crop. Accordingly, Ahmedabad and Banaskantha districts were selected for primary data collection.

From each district, two talukas were selected at the second stage, drawing one taluka from the nearby district headquarter and the second at a distance of 15-20 kilometer from the district headquarter. Accordingly Dholka and Sanand taluka from Ahmedabad; Palanpur and Kankrej taluka from Banaskantha district were selected. Subsequently, at the third stage, 75 beneficiaries and 25 non beneficiaries were selected randomly from each taluka making a total sample size of 200 households per district and 400 households for wheat crop in the state of Gujarat. For the selection of beneficiary households in each taluka, the beneficiary list was obtained from the Department of Agriculture/State Officials at the taluka level. After obtaining the beneficiary list, the households were selected in such a way that major component/s covered under the scheme get due representation. For the selection of non-beneficiary households, there was no list available. Therefore, the selection of non beneficiary households was done from same peripheral areas so that similar cropping pattern and baseline characteristics are represented by the non beneficiary households as well. Giving representation to different size classes and various socio-economic characteristics was also tried while selecting the beneficiary and non beneficiary sample farmers. In order to fulfill the first objective of analyzing the trends in production, productivity of rice wheat and pulses in NFSM districts and Non-NFSM districts, secondary data on area, production and productivity of rice, wheat and pulses for 9^{th}, 10^{th} and 11^{th} FYP is used. Average annual growth rate, correlation and graphical analysis were applied using this secondary information. For meeting the remaining objectives, primary household data were used. The primary data relating to general information about the sample

farmers, socio-economic profiles, cropping pattern, details on various inputs used in paddy, wheat and pulses cultivation, irrigation details, yield, returns, reasons for adoption/non-adoption of NFSM interventions, constrains faced for availing the benefits, suggestions for improvement, etc., were collected from the sample beneficiary and non-beneficiary farmers using a pre-tested questionnaire. The primary household data was collected mainly pertaining to the agricultural year 2013-14 which is the latest agricultural year.

The year to year change in irrigated area, fertiliser use as well as growth in area, production and productivity of crops covered under NFSM during plan period was estimated as: Year to Year Change (YYC) = (CYV-PYV)/ PYV*100; Where, CYV- Current year value; PYV- Previous year value. The data of the last year of previous plan was used for estimation of year to year change for the first year of the plan. The planwise average annual growth rate (AAGR) was estimated by taking average of year to year change, as: AAGR (average of year to year to change) = Average of YYC. The relation between per cent change in NFSM expenditure and per cent change in fertilizer consumption, irrigated area, area and production of paddy, wheat and pulses was analyzed by estimating Correlation Coefficient between two data sets.

In order to know the factors impacting the participation of farmers in NFSM, logit regression model using generalized liner model was used. The binary dependent variable was used as: 1 for NFSM beneficiaries; o for Non-beneficiary. The determinants/independent variables considered/used for analysis were age (years), education (code), total farming income (Rs/annum), caste (code), number of people engaged in farming/agriculture, net irrigated area (acre), asset value (Rs), and credit amount borrowed (Rs./acre).

III. Findings from Secondary Data

Impact of NFSM on Foodgra ins Production in the State

- The state has 188.1 lakh hectares of total reporting area. The net sown area accounted for 54.8 per cent of reporting area. The trend in area and fertiliser use in Gujarat during 1997-98 to 2011-12 indicate that during the last three plan periods (9th to 11th plan period), net area sown has grown from 97.3 lakh hectares (1997-98) to 103 lakh hectares (2009-10). Comparatively, the gross cropped area in the state has fluctuated a lot during corresponding period. It has increased from 112.1 lakh hectares in 1997-98 to 122.5 lakh hectares in 2010.11. Out of 103.2 lakh hectares of net sown area, 42.33 lakh hectares area was irrigated in 2010-11. SO, 41.1 per cent of net sown area in the state was irrigated. The groundwater was the main source of irrigation for more than 78 percent of net irrigated area. The percentage of gross irrigated area to gross cropped area in the state was estimated to be 45.27 per cent. The cropping intensity in the state has increased marginally during last three plan periods while irrigation intensity has increased significantly.

- Plan-wise growth analysis shows that during 9th Five Year Plan period (FYP), average annual growth rate of net irrigated area, gross irrigated and cropped area had declined. The same trend was recorded positive in case of fertilizer use. During 10th FYP period, the positive rate of growth in net sown area with significant growth in area sown more than once has increased gross cropped area in the state. The significant increase in net irrigated area as well as area irrigated more than once has increased gross irrigated area significantly (by 8.214 percent per year). The rate of growth in irrigation intensity as well as in cropping intensity was also very high. The total consumption of fertilizer as well as per hectare NSA fertiliser use had also increased tremendously (by 9.4 and 9.9 percent per annum respectively) during this period. During 11th FYP period, the rate of growth achieved during earlier plan period could not to be sustained by the state and decline trend in rate of growth of net irrigated area as well as cropping intensity was noticed. Due to marginal decline in area under irrigation has impacted area sown more than once as well as area irrigated more than once, which ultimately reduced cropped as well as irrigated area and thus cropping as well as irrigation intensity. However, fertilizer consumption has recorded significant increase during the plan period.

- During 9th FYP plan period, the overall consumption of NPK had declined from 10.27 lakh tones in 1997-98 to 9.15 lakh tones in 2001-02, then significantly increased to 14.1 lakh tones in 2007-08, further reported to increase to 17.3 lakh hectares in 2011-12. The NPK consumption per hectare of NSA has also increased from 105.6 kg in 1997-98 to 175 kg in 2011-12. It is worth mentioning here is that despite of State Government flagship programme on 'Soil Health Card' (which supposed to make aware the farmers about the negative consequences of application of overdoses of fertiliser and positive effects of balanced fertiliser application on soil health), the fertiliser consumption in the state has registered increasing trend.

Growth of Paddy, Wheat & Pulse Crops—Impact of NFSM (State)

- Gujarat is one of the important producers of food grains in the country, which contributed around 3.10 percent to national foodgrains production in 2013-14. However, high year to year fluctuations in

production of foodgrains is major concern (Fig. 3). During the year 2013-14, foodgrains crops were grown on 4.29 mha having production of 8.21 mt with average productivity level of 1917 kg/ha. The average productivity level of foodgrains in the state was lower than national average (2101kg/ha), despite the fact that about 46.0 percent area under foodgrains in the state was irrigated during 2011-12 (close to national average of 49.8 percent). In fact level of productivity of foodgrains in the state was less than half of productivity level recorded in Punjab (4409 kg/ha) in 2013-14. As like at all India level, the state has also registered significant growth in foodgrains production in recent past (Fig. 3).

- ***Wheat:*** Wheat is the important rabi crop grown in Gujarat, occupies around 12 percent gross cropped area. This crop is mostly grown as irrigated crop (98 percent in 2010-11), except wheat production in Khambhat, where it generally grown as rainfed crop. As per GOI (2015) estimates, wheat crop was grown on 1.35 million ha area in Gujarat with production of 3.65 million tonnes, accounted for 4.33 per cent area and 3.81 percent production of the country in 2013-14. Per ha productivity of wheat in the state (2703 kg/ha) was lower than national average of 3075 kg/ha in 2013-14. The trend in area, production and productivity of wheat during last three plan periods shows that during 9th plan period, area under wheat had declined at the annual average rate of growth of 0.06 percent per annum, whereas productivity growth was positive. The tremendous growth in production was recorded in 10th FYP period mainly due to significant increase in area under wheat crop (19.83 percent per annum) supported by positive growth in productivity of this crop. Though during the last FYP period, rate of growth in production was lower down as compared to earlier plan period, expansion in area under wheat as well as increase in productivity level, production had increased at the rate of 18.034 percent per annum.

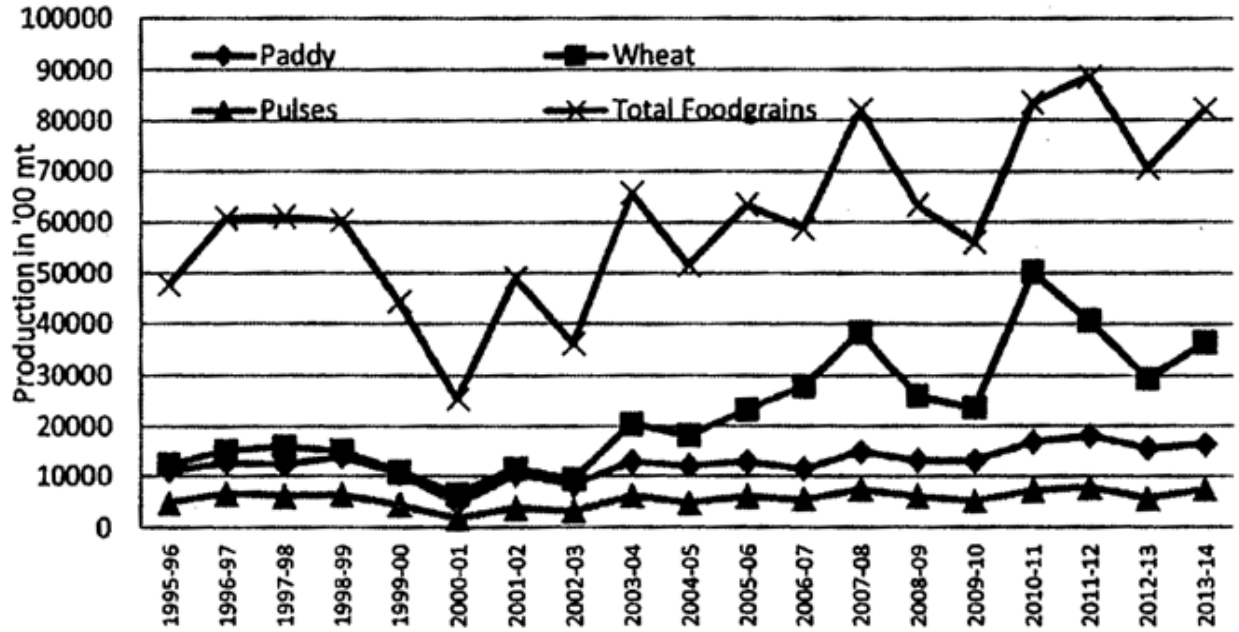
- ***Paddy:*** In the State of Gujarat, paddy occupies around 6 percent of the gross cropped area of the State in 2010-11. As per GOI (2015) estimates, during 2013-14, paddy crop was grown in Gujarat on 0.79 million ha area with production of 1.62 million tonnes. About 62 percent of area under paddy in the state was under irrigation during 2011-12. The state of Gujarat had accounted for 1.79 percent of area and 1.52 percent of production of paddy of the country (2013-14). The productivity level of rice in the state was 2053 kg/ha which was lower than all India average of 2424 kg/ha during 2013-14. As seen in case of wheat crop, during 9th 9 FYP period, the rate of growth in area under paddy was also found negative, while tremendous growth in productivity level was estimated (7.05 percent per annum). During 10th FYP period, significant increase in productivity level (3.22 percent per annum) as well as increase in area under paddy (08.37 percent per annum) has resulted in significant growth in production (4.737 percent). The positive high rate of growth in area and productivity equally contributed in significant increase in production of paddy in the state (10.61 percent per annum) during 11th FYP period.

