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AGRICULTURAL SITUATION IN INDIA

Since 1948

FEBRUARY, 2018

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

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 & Farmers Welfare's 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. Good articles in Hard Copy as well as Soft Copy (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 & Farmers Welfare, C-1, Hutments Dara Shukoh Road, New Delhi-110 011 along 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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We are pleased to inform that our monthly journal Agricultural Situation in India has been accredited by the National Academy of Agricultural Sciences (NAAS) and it has been given a score of 3.15 out of 6. The score is effective from January, 2018 onwards. The score may be seen in the following website: www.naasindia.org

The journal Agricultural Situation in India has been included in the UGC approved list of journals for promotion and recruitment in academic and non-academic posts.

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eands.dacnet.nic.in/publication.htm

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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From Editor's Desk

This issue of Agricultural Situation in India throws light on various initiatives of the Government aimed at farm sector development, a quick survey of agriculture, and also provides a bird's eye view of what is happening in agricultural economics academics and field research.

Important in the farm sector news is the release of the final estimates for horticulture for the year 2016-17 and the first advance estimates for the year 2017-18, which shows substantial increase of 5 percent during 2016-17 over the year 2015-16; and an increase of 1.6 percent in the total production during the first quarter of the year 2017-18. Other Farm Sector news cover launching of e-*pashu haat* portal; significant increase in public investment in agriculture and allied sectors; the Government endeavours on streamlining institutional credit; and the developmental initiatives of Coconut Development Board to include special measures for Bihar and the Central Institute of Fisheries Technology, Kochi, to contain rampant adulteration of fisheries.

So far as agricultural outlook of the country is concerned, the WPI of food grain decreased by 10.60 percent in December 2017 as compared to that in December 2016. The WPI of cereals, pulses and wheat depicted a declining trend; while there was an improvement in the case of paddy during the same period. The cumulative winter season rainfall in the country has been 88 percent of the long period average during 1st January to 17th January, 2018. Present live storage in 91 major water reservoirs in the country was 76.69 BCM as against 83.01 BCM of normal storage based on the average storage last 10 years. The sowing during Rabi 2017, upto 19th January, 2018, stood at around 99 percent of the normal area under Rabi crops.

On academic front, we are sharing three research articles on contemporary issues of Indian agriculture, viz. assessment of marketed and marketable surplus of tomato; role of modern skills in improving income and employment opportunity in rural Himachal Pradesh; and forecasting of oilseeds prices. The article on marketable and marketed surplus of tomato shows that the marketed amount of tomato is lower than the marketable surplus amount in the sample district (Golaghat) of Assam. This study suggests building cold storage and increasing the use of modern farming equipments for improving the economic condition of the sample farmers. The article on role of modern skills in increasing income and employment of household in rural areas of Himachal Pradesh reveals that among modern skilled households, technically skilled households enjoy highest annual income whereas barbers earn lowest. Further, among technically skilled households, goldsmiths earn comparatively higher income annually. The study suggests that Government should provide modern equipment and technology, training materials, and financial assistance to the poor traditional households for promoting modern skill in the state, thereby improving their income. In the article on forecasting of oilseeds price, the author applies ARIMA model to forecast the mustard prices in India.

In the agro-economic research studies, this issue brings out the findings of an all India survey on farmers' suicide, covering 13 states. The highlight of the study is the policy suggestion that farmers' suicide can be contained by regulating the illegal money lending prevalent in the credit market, and providing a rehabilitation package to the suicide prone states, enhancing employment opportunity under MNREGS, strengthening primary healthcare support to the vulnerable farmers, installing automated weather stations, etc.

Among other farm sector news in the month of January 2018 are the key-note address of Secretary, DAC&FW, at the Organics and Millets International Trade Fair at Bengaluru during 19-21st Jan, 2018, organized by Government of Karnataka and other millet growing states; and the Ministry's enthusiastic celebration of the completion of 15th years of good work by Kisan Call Centers on 21st January, 2018. Shri S.K. Pattanayak, Secretary, DAC&FW, spoke on the importance of millets in the national strategy for food security even while tackling climate change problems. In this context, he underlined the need for recognizing millets as nutri-cereals rather than coarse cereals as per the old categorization. The year 2018 has been declared as the International Millet Year.

There are fourteen KCCs functioning in different parts of the country ever since their birth fifteen years ago. The Ministry deputed a senior officer each to take part in the ceremony organized to mark the occasion in each center. I was deputed to observe the Kisan Call Center Anniversary Cake-Cutting ceremony at the Bengaluru Call Center. The center gives a feel of the professional excellence and dedication of the young Tele-Advisers, consisting of a good number of women. The Tele-Adviser's role in maintaining the health of a farmer's farming is same as that of a family doctor's towards a family's health. I shared with the young professionals the encouraging findings about their functioning as reported in the latest evaluation study report on KCCs brought out by Agro-Economic Research Unit, Centre for Management of Agriculture, IIM Ahmadabad. The center's management felt motivated with this gesture of the Ministry.

P. C. Bodh

Farm Sector News

Record Production of Horticulture Crops at 300.6 Million Tonnes which is 5% higher than the year 2015-16.

The Department of Agriculture, Cooperation and Farmers Welfare released the 2016-17 (Final) and 2017-18 (1st Advance Est.) of Area and Production of Horticulture Crops. These estimates are based on the information received from different State/UTs in the country.

The following table summarizes the All-India Final Estimates: 2016-17 and 2017-18 (1stAdvance Estimates):

Total Horticulture	2015-16	2016-17 (Final)	2017-18 (First Adv. Est.)	% change of 2016-17(Final) w.r.t. 2015-16	% change of 2017-18(First Advance Est) w.r.t. 2016-17 (Final)
Area (Million Ha)	24.5	24.85	24.92	1.55	0.26
Production (MillionTonnes)	286.2	300.6	305.4	5.05	1.59
Productivity (Tonnes/Ha)	11.7	12.1	12.3	3.45	1.32

Highlights for 2016-17 (Final Estimates):-

There has been a record production of Horticulture Crops with production during the year 2016-17(F) reaching 300.6 Million Tonnes which is 5% higher than in the previous year.

Productivity for horticulture sector as a whole has increased by about 3.45% in 2016-17(Final Estimates) as compared to 2015-16.

In fruits, productivity has increased from 14.3 Tonnes/Ha in 2015-16 to 14.6 Tonnes/Ha in 2016-17(Final). In vegetables, it has increased from 16.7 Tonnes/Ha in 2015-16 to 17.4 tonnes/ha. Production of fruits is estimated to be 93 million tonnes which is 3% higher than previous year.

There has been a record production of 178 million tonnes of vegetables which is about 5% higher than the previous year. With an increase of 7%, the production of Onion during the year 2016-17 is estimated at 224 lakh Tonnes as against 209 lakh Tonnes in 2015-16. Production of Potato in the year 2016-17 (Final) is estimated at 486 lakh Tonnes as against 434 lakh Tonnes in 2015-16 which is 12% higher. With an increase of 10.5%, the production of Tomato in year 2016-17(Final) is estimated at 207 lakh Tonnes as against 187 lakh Tonnes in 2015-16.

Highlights of 2017-18 (First Advance Estimates)

The Total Horticulture production of the country is estimated to be an impressive level of 305.4 Million Tonnes during 2017-18(First Adv. Est), which is 1.6% higher than the previous year and 8% higher than the past 5 years' average production..

Productivity for horticulture sector, as a whole, has marginally increased by about 1.3% in 2017-18(First Adv. Estimates) as compared to 2016-17. Production of fruits is estimated to be about 95 million tonnes which is 2% higher than previous year. Production of vegetables is estimated to be about 181 million tonnes which is about 1% higher than the previous year. Onion production in the current year is likely to be around 214 lakh Tonnes as against 224 lakh Tonnes in 2016-17 (Final Est.), which is about 4.5% lower than the previous year. Potato production is estimated at 493 lakh Tonnes as against 486 lakh Tonnes in 2016-17(Final) which is about 1% higher than the previous year. Tomato production in the current year is likely to be around 223 lakh Tonnes as against 207 lakh Tonnes in 2016-

Source: www.pib.nic.in

17 (Final Est.) which is about 7.7% higher than the previous year.

Secretary (DADF) Directed the Procurement of all Milk being Produced by Milk Farmers in Flush Season.

Secretary, Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture & Farmers Welfare took a meeting on 21st December, 2017, in which all the country's major cooperatives such as Gujarat (AMUL), Karnataka (Nandini), Bihar (Sudha), Haryana (Vita), Punjab (Verka), Uttar Pradesh (PCDF-Parag) were directed to ensure that the milk being brought by farmers to the cooperative dairies should be purchased without discrimination. Already, the milk procurement by the cooperatives during November 2017 had recorded an increase of 20.4% in milk procurement as compared to the last year. The Procurement Price of milk during November 2017 was also higher by 4.7% when compared to last year. The stock of Skimmed Milk Powder (SMP) was at 1,16,946 MT due to higher conversion and expected to be upto 2,00,000 MT by the end of March 2018. Domestic price of Skimmed Milk Powder (SMP) and Ghee is higher by about 9%, and 19% respectively, during November 2017 compared to last year.

Secretary (ADF) directed that a target of 255 MMT of Milk Production by 2022 has been set by the Department so as to double the farmers' income in line with achieving the Prime Minister's vision of doubling the farmers' income. The total share of milk procurement by cooperatives is to be increased from existing 10% to 20% of milk production by 2022. This would ensure better returns to dairy farmers. The States and Cooperatives are to prepare their plans accordingly. Rs.10,881 crore of financial assistance is being provided under Dairy Processing Infrastructure Fund (DIDF) to Milk Federations/ Unions for the purpose.

Further, Department of Animal Husbandry, Dairying & Fisheries issued an advisory on 15.12.2017 to States to include milk in the Mid-day Meal Scheme, Anganwadi Scheme etc. Department of Food and Public Distribution was requested to consider inclusion of milk in the PDS system. Ministry of Women and Child Development was requested to include milk in the Nutrition Mission like Anganwadi Scheme. This would increase the consumption of milk and subsequently, better returns to dairy farmers even in flush season as well. The cooperatives have also been advised to set a target 2% share in the World Trade by 2020. National Dairy Development Board (NDDB) would prepare an action plan in coordination with the States to achieve the export target.

Government takes tough Stand on Adulteration of Milk

Shri Parshottam Rupala and Shri Gajendra Singh Shekhawat, Union Minister of State for Agriculture and Farmers Welfare presided a meeting on 21.12.2017 to discuss the issue of adulteration of milk and milk products with the State Cooperative Milk Federations, National Dairy Development Board (NDDB), Food Safety and Standards Authority of India (FSSAI) and State Food Safety Department representatives. MOSs advised the stakeholders to identify the unscrupulous agents who indulge in adulteration of milk as their business. Directions have been issued by Secretary (ADF) to all Chief Secretaries and Food Commissioners of States/ UTs to conduct 500 random sampling of milk every month at village level for detecting adulteration particularly of edible oil, sucrose and detergents. This drive will be started immediately and 50,000 samples will be taken countrywide. FSAAI has been advised to follow up on this. States have also been advised to install milk Adulteration testing equipments at village level for detection of adulteration by various adulterants. Assistance for this will be provided by DADF under the National Programme for Dairy Development (NPDD). Rs.100 crores have been set apart for this. ICAR was directed to enable quick testing methods for testing chemicals which are not detected by the existing testing machines. Uttar Pradesh is being assisted to install 390 milk adulteration testing equipments in 2017-18 at village/District level. Other States are also being encouraged like Madhya Pradesh, Tamil Nadu etc. The FSAAI has also been directed to develop standards for Honey testing as fructose adulteration malpractice is rampant. NDDB is setting up a National Honey Testing Laboratory for the purpose with Central Government assistance.

Investment in Agriculture Sector

Public investment in agriculture and allied sectors (at 2011-12 prices) increased from Rs.35696 crore in 2011-12 to Rs.44957 crore in 2015-16. The details of the same from 2011-12 to 2015-16 (latest available)

are given below:

(Rs. crore)

Year	Public Investment (at 2011-12 prices)
2011-12	35696
2012-13	36019
2013-14	33925
2014-15	36714
2015-16	44957

Source: Central Statistics Office (CSO), M/o Statistics & PI

Assistance for Deep Sea Fishing

The Department of Animal Husbandry, Dairying & Fisheries (DADF), Ministry of Agriculture & Farmers Welfare has introduced a new Sub-component, namely, "Assistance for Deep Sea Fishing" under the Centrally Sponsored Scheme (CSS) on Blue Revolution Integrated Development and Management of Fisheries. Under this, the traditional fishermen and their societies / associations can avail financial assistance to the extent of Rs. 40 lakh per vessel for purchase of deep sea fishing vessel including equipments to increase fish production. The unit cost per vessel is Rs. 80 lakh, wherein the DADF provides 50 % of the Unit cost with a ceiling of Rs. 40 lakh as Central subsidy and the remaining cost of the vessel has to be borne by the respective State Government / beneficiary / financial institutions. Training programmes on tuna long lining, onboard handling and processing of fish with the financial assistance of DADF is also being imparted by the DADF through the organizations like Central Institute of Fisheries Nautical Engineering & Training (CIFNET) and Fishery Survey of India (FSI).

E-Pashudhan Haat

Government has launched e-Pashu Haat portal (www.epashuhaat.gov.in) for connecting breeders and farmers of indigenous breeds. Through the portal, farmers can obtain information on location of quality of indigenous germplasm in the form of live animals, semen doses and embryos. This portal is playing a crucial role in development and conservation of indigenous breeds. As on date, complete information along with pedigree and productivity details on availability of 40,542 live animals, 6.25 crore semen doses and 372 embryos is available on the portal.

Institutional Credit to small Farmers

Government has taken several measures to increase institutional credit flow and to bring more and more farmers including small and marginal farmers within the institutional credit fold. These measures, inter alia, include the following major steps to provide hassle free crop loans to farmers including small and marginal farmers:-

i). Under the Interest Subvention Scheme (ISS),Short Term Crop loans upto Rs.3 lakh are extended to farmers at a subvented interest rate of 7% per annum for a period up to one year. In case of prompt repayment, the farmers can avail a prompt repayment incentive of 3% per annum and thus the effective rate of interest on such loans is only 4%.

ii). The ISS also provides for post harvest loans for up to 6 months at the same rate of interest as Short Term Crop loans to Kisan Credit Card holding Small and Marginal Farmers, to encourage them not to resort to distress sale and instead store their produce in Warehouses accredited with Warehousing Development Regulatory Authority (WDRA) against Negotiable Warehouse Receipts (NWR).

iii). Reserve Bank of India (RBI) has issued Priority Sector Lending Guidelines (PSL), which mandate all Domestic Scheduled Commercial Banks to earmark 18% of their Adjusted Net Bank Credit (ANBC) or Credit Equivalent amount of Off-Balance Sheet Exposure (OBE), whichever is higher, as on the corresponding date of the previous year, for lending to Agriculture. Within the 18 percent target for agriculture, a sub-target of 8 % for small and marginal farmers has been fixed to help in increasing the flow of credit to small and marginal farmers.

iv). As per PSL guidelines, loans to distressed farmers to repay non-institutional lenders are eligible under priority sector. Besides, loans to stressed persons (other than farmers) not exceeding Rs. 1,00,000/- per borrower to repay their debt to non-institutional lender are also eligible for the purpose of priority sector lending by banks.

v). The Government implements the Kisan Credit Card (KCC) Scheme aimed at providing adequate and timely credit support from the banking system under a single window to the farmers for their cultivation and other needs. In terms of master circular dated July 03, 2017 of RBI, tenant farmers,

oral lessees or share croppers are also covered under the KCC Scheme. The Scheme provides for sanction of the limit for 5 years with simplified renewal every year. All the banks have been advised to implement the scheme. The issue of smart–cum debit card, mandated under the revised guidelines, is enabling the farmers to access multiple delivery channels.

vi). To bring small, marginal, tenant farmers, oral lessees, etc., taking up farm activities, off-farm activities and non-farm activities, into the fold of institutional credit, Joint Liability Groups (JLGs) have been promoted by banks. The announcement of Union Budget for 2014-15 for financing of 5 lakh JLGs of 'Bhoomi Heen Kisan' (landless farmers) has given further credence to efforts of National Bank for Agriculture and Rural Development (NABARD) in innovating and reaching out to the landless farmers through JLG scheme of financing.

vii). Banks have been advised by RBI to waive margin/security requirements of agricultural loans upto Rs.1,00,000/-, vide RBI's circular dated 18th June, 2010.

viii). RBI has issued directions for Relief Measures to be provided by respective lending institutions in areas affected by natural calamities which, inter alia, include, restructuring/rescheduling of existing crop loans and term loans, extending fresh loans, relaxed security and margin norms, moratorium, etc. These directions have been so designed that the moment calamity is declared by the concerned District Authorities they are automatically set in motion without any intervention, thus saving precious time. The benchmark for initiating relief measures by banks has also been reduced to 33% crop loss in line with the National Disaster Management Framework.

As on 31st March, 2017, cumulatively 24.53 lakh Joint Liability Groups (JLGs) had been provided Rs.26,848.13 crore loan by banks across the country. In Andhra Pradesh, 1,82,375 JLGs had availed loans of Rs.1,618.05 crore and in Telangana, 35,748 JLGs had availed bank loans aggregating to Rs.620.94 crore, as on 31st March, 2017. The details of small and marginal farmers availing loan through JLG mode of financing is not maintained separately.

Confirmation of H5 Avian Influenza in Dasarahalli Village, Bengaluru

An outbreak of H5 Avian Influenza has been reported from Dasarahalli village, Bengaluru East Taluk, Bengaluru Urban District in Karnataka.

The samples from the said epicenter (a poultry meat shop) were sent to the National Institute of High Security Animal Diseases (NIHSAD), Bhopal which confirmed on 30thDecember, 2017 that the samples were found positive for H5 strain of Avian Influenza virus. The State Government of Karnataka was intimated of the positive results immediately.

On the directions of the Centre, the Karnataka Government has notified the outbreak and initiated the control and containment operations.

A central team of Department of Animal Husbandry, Dairying & Fisheries comprising of two experts has been deputed to Bengaluru for overseeing the operation and to assist the State Government.

There are no further reports of mortality from the State or any other part of the country. The situation is fully under control.

Farmers can Increase income by Adopting Technologies like Crop rotation, Integrated Farming, Organic Farming, double/triple Cropping System

Union Minister of Agriculture and Farmer Welfare, Shri Radha Mohan Singh, addressed a gathering at the North-East Regional Agriculture Fair 2018 on 6th January, 2018, organized by the ICAR Research Complex for North Eastern Hill (NEH) Region, Umiam, Meghalaya.