- ***Pulses:*** About 7 percent gross cropped area of the State was under pulse crops during 2010-11. As per GOT (2015) estimates, state accounts for 3.22 percent of country's total pulses production in 2013-14. Tur and gram are the important pulse crops grown in State. Tur is the main pulse crop grown in Gujarat. It accounted for about 2.2 percent of gross cropped area and about 4 percent of total food grains production in the state. It was grown on about 0.21 mha area with production of 0.24 mt, which accounted for 5.41 per cent and 7.26 percent in total area and production of the country in 2013-14. The productivity level of tur in the state was 1138 kg/ha which was far better than national average of 849 kg/ha). The top five major tur growing districts in the state are Vadodara, Bharuch, Surat, Panchmahal and Sabarkantha. Gram crop was grown on 0.25 mha area having production of 0.28 mt with average productivity level of 1150 kg/ha, which was significantly higher than national average of 967 kg/ha in 2013-14. As like in paddy and wheat crops, area under pulses recorded negative trend during 9th FYP period, while productivity growth was positive which increased the production at the rate of 1.81 percent per annum during this period. The significant increase in productivity level (8.84 per cent per annum) followed by area increase (3.24 percent per annum) during 10th FYP period has recorded heavy increase in production of pulses in the state (14.17 per cent per annum). During 11th FYP period, production of pulses had increased at the rate of 9.74 percent per annum clue to significant increase in productivity level (4.97 per cent per annum) followed by increase in area (3.52 percent per annum).

Thus, State has experienced increase in production of wheat which was mainly due to significant increase in area under crop followed by increase in productivity, whereas in case of paddy and pulses, productivity growth was main factor followed by growth in area under these crops. It is worth mentioning here is that during the year 2007-08 to 2009-10, 11 districts of the State were covered under NFSM. However, during 2010-11 and 2011-12, all 26 districts of the State were covered. During the year 2014-15, out of 33 districts in the state, total 26

districts of the state were covered under NFSM. Out of 26 districts covered under NFSM, all districts were covered for NFSM-Pulses, 02 districts were covered for NFSM-Rice, 05 districts were covered for NFSM-Wheat and 08 districts were covered for NFSM-Coarse Cereal crops.

Fig. 3: Production of Foodgrains in Gujarat (1995-96 to 2011-12)



District-wise Growth of Paddy, Wheat & Pulse Crops and Impact of NFSM

- The district-wise growth in area, production and yield of wheat in NFSM and Non-NFSM districts in Gujarat shows that during 11th FYP period, among NFSM districts, Ahmedabad district recorded highest rate of growth in production (29.32 percent) followed by Banaskantha (16.65 per cent) and Sabarkantha (14.18 percent) and the lowest growth rate in production was recorded in Mehsana (11.19 percent). Area and productivity growth rate was highest in Ahmedabad, followed by Banaskantha. Among non NFSM districts, Porbandar district has recorded the highest RATE OF GROWTH in production, mainly due to increase in area under this crop. The lowest growth rate in production was recorded in Jamnagar district where productivity growth was found better than growth in area.

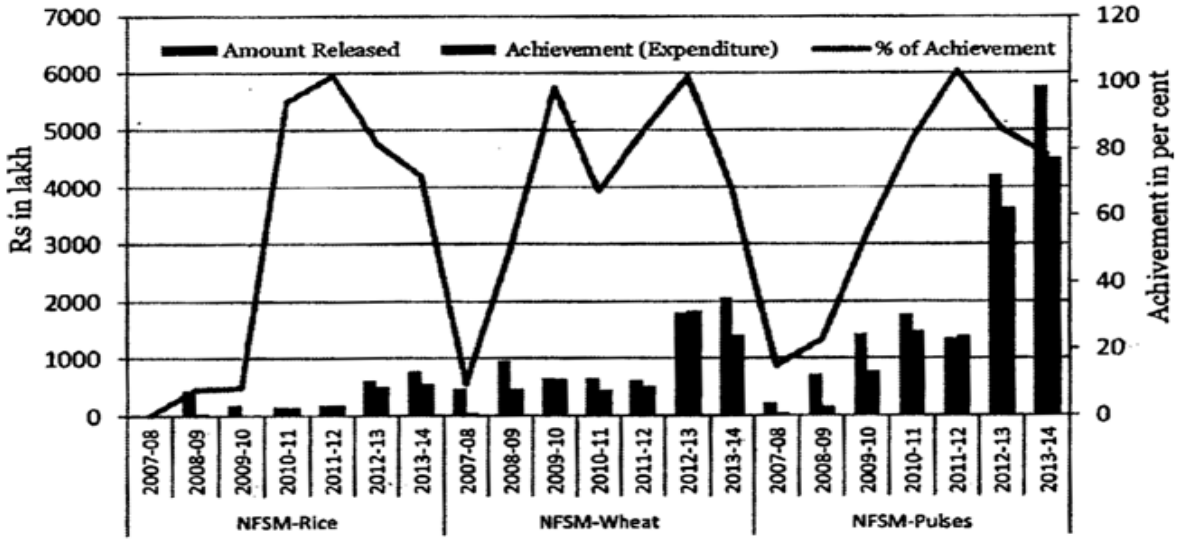
- In case of paddy, during 11th FYP period, out of two NFSM-Rice districts, the rate of growth in production was positive and significantly high in Dahod district, mainly due significant growth productivity whereas area under crop was declined. The rate of growth in production of paddy in Panchmahal was also very high (29.73 percent per annum), mainly due to productivity growth. Among Non-NFSM districts, Navsari and Ahmedabad recorded more than 16 percent increase in production during 11th FYP period.

- In case of pulses, among all NFSM districts covered during the last plan period, Banaskantha recorded highest rate of growth in pulses production (44.95 percent), whereas lowest growth in production was recorded in Sabarkantha (2.31 percent) while same was recorded negative in Surat, Valsad and Kheda districts. Due to drastic decline in both area and productivity of pulses, production of pulses in Surat had declined drastically. Production decline in Valsad was due to decline in productivity level while same was due to decline in area under pulses in Kheda district. Thus, efforts should be made to arrest decline in area under pulses in these districts as well as attempt should be made to enhance the productivity level.

Financial Progress under NFSM in the 11th & 12th FYP

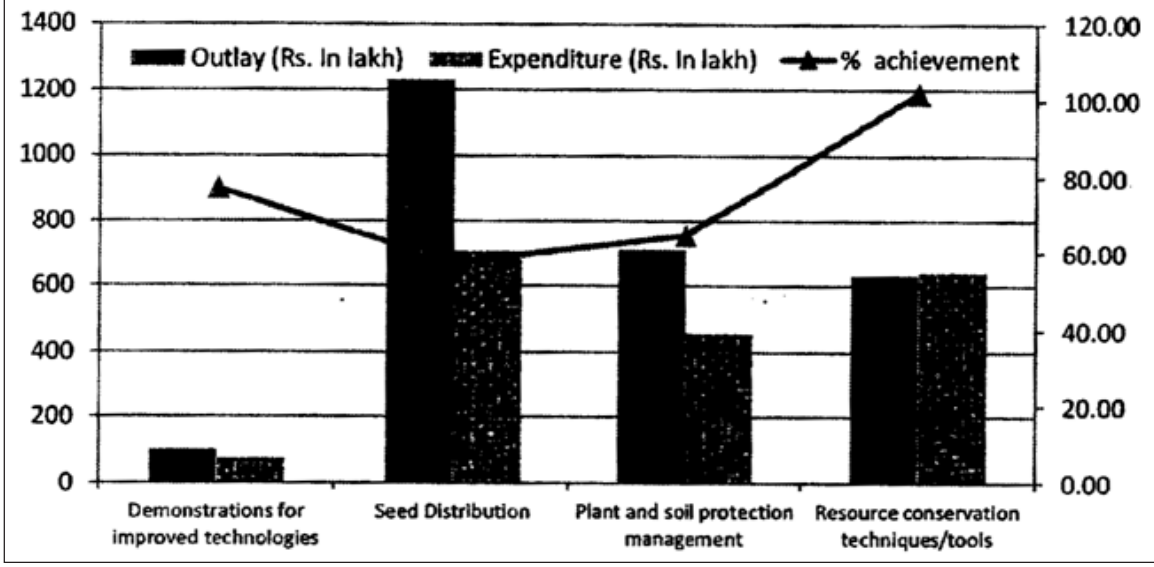
- The financial progress under NFSM in Gujarat indicate that during the year 2011-12, total expenditure under NFSM rice and pulses was more than amount allocated whereas in case of wheat, it was about 85 percent (Fig.4).

Fig. 4: Financial Progress under NFSM in Gujarat



- The district-wise percentage share of expenditure in total outlay during five years period indicated that the districts which had spent the allocated amount more than or close to budgeted amount and crossed or almost achieved the target were Surendranagar, Rajkot, Junagadh, Jamnagar, Narmada, Kutch, Porbandar, Ahmedabad, Tapi, Kheda, Surat, Gandhinagar, Anand, Patan, Mahesana and Vadodara. The share of expenditure in total outlay was recorded to be the lowest in pang district, which is one among the tribal and backward districts of the state.
- The details on category wise intervention wise outlay and expenditure in wheat, rice and pulse crops for the 11th FYP in Gujarat (2007-08 to 2011-12) shows that in case of wheat crop, achievement rate was better in resource conservation techniques/tools category (e.g. incentive on Rotavators, Seed Drills, Sprinkler Sets, Knap Sack Sprayers as well as for Pump sets) followed by plant and soil protection management category in which incentive for Gypsum (for Salt affected soils) was given (Fig. 5). In demonstrations for improved technologies, achievement rate was better in demonstrations on improved package of practices activity. It was very disturbing to note here is that expenditure on increase in SRR activity was short by about 42 percent. Unless rate of seed replacement is increased, the productivity level of crop would remain lower in many areas of the state.

Fig. 5: Intervention wise outlay and expenditure in Wheat crop for the 11th FYP in Gujarat



- In case of rice crop, the target was achieved only in one intervention under resource conservation techniques/tools, i.e. incentive for pump sets. The other interventions in which expenditure ratio to outlay was more than 60 percent were incentive for cono-weeders & other implement, incentive on knap sack sprayers, incentive on rotarator and incentive on seed drills. Under the category of plant and soil protection management, about 80.73 expenditure of total outlay was spent on providing assistance for plant protection Chemicals and bio-agents.

- In case of pulse crops, the expenditure was more than the outlay for the interventions such as incentive for diesel pump sets, distribution of rotavators, production of certified seeds and organization of technology demonstrations. The other major interventions were incentive for knap sack sprayers and distribution of seed drills.

V. Findings from Field Survey Data:

Household Characteristics, Cropping Pattern & Production Structure

- The socio-economic profile of the selected households indicate that selected NFSM beneficiary households were relatively large in size, more dependence on agriculture with 1.37 times higher average size of holdings than selected Non NFSM households. The average family size of beneficiary households was 7.25 whereas same was 6.57 in case of non beneficiary households. The average size of land holding with beneficiary and non beneficiary households was 8.05 acre and 5.86 acre respectively. It can be also seen from the table that both categories households were dominated by male respondents thus decisions were mostly taken by male as a head of household. It was strange to note here that only about 44 percent members of beneficiary households and about 35 percent members of non-beneficiary households were engaged in agriculture despite of the fact the major source of income for both categories of households was agriculture. About a quarter of family members were aged below the 15 years with one fifth illiterate family members in both groups. The social classification of selected households indicate that other backward classes accounted the highest share (around 50%) in total selected households followed by general category (around 40%) and the lowest share was of SC category households (less than 10 percent).