He said that ICAR Research Complex for NEH Region, Umiam, since its inception, has done many basic, strategic and applied research specific to the farming problems of the NEH Region. It developed 32 location specific farming system and agro-forestry models, including viable alternatives to shifting cultivation, release of 56 crop varieties, which includes 37 rice varieties, identifying high yielding livestock and fish species/breeds, packaging of practices for field and horticultural crops including production technology for 32 crops on cropping system basis, livestock and fish farming practices, crop and livestock production measures, etc., are some of the salient research achievements of the Institute. Recognising the need for the skilled

human resource in the development of agriculture, the Central Agricultural University, Imphal, has been strengthened. Before the present Government, there were only seven colleges in the eastern states, which has been increased to 13 in the last three-and-a-half-year and it includes a horticulture college and an agricultural college in Badapani, Meghalaya. Earlier, there were 5 Krishi Vigyan Kendras (KVKs) in Meghalaya and now the state has seven.

The Minister appreciated ICAR, NEH Region, Umiam, for launching the programme to double the income of the farmers on a pilot basis in the villages adopted by them in the next 5 years. He said 90 per cent assistance is given to North-East states and Meghalaya should accelerate the implementation of these schemes.

Hon'ble Minister for Agriculture and Farmers Welfare, Shri Radha Mohan Singh, further said the Government has initiated different flagship programmes for the welfare of the people living in rural areas, especially farming communities by improving the current farming systems and thereby doubling their income from agriculture and allied sectors.

In the changing global competitiveness, there is a tremendous scope for improvement in agricultural in the North-East region, including Meghalaya. Continuous employment generation in farming sectors through location-specific technologies in a profitable manner in partnership with different stakeholders are the driving forces to attract and retain youth in agriculture. The cooperation and convergence among the states, public, private and other stakeholders in the state and sharing of information, technology, knowledge and resources can play a key role in mutual development by saving of precious natural resources and time.

The Minister said that through the adoption of improved technologies, the productivity and farmers' income can be increased. The superior quality horticultural crops such as orange, pineapple, flowers, etc., can be produced in the region and the surplus can be marketed with the effective supply chain management, a key area that needs intervention. The farmers can increase their income by adopting technologies like crop rotation, integrated farming, organic farming, double/triple cropping system instead of relying on traditional farming.

To boost the agriculture sector, the Indian Government has set up an ambitious goal to double farmers' income by 2022. For this, the government has started various schemes - from irrigation, soil health management, organic farming to crop insurance. The Government of Meghalaya should utilise the amount allocated under the Prime Minister's Pradhan Mantri Krishi Sinchai Yojana. The state government has failed to spend the funds amounting to over Rs. 50 lakh allotted for micro-irrigation under Per Drop More Crop scheme. It is lying unused for four years. In FY 2015-16, Rs 1.44 crores was given for water management and water harvesting, the Government could not spend the amount in that year.

Even in the year 2016-17, it was unable to spend Rs 32 lakhs and for the year 2017-18, the state has Rs 2.2 crores and according to the information, the expenditure report had not been submitted to the Government of India. In FY 2015-17, Rs 44 lakhs was allocated to the Meghalaya Government for Soil Health Card (SHC) and as per the information available, so far 2,09,000 Soil Health Cards have been distributed. And this year Rs 53 lakh has been allocated for SHC.

Strategy for High Agricultural Growth Rate, 2017-18: Ministry of Agriculture & Farmers' Welfare

The Central Statistics Office (CSO) has released the Advance Estimate (AEs) of GDP and GVA for the country's economy for the year 2017-18. Further, GVAs for the economy's sectors including agriculture have been increased. The GVA of 'Agriculture, Forestry and Fishing' for the year 2017-18 has been estimated at 2.1 per cent compared to 4.9 per cent in the preceeding year 2016-17.

The Ministry of Agriculture & Farmers' Welfare (MoAFW) has had a quick deliberation on the growth rate for the Agriculture sector to strategize on ensuring that the year 2017-18 ends up with a much higher growth rate.

The components of the economic activity 'Agriculture, Forestry and Fishing' and their respective approximate GVA shares are as below:

1.
   i. Crops - 60 per cent
   ii. Livestock – 20 per cent
   iii. Forestry & logging- 8.5 per cent

iv. Fishing and aquaculture – 5.5 per cent

Further, crop sector includes both agriculture and horticulture, of which foodgrains are pre-dominant. The Advance Estimate released by CSO are based on the data on crop coverage and estimated production shared by the Directorate of Economics & Statistics (DES), Ministry of Agriculture & Farmers' Welfare. The DES has shared data on area coverage and production for the Kharif 2017-18 in respect of foodgrains, oilseeds and commercial crops, based on their compilation by the month of August, 2017. These Estimate by DES are largely eye Estimate by state governments.

In respect of horticultural crops, another important component of the crop sector, the data relating to area coverage and production Estimate was shared by the Horticulture Advisor, Ministry of Agriculture with the CSO.

It would help to know that the area coverage under different crops in Kharif as of August, 2017 was below that of the previous year on account of delay in onset of monsoons in some parts of the country. However, good rainfall thereafter helped the Ministry in increasing the area coverage in accordance with kharif targets. Despite delay in onset of monsoons and relatively poorer rainfall vis-à-vis the previous year, the area coverage under kharif finally rose to 106.55 million ha. against the five year average of 105.86 million ha.

In case of horticulture, similar positive trend in respect of both area coverage and production is seen as of December, 2017. The area coverage as per first advance Estimate under fruits & vegetables stands at 24.92 million ha., as against the previous year final of 24.85 million ha. Concomitantly, the horticulture output as per first advance Estimate is 305.4 million tonnes compared to 300.6 million tonnes in the previous year (2016-17).

Since crop sector, inclusive of foodgrains, oilseeds, commercial crops and horticulture, accounts for more than 60 per cent in the weightage of the economic activity, namely, 'Agriculture, Forestry and Fishing', the value in respect of crops is bound to influence overall sectoral GVA Estimate either positively or negatively. It is, hence logical, that the computation based on area coverage under crops as in August 2017 had a negative impact on the Advance Estimate for the overall Agriculture sector. The GVA estimate is bound to get corrected upwards, if increased area coverage by December 2017 and concomitant production Estimate in case of foodgrains, oilseeds and commercial crops, in particular are taken into account. These three account for higher percentage of share than horticulture in the GVA computation. And horticulture is showing a higher productivity Estimate.

The Ministry of Agriculture is of the opinion, that the lower coverage of area by August, 2017 on account of delayed onset of monsoons had caused a poor reflection compared to the actual positive field situation by December, 2017. The Estimate also indicates that despite a lower or negative share of crop sector in the GVA computation of Agriculture, based on August 2017 status, the growth rate still worked out to 2.1 per cent. This is a manifestation of higher growth rates in livestock and fishery sectors, the other two components. As seen thus, even by August, 2017, the estimated production of livestock and fishery was very positive and by December, 2017 crop the dominant sector had bounced back. If this is amended and actual field situation are taken into account in computation of the GVA for Agriculture sector as a whole, its growth rate can be estimated to be much higher than the Advance Estimate of 2.1 per cent.

The Ministry is optimistic about achieving a high growth rate because the Rabi, 2017 is showing a very good performance in addition to good Kharif, 2017. By 5th January, 2018 the area coverage under Rabi is 58.6 million ha., which is a very good progress. Considering that the Rabi sowing continues upto first week of February, the total area under crops and resultant production would be very good.

In totality, the crop segment in 2017-18 is expected to compare more favourably than the five year average of area coverage. Further, the Ministry expects to consolidate the record production achieved during the year 2016-17, by focusing on realizing higher productivity. The credit made available for the year 2017-18 is as high as Rs.10 lakh crore compared to Rs.9 lakh crore in the year 2016-17. The Ministry has been pursing with all the state governments to enhance the availability of credit to the farmers which is a critical input for achieving higher productivity.

Breed Registration is an Important Step in Documenting the vast Animal genetic Resource

and Related Knowledge and Information: Shri Radha Mohan Singh

Union Agriculture and Farmers Welfare Minister, Shri Radha Mohan Singh said breed registration is an important step in documenting the vast animal genetic resource and related knowledge and information and that this process will lead to the preparation of an inventory of our genetic resources so that systematic efforts can be made for genetic improvement, conservation and sustainable utilization of these resources. Shri Singh said it on 10th January, 2018, at the ceremony for Award of all Animal Breed Registration Certificates, organized in New Delhi.

Shri Singh said that a large number of livestock and poultry breeds have evolved in India due to the fact that, which have diverse use and utility and are found in varied climate and ecological zones. Currently, India has 512 million livestock and 729 million poultry heads. At present, there are 169 registered breeds of livestock and poultry in India, which include 41 breeds of cattle, 13 breeds of buffalo, 42 breeds of the sheep, 28 breeds of goat, 7 breeds each of pig and horse, 9 breeds of camel, one breed each of yak and donkey among livestock; and 18 breeds of chicken and one breed each of duck and geese among poultry group. It is important that for the first time, the breeds of Yak, Duck, and Geese have also been registered.

Union Agriculture Minister further said that with the advent of era of national sovereignty on genetic resources under the Convention on Biological Diversity (CBD), a new approach is required to catalogue and describe the animal breeds. There is a need to protect our native animal genetic diversity in the light of the global scenario after World Trade Organization (WTO) and Intellectual Property Rights. Understanding the diversity, distribution, basic characteristics, comparative performance, and current status of each country's animal genetic resources is essential for their efficient and sustainable use, improvement, and conservation. Effective management of diversity of our native animals requires complete National List and periodic monitoring of the trends and associated risks. I feel that in the absence of such information, some animal breeds may fall significantly in population or even become extinct.

On the occasion, Shri Singh also mentioned that understanding the need for an authentic national documentation system of valuable sovereign animal genetic resources along with known characteristics, Indian Council of Agricultural Research (ICAR) introduced a process for the registration of "Livestock and Poultry Breeds" through National Bureau of Animal Genetic Resources (NBAGR), Karnal, in 2007. This system is the only recognized process for registration of "animal genetic resources" at national level. Once registered, these genetic materials are included in the public sector, so that we can prepare an inventory for genetic improvement, conservation, and sustainable use of these resources. This type of documenting process helps to create a sense of awareness and ownership among local communities, policy makers, and research and development organizations.

Union Agriculture and Farmers Welfare Minister Shri Radha Mohan Singh released the Coffee Table Book on mass Embryo Transfer

Union Agriculture and Farmers Welfare Minister Shri Radha Mohan Singh said that India has 30 crore Bovines, which is 18 percent of the Bovine population of the world. He further said that through traditional and scientific knowledge, and after years of hard work, today, we have 42 breeds of cattle, along with Yak and Mithun, and 13 breeds of buffaloes. The Minister was speaking at release function of coffee table book on Mass embryo transfer by Department Of Animal Husbandry, Dairy, and Fisheries (DADF) in Krishi Bhawan, New Delhi on 17th January, 2018.

The Minister also launched a software to collect data for 20th livestock Census and said as the part of Hon'ble Prime Minister's Digital India initiative, computer tablets will be used for 20th Livestock Census. This software will have all the tools to prepare analytical reports and real-time monitoring of census operation.

He said that central government has set the target of doubling farmers' income in the next 5 years and dairy sector will play a significant role in achieving the same. DADF has prepared an Action Plan on Dairy Development to achieve this target. A Vision 2022 document, prepared on the basis of National Action Plan, was also launched by the Minister. The document includes an outline for dairy development, recommends measures to double the farmers' income, and also focuses on ways and means of making milk and milk products pure and

safe.

The Minister said that for the conservation and enhancement, a new scheme called Rashtriya Gokul Mission was launched in December 2014. Also, National Mission on Bovine Productivity was started in November 2016 to increase production and productivity of bovine population in the country. He said DADF started many collective schemes for the growth of Indigenous breeds under Rashtriya Gokul Mission.

He stated that among them, Estrus Synchronization, which started in October 2016, was important. For the first time in the country, 1,24,000 animals were inseminated with high-quality semen of indigenous breeds through Estrus Synchronization. These animals were identified by UID and were registered on Information Network for Animal Productivity & Health (INAPH). Accordingly, to the reports received from the states, 41,353 male-female calves were produced through Estrus Synchronization.

The agriculture minister said on October 2-10, 2017, DADH, in co-operation with 12 States, undertook a Mass Embryo Transfer programme in Indigenous Breeds under the scheme, National Gokul Mission. Under this programme, embryos of higher genetic merit indigenous bovines such as Sahiwal, Gir, Red Sindhi, Ongole, Deoni, and Vechur were transferred into surrogate cows. These cows were identified by UID and are under observation. The superior quality calves will be used for semen production at semen centres. The Minister said through the use of Embryo transfer technology (ETT), a farmer can get a 5-6 fold increase in the number of offspring, which will be free from diseases. 50 embryo transferred technology labs are being established under Rashtriya Gokul Mission. These labs will provide a new direction for the conservation and preservation of indigenous breeds.

India is the Leading Country in Coconut Production and Productivity in the World: Shri Radha Mohan Singh

Union Minister for Agriculture and Farmers Welfare, Shri Radha Mohan Singh said that the Coconut Development Board's (CDB) major schemes are focusing on coconut production, productivity, processing for coconut products, value addition, marketing, and export promotion in Bihar. The Minister said this on 27th January, 2018, on the occasion of the inauguration of the Farmers' Training Centre cum Regional Office Building of Coconut Development Board in Patna.

The Minister said that India is leading in the global coconut production and productivity. He said that the annual coconut production is 2395 crore from 20.82 lakh hectare and the productivity is 11505 coconuts/hectare. Coconut contributes to about Rs.27900 crore to the country's Gross Domestic Product (GDP). In the year 2016-17, coconut products worth of Rs.2084 crore were exported. More than one crore population depends on coconut cultivation for their livelihood. The aim of the CDB is to assist the coconut farmers in coconut production, processing, marketing and export of value-added coconut products thereby to make India the global leader in coconut production, productivity, processing, and export.

Shri Singh further said that the country has witnessed an increase in coconut export. During the period 2013 -15, coconut production was 42,104 million nuts whereas 44,405 million nuts were produced during the period of 2015-17. The export value of coconut products has increased from Rs.3017.30 crore during 2011-14 to Rs. 4846.36 crore, which is 60.62% more, and this is an achievement. In the year 2016, we started exporting coconut oil to Malaysia, Indonesia, and Sri Lanka, the countries from where we were importing earlier. For the first time, desiccated coconut is being exported to the US and Europe in large quantities from India.

The Minister added that the coconut cultivation can be taken up even in homesteads in Bihar with proper management. Currently, 14,900 hectare is under coconut cultivation. As per the Board's estimation, a nearly 50,000-hectare area in Bihar is suitable for coconut cultivation under irrigated condition. Consider this, the farmers who train at the Farmers Training Centre can consider coconut cultivation. In addition, an increase in coconut production will lead to employment generation. More people will get employment through the production of various coconut based products like coconut chips, coconut milk, coconut sugar, coconut water, tender coconut water, coconut honey, coconut jaggery, coconut milkshake, coconut snacks, virgin coconut oil, coconut natural cream, more cookies and other products.

Shri Singh informed that CDB had sanctioned Rs.409.01 lakh for the implementation of coconut related schemes in Bihar for the year 2014 to 2017. To increase the area under coconut cultivation in Bihar, the focus is on 'Expansion of area under coconut' scheme and financial assistance is being provided under the scheme for the new plantations. For the demonstration of the scientific coconut cultivation, Rs. 46.25 lakh has been allocated for the scheme 'Laying out of Demonstration Plot' for the period of 2017-18.

Shri Radha Mohan Singh Launched the Rapid Detection Kits for Adulterants in Fresh Fish

Union Agriculture and Farmers Welfare Minister, Shri Radha Mohan Singh, on 30th January, 2018, launched the Rapid Detection Kits for Adulterants in Fresh Fish, developed by Central Institute of Fisheries Technology (CIFT), Kochi. Ammonia helps in preventing ice from melting and use of formaldehyde increases the shelf life of fish therefore many people in the fisheries sector are using these chemicals. The kit helps in detecting both the chemicals in the fish. Shri Singh informed that continuous ingestion of ammonia and formaldehyde can lead to many health issues including abdominal pain, vomiting, unconsciousness, and sometimes even cause death.

Shri Singh said that fish consumption is beneficial for health. Since fresh fish is highly perishable in nature, so fish don't have a long shelf life. India's domestic fish market is reported to be selling formaldehyde-adulterated fish, especially in markets located far away from landing centres or production sites. According to Indian and International regulations, the fresh fish and shellfish should be preserved only by means of ice and use of substances other than ice to maintain quality is a fraudulent practice

Union Agriculture Minister informed that continuous monitoring of these contaminants in a laboratory is time-consuming and requires expertise but some people use toxic chemicals in the form of contaminated substances. Today's consumer is conscious about the food quality and safety issues and they need rapid, sensitive, and portable screening methods. Taking these aspects into consideration, ICAR-CIFT has developed two rapid detection kits for checking adulteration of fresh fish with formaldehyde and ammonia. The kits are handy and consist of simple paper strips, reagent solution, and standard chart for comparing results. Formaldehyde is potential cancer-inducing chemical, which is a major health concern, therefore, its use needs to be curbed. For handling, processing, storage, transportation, and display for sale of fish and fish products only cold chain should be used.

Rabi Crops Sowing Crossed 617 Lakh Hactare

As per preliminary reports received from the States, the total area sown under Rabi crops as on 19th January 2018 stands at 617.79 lakh hectares as compared to 620.99 lakh hectare this time in 2017.

Wheat has been sown/transplanted in 298.67 lakh hectares, rice in 22.32 lakh hectares, pulses in 163.11 lakh hectares, coarse cereals in 54.58 lakh hectares and area sown under oilseeds is 79.11 lakh hectares.

The area sown so far and that sown during last year this time is as follows:

Lakh hectare

Crop	Area sown in 2017-18	Area sown in 2016-17
Wheat	298.67	311.17
Rice	22.32	15.99
Pulses	163.11	155.76
Coarse Cereals	54.58	55.99
Oilseeds	79.11	82.08
Total	**617.79**	**620.99**

General Survey of Agriculture

Trends in Foodgrain Prices

Based on Wholesale Price Index (WPI) (2011-12=100), foodgrains price decreased by (-) 10.60% in December, 2017 over 157.5 in December 2016. During the same period, the WPI of cereals decreased by (-) 3.00%, pulses by (-) 34.60% and wheat by (-) 8.47% while the WPI of paddy increase by 3.19%. The WPI of foodgrains, cereals, pulses and paddy showed decreased of (-) 0.64%, (-) 0.07%, (-) 3.03% and (-) 0.27% respectively in December, 2017 over November, 2017. During the same period the WPI of wheat remained at same level of 139.4.