- The distribution of net operated area as per land holding, size category indicate that among the beneficiary group, small farmers accounted for 32 percent of total holders with about 15 percent of total net operated land area, followed by medium farmers (30 percent holders with 27.77 percent of total net operated land area), large farmers (21 percent holders with 53.16 percent of net operated land area) and the lowest number of holders and area was recorded in case of marginal farmers group (17 percent of holder accounted for 3.77 percent of area). In case of non-beneficiary households, except higher share of land holders in marginal group than large group, same trend was noticed. Thus, total 49 percent beneficiary holders which were marginal and small farmers put together had hardly hold 19 percent area of total land holdings, whereas in case of non-beneficiary households, total 60 percent small and marginal holders put together had hold about 28 percent share in total land holding area. The average net operated land holding size was higher in beneficiary households (8.05 acre) than its counterpart (5.86 acre).

- The characteristics of operational holdings of selected households show that beneficiary households had possessed/owned 7.15 acre whereas non- beneficiary household had 5.4 acre land. The land leased in pattern seems to be dominant in selected beneficiary household than non-beneficiary household. Though, in absolute term, area sown more than once was also higher in beneficiary household (4.61 acre) than non beneficiary household (3.61 acre), the relative share of same to net sown area was higher in non- beneficiary household (61.5 %) than beneficiary household (57.3%) resulted in higher cropping intensity in non beneficiary household than beneficiary household. The same trend was observed in terms of area irrigated more than once, resulted in higher irrigation intensity in non-beneficiary household (166.04 %) than beneficiary household (160.43%).

- The details on sources of irrigation show that 92 percent land of beneficiary households and about 95 percent land of non beneficiary households was irrigated. Among the sources of irrigation, groundwater was the main source of irrigation to both the groups. The tubewell source of irrigation accounted for about 50 percent area under irrigation in case of beneficiary households, whereas it was about 75 percent in case of non-beneficiary households. The canal irrigation was another source of irrigation which accounted for around 20 percent irrigated area in both cases. The share of tank irrigation in total net irrigated area of beneficiary households was significantly higher (16.1%) than non beneficiary households (1.51 %). Thus, the selected households in both groups were well protected with the supportive irrigation in crop production.

- The tenancy details indicated that about 54 percent of leased-in was taken by beneficiary households on fixed rent on cash basis, followed by share cropping (27.47 %) and fixed rent in cash (18.82 percent). The pattern of fixed rent in cash was followed by beneficiary household in leasing out the land. In case of non-beneficiary households, fixed rent in kind pattern in leased-in land accounted for highest share in total land leased-in (41.97 %), followed by share cropping (33.68 %) and fixed rent in cash pattern (24.34%). The rate of taking land on leased-in was found higher than the rate for leased-out in selected area. Of course, quality land may differ which must have effected on deciding this land rate.

- The cropping pattern of the selected households indicated that cereals crops accounted for 67.40 percent GCA of beneficiary households, whereas it was 55.67 percent in non-beneficiary households. The area share of total pulses was very meager in cropping pattern, accounting for 0.79 percent and 0.13 percent area of GCA of beneficiary and non-beneficiary households respectively. Thus, total foodgrains crops area share in GCA was higher in case of beneficiary (67.40 %) than non-beneficiary households (55.79%). In case of oilseeds, non beneficiary households had allocated more land to oilseed crops than its counterpart. The paddy and wheat were the main cereal crops grown by selected households followed by bajra and jowar. Gram and moong were major pulse crops grown. Castor and rapeseed mustard accounted significant share in area under oilseeds of selected households. Cotton accounted for about 10-12 share in cropped area of selected farmer households. Guar and Cumin were other crops grown by the selected households during the year under report.

- The details on household income earned from agricultural and non agricultural sources of selected households shows that net return per household as well as per acre of NSA under crop cultivation was marginally higher in case of beneficiary household than non-beneficiary household, which was estimated to be Rs. 268526/hh and Rs. 33370/acre of NSA in beneficiary, while Rs, 184707/hh and Rs. 31513/acre of NSA for non- beneficiary household. However, per household non-farm income was higher in non beneficiary household, may be due to low share of family members in agriculture and thus dependence on non-farm activities. In all, total income was recorded higher in beneficiary household.

- The crop-wise per acre costs and returns among the sample households shows that the average level of productivity of all cereal crops was found higher in beneficiary farmer households than non beneficiary farmer households. Particularly in case of wheat crop, average yield realized by beneficiary farmer households was 14.94 qtls/acre whereas same was 14.86 qtls per acre in case of non-beneficiary farmer households. Except jowar and barley, net returns realized by beneficiary households in all other cereal crops were higher than non-beneficiary group. In case of wheat crop cultivation, net returns per acre realized by beneficiary household was Rs. 13770/-, whereas it was Rs. 10237/- per acre in case of non-beneficiary households. Despite of high productivity level in barley and almost same productivity in jowar crop, low cost of crop cultivation of these crops by non beneficiary households had fetched them high profit level than beneficiary household.

- In case of pulses, moong crop was grown by both groups wherein rate of yield as well as net returns was higher in case of non-beneficiary households. In case of oilseed crops also, except groundnut crop, in all other oilseed crops, beneficiary households had realized higher returns than non beneficiary households. Cotton is an important cash crop grown by the selected farmer. It was observed that the average level of productivity as well as net returns per acre cost of cultivation in cotton was slightly higher in non-beneficiary households than beneficiary households. Almost Rs. 34,000/- per acre profit was realized by both the groups in cultivation of cotton crop.

- The details on farm assets holding by sample households show that the availability of farm implements, machineries and equipments were relatively better with beneficiary households than non-beneficiary households. The average availability of land development, tillage and seed bed preparation equipments as well as sowing and planting equipments were two times higher with beneficiary household than non-beneficiary households. The availability of tractor/mini tractor was relatively higher with beneficiary households and more half of the selected households had tractor as compared to every fifth household in non-beneficiary group. As it has been noted earlier that both selected group households were dependent on groundwater for irrigation purpose and therefore, water lifting equipments such as pumpsets and water saving sprinkler irrigation systems were available with the selected households. Among the various sowing and planting equipments, only seed drill was available with selected farmers of both groups. The other important equipments available with selected households were sprayers, harvesters, levelers and choppers. One among every two households in both groups had a cattle shed. Overall, both the groups of households possessed the necessary farm equipments and machineries for crop cultivation.

- Availability of credit is important factor of crop production. Out of the total selected beneficiary households, 79 percent households had taken loan, whereas in case of non-beneficiary, this proportion was 66 percent. The major source of credit was Primary Agricultural Credit Societies followed closely by commercial banks. Only one beneficiary household has reported to be taken loan from informal source (i.e. money lender). Per household loan amount outstanding was found to be very high in both selected groups. It was very strange to note here that despite of the fact that both selected groups had realized the good harvest and returns, loan outstanding was relatively high in both groups. All the farmers had taken loan for productive purpose only that to for agriculture purpose. Around 3-4 percent farmers from both groups had taken loan for the purchase of tractor.

NFSM Interventions and Its Impact on Farming

- About 96 percent beneficiary households were aware about the NFSM and the purpose of benefit which they had received. More than 4 percent farmers had availed the benefit without knowing the purpose as well as about NFSM.
- About 89 percent of beneficiary households had received information on NFSM from agriculture department, followed by district level offices and through newspaper (3%). Thus, the agriculture extension was found active in selected areas.
- Total 316 benefit items were availed by the selected 300 beneficiary households, it means 16 sample households availed more than one benefit item (Table 2). The benefits item-wise distribution of selected beneficiary households indicate that the largest number of farmers (43.0 %) had availed the benefit of FLD kit (Seed, Fertilizers and Knap Sack Sprayers), followed by benefit of incentive for micro nutrients in deficit soils (33.67%), benefit of rotavators (10.67 %), benefit of incentive for lime in acid soils (5.33 %), benefit of pump sets (5.00 %), benefit of manual and power operated knap sack sprayers (4.33 %), benefit of seed drills (2.00%), benefits of machineries/tools -multi crop thresher (0.67) and land laser (0.67 %).
- If we consider the farmers who had benefited with large absolute subsidy amount, benefit of land laser, thresher, rotarator, seed drill and pumpset were major ones. In terms of percentage of subsidy to total cost availed by the beneficiary households, it was observed that highest subsidy benefit was availed by sample farmers in FLD kit (71.67 %), followed by incentive for lime acid soil (57.29 %) and incentive for micro nutrients in deficit soils (50.01%), whereas in remaining items, subsidy benefit ranges between 36-47 percent. Thus larger number of farmers could avail the benefit of subsidy on FLD kit, may be due to low down payment/share amount as well as easy availability of kits at village level. The benefit of multi-crop thresher was taken by large farmers only, whereas same group farmers had availed benefits of half of the number of seed drill, rotavator and land laser instruments.

TABLE 2: DETAILS ON BENEFIT AVAILED BY SELECTED HOUSEHOLDS

SI. No	Benefit Item Name	No. of HHs availed benefits	No. of HHs benefitted to aggregate beneficiaries	Avg. total cost (Rs. per 11H benefited)	Subsidy as a % of total cost
1.	Incentive for lime in acid soils (Gypsum)	16	5.33	3370	57-59
2.	Machineries/Tools (Multi crop Thresher)	2	0.67	53750	37.21
3	Seed drills	6	2.00	36333	41.28
4	Rotavators	32	10.67	78875	38.03
5.	Pump sets (Diesel pump)	15	5.00	26513	37.72
6	Land Laser	9	0.67	350000	42.86
7.	Knap Sack Sprayers (Manual and Power Operated)	13	4.33	4085	46.23
8.	Others(FI.D Kit- Seed, Fertilizers and Knap Sack Sprayers)	129	43.00	5913	71.67

NOTE: NA-Not Availed, More than one benefit availed, therefore total would more than 3oo/percentage exceed 100.
SOURCE: Field Survey Data.

- FLD KIT and Knap Sack Sprayers as well as pumpsets were used by the sample households only on their own field and were not rented out also. However, other implements were used on own farm by beneficiary as well as were rented out. Land laser was used hardly 6 days on own field whereas it was rented out for about 43 days which earned Rs. 42500/- in a year for beneficiary household. In case of rotavator, beneficiary households used it for 26 days on own field and then rented out for about 30 days, having total earning of Rs. 25170/- in a year. Multi-thresher was heavily used by the selected households on their own field as compared to seed drill (which used heavily for renting out). Thus selected farmer households had not only benefited with subsidy amount for particular item, he was benefited with its use on own farm as well as earned extra earnings by renting out the implement.

- More than 47 percent beneficiary households opined that FLD KIT and Knap Sack Sprayers has helped in controlling weed, 34.51 percent hh mentioned that it helped them in timely operations, about 23 percent recorded that it has solved problem of labour shortage to some extent. It has also helped in reduction in cost of cultivation as well as good plant growth. Half of the selected farmers had opined that land laser has helped them solving labour problem, completion of operation in time, water saving, weed control, plant growth, reduced cost of cultivation as well as increased cropping intensity. Multi-thresher had benefited same ways.

- More than 73 percent of households mentioned that pumpsets have helped them in completing operations in time, around 53 percent farmers mentioned that it has solved labour problem whereas 40 percent farmers noted that it helped in saving water. Seed drill was another important instrument benefit availed by selected farmers. About 66 percent benefitted households opined that seed drill has helped in solving labour problem, 83 percent farmers mentioned that they could do operations in time, whereas 50 percent farmers recorded that seed drill use had reduced cost of cultivation as well as increased cropping intensity due to saving time in various operations. In solving labour shortage problem, completing operations in time and in controlling weed, rotavator was useful to selected beneficiary household.

- The use of knap sack sprayers could impact less than 10 per cent (26.8% hh) towards increase in productivity, reduction in material cost (26.1% hh) and other aspects. Majority of farmers have mentioned that use of sprayer, as expected, had no impact on reduction in water use, improvement in soil health, very surprisingly no impact on improvement of human health.

- In case of land laser, half of the beneficiary farmers opined that (except no impact on improvement in soil health and human health due to use of land laser), productivity level has increased significantly, material cost as well as water use was reduced (up to 30 percent) and losses were reduced up to 10 per cent. Among the selected households, half of them mentioned that due to use of thresher, not only productivity level realized by farmer had increased by 20-30 percent, same level impact was seen in case of fall in labour as well as material cost.

- In case of use of pumpset, it was observed that about 20 percent of beneficiary households mentioned that it has helped them in increasing the level of productivity of crop by 40-50 percent, as well as helped in reduction in labour, water cost, reduction in crop losses, and helped in getting higher output prices due to better output.

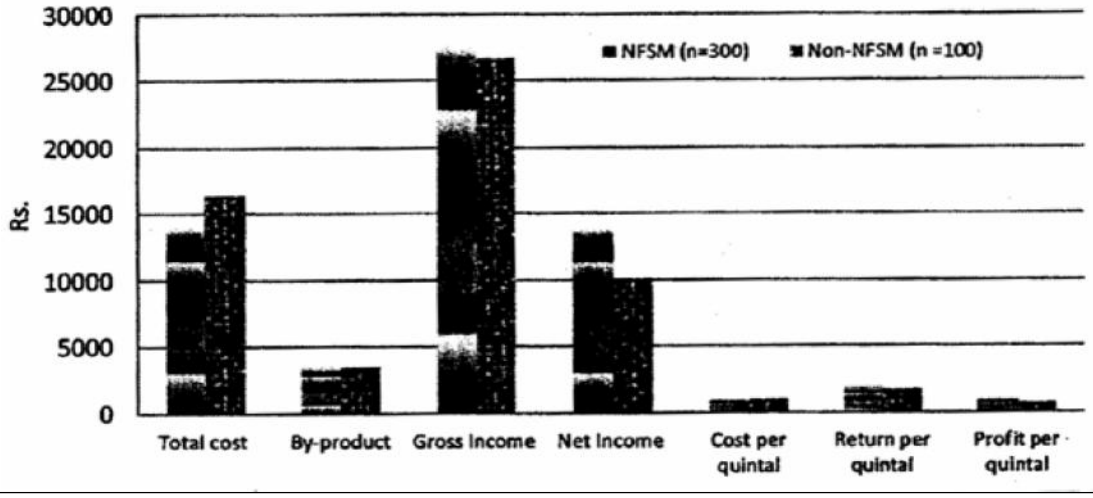
- More than 8o percent of farmers have opined that use of rotavator has impacted as increased in crop yield by more than 10 percent, 33.3 percent mentioned the significant reduction in material, labour cost as well as reduction in losses. More than 50 percent of farmer households had opined that seed drill use had reduced the labour cost, material cost and has helped in increasing the productivity level.

Per acre Cost and Return of Wheat (Rabi 2013-14)

- Wheat crop was grown during rabi season of agriculture year 2013-14. The beneficiary households had grown four varieties of wheat, viz. Bhaliya 313, GGW 496, Lok 1, and GGW 173. Out of these four varieties, Bhaliya variety of wheat was grown mostly as rainfed wheat, whereas other wheat varieties were grown with protective irrigation facilities. The results of per acre cost and returns of wheat crop grown during the year 2013-14 indicate that at overall level, total expenditure incurred towards per acre cost of cultivation (paid out cost plus family labour) of wheat crop by beneficiary household was lower by around 18 percent than non-beneficiary households, which was estimated to be Rs. 13924/- and Rs. 16490/- , respectively (Fig. 6). Per hectare wheat yield realized was marginally higher in case of beneficiary households (14.94 qtls) than non-beneficiary household (14.86 qtls). In both the cases, machine labour/power accounted for around 30 percent of total cost, followed by seed and fertilizer (around 14% each), irrigation charges (around 11 percent), harvesting and threshing (around 10 percent). In case of non beneficiary households, hired labour

accounted for 13.17 percent of total cost, which is relatively veiy high as compared to 8.83 percent in case of beneficiary households. Thus, due to high cost of cultivation and marginally lower yield realized by non-beneficiary households, cost per quintal of wheat was estimated to Rs. 1082/-, which was relatively higher than cost estimated for beneficiary households (Rs. 932/-). Therefore, profit on per quintal production of wheat was estimated to be Rs. 921/-, which was 28 percent higher than profit/ qtl estimated for non-beneficiary household (Rs. 716/qt.).

Fig. 6: Cost and Return of Wheat Cultivation



- The variety-wise cost of cultivation estimates for wheat crop present mixed picture. The majority of beneficiary farmers had grown wheat GGW 496 variety, followed by Bhaliya 313, Lok 1 and GGW 173 variety. In case of non beneficiary households, the variety preference sequence was as wheat GGW 496 variety, followed by GGW 173, Lok 1 and Bhaliya 313 varieties. It was further seen from the tables that productivity level was higher in all four wheat varieties for beneficiary households. Except in case of Wheat variety CGW 496, cost of cultivation per acre in other three wheat varieties was estimated to be higher for beneficiary households that non-beneficiary households. Except in case of Wheat variety Lok 1, profit per quintal realized by beneficiary households was higher in cultivation of other wheat varieties. The highest profit on per quintal production of wheat crop was recorded in production of Bhaliya wheat (1159/-) by beneficiary farmer whereas in case of non-beneficiary, highest profit/qtl production was realized in Loki Wheat.

Marketed Surplus and Marketing Channels

- Out of total selected households, 79 percent beneficiary households and 88 percent of non-beneficiary households had sold their produce at various places. The details on marketing channels and marketed surplus of wheat with selected households indicated that about 95 percent beneficiary farmers and about 99 percent non beneficiary households had sold their output in wholesale market/regulated market. Remaining farmers sold their output in local market and to the merchants. Thus, selected farmers were well versed with the benefit of regulated market in sale of their output.

VI. Participation Decision, Constraints and Suggestions for Improvement of NFSM

- In order to know the factors impacting the participation of farmers in NFSM, logit regression model using generalized liner model was used. The binary dependent variable was used as: 1 for NFSM beneficiaries; o for Non- beneficiary. The determinants/independent variables considered/used for analysis were age (years), education (code), total farming income (Rs/annum), caste (code), no. of people engaged in farming/agriculture, net irrigated area (acre), asset value (Rs), and amount borrowed (Rs./acre).
- The results of logit model to determine the factors affecting the participation of farmers in NFSM estimated that out of the eight predictor variables as a factor affecting the participation of farmers in NFSM, only two predictor variables (i.e. number of people engaged in farming/agriculture and assets value) found be significantly influencing the decision on participation of farmers in NFSM. However, though net irrigated area (acres) seems to be important variable but statistically found insignificant. Increase in number of family member by a person increases the log odds of farmer

participation in NFSM by 0.2429085, whereas in case of assets which also found influencing the decision of participation of farmer in NFSM, the log odds of farmer participation in NFSM is very weak. Thus, it indicates that larger the number of family members as well as number of assets, the log odds of farmer participation in NFSM is better. The factors like age, caste code and education code were found negative and statistically insignificant.

- About 11 percent beneficiary farmers had faced some difficulties in availing the benefits under the NFSM. Most of the selected farmers have opined that major constraints faced by them were no technical advice/ training under the programme was provided; no institutional financing facility was available under the programme. Most of the farmers mentioned that subsidy provided was biased towards large land owners. Some of the farmers mentioned that poor quality materials/machinery was supplied to them. Besides, they had to make payment for purchase before receiving subsidy which was the major problem faced by farmers.
- The suggestions for improvement of the NFSM scheme were collected from beneficiary households. On implementation and quality as well as quantity of benefit provided in scheme, about half of the respondent farmers had suggested that timely availability of seeds and other inputs should be ensured, while about 47 percent respondents have mentioned that Gram Sevaks/Gram Mitras should be provided regular training on accurate implementation of NFSM scheme as well as quality inputs should be supplied under NFSM. Besides, other major suggestions given by respondent farmers are input should be provided in more quantity/required quantity; kit should be provided as per suggestions given on soil health card; special Gram Sabha should be arranged to train/educate farmers or to raise the awareness level; more number of farmers should be involved and given training through farm demonstration/ Krishi Mahostav/ KVK/ SAUs and inadequate staff with implementing agency (state govt.) and present Staff loaded with huge work load, thus unable to justice with this scheme.
- Among the suggestions classified under subsidy given under scheme and additional requirement of subsidy under scheme, the major suggestions made the selected sample households were as: subsidy should be sent directly in the beneficiary account; there should not be any time gap in release of subsidy benefit (as initial investment is very high and subsidy come very late); Subsidy for farm pond should be given under this scheme; subsidies should be given for field fencing to save crops from crop damaging animals; and subsidy amount on agricultural implement should be increased.
- The other important suggestions made by the selected farmers were that NFSM program is a very useful scheme and it should be continued and, therefore NFSM budget needs to be increased. The suggestion was also made for state government officials to implement the scheme with ATMA and to reduce farmer selection biasness.
- About 41 percent responses suggested that no political influence/pressure should be entertained in implementation of scheme, while 26 percent sample farmers suggested that information on NFSM should be provided/disseminated in local language. The other suggestions made by non beneficiary households are that due to low budget for NFSM scheme, they could be benefited and, therefore, more budgets should be allocated. Also electricity supply should be regulated and should be made available for long duration was suggested by the farmers.
- About 53 percent farmers mentioned that they were unaware about the scheme, while 48 percent farmers mentioned that scheme provides the inputs in limited quantity and not in time and, therefore, they did not participate in the scheme. The other reasons cited by the farmers were due to political influence/ pressure in implementation of scheme as well as due to low budgeted amount in scheme, they were excluded. Some farmers mentioned that process was too lengthy whereas some farmers had received benefit in some other scheme.
- More than 53 percent non beneficiary households suggested that special gram sabha should be arranged to train/educate farmers or to raise the awareness level, 49 percent farmers households suggested that gram Sevaks/Gram Mitras should be provided regular training on accurate implementation of NFSM schemes, 40 percent farmers mentioned that NFSAI allocation/ budget should be increased, 37 percent respondents mentioned that there is inadequate staff with implementing agency (state govt.) and present staff is loaded with huge work load, therefore, adequate staff should be made available to implement scheme properly and 28 percent households suggested that more number of farmers should be involved and given training through farm demonstration/ Krishi Mahostav/ KVK/ SAUs.