Rainfall and Reservoir Situation
Rainfall Situation

Cumulative Winter Season rainfall for the country as a whole during the period 01st January to 17th January, 2018 has been 88% lower than the Long Period Average (LPA). Rainfall in the four broad geographical divisions of the country during the above period has been lower than LPA by 99% in North-West India and Central India, by 64% in East & North East India and by 49% in South Peninsula.

Out of total 36 meteorological Sub-divisions, 01 met subdivision received large excess/excess rainfall, 03 subdivisions received normal/ deficient rainfall, 07 Sub-divisions received large deficient rainfall and 25 Sub-divisions received no rain.

2. Water Storage in Major Reservoirs

Central Water Commission monitors 91 major reservoirs in the country which have total live capacity of 161.99 Billion Cubic Metre (BCM) at Full Reservoir Level (FRL). Current live storage in these reservoirs (as on 18th January, 2018) was 76.69 BCM as against 83.26 BCM on 18.01.2017 (last year) and 83.01 BCM of normal storage (average storage of last 10 years). Current year's storage is 92% of last year's storage and 92% of the normal storage.

Sowing Position during Rabi 2017

As per information available on sowing of crops, around 99% of the normal area under Rabi crops has been sown upto 19.01.2018. Total area sown under Rabi crops in the country has been reported to be 617.79 lakh hectares as compared to 620.99 lakh hectares during the same period of last year. This year's area coverage so far is lower by 3.2 lakh ha. than the area coverage during the corresponding period of last year.

Economic Growth

As per the first revised estimates of national income, consumption expenditure, savings and capital formation, released by the CSO on 31st January 2018, growth rate of Gross Domestic Product (GDP) at constant market prices is placed 7.1 per cent in 2016-17 and 8.2 per cent in 2015-16. The first advance estimates of national income released on 5th January 2018, based on information for the first seven to eight months of the current financial year, estimated that the growth of GDP for the year 2017-18 will be 6.5 per cent.

The growth in Gross Value Added (GVA) at constant (2011-12) basic prices for the year 2017-18 is estimated to be 6.1 per cent (as per 1st advance estimate), as compared to 7.1 per cent in 2016-17 (first revised estimates). At the sectoral level, agriculture, industry and services sectors grew at the rate of 2.1 per cent, 4.4 per cent and 8.3 per cent respectively in 2017-18.

The share of total final consumption in GDP at current prices in 2017-18 is expected to be at 70.7 per cent as compared to 69.9 per cent in 2016-17. The fixed investment rate ratio of gross fixed capital formation to GDP) is expected to decline from 28.5 per cent(1st revised estimate) in 2016-17 to 26.4 per cent (as per 1st advance estimate)in 2017-18.

The saving rate (ratio of gross saving to GDP) for the years 2016-17 was 30.0 per cent, as compared to 31.3 per cent in 2015-16. The investment rate (share of gross capital formation to GDP) was 30.6 per cent in 2016-17, as compared to 32.3 per cent in 2015-16.

Agriculture and Food Management

Rainfall: The cumulative rainfall received for the country as a whole, during the period 1st January – 31st January 2018, has been 85 per cent below normal. The actual rainfall received during this period has been 2.9 mm as against the normal

of 19.2 mm. Out of the total 36 meteorological subdivisions, 1 subdivision received large excess rainfall, 3 subdivisions received deficient rainfall, 16 subdivisions received large deficient rainfall and 16 subdivisions had no rain.

Production of Foodgrains: As per the 1st Advance Estimates released by Ministry of Agriculture, Cooperation & Farmers Welfare on 22nd September 2017, production of kharif foodgrains during 2017-18 is estimated at 134.7 million tonnes, as compared to 138.5 million tonnes (4th Advance estimates) and 135 million tones (1st Advance estimates) in 2016-17 (Table 3).

Procurement: Procurement of rice as on 1st January 2018 during Kharif Marketing Season 2017-18 was 24.4 million tones whereas procurement of wheat during Rabi Marketing Season 2017-18 was 30.8 million tonnes (Table 4).

Off-take: The offtake of rice all schemes during the month of November 2017 has been 29.5 lakh tonnes. This comprises 26.4 lakh tonnes under TPDS/ NFSA (offtake against the allocation for the month of December 2017) and 3.1 lakh tonnes under other schemes. In respect of wheat, the total off take has been 21.9 lakh tonnes comprising of 18.3 lakh tonnes under TPDS/NFSA (offtake against the allocation for the month of December 2017) and 3.6 lakh tonnes under other schemes. The cumulative offtake of foodgrains during 2017-18 is 44.1 million tonnes (Table 5).

Stocks: The total stocks of rice and wheat held by FCI and State agencies as on 1st January 2018 was 357.7 lakh tonnes comprising of 162.1 lakh tonnes of rice and 195.6 lakh tonnes of wheat (Table 6).

TABLES

TABLE 1: Growth of GVA at Basic Prices by Economic Activity at Constant (2011-12) Prices (in per cent)

Sectors	Growth Rate (%)			Share in GVA or GDP (%)		
	2015-16 2nd RE	**2016-17 1st RE**	**2017-18 1st AE**	**2015-16**	**2016-17 1st RE**	**2017-18 1st AE**
Agriculture, forestry & fishing	0.6	6.3	2.1	15.4	15.3	14.6
Industry	9.8	6.8	4.4	31.6	31.5	30.6
Mining & quarrying	13.8	13.0	2.9	3.1	3.3	2.9
Manufacturing	12.8	7.9	4.6	18.1	18.2	17.8
Electricity, gas, water supply & other utility services	4.7	9.2	7.5	2.1	2.2	2.2
Construction	3.7	1.3	3.6	8.2	7.8	7.8
Services	9.6	7.5	8.3	53.0	53.2	54.8
Trade, Hotel, Transport Storage	10.3	7.2	8.7	19.0	19.0	19.6
Financial , real estate & prof services	10.9	6.0	7.3	21.9	21.7	22.0
Public Administration, defence and other services	6.1	10.7	9.4	12.2	12.6	13.2
GVA at basic prices	8.1	7.1	6.1	**100.0**	**100.0**	**100.0**
GDP at market prices	8.2	7.1	6.5	---	---	---

Source: Central Statistics Office (CSO), 2nd RE: Second Revised Estimates, 1st RE: First Revised Estimates, 1st AE: First Advance Estimates

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

Sectors	2015-16				2016-17				2017-18	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Agriculture, forestry & fishing	**2.4**	**2.3**	**-2.1**	**1.5**	**2.5**	**4.1**	**6.9**	**5.2**	**2.3**	**1.7**
Industry	**7.3**	**7.1**	**10.3**	**10.3**	**7.4**	**5.9**	**6.2**	**3.1**	**1.6**	**5.8**
Mining & quarrying	8.3	12.2	11.7	10.5	-0.9	-1.3	1.9	6.4	-0.7	5.5
Manufacturing	8.2	9.3	13.2	12.7	10.7	7.7	8.2	5.3	1.2	7.0
Electricity, gas ,water supply & other utility services	2.8	5.7	4.0	7.6	10.3	5.1	7.4	6.1	7.0	7.6
Construction	6.2	1.6	6.0	6.0	3.1	4.3	3.4	-3.7	2.0	2.6
Services	**9.3**	**10.1**	**9.6**	**10.0**	**9.0**	**7.8**	**6.9**	**7.2**	**8.7**	**7.1**
Trade, hotels, transport, communication and services related to broadcasting	10.3	8.3	10.1	12.8	8.9	7.7	8.3	6.5	11.1	9.9
Financial, real estate & professional **services**	10.1	13.0	10.5	9.0	9.4	7.0	3.3	2.2	6.4	5.7
Public administration, defence and Other Services	6.2	7.2	7.5	6.7	8.6	9.5	10.3	17.0	9.5	6.0
GVA at Basic Price	**7.6**	**8.2**	**7.3**	**8.7**	**7.6**	**6.8**	**6.7**	**5.6**	**5.6**	**6.1**
GDP at market prices	**7.6**	**8.0**	**7.2**	**9.1**	**7.9**	**7.5**	**7.0**	**6.1**	**5.7**	**6.3**

Source: **Central Statistics Office (CSO).**

TABLE 3: Production of Major Agricultural Crops (1st Adv. Est.)

Crops	Production (Million Tonnes)					
	2012-13	2013-14	2014-15	2015-16	2016-17 (4th AE)	2017-18 (1st AE)*
Total Foodgrains	**257.1**	**265.0**	**252.0**	**251.6**	**275.7**	**134.7**
Rice	105.2	106.7	105.5	104.4	110.2	94.5
Wheat	93.5	95.9	86.5	92.3	98.4	---
Total Coarse Cereals	40.0	43.3	42.9	38.5	44.2	31.5
Total Pulses	18.3	19.3	17.2	16.4	23.0	8.7
Total Oilseeds	30.9	32.8	27.5	25.3	32.1	20.7
Sugarcane	341.2	352.1	362.3	348.4	306.7	337.7
Cotton#	34.2	35.9	34.8	30.0	33.1	32.3

*Source: DES, DAC&FW, M/o Agriculture & Farmers Welfare. 4th AE: 4th Advance Estimates, # Million bales of 170 kgs. each. *: Only Kharif Crops.*

TABLE 4 : Procurement of Crops (Million Tonnes)

Crops	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Rice#	35.0	34.0	31.8	32.0	34.2	38.1	24.4
Wheat@	28.3	38.2	25.1	28.0	28.1	23.0	30.8
Total	**63.3**	**72.2**	**56.9**	**60.2**	**62.3**	**61.1**	**55.2**

Kharif Marketing Season (October-September), @ Rabi Marketing Season (April-March)
Note: Procurement of rice as on 01.01.2018.
Source: FCI and DFPD, M/o Consumer Affairs and Public Distribution.

TABLE 5: Off-take of Foodgrains (Million Tonnes)

Crops	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18 *
Rice#	32.6	29.2	30.7	31.8	32.8	25.9
Wheat@	33.2	30.6	25.2	31.8	29.1	18.2
Total (Rice & Wheat)	**65.8**	**59.8**	**55.9**	**63.6**	**61.9**	**44.1**

Source: DFPD, M/o Consumer Affairs and Public Distribution. *: upto November, 2017

TABLE 6: Stocks of Foodgrains (Million Tonnes)

Crops	January 1, 2017	January 1, 2018
1. Rice	13.5	16.2
2. Unmilled Paddy#	24.2	25.4
3. Converted Unmilled Paddy in terms of Rice	**16.0**	**16.8**
4. Wheat	**13.7**	**19.6**
Total (Rice & Wheat)(1+3+4)	**43.2**	**52.6**

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

Articles

Marketable and Marketed Surplus of Tomato: An Empirical Study in Golaghat District of Assam

R. BORDOLOI* AND M.A ANSARI**

Abstract

Keeping in view, the increasing importance of horticultural crops in Indian agriculture, this study is an attempt to measure the marketable and marketed surplus of tomato among farmers as well as to assess the impact of various factors on the marketed surplus of tomato among the farmers. To realize these objectives, primary data on total production, retention amount and post harvest loss pertaining to the tomato cultivation is collected from purposively selected sample farmers of Golaghat district of Assam state during 2015-16. On the basis of land holding, the study segregates the farmers into four categories, viz. small-marginal, semi-medium, medium and large. The marketable and marketed surplus is measured by using simple statistical techniques such as tabulation method, bar diagram and percentage method. On the other hand, a linear multiple regression model is applied to investigate the determinants of marketed amount of tomato. The results reveal that the average land area used for cultivation of tomato is 7.37 percent of the total operated area in the study district. It is also found that small marginal farmers have used 12.87 percent of agricultural land operated under tomato cultivation, which is highest among all categories of farmer. The average productivity of tomato is observed to be 51.80 quintals per bigha in the district. On an average, the retention amount among all categories of tomato farmers in Golaghat district is found to be 5.73 quintals. Moreover, it is observed that the small-marginal farmers have highest retention amount while that of the medium farmers have lowest. The total marketed amount of tomato (71.02 percent) is found to be lower than the marketable surplus amount (77.41 percent). The regression results show that the average yield of tomato and area of tomato cultivation have positive and statistically significant impact on the marketed surplus. Overall, the study indicates that the tomato farmers of the sample district are not concerned with the price level of their product. Furthermore, the increasing wastage amount and amount paid to the creditors have further decreased the marketable and marketed surplus amount. In policy front, the study suggests to increase the application of modern cultivation techniques for the improvement of average productivity of tomato. It is also proposed to establish cold storage facility at the vicinity of production units for improving the economic condition of the farmers.

Key words: *Retention amount, Marketable surplus, Marketed surplus, Tomato, Assam.*

Introduction

In recent year, horticultural products have increased importance in agricultural development of our country. It has found that the share of plan outlay for Horticulture in Agriculture which was 3.9% during Ninth Plan has increased to 4.6% during the current Twelfth Plan. Also, the area under horticulture crops which was 12.77 million hectares during 1991-1992 has increased to 23.69 million hectares during 2012-13. Horticultural crop includes both fruits and vegetables. Among horticultural crops, percentage share of vegetables production in the total horticulture production was highest (60.3 % during 2012-13). Also, vegetables have occupied a significant place in export market of our country. The exported amount of vegetables has increased from 11622.33 MT during 2010-11 to 17816.7 MT in 2013-14 (Handbook on Horticulture statistics, 2014).

Assam is naturally rich enough with two valleys and bounded with a number of hills in almost all

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sides. It occupies 2.4 percent of total geographical land area of our country and provides shelter to 2.57 percent of total population of our country. (Census 2011) The natural fertility of soil, climate, rainfall and existence of large and small water bodies has created a favourable environment for cultivation of different types of food crops, cash crops and seasonal vegetables round the year. The agricultural growth rate in Assam is 20 percent during 2013-14 year period. The annual growth rates for area and production of horticulture crops during 2012-13 over 2011-12 were 1.9% and 4.5% respectively. Percentage share of vegetables production in the total horticulture production was highest (60.3 % during 2012-13) as compared to other horticulture crops (Horticulture Statistics report 2014, Govt. of India).

Assam has produced different seasonal vegetables in all the agro-climatic zones of the state. Though it does not occupy any position among the major vegetables producing states but it has greater prospects of doing revolution in production of such seasonal vegetables in near future. The economic condition of a farmer can be improved through increasing marketable and marketed amount of the produced item. Also ensuring adequate price of their agricultural produced is necessary for encouraging commercial cultivation in the state.

In the present paper horticulture crops are considered under study. Because such crops are basically produced for commercial purpose and also it has wide demand in almost all parts of our country. Among the horticulture crops, vegetables have been considered in the study because of the climate, temperature, rainfall and nature of the soil are more favourable for the cultivation of vegetables rather than fruits. Among various vegetables one rabi vegetable i.e. 'Tomato' has considered in the study.

Tomato is one of the good sources of Vitamins A, C and E that are good for health and protect the body against diseases (J.O. Olaniyi et.al 2010). Tomato (Solanum lycopersicum), content lyeopene which is a vital antioxidant that helps to fight against cancerous cell formation as well as all kind of health complications and diseases (Bhowmik et.al). Such a rich vegetable has been extensively cultivated by farmers in various part of the state. An empirical analysis about the problems and prospects of tomato farmer is primarily focused in the present study.

Review of Related Literature

The following literature has been reviewed to get a clear concept to set the objectives of the present study.

Quasem, A (1987) has attempted to study marketed surplus of paddy and identified market participants in Bangladesh. It has also examined the pattern of disposal of paddy and its variation in price. The researcher has found that marketed surplus is affected by per capita production and prices of paddy. Harbans, L. et al. (1992) studied the marketable and marketed surplus of principle food grains on different categories of farm and factors affecting the market surplus in Kangra and Mandi district of Himachal Pradesh. They found that the large farmers have a sizable proportion of marketed and marketable surplus. The marketed surplus is mainly determined by the volume of production, wage in kind and total consumption. But the marketable surplus is not affected by price change.

Krishna, M. (1995) studied the marketable surplus of vegetables and analyzed the marketing pattern and channels according to the size and class of farmers. The study conducted in Jamshedpur and Ranchi district of Bihar. The researcher found that small farmers use higher proportion of their land for vegetable cultivation then large farmer. Pramanik et al. (2009) analyzed the marketing efficiency and marketable surplus of tomato, potato, cauliflower in Indore district of Madhya Pradesh. Tabular analysis is used to estimate the marketed surplus. Adenuga A. H. et al. (2013) carried out a study to examine the marketing efficiency and determinants of marketable surplus in vegetables production in Kwara state of Nigeria. Descriptive statistics, regression analysis and marketing efficiency measures were used in the study. They had found that the educational level and farming experiences of the head of the household were the significant determinants of marketable surplus of vegetables. Meena et.al (2014) has examined the marketing efficiency of tomato in two area of Rajasthan. They have found that there is no difference between marketable and marketed amount of tomato.

Objective of the Study

The present study is based on the following objectives

1. To estimate marketable and marketed surplus

amount of tomato among farmers on the basis of land size holding.
2. To examine the factors affecting marketed surplus amount among tomato farmers.

Methodology

Selection of the Study Area

On the basis of nature of soil and geographical condition, Assam has been divided into six agro-climatic zones. Among those agro climatic zones, the Central Brahmaputra Valley which comprises of five districts and the third largest zone in terms of net cropped area 6, 20,320 hectare (22.07 percent) of Assam has been purposively selected in the present study. (Profile of Agri-Horti sector Assam, 2012)

Among the five districts one district has been selected on the basis on the annual per capita income level and total number of cultivator. It has found that the per capita income level in Golaghat district is Rs 19,788 which is the lowest among all other district of the Central Brahmaputra Valley and even below the state per capita income level which is 24,660 during the year 2014 (HDR by OKDISCD and Institute for Human Development, New Delhi). The total number of cultivator in Golaghat district is 1, 33,659 which is the highest among all other district of the central Brahmaputra valley (census report, 2011). It has proved that the Golaghat district is agriculturally predominant in comparison to the other district in the upper Brahmaputra valley of the state. The low per capita income and the greater dependence on agriculture has been instrumental to draw the attention to study the agricultural marketing situation of the district.

The present study is based on multi-stage random sampling procedure. In the district there are three agricultural development blocks. The present study has primarily focused on agriculture so we have considered the agricultural development blocks. On the basis of the size of gross and net cropped area and average productivity of tomato, the Sarupather Agriculture Development Block has produced the highest amount among the other agriculture development blocks. Therefore in the first stage, the Sarupather Agriculture Development Block has been selected as the area of study.

The Sarupather Agriculture Development Block has been divided into two Agricultural Development Officer's Circle. In the second stage, on the basis of the number of farmer and types of commodity produced and average productivity one Agricultural Development Officer Circle i.e. Sarupather has been selected.

Sarupather area is famous for production of paddy and all kinds of seasonal vegetables. In the third stage, among that Agricultural Development Officer Circle, one village level extension worker's (Gram Sevak) area has been selected on the basis of the availability of the concerned product, productivity and number of farmer. Respondent farmers are selected from the four villages under the selected Gram Sevak elaka of the Sarupather ADO Circle.

Selection of Sample Farmer

In the fourth stage of the study 100 sample farmers are selected from the four villages. The sample farmers are broadly divided into four categories on the basis of the size of land holding. Equal weight has been given to each category of farmer in the four sample villages.

In the present classification of farmer, land holding is measured by using the term 'Bigha' which is widely used to represent the amount of land holding in Assam. One bigha of land is equivalent to 0.25 hectare. Therefore we classified the sample farmers in the following ways, Small marginal farmers having land area in between 4 to 8 bighas, Semi-medium farmers with land area between 8 to 16 Bighas, Medium farmers with land area above 16 to 24 Bigha and Large farmers with land area above 24 bighas.

Method of Data Collection

The present study is primary data based. The primary information about total production, retention amount, post harvested loss amount marketable and marketed amount from the sample farmer's was obtained through specially designed interview schedule during 2015-16. Also the researcher had personal by observed the present situation of the tomato farmer's in the study area.

Tools and Techniques

The first objective of the study, marketable surplus which was measured by using the method given below:

Marketable Surplus =
Total Production – Total Retention amount

The total retention includes the amount kept for domestic consumption, seeds amount, payments in kind and repayment of loans.
Marketed Surplus amount of tomato has been measured by the method given below

Marketed surplus =
Marketable Surplus – Unsold amount.

The first objective of the study has been analyzed by using simple statistical tools and techniques. Tabulation method, simple bar diagram and percentage method has been used to represent the average and total production is the various categories of the farmer.

Regression Model

In order to determine the factors determining the marketed amount of tomato in the selected area linear multiple regression model has been used. The marketed amount of tomato has been influenced by different explanatory variables. The level of significance of all those explanatory variables is not equal. Therefore to study the associations of different explanatory variables with the explained variable is to be analyzed with the help of linear multiple regressions equation.

The linear multiple regression model is as follows.

$$MSP_i = \alpha_1 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + E_i$$

Where,

MSPi = Marketed surplus amount of tomato in i^{th} district (Golaghat)
α_1 = constant term
β_1…….. β_6 are coefficient of independent variables

X_1 = Marketed amount of tomato is based on the amount of land used for cultivation. Therefore the size of cultivable land used by the farmer has been considered.

X_2 = Average productivity of tomato per bigha of agricultural land area is another important explanatory variable used in this model.
X_3 = Farmers sale price of a product is related with production and marketed amount of that product. The farmer will be motivated to produce more if they receives better price of their products. In this regression analysis the average sale price of tomato in all market season is considered.

X_4 = Respondent farm's has reported that the first preference of cultivation is to meet the needs of their family. Therefore the amount of tomato used for domestic purpose is considered as an important explanatory variable in the study.

X_5 = Tomato is one of the most easily perishable agricultural products. Therefore the amount of tomato losses as informed by the respondent farmer in the selected district is considered as an important variable in determining marketed surplus.

X_6 = Capital amount of needed in performing agricultural activities. In rural areas capital is not available and also financial institutions are not interested to provide loans to the farmers. Also the farmers are not familiar with the critical paper works needed to sanction a loan from the banks. Therefore the amount of tomato paid to the creditor is considered as an important explanatory variable in the study.

Analysis and Discussion

Land Area, Average Yield and total Production of Tomato in Golaghat

In Golaghat district the average land area used for production of tomato is 7.37 percent of the total operated land. On the basis of farm size, small marginal farmer has used 12.87 percent percentage of agricultural land for tomato cultivation which is the highest among all other types of farmer in the district. This shows that the small marginal farmer has greater interest in cultivation of tomato then the other types.

TABLE: 1 LAND AREA, TOTAL PRODUCTION AND AVERAGE YIELD OF TOMATO (PRODUCTION IN QUINTAL, LAND AREA IN BIGHA)

Types of farmer	Average land	Percentage from Operated land	Average yield	Total production
Small marginal	1.04	12.87%	55.00	58.44
Semi-medium	1.21	9.82%	57.80	73.48
Medium	1.45	8.48%	49.00	76.20
Large	1.85	4.89%	45.40	88.60
All types	1.39	7.37%	51.80	74.18

Source: field survey, 2015

The average productivity of tomato is 51.80 quintal in the district. Among the size class of farmer, the semi-medium farmer has highest average productivity of 57.80 quintal among the other category of farmers. Also the total production among all categories of farmer is 74.18 quintals. The total production and average yield of tomato in the district is sufficient enough for commercialization. Therefore it has created an opportunity to study the marketable and marketed surplus amount of tomato among all categories of farmers in the district.

Tomato Losses at Different Stage of Handling in Golaghat District

Tomato is a perishable agricultural product. Therefore it is prone to damage at different stage of handling from agricultural field to the stage of delivery to the final consumer. The different types of loss amount in percentage have shown in the table below.

TABLE: 2 POST HARVESTED LOSS AMOUNT OF TOMATO IN GOLAGHAT (AMOUNT IN QUINTAL)

Types of Farmer	Total production	Post harvested loss		Storage loss		Total losses	
		Qty.	Percent	Qty.	percent	Qty.	Percent
Small marginal	58.44	5.28	9.03	4.84	8.28	10.12	17.31
Semi-medium	73.48	5.80	7.89	6.16	8.38	11.96	16.27
Medium	76.20	5.48	7.19	5.44	7.13	10.92	14.33
Large	88.60	6.08	6.86	6.38	7.20	12.46	14.06
All types	74.18	5.66	7.63	5.71	7.69	11.37	15.32

Source: field survey data, golaghat

The total loss amount of tomato in Golaghat district is 15.32 percent of the total production. The small and marginal farmer has incurred highest amount of post harvested losses. The storage loss is common among all category of farmer due to absence of scientific storage facilities nearby the market center as well as production area. The availability of proper storage facilities can reduce such huge damage of the produced item and also increase the marketable and marketed amount of the product.

Percentage- wise Distribution of Loss from the Total Loss Amount

The loss amount of tomato is not equally distributed between storage and post harvested amount in the study area. It has been found that the storage loss percentage is more in Golaghat district. Any kind of loss is unexpected from the producer side irrespective of land size. This will decrease the marketed surplus and also de-motivate the farmer for further extension of his business. It was found that there is no cold storage facility in nearby the production center or even under that Agricultural Sub-division. But private storage houses were located in the district head quarter, which was situated at 50 kilometer long distance from the production center of the study area. The selected area has been connected through a state highway that passes through Nambar Reserve Forest. The transportation and communication system through roadways is not convenient enough to the farmer.

TABLE: 3 PERCENTAGE OF LOSSES FROM TOTAL LOSS OF TOMATO IN GOLAGHAT (AMOUNT IN QUINTAL)

Types of farmer	Average Production	Post harvested loss	Storage loss	Total
Small marginal	58.44	52.16%	47.83%	100
Semi-medium	73.78	48.49%	51.50%	100
Medium	76.20	50.17%	49.82%	100
Large	88.60	48.79%	51.20%	100
All types	74.18	49.80%	50.19%	100

Source: field survey data

Also to transport these surplus produced from that place is a costly affair and the owner of the private store house charges high rent from the farmer. Therefore the farmer is compelled to incur such losses to decompose it either in piggery firm or give it to the hands of middleman at a very low price.

Retention Amount of Tomato in Golaghat

The average retention amount of tomato among all categories of farmers in Golaghat district was 5.73 quintal. The small marginal farmer had the highest retention amount and the medium category farmer had the least retention amount. It was found that the small marginal farmer had paid 6.54 quintal (64.04 percent) to the creditor out of the total retention amount. Tomato cultivation requires capital from the beginning to the final stage of plucking and bringing it to the market centers. But the small marginal category farmer does not have sufficient fund and was forced to borrow money from commission agents on an agreement of returning certain quintal of the final product just after harvesting.

Therefore the payments in kind amount is more common among this category of farmers. But the amount paid as payments in kind is least because the small marginal farmer has performed all agricultural activities with the help of his family members but the medium and large farmer performs such activities through enjoying hired labour. So they pay high amount for this purpose.

TABLE: 4 PURPOSE-WISE RETENTION AMOUNT OF TOMATO IN GOLAGHAT (AMOUNT IN QUINTAL)

Types of farmer	Seeds amount	Domestic consumption	Payments in kind	Amount paid to the creditor	Total
Small marginal	1.32	0.67	0.57	4.56	7.12
	(18.53%)	(9.14%)	(8%)	(64.04%)	(100%)
Semi-medium	1.16	0.70	0.92	3.76	6.54
	(17.73%)	(10.70%)	(14.06%)	(57.49%)	(100%)
Medium	1.08	0.91	1.22	0.32	3.53
	(30.59%)	(25.77%)	(34.56%)	(9.06%)	(100%)
Large	1.0	1.26	2.05	00	4.31
	(23.20%)	(29.23%)	(47.56%)	(00%)	(100%)
All types	1.14	0.88	1.19	2.16	5.37
	(21.22%)	16.38%)	(22.16%)	(40.22%)	(100%)

Source: Filed survey data, Golaghat, 2015

Marketable Surplus of Tomato in Golaghat

The marketable surplus amount of tomato in Golaghat district is not uniform among all categories of farmers. The small marginal farmer has the least marketable surplus and highest retention among all category farmers. The medium and the large category farmer has greater marketable surplus and low retention amount. The high marketable surplus among the medium and large category farmers in the district is the result of low retention amount among them.

TABLE: 5 MARKETABLE SURPLUS OF TOMATO IN GOLAGHAT (AMOUNT IN QUINTAL)

Types of farmer	Total retention		Marketable surplus	
	Qty	Percent	Qty.	Percent
Small marginal	7.12	12.18%	41.24	70.56
Semi-medium	6.54	8.90%	54.80	74.57
Medium	3.53	4.63%	61.72	81.00
Large	4.31	4.86%	71.90	81.15
All types	5.37	7.23%	57.43	77.41

Source: Compiled data from field survey, Golaghat

But the small marginal farmer (12.18%) and semi medium farmer (8.90%) has spend greater retention amount, therefore the marketable surplus amount of tomato has become low among these category farmers.

In comparison to other agriculturally developed states like Rajasthan, the marketable surplus of tomato among the large farmer is 3480 quintal and medium farmer is 4105 quintal (Meena et.al) which is much higher than the same category farmers in the selected district of Assam. Also the overall marketable surplus of tomato among all category farmers is 77.41 quintal which is lower than that in Rajasthan where it is about 13425 quintals.

Marketed Surplus Amount of Tomato in Golaghat

Marketed amount is the most crucial part of cultivation which focus of the present study. Now the above analysis has shown that the marketed amount of Tomato is differ among different category of farmers in the district. The total marketed amount of tomato is 71.02 percent of the total production which is lower than marketable surplus amount of 77.41 percent. This is the result of the unsold amount (6.17 percent) of the total production in the district. Thus the unsold amount is negatively associated with the marketed amount, i.e., greater the unsold amount lesser the marketed amount. It has been reported that the unsold amount arises due to the in-efficiency of marketing system and marketing infrastructure facilities in the study area.

TABLE: 6 MARKETED AMOUNT OF TOMATO (PERCENTAGE FROM TOTAL)

(Amount In Quintal)

Types of farmer	Unsold amount		Marketed amount	
	Qty	Percent	Qty	Percent
Small marginal	3.48	5.95	37.88	64.81
Semi-medium	3.12	4.24	51.68	70.33
Medium	6.12	8.03	54.28	71.23
Large	5.60	6.32	66.92	75.53
All types	4.58	6.17	52.69	71.02

Source: Field survey, Golaghat, 2015

The average sale price of tomato in all seasons is an important factor in influencing the marketed amount. Farmer's in Golaghat district have reported that the extramely low amount of sale price during the lean market season has compelled them to decompose the product in the field itself. Because such low market price will not even cover the transportation cost of the product. In the study area tomato has no substitute demand except consumption. But during lean season it becomes available because the demand for tomato becomes very low but supply is high. Also the farmers are not receiving information about the demand for tomato in other market centers located in urban areas. In such situation the commission agent or whole seller takes advantage by offering very low price to the tomato farmer and even refuse to purchase because of greater possibility of natural damages.

Regression Analysis

The cross section data collected from the farmer household in Golaghat district during 2015 follows the normality conditions. Also the VIF test shows no multi-collinearity among the independent variables.

TABLE: 7 REGRESSION RESULTS OF THE MARKETED AMOUNT OF TOMATO

District	Golaghat
Number of observation	100
R- Square value	0.910
Adjusted R square	0.904
F statistics	156.895
Sig.	0.000*

Source: Estimated results from field survey data conducted in the year 2015-16
NOTE: *1percent or less than 1 percent level of significance

The regression results have shown that the explanatory variable have best explained the marketed surplus of the tomato. In the selected district the R square value is 0.910 percent. Also regression coefficient values are significant at one percent or less than 1 percent in the district. The coefficient values of all the independent variables are explained in the table below.

TABLE: 8 REGRESSION RESULTS OF MARKETED SURPLUS OFTOMATO IN GOLAGHAT DISTRICT

Predictor	Co-efficient	Value of co-efficient	Stan. Error	T value	P –value
Constant	A	-15.166	5.257	-2.885	0.005**
X 1	β 1	44.069	1.867	23.607	0.000*
X 2	β 2	0.715	0.090	7.959	0.000*
X 3	β 3	-0.019	0.004	-4.348	0.000*
X 4	β 4	-8.197	3.183	-2.575	0.012**
X 5	β 5	-1.371	0.539	-2.543	0.013**
X 6	β 6	-0.766	0.343	-2.231	0.028***

Source: estimated results from field survey data conducted in the year 2015-16
NOTE: *, ** and *** coefficients are significant at less than one five and ten percent level of significant, X 1 = Land used for cultivation, X 2 = Average productivity, X 3 = Average sale price, X 4 = Domestic consumption, X 5 = Loss amount X 6 = Amount paid to the creditor.

The constant (α) value is negatively associated but significant at less than 5 percent level. It indicates that besides the above mentioned variables there are some other variables which have influenced the marketed amount of tomato in the district. The average yield of tomato and area of tomato cultivation is positive and significantly associated with the marketed amount of tomato in Golaghat district. It may be due to better soli structure and modern methods of cultivation of tomato among the farmers.

The average sale price of tomato has significant negative association with the marketed amount. This means that the marketed amount has increased without increase in sale price of the product. The tomato farmers in Golaghat district has informed that the marketed amount of tomato has increased during lean season because of large production of tomato and increased the number of tomato sellers or farmer's during that season. Therefore the sale price has decreased and farmers have increased the marketed amount not guided so much about the price of that product but more because more surplus products were available with them. Therefore, the negatively association of price indicates that tomato marketed amount has increased and this has further decreased the market price of tomato. Thus the tomato farmers are not concern with the price level of their products and the marketing inspector also has no control over the market price offered to the farmer at that peak season. As a result of oversupply of tomato, farmers have no other option but to sell it at a low price offered by intermediaries or to dispose it on the road side. The traders and commission agent take advantage by giving wrong information to the farmer about the demand of their products in other market centers. Thus the farmers are forced to sell their produce to the intermediaries at a low price and by the fear of further decrease in future. The ineffective role of marketing inspectors in the study area has created an environment to exploit the poor farmers. Thus proper market information as well as price control system will definitely help to reduce the exploitation of farmers. Thus increasing the marketed amount will be possible effective after establishing a transparent pricing policy and adequate marketing infrastructure facilities.

The domestic consumption amount of tomato is

negatively associated with the marketed amount of tomato. this means that as the amount used for domestic consumption increases the marketed amount of tomato is going to be decreased. The wastage amount of tomato due to various reasons and amount paid to the creditor is also significantly but negatively associated with the marketed amount. The increasing wastage amount and high amount of tomato paid to the creditor has decreased the marketable and marketed amount of tomato among the farmers in Golaghat district.

The present analysis has shown that a large amount tomato is going as wastage which has significantly impacted on the marketed amount. The absence of proper storage facilities and other marketing infrastructure has resulted in such huge losses of tomato in the district.

Conclusion:

Tomato cultivation has greater prospects in the soil of the state. The average productivity of tomato in the study area is not satisfactory in comparison to the other developed states of the country. The farmers are poor and uneducated so they are using traditional methods of cultivation. Application of modern methods cultivation and proper training has a greater possibility to improve the overall production and marketing of tomato. The establishment of cold storage within the radius of production units is necessary for improving the economic condition of the farmer. Possibility of the establishment of a food processing industry will definitely help the overall growth of the market of the tomato. Such an area has greater prospect for introducing horticultural revolution and value based cultivation. The lack of proper scientific exploration of the hidden prospects of these areas has been unable to attract the attention it deserves to realize the full utilization of its potentiality.

REFERENCES:

Quasem, A. (1987), "Farmers participation in the Paddy markets, their marketed surplus and factors affecting it in Bangladesh" The Bangladesh Development Studies Vol 15, No1.

Lal. H, Thakur D.S Sarma K.D (1991-92), "Factors affecting marketed surplus of principal food grains in Himachal Pradesh" *Encyclopedia of Agricultural Marketing, Vol, II.*

Krishna, M (1992), "Marketable surplus and disposable pattern of vegetables in platue region of Bihar," *Encyclopedia of Agricultural Marketing,Vol. II*

Pramanik, R and G, Prokesh. (2010)"Marketing surplus and marketing efficiency vegetables in Indore districts ---a micro level study" *IUP Journal of Agricultural Economics Vol III, No. 3*

Olaniyi J. O, Akanbi W. B., Adejumo T. A. and Akande O. G.(2010), "Growth, fruit yield and nutritional quality of tomato varieties" African Journal of Food Science Vol. 4(6), pp. 398 - 402

Bhowmik D, Sampath K.P, Paswan S, Srivastava. S (2012), "Tomato - A natural medicine and its health benefits" Journal of Pharmacognosy and Phytochemistry Vol.1 No. 1

Adenuga, A. H. Fakayode, S. B. Adewole, R.A. (2013) "Marketing efficiency determinants of marketable surplus in vegetables production in Kwara State, Nigeria" *4th International conference of the African Association of Agricultural Economics*

Meena. S. Singh I.P (2014), "Price spread and efficiency of marketing of tomato in Rajasthan" *Indian Journal of Agricultural Research,* Vol.48 No.4

Census report, Govt. of India 2011

Handbook on Horticulture statistics, 2014

HDR by OKDISCD and Institute for Human Development, New Delhi

Role of Modern Skills in Increasing Income and Employment of Households in Rural Areas of Himachal Pradesh

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Abstract

In Himachal Pradesh, majority of population is living in rural areas having agriculture as their livelihood. Land holding is very small and scope of industrialization is low hence, there is a large scope of developing the economy through skill development in this state. In the rural areas, people are engaged in agriculture, handloom, tailoring and rural artisan works etc. An attempt has been made in this paper to study the role of modern skills in increasing income and employment level of households in rural areas of Himachal Pradesh. The study reveals that the highest annual income ranged between technical skill households (Rs. 1433820/hh), followed by goldsmith (Rs.1141354/hh), to the lowest barber (Rs.203751/hh) among modern skilled households. The same trend has been observed in case of per capita annual income of skilled households, which ranged between Rs.50800 per capita among cobbler households to Rs.298712 per capita among technical skill households. However, among traditional skilled households, the goldsmith households earned relatively higher income of Rs.4,08,419 per household to the lowest income of Rs.70,700 among barber households. The per capita income was also higher on goldsmith households (Rs. 81684/capita) and lesser on barber households (Rs.17675/capita). As far as per worker number of days worked is concerned, there were relatively higher on handloom households (184 days/worker) and lesser on goldsmith households(98 days/worker) among modern households. However, among traditional households, there were also more on handloom skill households (151 days/worker) and lesser on cobbler skill households (78 days/worker).Government should facilitate access to training materials, toolkits, modern equipment and technology, and invest in teacher training, as well as better remuneration for teachers and trainers. Moreover, to provide some subsidies on latest modern machines as well as financial assistance to the poor traditional households are the policy issues for promotion of skill in Himachal Pradesh.