VII. Policy Implications:

The policy implications emerged out of the study is as follows:

- The awareness level about the scheme need to be increased/raised through holding gram sabha, group meetings and agricultural extension programmes. The information on NFSM should be provided/ disseminated in local language.
- The local distribution authorities such as Gram Sevaks/Gram Mitras should be provided regular training on accurate implementation of NFSM scheme.
- The adequate allocation for various benefits under NFSM scheme should be made by taking into account the actual requirement of funds/allocation in particular area.
- The government should ensure timely availability of benefits with utmost required quantity to farmer.
- The government should ensure the adequate staff with implementing office in order to implement the scheme properly and successfully.
- Farmers should be provided the training on various aspects of scheme through farm demonstration/ Krishi Mahostav/ KVK/SAUs.
- The Gypsum should be made available to farmer in required quantity at village level. Transport cost if any should be paid by the government.
- In case of some farm implement, more number of distributors should be identified so that farmer gets more options in selecting the instrument.
- The time lag between the paper work and allotment of sanction for purchase of tractor should be reduced and process should be made hassle free to farmer.
- Bottom-up approach should be used in implementation of scheme.

Evaluation of Market Intervention Scheme (MIS) and Price Support Scheme (PSS) in Andhra Pradesh

PROF. G. GANGADHARA RAO*

Background

Agricultural marketing has still several imperfections to establish a proper stream for the flow of reliable prices to the peasants in the nation. Market Intervention Scheme (MIS): The MIS is implemented for horticultural crops, which are perishable in nature and these are not covered under the Price Support Scheme. Price Support Scheme (PSS): The Department of Agriculture and Co-operation executes Price Support Scheme (PSS) through NAFED, in addition to Cotton Corporation of India (CCI), as per the Minimum Support Price (MSP) declared by the Government of India.

Selected Crops Information on Production and Marketing and the Schemes:

In this study, two crops are selected for the study viz, oil palm and cotton and the production and marketing information for the two crops are given below:

Oil Palm

There is a lot of potentiality for the oil palm crop in Andhra Pradesh by 4.10 lakhs ha, but the oscillation in prices of oil palm is a negative element for crop extension in Andhra Pradesh . It is observed that the total area extension taken place in Andhra Pradesh is 1.23 lakhs ha by 2011-12.

Cotton

Andhra Pradesh occupies major marketing share of cotton in India and it signifies the role of production of cotton of Andhra Pradesh in the cotton market across nation. The percentage share of area of Andhra Pradesh to all-India had been above 10 per cent in all the study period and after 2006-07, it started increase of share and it reached 18 per cent by 2012-13.

Review of Literature

The literature survey is available to cotton crop with reference to volatility of prices in the market and the same is reviewed. There are no studies on evaluation of PSS for cotton crop. The studies for oil farm are hardly available with reference to prices in the market.

The Problem

It is very pertinent to pursue the existing problems in reaching the schemes of the aimed peasants across nation. There are different studies, which have identified the low price existence during harvesting season for the crops. However, Government of India (GOI) has spent huge amounts on MIS and PSS, still farmers are left uncovered and facing lack of reliable supporting price in the concerned markets. Therefore, Ministry of Agriculture, GOI has assigned the project to this centre to evaluate the MIS and PSS for oil palm and cotton in Andhra Pradesh . To examine the problem, the following objectives are formulated to the study:

Objectives of the Study

1) To understand coverage of MIS and PSS across crops and regions of India,
2) To ascertain factors that influence coverage of crops across regions,
3) To understand levels and basis of participation of farmers in MIS and PSS,
4) To understand problems of different stakeholders in operation of MIS and PSS,
5) To study the effect of MIS and PSS on the market price of commodity in Andhra Pradesh and
6) To assess efficiency of Central Agencies in operation of MIS and PSS and to suggest policy measures to improve operations of MIS and PSS.

Methodology

The study selected two districts with highly developed one and less developed one from Andhra Pradesh (A.P.). Each district has two blocks based on the crop development. From every block, one village is selected with due weightage to mandi and 15 respondents (farmers). Thus, the total 60 respondents from a district for each crop were taken. Both secondary and primary are analyzed in the study.

Study of West Godavari, Guntur and Khammam Districts, Sample Blocks and Sample Villages

OiI palm has tendency of cropping much in higher size groups than for cotton crop. It is estimated that small and medium farmers participation is higher than the other two groups. The growth of NAS shows deceleration during 2001-11 for all the sample districts. At state level also, NAS has declined and it shows some negative trend. The marginal farmers are gradually increasing across state and

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in study districts. Comparatively, the semi-medium farm households reported declining trend during 2001-11, while the opposite appeared during 1991-2001. As a whole in the study area, the marginal and small farm households are in acceleration trend and for other farm households, there was decreasing trend. There is gradual acceleration for the use of tractors. There was a sea charge for the tube well irrigation and it increased in leaps and bounds during 2001-11.

The increase of bank offices has shown in study districts but post offices are stagnant in the study period. Out of the study districts, West Godavari has higher share of net irrigation in the state in all the study years followed by Khammam district. The 'other sources of Irrigation' has shown deceleration in state, despite study districts report high shares during study period except in West Godavari district. During 1980-2002, horsegram, sesamum, jowar, chillies and groundnut declined very sharply in the area and the new crops like maize, cotton, chillies and black gram came into picture. The land for non-agricultural uses was reported as first place by Pedavegi mandal and second place by Aswaraopeta mandal/block.

Out of all six sample blocks, Nadendla mandal/block showed the least use of land for non-agricultural uses. Pedavegi and Aswaraopet mandals stood in first and second places for net area sown from all the sample blocks. The number of farm households under marginal size existed in large number in Khammam rural and Pedavegi blocks. Blocks from Khammam district show larger extent of farm group sizes compared to other blocks of study districts. All the selected blocks/mandals are 100% electrified and linked with roads. The number of commercial banks is high in chilakaluripeta block out of all the blocks. It is surprising that the blocks of Khammam district- Chintakani and Khammam (rural) do not have co-operative banks.

Pedavegi, lingapalem Aswaraopet and Dammapet are tube-well irrigated blocks. In the canal irrigation, chintakani mandal shows the highest out of all mandals followed by Khammam rural. Though paddy occupies first place in area, it reports declining trend in the both Aswaraopet and Dammapet blocks. For cotton, the demographic features report that two villages from Khammam district informed higher geographical area than the area of sample villages from Guntur district. Aswaraopet village shows the highest marginal farmers (19%) against the selected villages for oil palm.

The sample villages of Khammam district report higher net area sown (NAS) for oil palm cropping and Vegiwada village shows the lowest amount. All the four villages of oil palm crop are under tube well irrigation. Oil palm crop demands much irrigation for growing successfully and yielding at good level. For cotton crop cultivation, all the farmers of two sample villages from Guntur district are dependent on 'other sources' of irrigation and no other source is found for cotton cultivation in Guntur district. However, in Khammam district, farmers of both villages are using different sources of irrigation and out of these sources. 'Other sources' has major share in both villages. The Commercial banks are available in two market villages of Aswaraopet and Dammapet of Khammam district. The farm produce storage is available to Vegiwada (West Godavari district), Aswaraopet (Khammam district) and the other market centers do not possess farm produce storage or godown facility.

During 2000-11, oil palm reported acceleration and during 2008-09 and latter the increase in area became sluggish. We can find that there is extension of area for oil palm in study districts in the first decade and in the latter period, it became stagnant. In Guntur district, the cotton crop reports deceleration during 2000-11, while an acceleration is traced between 1980-92. Some socio-economic problems cropped up during 2000-2011.There have been number of suicides among cotton crop growers.

In Khammam district, a gradual increase of cotton appeared in the entire study period 1980-2011. At block/mandal level, Pedavegi mandal has shown declining trend for oil palm during 2000-11, as this crop stood by 10% in 2000-02 and declined to 8.6% by 2010-11. On the other, Lingapalem mandal reported nearly stable share of oil palm in the total cropped area of block/mandal. In Khammam district, oil palm crop had shown increasing trend during 2000- 09 and latter, it displayed decline in the cropped area in both blocks/mandals. From Guntur district, the selected mandals/blocks viz., Chilakaluripeta and Nadendla have shown acceleration of cotton-cropped area across selected mandals during 2003-11 and the similar trend appeared for sample blocks/mandals of Khammam district.

Results and Discussions:

In two sections, the results of two crops- oil palm and cotton are discussed.

Oil Palm

There was no need of regular MIS for the oil palm farmers due to existence of market price higher than Minimum Support Price (MSP) in Andhra Pradesh . Hence, it is examined for 2010-11, 2009, and 2000-01 years for the implemented years of MIS for oil palm. There was much acceleration of crop in West Godavari district, but in other districts show slow increasing trend. Khammam district informs a lot of scope for extension of oil palm crop. Cost of cultivation is high in Khammam district than in its counterpart. The coverage of farmers has been good during the study years and there is no bias or deletion any farmer.

Farmers are much more crop specific in case of oil palm, till non-institutional credit is predominant among farmers at higher rates of interest. All the produce of oil palm reaches to milling site and there is no wastage except

some falling of oil return due to much delay in milling. There are no different market channels for the farmers except the one allotted one by government and there is no question of rejection of produce. Farmers express that MIS is not a good catalyst to extend area but it worked out for the increase in incomes during the lower price period. The scheme reached all the farmers and they knew very well about the scheme. Price under MIS is very low and the payment is delayed, and it does not cover the increased cost of produce. There are no other problems regarding packing and transport.

Cotton

During 2000-12, cotton had only four years under PSS, while safflower had the highest number of years (nine) under PSS. Share of PSS was very low with 3% to 4% in Guntur district and with 40% and 20% in Khammam district out of the total market arrivals and these purchases were not subjected to cess or commission of the market because of bearing by state and central governments. Near stagnancy appears for Guntur district in the area, while there is increasing trend in Khammam district. There is high productivity in Guntur district rather than its counterpart.

The coverage of PSS is low and the prices of private traders are not available with mandies selected. The coverage of farmers is 100% for PSS in the sample villages. Still the non- institutional credit is high for the cotton cultivators in both districts at 24% interest rate or more. Large farmers along with cotton in both areas crop cash crops. There is no home consumption for cotton. Marketing costs are similar in both private and PSS channels, but the price variation has led to increase in net income under PSS channel. There is no discrimination over farmers during the purchases, but the purchase officials use the wet of the produce to fix low price. Many marginal and small farmers are not covered. The insufficient market price of PSS and Cartel formation by Private traders is the basic problem for marketing the cotton produce along with lesser weight fixation to cotton produce of the farmer in the market.

Andhra Pradesh Oil Seeds Federation, CCI and NFAFED are executing the schemes of MIS and PSS in Andhra Pradesh and they express the need of extension of the period to seven months of MIS for oil palm and much storage and warehousing for cotton. The timely AMC bills to CCI will enable it to pay in-time payment to farmers. The additional incidental charges will make the schemes to be on right path.

Conclusions/Policy Measures:

The policy measures are given for two crops separately.