Keywords: Himachal Pradesh, Modern skills, Traditional skills, Income, Employment.

Introduction

Skills and knowledge are the driving forces of economic growth and social development of a country. In rapidly growing economies like India with a vast and ever-increasing population, there are many problems and challenges. We find that there is a severe paucity of highly trained, quality labour and large sections of the population possess little or no job skills. As the Indian economy continues to transform and mature, large-scale sectoral shifts in the working population are inevitable, particularly from agriculture to other sectors of the economy.

In Himachal Pradesh majority of population is living in rural areas. There is a big scope of developing the economy through skill development in this state. Skill development is characterized by a range of approaches coming from different traditions especially in rural areas of this state. In the rural areas, people are engaged in agriculture, handloom, handicraft and rural artisan works etc. There are various schemes that improving employability of the vulnerable groups. In the area of skill development, the programmes so far have been state driven and in some cases, the industry retrains the employee to make them job competent. The need is to have demand driven skill development, which meets the requirement of the industry. The National Policy on Skill Development & Entrepreneurship, 2015 envisages inclusion irrespective of any divide through equal access to skill development by marginalized groups to enhance their employability, entrepreneurship and access to descent employment opportunities. Both traditional and modern skills play an important role in income and employment generation of all skilled households. Although,

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nowadays-traditional skills are missing day by day, still it has more importance in this modern era in terms of income as well as employment generation. Modern technique of skill plays an important role in income as well as employment generation among all types of rural skilled households. Keeping in view these facts in mind an attempt has been made in this paper to examine the role of modern skills in increasing income and employment level of households in rural areas of Himachal Pradesh.

Research Methodology

The study is based on primary data collected through field survey in Himachal Pradesh. The primary data has been collected through household survey in low, mid and high hills agro-climatic zones of Himachal Pradesh as Solan, Kullu and Kinnaur district, respectively. For the selection of households, a multistage random sampling technique has been employed. Following this procedure, at the first stage, one district in each zone has been selected. Further from each district, two tehsils have been selected at the second stage, drawing one tehsil from the nearby district headquarter and the second at a distance of 5-10 kms. away from district headquarter. Subsequently, at the third stage, a panchayat from each tehsil has been selected purposively. From each panchayat a list of households having any skill has been prepared and sample of 50 such households been selected randomly. Thus, total sample has been consisted of 300 skilled person households in three zones.

Table- 1: CLASSIFICATION OF SAMPLED HOUSEHOLDS

S. No.	Skills	Selected Districts			Total
		Kinnaur	Kullu	Solan	
1	**Handloom households:**	**81**	**79**	**0**	**160**
	-Modern	11	29	0	40
	-Traditional	70	50	0	120
2	**Tailor households:**	**10**	**13**	**49**	**72**
	-Modern	02	06	25	33
	-Traditional	08	07	24	39
3	**Carpenter households:**	**04**	**03**	**05**	**12**
	-Modern	0	01	05	06
	-Traditional	04	02	0	06
4	**Goldsmith households:**	**05**	**01**	**04**	**10**
	-Modern	0	01	03	04
	-Traditional	05	0	01	06
5	**Barber households:**	**0**	**01**	**10**	**11**
	-Modern	0	0	08	08
	-Traditional	0	01	02	03
6	**Cobbler households:**	**0**	**01**	**04**	**05**
	-Modern	0	0	01	01
	-Traditional	0	01	03	04
7	**Technical/Mechanical households:**	**0**	**02**	**28**	**30**
	-Modern	0	02	28	30
	-Traditional	0	0	0	0
	Total	**100**	**100**	**100**	**300**

The data regarding various resources of family, education, occupation, income, skill detail etc. has been obtained from selected households on well-designed and pre-tested schedule/questionnaire through personal interview method. The data collected pertain to the agriculture year 2015-16. The classification of sampled households is given in the Table-1.

Results and Discussion

Out of total sampled households, 178 were having traditional skills persons/workers and 122 households were trained and having modern skilled persons. The traditional and modern skilled persons in sampled households were having handloom, carpenter, goldsmith, blacksmith, barber, tailor and technical works trades (see Table-2). Table-2 reveals that the highest average size of family comes out as 5.7 and 5.5 under both modern and traditional carpenter households respectively among all different skilled households. All modern households have higher workers/family as compared to all traditional skilled households (except traditional handloom and tailor have higher workers/family than the modern handloom and tailor households).

Table-2: GENERAL FEATURES OF SAMPLED HOUSEHOLDS

Particulars	Skilled Artisans						
	Handloom	**Tailor**	**Carpenter**	**Goldsmith**	**Barber**	**Cobbler**	**Technician**
Modern skill: -No. of hh	40	33	06	04	08	01	30
-Family size	4.7	4.6	5.7	5.0	4.0	5.0	4.8
-Literacy (%)	85.56	89.47	88.23	90.00	84.37	80.00	76.39
- No. of Workers/hh	3.55	3.82	4.33	4.50	3.12	4.00	3.57
-Land holding (bighas)	3.25	3.76	4.67	3.75	0.23	1.00	3.83
-Livestock owned (Rs)	5675.00	8675.75	15772.17	2875.00	0.00	12300.00	5109.00
Investment (Rs)	51980.52	84360.25	80823.17	220675.00	85360.00	37450.00	877140.00
Traditional skill: -No. of hh	120	39	06	06	03	04	0
-Family size	4.8	4.7	5.5	5.0	4.0	4.0	0
-Literacy (%)	84.43	86.49	87.88	90.00	83.33	68.75	0
- No. of Workers/hh	3.63	3.90	4.00	4.17	2.00	2.75	0
-Land holding (bighas)	3.84	3.05	5.50	3.67	0.20	1.90	0
-Livestock owned (Rs)	11549.90	11767.47	20339.00	7226.00	0.00	2460.00	0
Investment (Rs)	25754.63	59216.48	22944.67	55201.67	14143.00	16400.00	0

Source: Own Survey-2015

In case of literacy rate, all different modern skilled households have been worked out as higher literacy rate as compared to all traditional skilled households (except both modern and traditional goldsmith skilled households have same percentage i.e. 90% and technician households have less literacy rate i.e. 76.39%). In case of land holdings, both traditional and modern carpenter households have been worked out as the highest total land per household as 5.50 bighas and 4.67 bighas respectively among all modern and traditional skilled households. In case of livestock, all traditional skilled households have more livestock as compared to all the modern skilled households (except modern cobbler

household which had more livestock as compared to traditional cobbler households). It means that traditional households are more engaged in rearing of the livestock as compared to modern households so that they can earn their livelihood. Technical/ mechanical households have made the highest investments as Rs.877140.00/hh and 2nd highest investments have been made by modern goldsmith as Rs.220675.00/hh. Although technical/mechanical households have low literacy rate i.e. 76.39 and low values of livestock, still, they have made high investments only due to their high land holdings as 3.83 bighas, more workers/family as 3.57 and other factors involved such as credits/finance through financial institutions as well as getting professional skills courses/training. No doubt, these types of skilled works (Technical/mechanical) require latest modern machines and for this purpose, it needs more investments. On the other hand, modern goldsmith households have good literacy rate which is as high as 90 percent, more workers/family, which is as 4.50 and higher land holdings of about 3.75 hectares.

Source wise Annual Income of Modern Skilled Households

Contribution of different sources of income of modern skilled households is presented in Table-3 wherein it may be seen that more than half of total annual income is contributed by skilled activities followed by the sampled households under study. In case of barber, gold smith and technician families more than 90 per cent of total income is earned from these professions. Except barber, other skills households are also having substantial income from agriculture (field crops, horticulture and animal husbandry). The contribution of service and petty business occupation in total income was relatively higher on handloom, tailor, cobbler and carpenter households than other skill households.

TABLE-3: SOURCE WISE AVERAGE ANNUAL INCOME OF MODERN SKILLED SAMPLED HOUSEHOLDS

(%-age of total income)

S.No.	Occupation	Skilled Artisans						
		Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler	Technician
1.	Agriculture	12.07	15.77	18.79	1.22	-	7.68	4.17
2.	Skilled works	44.00	67.18	38.14	89.83	92.64	62.80	90.87
3.	Service	10.64	11.84	24.74	6.76	-	29.52	4.13
4.	Business	31.55	5.21	18.33	2.19	7.36	-	0.57
5.	Wage labor	1.74	-	-	-	-	-	0.26
All occupations		100	100	100	100	100	100	100
Annual income /hh (Rs)		430619	374804	363743	1141354	203751	254000	1433820
Per capita income(Rs)		91621	81479	63815	228271	50938	50800	298712

Source: Own Survey-2015

The workers of handlooms and technical skills households were also engaged in wage labour. The highest annual income was among technical skill households (Rs. 1433820/ hh), followed by goldsmith (Rs.1141354/hh), handloom (Rs.430619/ hh), tailor (Rs. 374804/hh), carpenter (Rs.363743/ hh), cobbler (Rs.254000/hh) and barber (Rs.203751/ hh). The same trend has been observed in case of per capita annual income of skill households, which ranged between Rs.50800 per capita among cobbler households to Rs.298712 per capita among technical skill households under study.

Source wise Annual Income of Traditional Skilled Households

The households in rural area of Himachal Pradesh also followed traditional skills in various professions. Contribution of various economic activities in total income of households under study is presented in Table-4 wherein it may be seen that skilled works activities are the major source of income of handloom, tailor, carpenter, goldsmith, barber and cobbler skilled households under study. However, agriculture, service and petty business activities have larger share in total income of handloom and carpenter skill households as compared to other skilled households under study. This may be due to shift of workers towards service and business professions and large farm size among handloom and carpenter skill households as traditional skills

are less remunerative. Further, analyses reveal that barber households followed only skilled works and petty business activities and cobbler households engaged in agriculture and skilled works for livelihoods.

TABLE-4: SOURCE-WISE AVERAGE ANNUAL INCOME OF TRADITIONAL SKILLED SAMPLED HOUSEHOLDS

(%-age of total income)

S. No.	Occupation	Skilled Artisans					
		Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler
1.	Agriculture	25.38	14.54	25.57	11.73	-	9.12
2.	Skilled works	31.58	54.79	36.99	69.39	80.20	90.88
3.	Service	13.26	24.53	30.82	18.88	-	-
4.	Petty Business	25.43	4.28	2.73	-	19.80	-
5.	Wage labour	4.35	1.48	3.89	-	-	-
All occupations		100	100	100	100	100	100
Per household (Rs)		319384	302538	244397	408419	70700	83625
Per capita income(Rs)		66538	64370	44436	81684	17675	20906

Source: Own Survey-2015

Goldsmith income activities include agriculture, service and skilled works. As far as income from different skills under study is concerned, it was found that goldsmith households earned relatively higher income of Rs.4,08,419 per household, followed by handloom household with annual income of Rs. 3,19,384, tailor Rs. 3,02,538, carpenter Rs.2,44,397, cobbler Rs.83,625 and lowest income of Rs.70,700 among barber households. The per capita income was also higher on goldsmith households (Rs.81684/capita) and lesser on barber households (Rs.17675/capita).

Impact of Modern Skill in Increasing Household Income

Skill works in rural households contributed a large share in total income from various sources. On an average, annual income from skill works was relatively higher i.e., Rs.1025278 in goldsmith households and lesser Rs.138732 in carpenter households of modern skill households whereas among traditional skill households it was Rs.283402 per household in goldsmith and Rs.56701 in barber households (see Table-5). The income of modern skill over traditional skill was estimated to be Rs.741876, Rs. 132054, Rs.88611, Rs.86032, Rs.83514 and Rs.48330 per household in goldsmith, barber, handloom, tailor, cobbler and carpenter households respectively. The difference in income of modern skill over traditional households is 262 per cent, 233 per cent, 110 per cent, 88 per cent, 53 per cent and 52 per cent in goldsmith, barber, cobbler, handloom, carpenter and tailor households respectively. Hence, it is clear from the analysis that households having modern skill are earning higher income by adopting modern equipment, tools and training as compared to traditional skill households. Thus modernization has larger impact in case of goldsmith, barber and cobbler.

TABLE- 5: INCOME DIFFERENCE OF MODERN VERSES TRADITIONAL SKILL HOUSEHOLDS

(Rs /household)

Particulars	Skilled Artisans						
	Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler	Technician
Annual income :-Modern skill	189472	251793	138732	1025278	188755	159512	1302912
-Traditional skill	100861	165761	90402	283402	56701	75998	0
Difference	88611	86032	48330	741876	132054	83514	1302912
% difference	87.85	51.90	53.46	261.78	232.90	109.89	-

Employment Pattern on Modern Skill Households

The workers of family are involved in various economic activities for livelihood of persons in the family. Occupational pattern of modern skill households is presented in Table-6 wherein it may be seen that the skill work activities provided more than fifty per cent of total employment among sampled households under study. In case of cobbler and carpenter households, 43 per cent and 33 per cent of total employment is provided by the skill work activities respectively. In these households, service sector was the major activity which provided 57 and 35 per cent of total work done on all economic activities respectively. Except barber and cobbler workers, workers of other skilled households engaged in agriculture activity. Petty business was also major economic activity of sampled households except cobbler. Workers of handloom and tailor households were worked as wage labour in agriculture and non-agricultural activities. On an average, all economic activities have generated 652, 542, 525, 442, 408, 645 and 449 mandays on handloom, tailor, carpenter, gold smith, barber, cobbler and technical skill households.

TABLE-6: ANNUAL EMPLOYMENT IN VARIOUS ACTIVITIES ON MODERN SKILL HOUSEHOLDS

(%-age of total)

S. No.	Occupation	Skilled Artisans						
		Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler	Technician
1.	Agriculture	11.13	21.92	23.64	7.63	-	-	7.80
2.	Skilled works	49.66	50.49	33.04	56.46	68.40	43.41	66.24
3.	Service	14.00	19.49	34.75	20.64	-	56.59	18.59
4.	Petty Business	23.58	6.14	8.57	15.27	31.60	-	3.49
5.	Wage labour	1.63	1.96	-	-	-	-	3.88
6.	Total employment	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7.	Employment (days): -Per household	652	542	525	442	408	645	449
	-Per worker	183.60	141.96	121.29	98.25	130.70	161.25	125.64

Source: Own Survey-2015

The per worker number of days worked were relatively higher on handloom households and lesser on goldsmith households. This may be due to the reason that the goldsmith profession is more profitable than other occupations.

Employment Pattern on Traditional Skill Households

Occupation wise, number of days worked in different economic activities followed by traditional skill households under study is given in Table-7 wherein it may be seen that skilled works were the major economic activities of workers of households under study. The workers of barber family have worked in the barber activities only. The workers of cobbler skill households have worked for agriculture and skilled work activities. Goldsmith household's workers were engaged in skilled works, agriculture and service. The workers of handloom, tailor and carpenter households worked for livelihoods in all the occupations.

TABLE-7: ANNUAL EMPLOYMENT IN VARIOUS ACTIVITIES ON TRADITIONAL SAMPLED HOUSEHOLDS

(%-age of respective total)

S. No.	Occupation	Skilled Artisans					
		Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler
1.	Agriculture	12.21	17.05	25.95	27.54	-	12.28
2.	Skilled works	46.61	51.21	29.13	48.94	100.00	87.72
3.	Service	17.94	20.76	24.10	23.52	-	-
4.	Petty Business	16.52	8.34	11.69	-	-	-

TABLE-7: ANNUAL EMPLOYMENT IN VARIOUS ACTIVITIES ON TRADITIONAL SAMPLED HOUSEHOLDS-CONTD.

(%-age of respective total)

S. No.	Occupation	Skilled Artisans					
		Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler
5.	Wage labour	6.72	2.64	9.13	-	-	-
6.	Total employment	100	100	100	100	100	100
7.	Employment in days: -Per household	549	428	584	517	160	214
	--Per worker	151.31	109.67	146.10	124.06	80.00	77.73

Source: Own Survey-2015

On an average, all economic activities followed by the household workers provided 549 mandays to the handloom households, 428 mandays to tailor households, 584 mandays to carpenter households, 517 mandays to goldsmith households, 160 mandays to barber and 214 mandays to cobbler households. Per worker number of days worked were comparatively more on handloom skill households (151 days/ worker) and lesser on cobbler skill households (78 days/worker) under the study.

Impact of Modern Skill in Increasing Gainful Employment

Skilled work activities are major employment provider as large number of workers are engaged in these activities. On an average, per household number of days worked in skill work activities ranged between 324 days annually in handlooms and 173 mandays in carpenter households of modern skill (see Table-8). In case of traditional skill households, number of days spent in various skill works is relatively higher at 256 mandays in handloom and lesser at 160 days in barber households. The percentage difference in employment in modern and traditional skill work activities was 74 percent in barber and 2 percent in carpenter households. However, employment in modern skill among gold smith was lesser over traditional skill. The employment has declined marginally after modernization of goldsmith activities.

TABLE- 8: EMPLOYMENT IN MODERN AND TRADITIONAL SKILL HOUSEHOLDS.

Particulars	Skilled Artisans						
	Handloom	Tailor	Carpenter	Goldsmith	Barber	Cobbler	Technician
Annual employment in skilled works							
-Modern skill	323.78	273.66	173.46	249.55	279.07	279.99	297.42
-Traditional skill	255.89	219.18	170.12	253.02	160	187.72	0.00
Difference	67.89	54.48	3.34	-3.47	119.07	92.27	297.42
% difference	26.53	24.86	1.96	-1.37	74.42	49.15	-
Women employment in skilled works							
-Modern skill	160.75	110.69	60.00	0.00	65.62	30.00	0.00
-Traditional skill	136.45	89.74	0.00	0.00	0.00	0.00	0.00
Difference	24.30	20.95	60.00	0.00	65.62	30.00	0.00
% difference	17.81	23.35	-	-	-	-	-

Women Contribution in Employment in Skill Works

Women were engaged only in handloom and tailoring activities in traditional skill households whereas modernization of skill attracted women to work in carpenter, barber and cobbler activities. In case of handloom and tailoring activities, women

employment has increased by 18 and 23 per cent respectively after modernization of the skill in these professions. Women role in work participation in goldsmith was absent.

Conclusions and Policy Implications

The study concludes that both modern goldsmith and technical/mechanical skill households are relatively more economically sound as compared to other skilled households in the state. As far as employment generation is concerned, both the modern and traditional handloom households have been gained more employment than the other given skilled households in the study area have. Emphasis on the skill development programmes/schemes with modern technologies along with protecting the traditional skills is the major policy issue for improving the livelihood of households in rural areas. Awareness about vocational education and labour market among the rural youths; orientation and induction of rural youths on skill development and employability through organizing awareness camps/ sensitizing workshops/ motivational trainings etc.; incentive schemes towards all skilled works research; technological innovation, innovations in process which save human effort, time and energy are the major policy implications suggested for improving the income of skill households in Himachal Pradesh.

REFERENCE

http://www.euroasiapub.org>uploads>2016/09

Garg, Monika S., Preserving our Heritage: Protecting and Promoting Handloom, Yojana, Vol.59, October, 2015, p.42

Sanghi, Sunita, Improving Employability of the Disadvantaged, Yojana, Vol.59, October, 2015, p.58.

Majumdar, Swati, Skill Development and Vocational Education, Yojana, Vol.59, October, 2015, p. 26

Gianchandani, Pooja, Skills for Inclusive Growth: Next Decade of Innovation and Blended Learning, Yojana, Vol.59, October, 2015, p.18

Oilseeds Price Forecasting: Case of Mustard in India

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Abstract

Mustard accounts nearly about one third of the oil production in India. It is mainly cultivated in the rainfed and resource scarce regions of the country. Hence, it contributes to livelihood security of the small and marginal farmers in these regions. Therefore, accurate forecasting of the oil prices will help the farmer to plan the area under the crop and the traders to plan their decisions. In this paper, ARIMA model was carried out to predict the future prices of mustard in major producing states viz., Gujarat, Haryana, Madhya Pradesh, Rajasthan, and Uttar Pradesh during the harvesting season. For this purpose, time series data on monthly wholesale prices of mustard (from January, 2006 to June, 2017) was collected from Agmark net website. Different criterions such as: MAE, MAPE and RMSE were used for evaluating and comparing the forecasting performance of this model. Parameters of the model were estimated by using the Statistical Packages for Social Sciences (SPSS) software. Empirical results showed that ARIMA (0,1,0)(0,1,1) model was most suitable to forecast the future prices of mustard in India during harvesting season. In India, mustard is harvested during the month of February to April. The forecasted prices of mustard were almost similar to actual prices with a good validation. Forecast shows that market prices of mustard would be ruling in the range of Rs. 2,640 to 4,250per quintal in Rabi harvesting season, 2017-18.

Key words: ACF, ARIMA, Box and Jenkins, Forecasting, MAE, MAPE, PACF, Mustard.

Introduction:

Edible oilseeds are playing an important role in daily food basket of human being. The decision regarding the acreage allocation under oilseed crops depends upon the previous season prices, thus prices of oilseed is one of the important and highly influencing factors from farmer's point of view. Mustard (Brassica juncea) is one of the first domesticated crops in rabi season. It is widely cultivated in tropical and sub-tropical areas of the world. Globally, it is mainly cultivated in India, Canada, China, Pakistan, Poland, Bangladesh, Sweden and France. About 35% area of the total cultivated area of world is in India with 16% of shares in production. India is the fifth major mustard producing country and fourth major mustard consuming country in the world. The major mustard growing states in India are Rajasthan, Uttar Pradesh, Haryana, Madhya Pradesh, Gujarat and West Bengal. The government of India has introduced National Mission on Oilseeds and Oil Palm (NMOOP), with a vision to increase production of vegetable oils sourced from oilseeds. Apart from that, various other initiatives have been taken to increase oilseed production in India, including mustard in order to meet domestic as well as global demand. Rajasthan contributes about 49% to the county's total mustard production, followed by Uttar Pradesh (11%), Haryana (11%), Madhya Pradesh (11%), Gujarat (6%), West Bengal (5%) and other districts (7%). (http://www.commoditiescontrol.com).

Mustard is grown for its oil rich seeds. Apart from extracting oil, seeds are also used directly in the preparation of almost all Indian curries particularly in a process called "tadka". India occupies the first position both in area and production of mustard. The mustard seed gives edible oil which is used as cooking medium in north India. Oil content in mustard varies from 30 to 49%. Mustard Seed is used as a condiment in the preparation of vegetable and curries. Split seed (Mohari dal) and oil is used for pickling. The leaves of the young plants are used as vegetable. Oil cake is fed to cattle (http://www.agriinfo.in).Due to the gap between domestic availability and actual consumption of edible oils, India has to resort to import of edible oils. It is the major source of income, especially to the marginal and small farmers in rain fed areas. Its contribution

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to livelihood security of the small and marginal farmers is also very important. So, the crop has the importance for farmers as well as for the nation. Prices of the agricultural commodities are important both economically and politically in almost all countries. Accurate forecasting about the prices will help the farmer to plan the area under the crop and the traders to plan their decisions. Agricultural commodity prices strongly influence not only the farmers' income but also consumers, agri business industry and policy makers as they are quite volatile in nature. India has a long history of policies aimed at smoothing out the price volatility for the consumers and income volatility for the farmers (http://www.ikisan.com).Table 1 shows that the area of mustard has been increased by 10 per cent with 17 per cent increase in production and only 7 per cent in yield. The increase in area was mainly due to area allocation and slightly due to productivity improvement.

TABLE 1: Area, Production and Yield of Mustard in India

Year	Area (000 Hectare)	% Change in area	Production (000 Tonne)	% Change in Production	Productivity (Kg./ Hectare)	% Change in Yield
2007-2008	5826	-	5834	-	1001	-
2008-2009	6298	8%	7201	23%	1143	14%
2009-2010	5588	-11%	6608	-8%	1183	3%
2010-2011	6901	23%	8179	24%	1185	0%
2011-2012	5894	-15%	6604	-19%	1121	-5%
2012-2013	6363	8%	8029	22%	1262	13%
2013-2014	6646	4%	7877	-2%	1185	-6%
2014-2015	5799	-13%	6282	-20%	1083	-9%
2015-2016	5746	-1%	6797	8%	1183	9%
2016-2017	6323	10%	7977	17%	1262	7%

Source: www.indiastat.com

The present study is an attempt to forecast the monthly wholesale prices of mustard in the major producing states of India. The Autoregressive Integrated Moving Average(ARIMA)model is a univariate time series model which is used for statistical forecasting in econometrics. . It offers a good technique for predicting the future values or events of any variable. ARIMA produces satisfactory result depending on the researcher's expertise Jha and Sinha (2013), have studied the price of soybeans and rapeseed, based on monthly wholesale prices of these products by using Time Series and neural networks methods. Meena et al., (2014) forecasted the mustard seed and oil prices in selected Indian markets by using ARIMA model. Bannor and Melkamu (2016) explored modelling and forecasting of wholesale mustard monthly prices in Sri Ganganagar district of Rajasthan by using ARIMA, ARFIMA and Error Correction Model (ECM) and concluded that ARIMA as the best model, fit for forecasting of wholesale mustard prices in Sri Ganganagar District of Rajasthan. Solanki et al., (2017) studied ARIMA and Exponential GARCH (EGARCH) model along with their estimation procedures for modelling and forecasting of mustard price.

Martial's and Methods:

The study has used the long range of monthly time series data for forecasting the monthly wholesale prices of mustard. The data set includes monthly modal prices of mustard i.e., from January, 2006 to June, 2017 for major producing states viz; Gujarat, Haryana, Madhya Pradesh, Rajasthan, Uttar Pradesh and India. The last few months are skipped due to unavailability of reliable statistic at the time of data analysis. The data has been collected from secondary source i.e., AGMARKNET website (www.agmarknet.gov.in).

Keeping in view the aims of the study and nature of statistical information, the ARIMA methodology developed by Box and Jenkins has chosen for analysis due to its suitability to our dataset and non-

stationary nature of time series to be forecasted. This model suitable even for non-stationary time series, has great statistical power for reliable forecasting from small datasets and requires data for only time series being forecasted but not for its determinants. The ARIMA methodology has gained enormous popularity in many areas and research practices confirmed its power and flexibility. In general, an ARIMA model is characterized by the notation ARIMA (p, d, q) where, p, d and q denote orders of auto-regression, integration (differentiation) and moving average, respectively. ARIMA technique comprises of linear time series function of past actual values and random shocks. This approach helps in ARIMA model identification, estimation, diagnostic checking and forecasting of both stationary and non-stationary time series. This approach differentiates ARIMA and ARMA model for stationary and non-stationary time series, respectively. Graphs of Partial Autocorrelation Function (PACF) and Autocorrelation Function (ACF) are used to identify the length of autoregressive (p) and moving average (q) terms.

Step 1: Identification of the Model: The most important step in the process of modelling is to check for the stationarity of the series, as the estimation procedures are available only for stationary series. Stationarity in variance could be achieved by some modes of transformation, for example, log transformation can be attempted. The next step in the identification process is to find the initial values for the orders of seasonal and non-seasonal parameters, p, q, and P, Q. ARMA model could be tried to start with. This is not a hard and fast rule, as sample autocorrelation coefficients are poor estimates of population autocorrelation coefficients. Still they can be used as initial values while the final models are achieved after going through the stages repeatedly.

Step 2: Estimation of the Model: At the identification stage, one or more models are tentatively chosen that seem to provide statistically adequate representations of the available data. Then, we attempt to obtain precise estimates of parameters of the model by the least squares method as advocated by Box and Jenkins. Standard computer package Statistical Packages for Social Sciences (SPSS) is used to find the estimates of relevant parameters using iterative procedures.

Step 3: Diagnostic Checking: After having estimated the parameters of a tentatively identified ARIMA model, it is necessary to do diagnostic checking to verify the adequacy of the model. Autocorrelation Function (ACF) and Partial ACF (PACF) of residuals may show up an adequacy or inadequacy of the model. If it shows random residuals, then it indicates that the tentatively identified model is adequate.

Step 4: Forecasting: The principal objective of developing an ARIMA model for forecasting is to generate post sample period forecasts for the same variable. The ultimate test for any model is whether it is capable of predicting future events accurately or not. **The Mean Square Error (MSE)** is the most commonly used error indicator. MSE is very useful to compare different models; it shows the ability to predict the correct output. Yt and $\hat{Y}t$ are the actual and the predicted output for the ith price, and N is the total number of observation. **Mean Absolute Percentage Error (MAPE)** is the most important statistical property in that it makes use of all observations and has the smallest variability from sample to sample. **Root Mean Square Error (RMSE)** is another error estimation, which shows the error in the units of actual and predicted data.

Results and Discussion:

The data of major mustard producing states viz., Gujarat, Haryana, Madhya Pradesh, Rajasthan, Uttar Pradesh and India was selected for mustard price forecasting during harvesting season. Monthly modal prices of mustard wer used to fit an ARIMA model as outlined in the methodology. Price series clearly exhibited non-stationarity and there was also no evidence of seasonality in data. Therefore, to make price series stationary, the first difference in the price series was considered for mustard, the second differencing was also done. The computed values of Auto Correlation Function (ACF) and Partial Auto Correlation Function (PACF) of differenced series of cereal crops are shown in Figure 1 with lags up to 24. An examination of the ACF and PACF revealed lack of seasonality in data. After the first difference, it was found to be stationary, since, the coefficients dropped to zero after the second lag. Each individual coefficient of ACF and PACF were tested for their statistical significance using t-test. The ARIMA (0,1,0)(0,1,0) model was found to be a good fit. The parameters estimated through an iterative process by the least square technique which gave the best model are presented in Table 2. The ACF and PACF of the residual indicated the 'good fit' of the model.

(Fig. 1). The coefficients were statistically significant; hence selected models were deemed as the best fit and used for forecasting. Residuals were obtained by back forecasting to carry out the model adequacy check for the best selected model. The ARIMA (3,1,0)(0,1,1), ARIMA (0,1,0)(0,1,1), ARIMA (0,1,0)(0,0,0), ARIMA (0,1,1)(0,1,0), ARIMA (0,1,1)(0,1,0) and ARIMA (0,1,0)(0,1,1) models were found to be a good fit for forecasting the prices of mustard in Gujarat, Haryana, Madhya Pradesh, Rajasthan, Uttar Pradesh and India, respectively.

TABLE 2. MODEL FIT STATISTICS OF THE FITTED ARIMA MODEL OF MONTHLY PRICES OF MUSTARD IN SELECTED STATES.

State	ARIMA Model	MAE	MAPE	RMSE
Gujarat	(3,1,0)(0,1,1)	111.32	3.79	155.16
Haryana	(0,1,0)(0,1,1)	122.67	4.40	160.27
Madhya Pradesh	(0,1,0)(0,0,0)	104.38	3.73	144.80
Rajasthan	(0,1,1)(0,1,0)	150.13	5.03	199.44
Uttar Pradesh	(0,1,1)(0,1,0)	119.89	4.15	162.54
India	(0,1,0)(0,1,1)	125.55	4.19	157.04

The values of MSE, MAPE and RMSE were significant, indicating the accuracy of the forecasts. At country level, ARIMA (0,1,0)(0,1,1) model for mustard was found to be the most appropriate model with 125.55, 4.19 and 157.04 MAE, MAPE and RMSE respectively. Fig. 2 shows observed and forecasted prices of mustard in selected states and India. The figure indicates that the forecasted prices predicts prices with 95% confidence interval. Using the identified models, prices of mustard were forecasted for the harvesting period. Forecast shows that market prices of mustard would be ruling in the range of Rs. 2,640 to 4,250per quintal in Rabi harvesting season, 2017-18. As results from Table 3 revealed that, the forecasted prices of mustard would be lowest in Rajasthan (Rs. 2,580 /q) and Uttar Pradesh (Rs. 2,640 /q). In case of Gujarat, Haryana, and Madhya Pradesh, the prices would be Rs. 3,030, 3.270 and 3350 quintal respectively. This information on price forecasting could be useful to farmers to make their acreage allocation i.e., sowing and marketing decisions. Fig. 3 Shows the forecasted prices for mustard in selected states during harvesting season 2017-18.

TABLE 3. FORECASTED PRICES FOR MUSTARD IN SELECTED STATES DURING HARVESTING SEASON 2017-18 (RS. /Q)

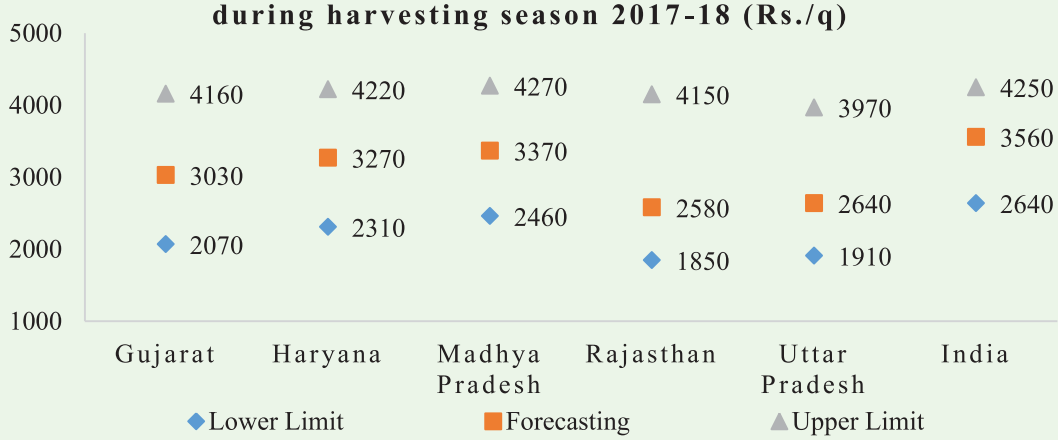
State	Lower Limit	Forecasting	Upper Limit
Gujarat	2070	3030	4160
Haryana	2310	3270	4220
Madhya Pradesh	2460	3350	4270
Rajasthan	1850	2580	4150
Uttar Pradesh	1910	2640	3970
India	2640	3560	4250

Conclusion

India imports about 60% of its domestic consumption of edible oils every year. Due to high dependence of imports, domestic prices of edible oilseeds are highly volatile depending on the international prices. This high volatility in harvest prices is a big hindrance to increase oilseeds area in India. Farmers will be benefited if there were some reliable price forecasting models available to disseminate forecasted harvest prices with about 90 to 95% accuracy. This paper tries to address this need of the farming community. In India, mustard is harvested during the month of February to April. The paper developed a model to forecast harvest season prices with 95% accuracy in predictions. The forecasted prices of mustard were almost similar to actual prices with a good validation. Forecast shows that market prices of

mustard would be ruling in the range of Rs. 2,640 to 4,250per quintal in Rabi harvesting season, 2017-18. The ARIMA model stands as a good technique for forecasting the magnitude of any variable. Darekar and Reddy (2017) have used similar technique to forecast common paddy and cotton prices in India. This forecast is based on past data and the fact that actual market price may not turn out to be the same as those forecasted. Just like any other method, this technique also does not guarantee perfect forecasts.

Fig. 3: Forecasted prices for mustard in selected states during harvesting season 2017-18 (Rs./q)



REFERENCES:

Anonymous.http://agmarknet.gov.in/PriceTrends/.

Anonymous.http://www.agriinfo.in.

Anonymous.http://www.commoditiescontrol.com.

Anonymous. http://www.ikisan.com.

Bannor, RK and Melkamu, M. 2016. ARFIMA, ARIMA and ECM Models Forecasting of Wholesale Price of Mustard in Sri Ganganagar District of Rajasthan of India. Journal of Business Management & Social Sciences Research, 5(1): 1-13.

Darekar, A. and Reddy, A. A. 2017. Cotton Price Forecasting in Major Producing States. Economic Affairs, 62(3):1-6.

Darekar, A. and Reddy, A. A. 2017. Forecasting of Common Paddy Prices in India. Journal of Rice Research, 10(1): 71-75.

Jha, G.K and Sinha, K. 2013. Agricultural price forecasting using neural network model: An innovative information delivery system. Agricultural Economics Research Review, 26(2): 229-239.