Oil Palm

Cost of Cultivation

Cost of cultivation is not reflected in the fixation of price in the MIS, though the cost of cultivation of government research centre gives at higher level. Hence, it is better to encourage the cultivator of oil palm through the reality of changing cost conditions in the cultivation.

Need of Regular MIS:

As the irregular scheme and the lower price fixation of Minimum Support Price (MSP) are the basic elements in the turn out of the level of market price. It is better to arrange the MIS to oil palm on a regular basis, as the scheme, in any case, is very much limited to lower period. There would be very much good impact over the market price or miller price fixation, if the scheme is in force in the peak season.

Avoiding Power of Monopsony and Need of Institutional Body in Marketing

The market structure is 100% monopsony for oil palm farmer. There is no say to farmer and he stands as 'price receiver'. It would be better to establish some market structure that should set the competition in the market. There are no instances as the mill owners have followed any competitive price in the market. There will be much existence of surplus to 'Monopsonist' in case of oil palm milling and therefore, it is imperative to establish any institutional body to reduce the power of 'Monopsonist'/ Miller to give good price or justice to the peasant of the oil palm. This body, having consisted of representatives from mill owners, farmers and the government nominated officials, could do successfully the proper price fixation to the farmer community of oil palm on a regular basis.

Proper Weighing and in-time Payment

It is also very important segment of the oil palm marketing. There is weighing by factory owners only and it could hardly be reliable. Subsequently, it is important to erect the alternative weighing machines to farmers to check the produce. It is better to arrange payments in time to avoid undue interest payments by farmers, as the private factory owners are in practice of delay the payment of all farmers in all areas across study districts.

Oil Cotton

All the farmers express unanimously the need of MSP reflecting the changed cost of cultivation. They quote the increase in wages of labour and material charges at large extent. In such a dire context, the MSP for cotton is to be declared to meet the changed cost of production.

Institutional credit

There is big claim for increase of institutional credit, though there is considerable rise in it (as the recent data informs). Cotton cultivation takes much investment within a short period for fertilizers, pesticides and weedisides. Most of the suicides are among the cotton cultivators across Andhra Pradesh due to indebtedness arisen from the exorbitant interests and low price to their produce.

Need of Fair Market Structure

Weighing

There is lot of criticism over the method of weighing either by private traders or by the officials of PSS. The farmers attribute malpractices of weighing through the wet aspect of 'Kapas' in the market. Calculation and weighing is very much corruption oriented and it leads to falling of net income to the farmer in the market site. In case of quality fixation also, the methods adopted by private traders and officials of PSS are non-acceptable for the proper price fixation. There is a cry with distress from farmers for the change of scenario.

Quality

All the cultivators under PSS say that there is a lot of practice of lowering the quality of their produce in the market by both private traders and the officials of PSS. To this end, they use pretext of 'Moisture and colour '. Thus the farmer is being cheated at the mandi by the both private traders and the officials of CCI.

Packing Material

The packing material is supplied at subsidy price (gunny bags) to farmers, but this amount is not fully reached the respondents and further the whole produce could hardly be covered under this subsidy of packing material.

Storage facility in Mandi

No sufficient space is available for the storage of cotton produce in the mandis. Many a time unseasonal rains have given trouble to farmers in the market in storing the produce in the market.

8.2.3.5 Rejection of Farmer Produce and Milakat with Private Trader

Farmers blame the PSS officials for the practice of rejection of their produce and the same quality is being purchased from private traders. This practice gives lower price to farmer by private trader and in return, the private trader gets high price for same produce from the CCI officials by selling the same quality of cotton.

Misappropriation of Farmer Card/Passbook by Private Traders

Private traders are misappropriating the farmers' passbooks or landholding record for the purpose of selling their produce under PSS, and getting higher price to their produce, which was bought from the farmers at lower prices.

Delayed Payment

CCI officials are not paying in time to the cultivators for the purchases done, while the private traders pay on the same day. Therefore, the farmers, who are at dire need of cash, are selling their produce at lower prices to the private traders. It could be avoided, if the payment from CCI is done at an earlier instant.

Coverage of Marginal and Small Farmers

A very important aspect is the coverage of PSS for marginal and small farmers, as these farmer size groups are covered at lower ebb under the scheme. Location, transport and quantum of produce with these groups are the factors for uncovering by CCI officials in the implementation of PSS. Hence, it is imperative to change policy of the CCI or Government of India to confine to the designated mandi or collection centres. The collection centres may be increased to cover these farmer size groups and further, these farmers may be arranged with sub-collection centres at some nearest villages, then marginal and small farmers may transport their produce to the proximate collection centre, which should not necessarily be a mandi of the concerned state government.

Removal of Price Syndicate and CCI Purchases

As per the farmers, there is allegation of existence of common price fixation by all the private traders during harvest season. To avoid this, it would be better to increase the purchases of CCI during harvest season, instead of confining to very limited period. Otherwise, the storage facilities could much be enhanced to the farmers coupled with bank loans over the stocks.

COMMODITY REVIEWS

Foodgrains

During the month of June, 2015 the Wholesale Price Index (Base 2004-05=100) of pulses increased by 8.77%, cereals increased by 0.35% & foodgrains increased by 2.13% respectively over the previous month.

INDEX NUMBER OF WHOLESALE PRICES

(Base: 2004-2005=100)

Commodity	Weight (%)	WPI for the month of June 2015	WPI for the month of May 2015	WPI A year ago	Percentage Change during	
					A month	A year
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rice	1.793	236.9	233.6	244.7	1.41	-3.19
Wheat	1.116	210.4	213.5	208.8	-1.45	0.77
Jowar	0.096	283.9	286.0	292.7	-0.73	-3.01
Bajra	0.115	244.4	248.5	258.7	-1.65	-5.53
Maize	0.217	248.7	243.6	253.9	2.09	-2.05
Barley	0.017	216.6	221.9	215.8	-2.39	0.37
Ragi	0.019	327.1	329.1	325.4	-0.61	0.52
Cereals	3.373	230.9	230.1	235.6	0.35	-1.99
Pulses	0.717	308.9	284.0	234.1	8.77	31.95
Foodgrains	4.09	244.6	239.5	235.3	2.13	3.95

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 June, 2015.

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

Procurement of Rice

2.28 million tonnes of rice(including paddy converted into rice) was procured during June 2015 as against 2.76 million tonnes of rice(including paddy converted into rice)procured during June 2014. The total procurement of rice in the current marketing season i.e 2014-2015, up to 30.06.2015 stood at 30.89 million tonnes, as against 30.45 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 30.06.2015)		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)
Andhra Pradesh	3476	11.25	7460	24.50	3722	11.76	6464	19.00
Chhatisgarh	3355	10.86	4286	14.08	4290	13.56	4804	14.12
Haryana	2009	6.50	2405	7.90	2406	7.60	2609	7.67
Maharashtra	178	0.58	152	0.50	161	0.51	192	0.56
Punjab	7782	25.19	8106	26.62	8106	25.62	8558	25.16
Tamil Nadu	943	3.05	681	2.24	684	2.16	481	1.41
Uttar Pradesh	1682	5.44	1125	3.69	1127	3.56	2286	6.72
Uttarakhand	465	1.51	442	1.45	463	1.46	497	1.46
Others	11003	35.62	5793	19.02	10678	33.75	8129	23.89
Total	30893	100.00	30450	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 2015-2016 up to June, 2015 is 27.62 million tonnes against a total of 27.06 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 2015-16		Corresponding Period of last Year		Marketing Year (April-March)			
	(upto 30.06.2015)		2014-15		2014-15		2013-14	
	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	6756	24.46	6414	23.70	6495	23.20	5873	23.41
Madhya Pradesh	7261	26.29	7094	26.21	7094	25.34	6355	25.33
Punjab	9952	36.03	10772	39.79	11641	41.58	10897	43.43
Rajasthan	1298	4.70	2155	7.96	2159	7.71	1268	5.06
Uttar Pradesh	2267	8.21	628	2.32	599	2.14	683	2.72
Others	88	0.32	6	0.02	6	0.02	16	0.06
Total	27622	100.00	27069	100.00	27994	100.00	25092	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 217.6 in June, 2015 showing an increase of 1.0 percent and 2.6 percent over the previous month and year, respectively. The WPI of niger seed (16.1 percent), gingelly seed (7.2 percent), safflower seed (5.1 percent), groundnut seed (4.9 percent), rape & mustard seed (4.2 percent), cotton seed (3.7 percent) and sunflower seed (1.0 percent) increased over the previous month. However, the WPI of copra (6.3 percent) and soyabean (5.9 percent) decreased over the previous month. The Wholesale Price Index (WPI) of edible oils as a group stood at 149.2 in June, 2015 showing an increase of 2.0 percent and 2.8 percent over the previous month and year, respectively.The WPI of mustard & rapeseed oil (6.3 percent), cotton seed oil (4.5 percent), groundnut oil (2.8 percent), sunflower oil (1.7 percent), soyabean oil (0.2 percent) and copra oil (0.1 percent), increased over the previous month. However, the WPI of gingelly oil (5.5 percent) decreased over the previous month.

Fruits & Vegetable

The Wholesale Price Index (WPI) of fruits & vegetable as a group stood at 249.4 in June, 2015 showing an increase of 3.6 percent 0.3 percent over the previous month and year, respectively.

Potato

The Wholesale Price Index (WPI) of potato stood at 148.7 in June, 2015 showing an increase of 9.5 percent over the previous month. However, it is lower by 52.4 percent over the previous year.

Onion

The Wholesale Price Index (WPI) of onion stood at 356.1 in June, 2015 showing an increase of 14.1 percent and 18.5 percent over the previous month and year, respectively.

Condiments & Spices

The Wholesale Price Index (WPI) of condiments & spices (group) stood at 326.3 in June, 2015 showing an increase of 4.1 percent and 16.9 percent over the previous month and year, respectively.The WPI of chillies (dry) and black pepper each increased by 1.5 percent over the previous month. However, WPI of turmeric decreased by 1.9 over the previous month

Raw Cotton

The Wholesale Price Index (WPI) of raw cotton stood at 197.1 in June, 2015 showing a decrease of 1.4 percent and 14.3 percent over the previous month and year, respectively.

Raw Jute

The Wholesale Price Index (WPI) of raw jute stood at 356.5 in June, 2015 showing an increase of 14.6 percent and 21.6 percent over the previous month and year, respectively.