Meena, D.C., Singh, O.P., Singh, R. 2014. Forecasting mustard seed and oil prices in India using ARIMA model. Annals of Agri Bio Research, 19(1): 183-189.

Solanki, P., Sharma, R and Sharma, M. 2017. Price forecasting of mustard using ARIMA and EGARCH models. Journal of Oilseed Brassica, 8(2): 181-186.

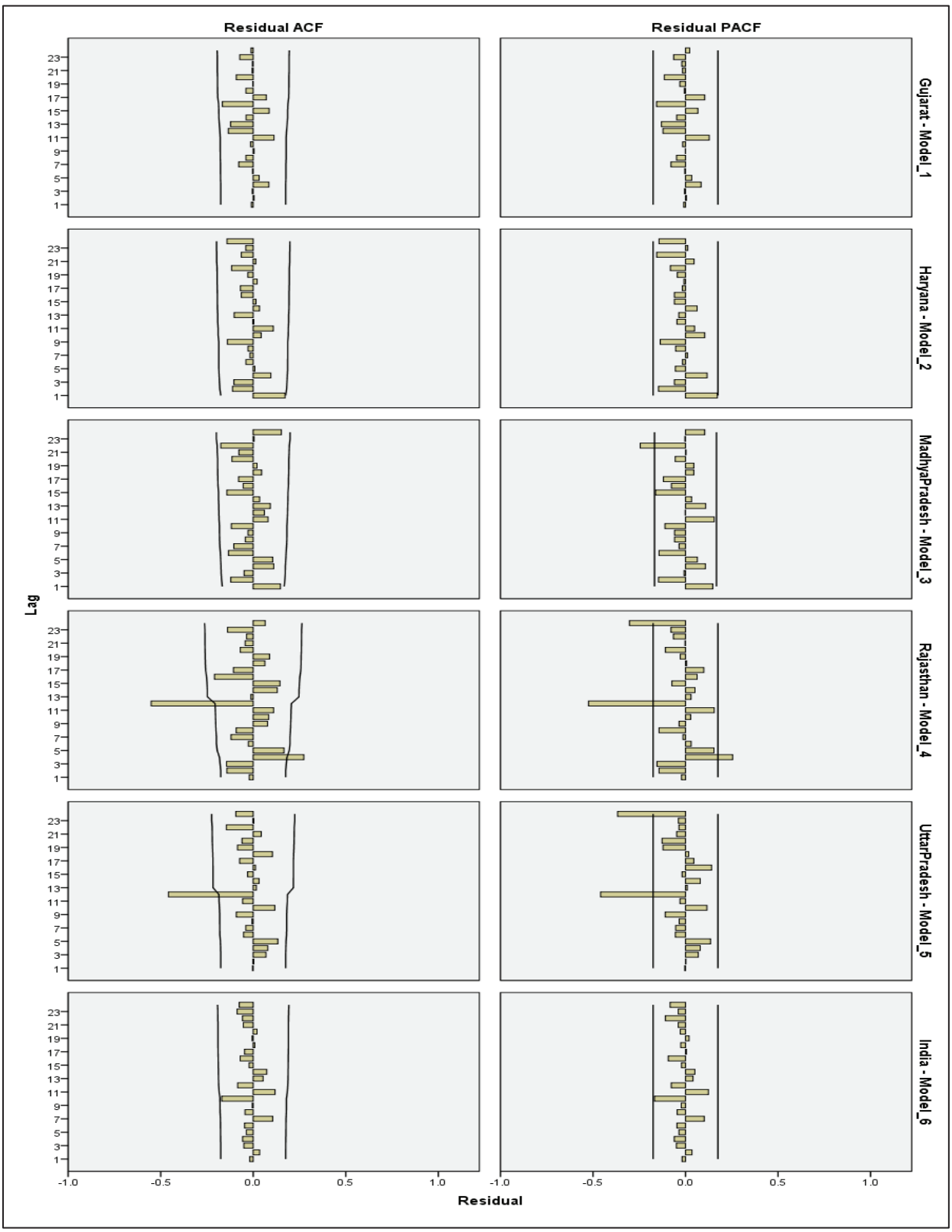


FIG. 1 ACF AND PACF OF RESIDUALS OF BEST FIT ARIMA MODEL FOR MUSTARD PRICES IN SELECTED STATES AND INDIA

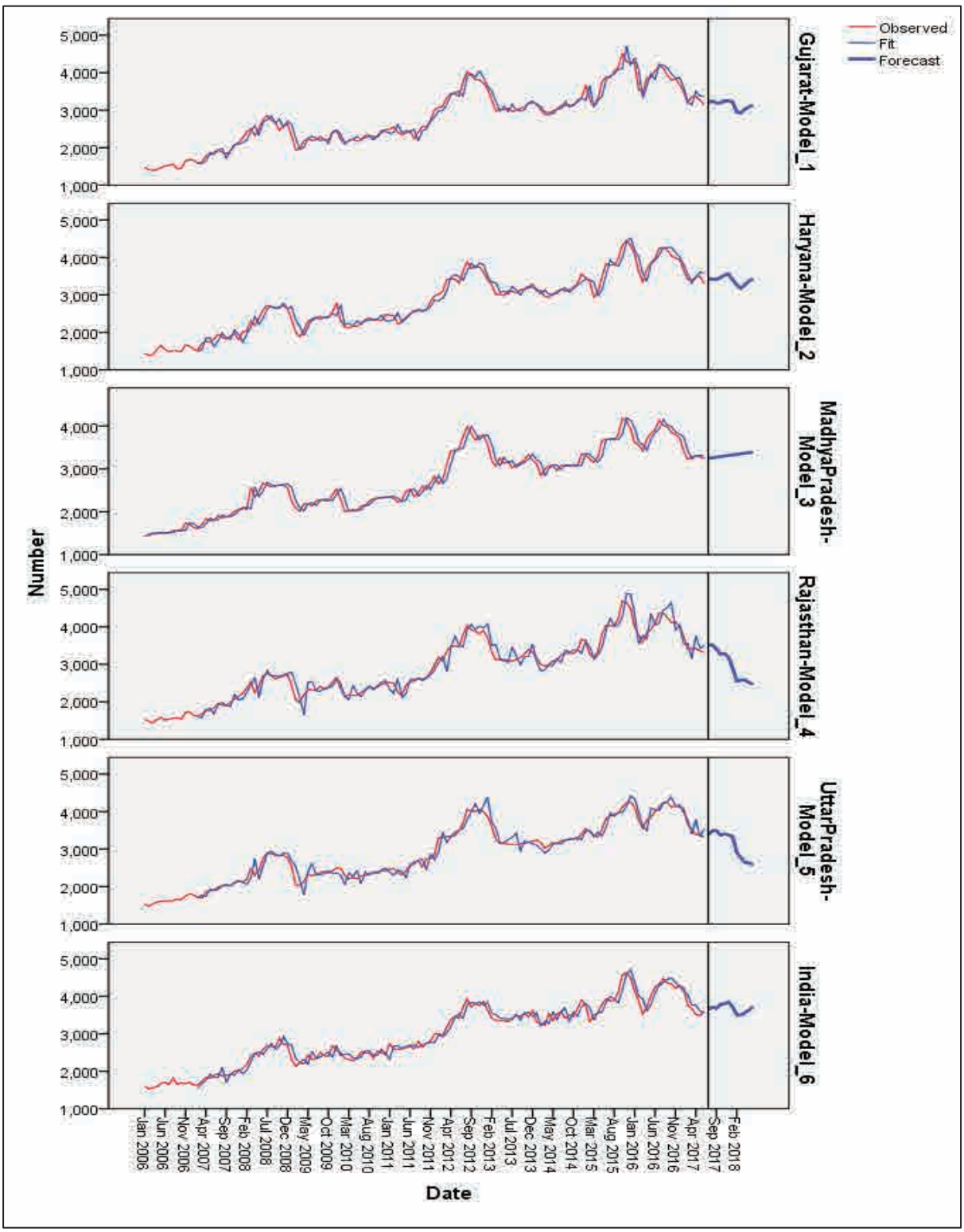


FIG. 2: OBSERVED AND FORECASTED PRICES OF MUSTARD IN SELECTED STATES AND INDIA

Agro-Economic Research

Farmer Suicides: An All India Study*

A.V. MANJUNATHA AND K.B. RAMAPPA

Background

Farmer suicides have become a major concern in India that has resulted in profound implications on the quality life of farmers. The deterioration in farmers' household status was clearly brought out by the NSSO's Situation Assessment Survey in 2003 and 2013. According to National Crime Records Bureau (NCRB), the tendency of farmers resorting to the extreme measure of suicide was alarming in Maharashtra, Telangana, Madhya Pradesh, Chhattisgarh and Karnataka during 2014. These five states together accounting for 90 per cent of farmer suicides (5056), remained as hotspots of agrarian distress. The unfortunate incidence of farmer suicides continued in the subsequent years. According to NCRB data, number of farmers who committed suicide in 2015 went up by 42 per cent as compared to 2014. Fifteen farmers committed suicide every day in the country during 2014 and this went up to 21 in 2015. Five states remained hot spots in both years despite the efforts by the Central and State Governments. Among these states, reduction in farmer suicides was observed only in Chhattisgarh. It is important to note that half of the farmer suicides reported in 2014 and 2015 reported during July to November.

Many studies have addressed the reasons for suicides from various angles. A detailed perusal of the literature in India suggests multiple causes for building the agrarian distress. This may be due to the squeezing of income sources under the pressure of increasing cost of cultivation and higher cash needs for the households. This is further aggravated by the climatic factors, low productivity and market failures both in factor and product markets. But among these, the farm indebtedness was considered as the major triggering factor by analysts. Even though indebtedness is the major reason for farmer suicides, it originates due to inadequacy and continuous shrinking of the income flow. The scenario of indebtedness vis-a-vis income generation in agriculture in the country also supports this hypothesis. The per cent of indebted farm households to total farm households was 57 per cent, 46 per cent and 37 per cent in Maharashtra, Madhya Pradesh and Chhattisgarh, respectively. At all India level, prominent causes recognized for farmer suicides were namely, bankruptcy or indebtedness (20.6%), family problems (20.1%), farming related issues (17.2%), illness (13.2%) and drug abuse/ alcoholic addiction (4.4%).

The Situation Assessment Surveys of the National Sample Survey Organization (NSSO, 2013) has reconfirmed the worsening situation observed in 2003 by NSSO 59th round, of farm households which indicated that 52 per cent of the farm households in India are indebted. Repeated failure of crops lead to loss of income to the extent that the farmers could hardly earn to meet their livelihood expenses. Such circumstances compel the farmers to borrow from illegal money lenders after exhausting all the institutional sources of borrowing and inability of repayment mounts heavily. Over a period of time, ultimately, they encounter a debt-trap situation wherein committing suicide turns out to be the only way to escape the mental agony.

Objectives

In order to avert agrarian distress and farmer suicides, the Government of India launched several programmes. The prominent among them were Prime Minister's Rehabilitation Package (PMRP) launched in September, 2006 in 31 suicide prone districts covering Andhra Pradesh, Maharashtra, Karnataka, and Kerala with a budget allocation of Rs.16,978 crores. The package was designed to meet short and long term needs of the distressed farmers. The package attempted to help farmers who were finding it hard to repay the loans. The package also created irrigation facilities, supplied seeds and other inputs. In addition to these, an ex-gratia amount of Rs.50 lakhs was provided for each

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district. The distressed farmers of 31 districts found relief to a significant extent (Bhende and Thippaiah, 2010). Radhakrishna Committee report (2007) on indebtedness pointed out that the government did not optimally utilize the fund under PMRP.

Some other notable programmes of the Central Government for improving the income of farmers are Kisan Credit Cards (KCC), revival package for short term cooperative credit structure, concessional interest schemes, interest subvention schemes, interest subvention against negotiable warehouse receipt, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), National Agricultural Development Programme (NADP), National Mission on Micro Irrigation (NMMI), National Horticulture Mission (NHM) and National Mission for Sustainable Agriculture (NMSA). The recent prominent programmes aimed at addressing agrarian distress are: Pradhana Mantri Krishi Sinchayee Yojana, 2015 (PMKSY) and Pradhana Mantri Fasal Bima Yojana (PMFBY), 2016. Despite all these measures, the agrarian distress culminating into suicides remained a major challenge for the policy makers in the country. With this background, the study addressed following specific objectives:

To analyze the incidence and spread of farmer suicides in selected states and to map the hotspots of suicides.

To study the socioeconomic profile, cropping pattern and profitability in the victim's household.

To study the causes leading to suicide.

To recommend suitable policies to avert farmer suicides.

Methodology

The study is based on the primary data obtained from the victim's family members and secondary data obtained from Department of Agriculture and related departments of respective states. The study included Maharashtra, Madhya Pradesh, Chhattisgarh, Telangana and Karnataka states which are the major suicide prone states in the country and another eight states (AP, Kerala, TN, UP, Gujarat, Punjab, Haryana, WB), where farmer suicides were noticed. Thus, a total of 13 states were included in the study covering 46 districts, 138 taluks, 388 villages and 528 victim households.

Primary data was collected using multi-stage sampling technique considering number of suicides per lakh hectare of net sown area. The highest number of victim households has been covered in Karnataka (107), whereas the least was in Haryana (14). Fifty victim HHs each was covered in major suicides prone states like Maharashtra, Madhya Pradesh, Telangana and Chhattisgarh. In the remaining states the sample size covered was 30. Thus, a total of 528 victim HHs were interviewed, which accounts to 6.63 per cent of total farmer suicides (7959) in thirteen states during 2015-16. The districts with highest number of suicides in respective sample states were selected for the study. Members of the victim's HHs were contacted using the information obtained from Government departments and published reports.

Primary data was collected from the victim's family members through a structured questionnaire designed for the study. The questionnaire covered basic data such as family details, land holding, income and expenditure pattern and credit details. One of the main focus of the study was to elucidate the causes leading to suicide. Hence the households were enquired about causes related to social, farming and indebtedness. Data for understanding the post suicide situation of family was also collected.

Findings

The findings are presented under the following headings:

Household Characteristics, Cropping Pattern and Income Status

Nearly 58 per cent and 8 per cent of the victim HHs possessed BPL and AAY cards, respectively. Andhra Pradesh (93%) has the highest percentage of BPL and AAY cards followed by Telangana and Karnataka (86% each), Tamil Nadu (80%) and Chhattisgarh (78%), whereas the least was in Punjab (10%). Maharashtra having witnessed highest number of farmer suicides, had only 62 per cent of victims with BPL or AAY cards.

Victim farmers consisted of 94 per cent of male farmers and six per cent of female farmers. The female victims were reported in Telangana (36%), Gujarat (10%), Tamil Nadu (7%), West Bengal (7%), Chhattisgarh (4%), Karnataka (4%), Maharashtra and Madhya Pradesh (2% each).

The highest percentage of victims belong to OBC (46%) followed by General (29%), SC (16%)

and ST (9%). The percentage of SC and ST victims was found to be higher in Chhattisgarh (70%), West Bengal (50%), Uttar Pradesh (47%), Tamil Nadu (40%) and Maharashtra (32%), whereas it was lower in Gujarat and Punjab (3% each).

Seventy per cent of the victims were in the age group of 31 to 60 years, 17 per cent in less than 30 years and 13 per cent in above 60 years. Victims in the age group of 31 to 60 years were fully involved in agriculture and are prone to agrarian distress. Special efforts needed to counsel farmers of this age group to overcome distress situation. Relatively higher number of farmer suicides in the age group of 31 to 60 years was reported in AP (90%), Karnataka (83%), MP (82%), Haryana (79%), Punjab (73%), Chhattisgarh (70%), Gujarat (70%), Maharashtra (62%), Telangana (60%) and West Bengal (60%).

Nearly 56 per cent of the victims were educated upto matriculation, 33 per cent were illiterates and 11 per cent were educated more than matriculation. The percentage of illiterates was found to be highest in MP (62%) followed by AP (53%), UP (40%), Maharashtra (40%), Karnataka (35%) and TN (33%).

Most of the victim farmers (91%) were married and had two children on an average which indicates the extent of dependence on the victim. The higher percentage of married victims was found in AP (100%), MP (98%), Chhattisgarh (98%), TN (97%), Telangana (96%), Karnataka (93.5%) and Maharashtra (92%) as compared to remaining sample states.

The most common methods adopted for committing suicide included Poisonous/Plant Protection Chemicals (PPCs) consumption (48%) and hanging (43%). Most of the victims in Andhra Pradesh (77%), Punjab (73%), Madhya Pradesh (72%), Tamil Nadu (70%), Gujarat (67%) and West Bengal (53%) resorted to suicide through poison consumption, whereas victims resorted to hanging in Chhattisgarh (78%), Kerala (67%), UP (67%), Haryana (57%) and Maharashtra (52%).

Nearly 57 per cent of the victims committed suicide at their residence and 36 per cent in farm. There were also instances where victims committed suicide in places like hotels/ lodges (7%).

The average operational land holding of victim HHs was 3.4 acres, of which, 55 per cent was irrigated with groundwater (70%) being the major source of irrigation. Groundwater was the major source of irrigation in UP (100%), Haryana (100%), Kerala (97%), West Bengal (91%), Telangana (91%), Gujarat (85%) and Maharashtra (80%). The highest land holding was found in Haryana (18 acres) followed by 6.6 acres in Punjab, 6 acres in Gujarat, 4.1 acres in AP and 4 acres in Maharashtra. Whereas the least operational land was found in West Bengal (1.2 acres). It is to further note that victims in Kerala, TN, UP, Punjab, Haryana and West Bengal had only irrigated land.

Marginal and small victim farmers constituted 76 per cent to the total victim HHs followed by Medium (16%) and Large (8%). The percentage of marginal and small victim farmers was relatively higher in UP (97%), West Bengal (97%), Telangana (96%), Kerala (93%), Karnataka (80%), Chhattisgarh (90%), AP (78%), TN (76%) and Maharashtra (76%). Whereas, the percentage of medium and large victim farmers was relatively higher in Haryana (86%) and MP (53%).

Marginal and small farmers among the victims operated 56 per cent of the total operational land followed by Medium (27%) and Large (17%). Nearly 90 per cent of the land was operated by marginal and small victim HHs in Telangana followed by 86 per cent in UP and West Bengal, Maharashtra (82%) and MP (82%). Conversely, medium and large victim HHs operated relatively higher area in Haryana (99%), Punjab (80%) and Gujarat (77%). The distribution of land across categories clearly indicates inequity in distribution of land. The extent of inequity was relatively higher in Gujarat, Punjab, Haryana, Karnataka, Chhattisgarh and AP.