WHOLESALE PRICE INDEX OF COMMERCIAL CROPS

Commodity	Latest	Month	Year	% Variation Over	
	June, 2015	May, 2015	June, 2014	Month	Year
Oil Seeds	217.6	215.4	212.1	1.0	2.6
Groundnut Seed	257.9	245.8	206.4	4.9	25.0
Rape & Mustard Seed	214.7	206.0	188.2	4.2	14.1
Cotton Seed	173.3	167.1	180.8	3.7	-4.1
Copra (Coconut)	160.9	171.8	180.3	-6.3	-10.8
Gingelly Seed (Sesamum)	347.4	324.0	408.3	7.2	-14.9
Niger Seed	261.5	225.3	181.1	16.1	44.4
Safflower (Kardi Seed)	134.8	128.2	131.3	5.1	2.7
Sunflower	192.7	190.8	187.9	1.0	2.6
Soyabean	217.6	231.3	244.4	-5.9	-11.0
Edible Oils	149.2	146.3	145.1	2.0	2.8
Groundnut Oil	189.1	183.9	160.6	2.8	17.7
Cotton Seed Oil	180.6	172.9	179.3	4.5	0.7
Mustard & Rapeseed Oil	175.6	165.2	154.2	6.3	13.9
Soyabean Oil	150.3	150.0	155.4	0.2	-3.3
Copra Oil	161.5	161.4	135.0	0.1	19.6
Sunflower Oil	130.1	127.9	126.0	1.7	3.3
Gingelly Oil	158.4	167.6	180.0	-5.5	-12.0
Fruits & Vegetables	249.4	240.7	248.7	3.6	0.3
Potato	148.7	135.8	312.4	9.5	-52.4
Onion	356.1	312.1	300.4	14.1	18.5
Condiments & Spices	326.3	313.4	279.2	4.1	16.9
Black Pepper	713.6	703.1	726.4	1.5	-1.8
Chillies(Dry)	322.3	317.4	277.4	1.5	16.2
Turmeric	250.6	255.5	215.8	-1.9	16.1
Raw Cotton	197.1	199.8	230.1	-1.4	-14.3
Raw Jute	356.5	311.1	293.1	14.6	21.6

STATISTICAL TABLES

Wages

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

State	District	Centre	Month & Year	Daily Normal Working	Field Labour		Other Agri. Labour		Herds man		Skilled Labour		
											Carpen-ter	Black Smith	Co-bbler
				Hours	M	W	M	W	M	W	M	M	M
Andhra Pradesh	Krishna	Ghantasala	April,15	8	300	250	325	NA	200	NA	300	NA	NA
	Guntur	Tadikonda	April,15	8	283	200	275	NA	250	NA	NA	NA	NA
Telangana	Ranga Reddy	Arutala	March,15	8	260	190	300	NA	NA	NA	NA	NA	NA
Karnataka	Bangalore	Harisandra	Nov,14	8	250	200	300	250	300	250	350	330	NA
	Tumkur	Gidlahali	Nov,14	8	160	160	180	180	180	180	180	180	NA
Maharashtra	Nagpur	Mauda	Sep, 14	8	100	80	NA	NA	NA	NA	NA	NA	NA
	Ahmednagar	Akole	Sep, 14	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jharkhand	Ranchi	Gaitalsood	April,12	8	100	100	NA	90	90	NA	170	170	NA

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

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Plough-ing	Sow-ing	Weed-ing	Harve-sting	Other Agri Labour	Herd-sman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Assam	Berpeta	Laharapara	Feb, 15	M	8	250	250	250	250	250	200	350	250	250
Assam	Barpeta	Laharapara	Feb,15	M	8	250	250	250	250	250	200	300	250	250
				W	8	NA	NA	200	200	200	NA	NA	NA	NA
Bihar	Muzaffarpur	BhaluiRasul	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	April,15	M	8	NA	NA	NA	150	100	150	250	150	100
				W	8	NA	NA	NA	120	100	130	200	NA	NA
Gujarat*	Rajkot	Rajkot	Dec,14	M	8	219	214	156	183	150	184	428	428	344
				W	8	NA	163	147	178	139	NA	NA	NA	NA
	Dahod	Dahod	Dec,14	M	8	207	164	164	164	136	NA	271	221	221
				W	8	NA	164	164	164	136	NA	NA	NA	NA
Haryana	Panipat	Ugarakheri	Apr,15	M	8	400	400	400	400	400	NA	NA	NA	NA
				W	8	NA	300	300	300	300	NA	NA	NA	NA
Himachal Pradesh	Mandi	Mandi	Dec,13	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	March,15	M	4-8	1030	610	NA	660	820	NA	710	NA	NA
				W	4-8	NA	NA	460	510	510	NA	NA	NA	NA
	Palakkad	Elappally	March,15	M	4-8	500	500	NA	500	466.66	NA	600	NA	NA
				W	4-8	NA	NA	300	300	300	NA	NA	NA	NA
Madhya Pradesh	Hoshangabad	Sangarkhera	May,15	M	8	200	200	200	NA	200	150	400	400	NA
				W	8	NA	200	200	NA	150	150	NA	NA	NA
	Satna	Kotar	May,15	M	8	200	150	200	200	200	200	350	350	300
				W	8	NA	150	200	200	200	200	NA	NA	NA
	Shyopurkala	Vijaypur	May,15	M	8	NA	200	NA	NA	NA	200	300	300	NA
				W	8	NA	200	NA	NA	NA	NA	NA	NA	NA
Odisha	Bhadrak	Chandbali	March,15	M	8	NA	NA	300	NA	NA	250	300	NA	NA
				W	8	NA	NA	250	NA	NA	200	NA	NA	NA
	Ganjam	Aska	March,15	M	8	300	200	200	250	200	200	400	400	400
				W	8	NA	100	100	150	100	100	NA	NA	NA

TABLE 1.1: DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)—*(Contd.)*

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Plough-hing	Sow-ing	Weed-ing	Harve-sting	Other Agri Labour	Herd-sman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Punjab	Ludhiyana	Pakhowal	July,14	M	8	300	300	300	NA	365	NA	395	395	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan	Barmer	Kuseep	April,15	M	8	NA	NA	NA	NA	NA	300	700	500	NA
				W	8	NA	NA	NA	NA	NA	200	NA	NA	NA
	Jalore	Sarnau	April,15	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tamil Nadu*	Thanjavur	Pulvarnatham	March,15	M	8	NA	318.75	NA	306	312.62	NA	NA	NA	NA
				W	8	NA	100	115	116	119	NA	NA	NA	NA
	Tirunelveli	Malayakulam	March,15	M	8	NA	NA	NA	NA	431.25	NA	NA	NA	NA
				W	8	NA	165	152.5	170	262.5	NA	NA	NA	NA
Tripura		State Average	Apr, 14	M	8	287	263	264	277	261	270	305	212	285
				W	8	NA	197	201	209	197	200	NA	NA	NA
Uttar Pradesh*	Meerut	Ganeshpur	Dec,14	M	8	275	263	261	263	260	NA	378	NA	NA
				W	8	NA	198	202	197	203	NA	NA	NA	NA
	Aurraiya	Aurraiya	Dec,14	M	8	150	150	150	160	150	NA	250	NA	NA
				W	8	NA	NA	NA	160	150	NA	NA	NA	NA
	Chandauli	Chandauli	Dec,14	M	8	NA	200	200	200	200	NA	350	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA

M-Man
W-Woman
NA-Not Available

*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 ₹)

Commodity	Variety	Unit	State	Centre	June-15	May-15	June-14
1	2	3	4	5	6	7	8
Wheat	PBW 343	Quintal	Punjab	Amritsar	1600	1500	1405
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1460	1455	1410
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1434	1419	1500
Jowar	-	Quintal	Maharashtra	Mumbai	2350	2450	2600
Gram	No III	Quintal	Madhya Pradesh	Sehore	3890	4165	2470
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1370	1510	1160
Gram Split	-	Quintal	Bihar	Patna	4970	4725	4560
Gram Split	-	Quintal	Maharashtra	Mumbai	5600	4300	4200
Arhar Split	-	Quintal	Bihar	Patna	8390	7975	6850
Arhar Split	-	Quintal	Maharashtra	Mumbai	9500	8000	7100
Arhar Split	-	Quintal	NCT of Delhi	Delhi	10200	N. A.	6150
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	9900	9700	6400
Gur	-	Quintal	Maharashtra	Mumbai	3200	3250	3400
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	3800	3800	4000
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2375	2250	3170
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3550	3620	3225
Mustard Seed	Black	Quintal	West Bengal	Raniganj	4250	4350	3400
Mustard Seed	-	Quintal	West Bengal	Kolkata	4750	4500	3750
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4240	4240	4125
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	3915	3960	3810
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1700	1350	1750
Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	2000	2000	1550
Castor Seed	-	Quintal	Andhra Pradesh	Hyderabad	3800	4000	3800
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	13400	13790	6350
Copra	FAQ	Quintal	Kerala	Alleppey	8100	8750	9800
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	4500	4500	4800
Groundnut	-	Quintal	Maharashtra	Mumbai	6000	5900	5700
Mustard Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1290	1323	1224
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1530	1463	1185
Groundnut Oil	-	15 Kg.	Maharashtra	Mumbai	1440	1410	1125
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1635	1590	1275
Linseed Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1425	1479	1470
Castor Oil	-	15 Kg.	Andhra Pradesh	Hyderabad	1238	1305	1290
Sesamum Oil	-	15 Kg.	NCT of Delhi	Delhi	1855	1850	1855
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2070	2175	2175
Coconut Oil	-	15 Kg.	Kerala	Cochin	1755	1905	2235
Mustard Cake	-	Quintal	Uttar Pradesh	Kanpur	1900	1950	1800
Groundnut Cake	-	Quintal	Andhra Pradesh	Hyderabad	3386	3500	3000
Cotton/Kapas	NH 44	Quintal	Andhra Pradesh	Nandyal	4000	4100	4700
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	3400	3606	3800
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	4210	3740	2985

(Month end Prices in ₹)

Commodity	Variety	Unit	State	Centre	June-15	May-15	June-14
1	2	3	4	5	6	7	8
Jute Raw	W 5	Quintal	West Bengal	Kolkata	4160	3670	2935
Oranges	-	100 No	NCT of Delhi	Delhi	NA	500	NA
Oranges	Big	100 No	Tamil Nadu	Chennai	490	440	650
Oranges	Nagpuri	100 No	West Bengal	Kolkata	NA	750	-
Banana	-	100 No.	NCT of Delhi	Delhi	333	333	375
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	495	499	463
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	62000	63000	55000
Almonds	-	Quintal	Maharashtra	Mumbai	74000	72000	62000
Walnuts	-	Quintal	Maharashtra	Mumbai	68000	68000	65000
Kishmish	-	Quintal	Maharashtra	Mumbai	24000	24500	15000
Peas Green	-	Quintal	Maharashtra	Mumbai	4000	4000	4600
Tomatoes	Ripe	Quintal	Uttar Pradesh	Kanpur	1800	1550	910
Ladyfinger	-	Quintal	Tamil Nadu	Chennai	3300	2500	2400
Cauliflower	-	100 No.	Tamil Nadu	Chennai	2800	2250	2050
Potatoes	Red	Quintal	Bihar	Patna	810	700	1580
Potatoes	Desi	Quintal	West Bengal	Kolkata	700	680	1450
Potatoes	Sort I	Quintal	Tamil Nadu	Mettuppalayam	-	1656	3457
Onions	Pole	Quintal	Maharashtra	Nashik	1550	1000	1400
Turmeric	Nadan	Quintal	Kerala	Cochin	12000	12000	9500
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	7900	7800	9800
Chillies	-	Quintal	Bihar	Patna	8900	9200	8580
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	61000	59000	70000
Ginger	Dry	Quintal	Kerala	Cochin	22500	22500	31000
Cardamom	Major	Quintal	NCT of Delhi	Delhi	125000	106000	135000
Cardamom	Small	Quintal	West Bengal	Kolkata	110000	110000	115000
Milk	Buffalo	100 Liters	West Bengal	Kolkata	3600	3600	3600
Ghee Deshi	Deshi No 1	Quintal	NCT of Delhi	Delhi	29181	29015	30682
Ghee Deshi	-	Quintal	Maharashtra	Mumbai	46000	46000	35000
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	34750	34800	33200
Fish	Rohu	Quintal	NCT of Delhi	Delhi	8300	8100	9800
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	38500	36000	36500
Eggs	Madras	1000 No.	West Bengal	Kolkata	4200	3500	3500
Tea	-	Quintal	Bihar	Patna	21050	21050	21300
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	35000	35000	13000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	29500	30000	26000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	13000	15200	14000
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	4400	4400	4870
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	3400	3400	3815
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	3900	3900	3900
Rubber	-	Quintal	Kerala	Kottayam	11800	11650	13600
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	31400	30250	29700

3. Month end Wholesale Prices of Some Important Agricultural Commodities in International Markets during Year 2015

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.	May	June
1	2	3	4	5	6	7	8	9	10	11
Cardamom	Guatmala Bold Green	U.K.	—	Dollar/M.T.	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00
				Rs./Qtl	74160.00	74100.00	75396.00	75948.00	76596.00	76212.00
Cashew Kernels	Spot U.K. 320s	U.K.	—	Dollar/lbs	3.60	3.62	3.64	3.68	3.85	3.75
				Rs./Qtl	49034.59	49267.11	50405.74	51332.75	54162.31	52491.02
	Spot U.K. 320s	U.K.	—	Dollar/MT	7877.32	7932.59	7644.65	8194.35	8431.63	8251.98
				Rs./Qtl	48681.84	48983.74	48031.34	51862.04	53819.09	52408.32
Castor Oil	Any Origin ex tank Rotterdam	Netherlands	—	Dollar/M.T.	1700.00	1525.00	1434.00	1434.00	1434.00	1575.00
				Rs./Qtl	10506.00	9416.88	9009.82	9075.79	9153.22	10002.83
Chillies	Birds eye 2005 crop	Africa	—	Dollar/M.T.	4100.00	4100.00	4100.00	4100.00	4100.00	4100.00
				Rs./Qtl	25338.00	25317.50	25760.30	25948.90	26170.30	26039.10
Cloves	Singapore	Madagascar	—	Dollar/M.T.	10500.00	10500.00	10500.00	10500.00	11200.00	11200.00
				Rs./Qtl	64890.00	64837.50	65971.50	66454.50	71489.60	71131.20
Coconut Oil	Crude Phillipine/ Indonesia	Netherlands	—	Dollar/M.T.	1080.00	1140.00	1040.00	1085.00	1125.00	1105.00
				Rs./Qtl	6674.40	7039.50	6534.32	6866.97	7180.88	7017.86
Copra	Phillipines CIF Rotterdam	Phillipine	—	Dollar/M.T.	679.50	726.00	657.00	682.50	714.00	701.50
				Rs./Qtl	4199.31	4483.05	4127.93	4319.54	4557.46	4455.23
Corriander		India	—	Dollar/M.T.	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00
				Rs./Qtl	12360.00	12350.00	12566.00	12658.00	12766.00	12702.00
Cummin Seed		India	—	Dollar/M.T.	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00
				Rs./Qtl	13905.00	13893.75	14136.75	14240.25	14361.75	14289.75
Ginger	Split	Nigeria	—	Dollar/M.T.	2250.00	2250.00	2250.00	2250.00	2250.00	2250.00
				Rs./Qtl	13905.00	13893.75	14136.75	14240.25	14361.75	14289.75
Groundnut kernels	US 2005, 40/50	European Ports	—	Dollar/M.T.	1350.00	1350.00	1350.00	1320.00	1250.00	1250.00
				Rs./Qtl	8343.00	8336.25	8482.05	8354.28	7978.75	7938.75
Groundnut Oil	Crude any origin CIF Rotterdam	U.K.	—	Dollar/M.T.	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00
				Rs./Qtl	7416.00	7410.00	7539.60	7594.80	7659.60	7621.20
Maize		U.S.A.	Chicago	C/56 lbs	373.25	375.75	395.00	372.50	349.50	366.50
				Rs./Qtl	906.53	911.86	975.34	926.52	876.73	914.76
Oats		Canada	Winnipeg	Dollar/M.T.	365.75	341.64	352.54	315.21	297.89	313.24
				Rs./Qtl	2260.34	2109.63	2215.01	1994.96	1901.43	1989.39
Palm Kernal Oil	Crude Malaysia/Indonesia	Netherlands	—	Dollar/M.T.	945.00	1070.00	980.00	990.00	945.00	880.00
				Rs./Qtl	5840.10	6607.25	6157.34	6265.71	6031.94	5588.88
Palm Oil	Crude Malaysian/Sumatra	Netherlands	—	Dollar/M.T.	630.00	678.00	658.00	655.00	648.00	670.00
				Rs./Qtl	3893.40	4186.65	4134.21	4145.50	4136.18	4255.17
Pepper (Black)	Sarawak Black lable	Malaysia	—	Dollar/M.T.	10000.00	11000.00	11000.00	11000.00	12000.00	12000.00
				Rs./Qtl	61800.00	67925.00	69113.00	69619.00	76596.00	76212.00
Rapeseed	Canola	Canada		Can	449.80	458.50	460.60	445.10	468.90	511.90
			Winnipeg	Dollar/M.T.	2204.02	2264.53	2319.12	2318.97	2408.74	2636.29
	UK delivered rapeseed delivered	U.K.	—	Pound/M.T.	242.00	240.00	233.00	242.00	247.00	238.00
				Rs./Qtl	2254.96	2285.04	2175.06	2305.29	2414.92	2380.00
Rapeseed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T.	577.00	586.00	601.00	587.00	607.00	639.00
				Rs./Qtl	5376.49	5579.31	5610.34	5591.76	5934.64	6390.00
Soyabean Meal	UK produced 49% oil & protein	U.K.	—	Pound/M.T.	334.00	319.00	317.00	306.00	294.00	280.00
				Rs./Qtl	3112.21	3037.20	2959.20	2914.96	2874.44	2800.00
Soyabean Oil		U.S.A.	—	C/lbs Rs./Qtl	30.34	31.71	31.04	31.56	31.73	33.27
					4132.53	4315.64	4298.34	4402.34	4463.82	4675.00
Soyabean Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T.	756.00	611.00	593.00	558.00	595.00	590.00
				Rs./Qtl	7044.41	5817.33	5535.66	5315.51	5817.32	5900.00

3. MONTH END WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2015—(*Contd.*)

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.	May	June
1	2	3	4	5	6	7	8	9	10	11
Soyabeans	US No. 2 yellow	Netherlands		Dollar/M.T.	420.90	409.40	418.00	392.80	380.90	397.30
			Chicago	Rs./Qtl	2601.16	2528.05	2626.29	2486.03	2431.28	3523.25
		U.S.A.	—	C/60 lbs	970.25	1007.75	978.75	970.50	927.00	981.75
				Rs./Qtl	2200.59	2283.79	2256.86	2254.22	2171.55	2288.28
Sunflower seed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T.	664.00	656.00	665.00	672.00	715.00	694.00
				Rs./Qtl	6187.15	6245.78	6207.78	6401.47	6990.56	6940.00
Tallow	High grade delivered	U.K.	London	Pound/M.T.	295.00	295.00	290.00	330.00	335.00	335.00
				Rs./Qtl	2748.81	2808.70	2707.15	3143.58	3275.30	3350.00
Wheat		U.S.A.	Chicago	C/60 lbs	505.25	497.75	519.00	498.75	487.75	518.00
				Rs./Qtl	1145.94	1128.01	1196.74	1158.47	1142.58	1207.36

Source: Public Ledger

Exchange Rate	Jan.	Feb.	Mar.	Apr.	May	Jun
US Dollar	61.80	61.75	62.83	63.29	63.83	63.51
CAN Dollar	49.00	49.39	50.35	52.10	51.37	51.50
UK Pound	93.18	95.21	93.35	95.26	97.77	100.00

CROP PRODUCTION

4. Sowing and Harvesting Operations Normally in Progress during August, 2015

State	Sowing	Harvesting
(1)	(2)	(3)
Andhra Pradesh	Winter Rice, Jowar (K), Bajra Maize (K), Ragi (K), Small Millets (K), Urad (K), Tur (K), Mung (K), Other Kharif Pulses, Ginger, Chillies (Dry), Groundnut, Castor seed, Cotton, Mesta, Sweet Potato, Nigerseed	Autumn rice, Small Millets (K), Mung (K), Other Kharif Pulses, Sesamum
Assam	--	Autumn Rice, Maize, Jutem Mesta
Bihar	Winter Rice, Jowar (K) Bajra, Small Millets (K), Tur (K), Groundnut, Castor seed	Jute, Mesta
Gujarat	Winter Rice, Chillies (Dry), Tobacco, Castor seed, Sesamum, Cotton	—
Himachal Pradesh	Bajra	Sesamum
Jammu & Kashmir	Small Millets (K),	Maize, Small Millets (K), (early) Sannhemp
Karnataka	Autumn Rice, Winter Rice, Bajra, Ragi, Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Potato (Plains), Chillies (Dry), Tobacco, Castorseed, Groundnut, Cotton, Sweet Potato, Nigerseed	Maize(K), Urad(K), Mung(K), Summer Potato (Hills), Tobacco Sesamum , Sweet Potato, Sannhemp, Onion, (1st Crop)
Kerala	Winter Rice, Tur(K), Other Kharif Pulses, (Kulthi) Sesamum(2nd crop), Cotton, Tapioca (3rd Crop)	Autumn Rice, Ragi, Small Millets (K) Tur(K), Urad(K), Mung(K), Other Kharif Pulses, Lemon Grass, Tapioca (1st Crop)
Madhya Pradesh	Autumn Rice, Jowar (K), Bajra, Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Summer Potato, Ginger, Chillies (Dry), Tobacco, Castor Seed, Sesamum, Sweet Potato, Nigerseed.	Maize
Maharashtra	Tobacco, Castor Seed, Cotton,	Maize (K)
Manipur	Sweet Potato	Autumn Rice, Maize, Jute
Orissa	Winter Rice, Summer Potato (Plains), Chillies (Dry),	Chillies (Dry.), Jute
Punjab and Haryana	Autumn Rice, Bajra, Ragi, Castor Seed	Small Millets, (K), Winter Potato (Hills).
Rajasthan	Autumn Rice, Jowar (K), Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Winter Potato (PLains), Chillies (Dry), Tobacco (2nd Crop), Groundnut, Castor Seed, Sesamum, Sannhemp.	—
Tamil Nadu	Autumn Rice, Jowar (K), Bajra, Ragi, Small Millets (K), Tur (K), Mung (K), Sugarcane, Chillies (Dry), (Early) Groundnut (Late), Cotton, Sannhemp, Tapioca	Summer Potato, Sugarcane, Chillies (Dry), Cotton (Early), Sannhemp, Onion
Tripura	Winter Rice	Autumn Rice., Sesamum, Jute
Uttar Pradesh	Winter Rice, Bajra, Chillies (Dry), Sesamum, Sweet Patoto, Turmeric, Tapioca (1st Crop)	Maize, Chillies (Dry), Jute
West Bengal	Winter Rice, Tur (K), Ginger, Chillies (Dry), Sesamum (Early)	Autumn Rice, Maize, Chillies (Dry), Jute
Delhi	Tur (K),	—
Andaman & Nicobar Islands	--	Autumn Rice

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