The annual average net income realized per HHs was Rs.73,142, of which 72 per cent was derived from agriculture and allied activities. The average annual expenditure incurred was Rs.59,868, of which, 50 per cent spent on food and remaining on non-food items. Overall, Rs.13,274 was the surplus amount realized after accounting for expenditure which is just above poverty line income. The deficit was seen in Gujarat (Rs.78,823), Maharashtra (Rs.63,787), Telangana (Rs.2,426) and West Bengal (Rs.2,466). The surplus was relatively higher in Haryana (Rs.3,36,500) and Kerala (Rs.2,06,705). It is to note that victim households in Maharashtra incurred loss of Rs.11,526 from agriculture and allied activities, which are reflected in highest number of suicides

during 2015-16.

The net income of victim HHs depended on the cropping pattern. Cereals and cash crops are the major crops grown in 57 per cent and 22 per cent of the gross cropped area, respectively. The remaining crops include oilseeds (10%), pulses (5%), fodder crops (2%), fruits (2%) and vegetables (1%). Among crops, the highest area was reported in Paddy (30%) followed by Wheat (18%) and Cotton (16%).

Among the various crops grown, the highest net returns per acre was realized from cultivation of pepper (Rs.75,000), followed by ginger (Rs.71,284), fruits (Rs.70,334), groundnut (Rs.44,321), and mulberry (Rs.38,227). The highest expenditure on cultivation was incurred on pepper (Rs.1,59,375), followed by coffee (Rs.83,636), and ginger (Rs.77,246). Relatively lower income per acre was registered from blackgram (Rs.12,327), sugar cane (Rs.11,185), greengram (Rs.6,332), maize (Rs.6,197), coffee (Rs.5,060), redgram (Rs.2,649), and jowar (Rs.431). It is quite significant to note that loss was incurred from the cultivation of tobacco (Rs12,016/acre), ragi (Rs.741/acre), soyabean (Rs.301/acre) and bajra (Rs.251/acre).

At aggregate level, the highest net return per acre was derived from cultivation of fruits and vegetables (Rs.1,00,172/acre), followed by oil seeds (Rs.71,392/acre). Loss was incurred from the cultivation of oil seeds in Maharashtra (Rs.3,536/acre). Similarly loss was also observed in the cultivation of fruits and vegetables in Karnataka (Rs.76,343/acre) and Telangana (Rs.5,750/acre). At the time of survey, the victim HHs of Karnataka had not realised yield from fruit crops and hence loss was reflected under fruits and vegetable group.

Credit was availed by the entire victim HHs and a majority of them borrowed from multiple sources with the average borrowing being Rs.1.55 lakh and Rs.1.70 lakh from institutional and non-institutional sources, respectively. Nearly 8 per cent of the institutional borrowing and 39 per cent of the non-institutional borrowing was used for non-farming purposes. Per cent of amount outstanding to the total credit availed was highest in borrowings from traders and commission agents (162%), followed by landlords (108%), relatives and friends (Rs.94%), and commercial banks (85%). The overall outstanding amount was to the extent of 86 per cent of the total credit.

Symptoms observed by family members before suicide indicated that 19 per cent of the victims were not mingling, staying aloof from family members, 22 per cent were not interacting with the community, 26 per cent were not friendly as usual with the neighbours, 27 per cent were not consuming food regularly and 30 per cent had inadequate sleep. These symptoms were prominently visible in Maharashtra, Chhattisgarh, WB, TN and Punjab as compared to other states.

Causes of Farmer Suicides

The decision to commit suicide by the victim cannot be attributed to a single reason. It was spur-of-the-moment triggered action with respect to 70 to 80 per cent of victims. The final action of committing suicide was a combination of several cumulative causes which can be grouped into social, farming and debt-related.

Social Causes

Drug/Alcoholic addiction (26%), Illness (18%), fall in Social reputation (17%), family quarrel (16%), daughter's marriage (11%) and extra-marital affair (8%) are the major social causes opined by victim HHs across 13 sample states. Drug/Alcoholic addiction and Illness was common major cause reported by victim HHs in all the sample states. Fall in social reputation was reported as one of the main cause for suicide by all the sample states except UP.

Gambling was reported by 33 per cent of victim HHs in Kerala, 27 per cent in TN, 18 per cent in Chhattisgarh, 8 per cent in MP and 2 per cent in Telangana.

Family quarrel was also reported by all states except TN. Disputes in partition of income was reported by 4 per cent of the victim HHs in Maharashtra and 2 per cent in Karnataka.

It is to note that dowry was reported as a cause for suicide in TN (10%), AP (3%), and Gujarat (3%) Telangana (2%) and Maharashtra (2%). Daughter's marriage was reported in all states except Chhattisgarh, UP and Haryana. Only in Punjab (3%) victim HHs have reported divorce as one of the reason for suicide.

Social autopsy results revealed that the opinion of neighbours/relatives/ friends regarding social

causes are in-line with the opinions of victim HHs.

Farming Related Causes

Expectation of non-institutional credit and failure of rain was reported as major farming related cause by 37 per cent and 36 per cent of the victim HHs, respectively. This is followed by non-realisation of higher output (35%), non-realisation of higher price (33%), lack of access to expected institutional credit (33%) and lack of irrigation (32%).

The failure of crop during the two successive years (2014-15 and 2015-16) in the sample states was considered as a major setback, which was responsible for suicides. Lack of access to expected credit (70%), non-realization of higher output and prices (68%) and crop failure (60%) were the major reasons for suicides. The failure of crops due to attack of pests and diseases was reported by all sample states. Lack of access to irrigation water was reported by all states except MP, Chhattisgarh, UP and Punjab. The HHs of UP reported crop failure due to pest and diseases (30%) and cyclones (30%) as two causes for suicides.

Cyclone was reported as one of the cause by Kerala (56%), UP (30%), AP (3%) and Karnataka (0.9%). Drought was common cause in all states except UP, Punjab and WB. Inability to sell the output was mainly reported by the HHs of the Kerala (59%). Well failure was reported by 40 per cent of victim HHs in Telangana.

Non-realisation of higher output was one of the major causes in all states except UP and MP. Similarly, the non-realisation of higher prices was also the major reason in all states except Chhattisgarh and UP. Telangana (68% of sample HHs expected higher output and 60% expected higher price), West Bengal (60% of sample HHs expected higher output and 60% expected higher price), Tamil Nadu (50% expected high output and 80% expected higher price) and Kerala (52% expected higher output and 81% expected higher price) are the prominent states where expectation of higher output and price were reported as a major farming related cause of farmer suicides.

Failure to avail expected amount of credit was quoted as major cause in all the sample states except Uttar Pradesh and Chhattisgarh. Expectation of institutional credit was highest in Tamil Nadu (80%), whereas expectation of non-institutional credit was highest in Telangana (68%). Expectation of loan waiving was cited as a reason for suicide in West Bengal (97%), Kerala (78%), Karnataka (67%) and Tamil Nadu (63%).

Lack of extension services was highlighted as a farming related cause which was opined by 73 per cent of victim HHs in West Bengal and 70 per cent in Punjab. Kerala (37%) was the only state where high per cent of victim households committed suicide due to delayed payment to the output sold. This cause was quoted by Karnataka (7%), Telangana (6%), Andhra Pradesh (3%) and Haryana (7%).

Debt Related Issues

Members of the victim's household attributed causes of suicides to institutional loan (44%), non-institutional loan (37%), pressure from money lenders (36%), non-agricultural loan (28%), pressure from institutional sources (28%) and farm equipment loan (10%) were major indebted related causes of suicides.

Suicides committed due to institutional loan has been stated in Karnataka (87%), TN (77%), Maharashtra (62%), Kerala (59%) and West Bengal (50%), whereas non-institutional loan in Punjab (80%), Karnataka (71%), West Bengal (67%), Telangana (60%) and TN (50%).

Pressure from institutional sources for repayment of loan was reported as major cause for suicides mainly in TN (77%), Kerala (56%) and Karnataka (51%). Pressure from non-institutional sources was majorly quoted in Karnataka (70%), Telangana (68%), Punjab (63%), WB (57%) and TN (50%).

Ranking of Social, Farming and Indebtedness Related Causes of Suicides

The foremost reason for suicides among 13 sample states include Indebtedness due to crop loan (44.3%), indebtedness due to non-institutional loan (37.1%), expectation of non-institutional credit (36.9%), recovery pressure from non-institutional sources (36.1%), non-realisation of higher output (35.4%), non-realisation of higher prices (33.3%), lack of access to expected institutional credit (33.1%), crop failure due to lack of irrigation (32.2%), expectation of loan waiver (31.1%), Recovery pressure from

institutional sources (28.1%), indebtedness due to non-agricultural loan (27.5%), and drug abuse and alcohol addiction (26.5%).

State-wise major causes reported by the victim HHs widely vary across states. Crop failure as a cause for suicide was reported in Haryana, Gujarat, Maharashtra, Telangana, AP,

TN and UP. Indebtedness as one of the causes was seen in Maharashtra, Telangana, AP, Karnataka, TN, UP, Punjab, Haryana and WB. Non-realisation of higher output and price reported in Telangana, AP, Kerala, TN, and Haryana. Expectation of credit was opined in Telangana, Karnataka, Kerala, TN and Punjab. Expectation of loan waiving was opined in Maharashtra, WB and Kerala.

Impact of Farmer Suicides on Victim Households and Suggestions Offered by Victim Households to Prevent Farmer Suicides

Death of the bread winner was seen to have severely affected the HHs. This impact was reported by 34 per cent of the HHs who mentioned that there was none in their family to earn income. The land of such families was confiscated by the private money lenders. Discontinuation of agriculture was another impact as seen in the case of 21 per cent of the total HHs. Such situations were evident in West Bengal (63%), Haryana (57%) and Tamil Nadu (53%).

Insecurity in the family (33%) and family members under depression (25%) were among the major impacts opined by victim HHs across states. Insecurity in the family was opined majorly in TN (87%), WB (77%) and Telangana (58%), whereas family members under depression were opined in TN (90%) and WB (80%).

Interestingly none of the victim HHs in Madhya Pradesh and Uttar Pradesh gave up farming practices due to the loss of family member. Overall, nearly eight per cent of victim households sold the land after suicide.

MP (36%), Kerala (15%), Telangana (18%) and Andhra Pradesh (13%) are the four states where the victim HHs who sold land was in large number.

Large number of victim households had discontinued their children's education in Madhya Pradesh (32%), Tamil Nadu (27%) and Gujarat (27%). Among other states, it ranged between nil in Haryana to 17 per cent in Uttar Pradesh.

The most prominent suggestions offered by the victim households to prevent farmer suicides across states were: (i) Counseling, (ii) Provision of credit facilities, (iii) Crop Insurance and compensation during crop failure, (iv) Creation of irrigation facilities, (v) Creation of alternative income generating activities, (vi) Extension activities, (vii) Increasing MSP or extending the MSP to crops for which it is not there and (viii) supply of quality inputs at subsidized rates.

Policy Suggestions

Suggestions that can be Implemented Immediately

Crop failure and collapse of income was found to be the root cause for farmer suicides. Therefore, it is suggested that individual farmers should be brought under the ambit of crop insurance programme. More intensively the state must ensure through the proper policy framework that indemnity be paid within a week after reporting of the failure. Crop Insurance payment provided months after the crop failure by design pushes the farmer into the debt trap of the moneylender.

One of the main causes for crop failure was insufficient availability of water. Hence judicious use of available water is needed. Groundwater recharge, rain water harvesting and, de-siltation of ponds / tanks can ensure increased water supply. To avoid under- or overuse of water to crops, farmers should carefully monitor the weather forecast, as well as soil and plant moisture and adapt their irrigation schedule to the current conditions. Farmers can participate in the construction of percolation ponds and check dams in their surrounding areas both in private and common land. This helps to increase the availability of water.

Poor awareness among the farmers regarding scientific and improved methods of cultivation is one of the reasons for crop failure. This may be addressed through proper extension activities. Instances in Andhra Pradesh indicate that in the absence of adequate extension services, most farmers were misled by the traders and were found using pesticides indiscriminately. The farmers were also supplied with low quality seeds. Proper measures to eliminate such practices has to be made. The Seeds Act, 2004, Insecticide Act 1968, Pesticide Control

Act, Fertilizer Control Order, be implemented very strictly and the abettors be punished. Special extension efforts are needed towards capacity building of farmers for usage of quality inputs and efficient options in production and marketing.

Though, this problem is highlighted by Andhra Pradesh victim households, the possibility of existence of such unscrupulous dealers in other states cannot be ruled out. Hence, Government intervention in the supply of seeds and other agricultural inputs by establishing fair price retail outlets in rural areas, where quality of inputs is assured is required.

It is suggested by the victim households that Government should make policy to waive or reschedule the outstanding amount of farmers loan whenever the crop fails due to natural calamities. This will save the farmers from debt trap. The same suggestions were offered in the Report of the Commission on Farmers' Welfare (2005). The report mentioned that the interest should not be charged for the period of current rescheduling. Whenever an area is declared as drought-affected, interest should be waived, without changing other terms of rescheduling (GoAP, 2005).

Local money lenders are the main non-institutional sources who charge exorbitant rates of interest and adopt harsh ways to recover borrowed amount. Farmers prefer to borrow normally from institutional sources but they approach non-institutional sources only when they are denied loans from institutional sources for various reasons. Hence the government must implement stringent laws on informal lending through fixing a cap on the interest rates equivalent to the institutional lending rates with sufficient monitoring.

Release of loans in phased manner is needed. Thereby proper utilization of funds can be ensured. Releasing of funds at one stretch (usually done in Kisan Credit Card) may result in diversion of the borrowed amount to other activities rather than cultivation. Monitoring of funds thus released is required to ensure proper utilization.

Government may consider extending institutional credit without collateral security of property for tenant farmers as well.

The compensation was extended only to farmers who own land/lease in land (on record) and have availed credit from institutional sources against land record. But the present study reveals that a majority of the farmers borrow from non-institutional sources as they are denied loans by institutional sources due to various problems pertaining to land records. Thus, the victims who borrow from such sources can be considered for compensation if the reason for suicide happens to be farming related and may also be covered under the ambit of crop insurance.

Though the study had not made an attempt to obtain the data on MSP received, a fair majority of the victim households, at aggregate level, have mentioned that MSP does not cover cost of production. This needs to be considered by CACP. CACP may review the methodology for arriving at MSP considering explicit and implicit costs along with reasonable profit margin. This was suggested by 84 per cent of the Telangana victim HHs and 100 per cent victim HHs of Andhra Pradesh.

The condition of the victim households was seen to be worsening after the suicide event involving the main family member. Hence certain institutional mechanism for post suicide welfare of the family is required.

The victim families should be given preference in availing benefits of various developmental schemes at least for a period of five years. Such schemes may also include social welfare schemes of State and Central Government.

NGOs, religious institutions and agriculture department should also be involved in providing counselling to farmers to handle the distress situation through establishment of Farmer Welfare Cell and Help Desk Services.

Maximum number of suicides occur during kharif season and mainly among highly indebted farmers, therefore help lines may be established based on the information on crop failure and extent of indebtedness. The helpline may act as immediate relief providers for the distressed through helping them in sourcing finance to meet the immediate needs.

Programmes aimed at addressing the health issues of marginal, small and medium rural households should be launched. One such scheme in operation was launched by Government of Andhra

Pradesh (Aroggyasree). This programme helped the rural households to overcome their health issues. This may be taken up on priority basis in Madhya Pradesh, Chhattisgarh and Gujarat as 46 per cent, 44 per cent and 27 per cent of the households, respectively indicated illness as a cause for suicide in these states.

The study noticed that around 58 per cent of the victim HHs were BPL families. Field evidence shows that food grains supplied is insufficient. Hence, the quantum of food grains supplied to BPL card holders needs to be at least doubled to ensure food and nutrition security for the victim households.

Higher incidence of suicides among BPL, AAY card holders and among OBC category necessitates special focus on strengthening their weakness to cope with distress conditions. Special counseling to women farmers in Telangana may be done since the state has witnessed highest number of women farmer suicides.

Higher number of farmer suicides was reported in resource rich districts of Karnataka, whereas the resource poor (drought prone) districts exhibited relatively lesser number of suicides. This might be due to the ability of farmers in resource poor regions to cope up with the distress and their awareness of alternate choices. On the contrary, farmers from resource rich areas are left with fewer options to take up. For instance, in command areas, main crops were paddy and sugarcane and during water crisis, they hardly have any other option to sustain the crop since techniques like drip irrigation and mulching are not viable options. Hence capacity building on coping strategies should be given to resource rich regions as well.

Suggestions that can be Implemented over a Span of Time

Regulating the informal credit market through licensing and fixing the norms for charging interest rate and terms of lending is required. There is a need to create indemnity to non-institutional borrowers. Radhakrishna Committee recommendations (2007) regarding rural informal credit market be implemented, which underlines the need for mitigating the burden of farmers' indebtedness to money lenders. It recommends a one-time measure of providing long-term loans by banks to farmers to enable them to repay their debts to the money lenders. Further, it recommends that Panchayat Raj Institutions (PRIs), civil society

organizations like farmers' collectives and Non-Governmental Organizations (NGOs) should be involved in arriving at negotiated settlements with the Money lenders.

• Most of the victims HHs were not seen practicing crop and enterprise diversification. Risk hedging through crop and enterprise diversification should be encouraged to reduce farmers' distress aiming at sustainable income.

• Establishment of farmers' Welfare Fund / Farmers' Welfare Department in every state is the need of the hour to meet social consumption needs of farmers. The Central and State Government should contribute to this fund. NABARD can also be roped into this scheme for fund contribution. This has been suggested by Deshpande and Arora (2010), Bhende and Thippaiah (2010) and Radhakrishna Report (2007) as well.

• Prime Ministers Rehabilitation Package may be reintroduced in the suicide prone states by plugging the loopholes mentioned in the study by Bhende and Thippaiah (2010). The various components of the package may aid the distress farmer to cope with the predicament.

• Farmers may include various effective water saving techniques in cultivation like drip irrigation and protective cultivation as lack of water was mentioned by victim HHs in most of the sample states.

• Most of the Cooperative banks of eastern region of Uttar Pradesh are bankrupt at present and are not functioning. Hence, there is a need for its financial revival to eliminate the illegal money lenders from remote rural areas. In this context, NABARD may provide the financial help to cooperative banks.

• Fodder shortage was one of the issues of concern in Maharashtra. Most of the farmers were compelled to sell their animals at low prices due to non-availability of fodder, thereby, discontinuing livestock farming. Such a situation should not arise and there must be enough fodder camps so that livestock farming is continued.

• It is also suggested that rural non-farm employment programme under MNREGS must be enhanced.

• There should be a Compassionate Distress Consulting Officer at the Department of Agriculture heading a special cell. This cell may be assigned with the responsibility of counseling and financing the small ventures in the villages. This may be integrated with the employment generating departments and agencies across states and nation as a whole. It should encourage the farmers to start dairy, poultry, fishery and other livestock activities.

• At aggregate level, 17 per cent of 528 victim households mentioned illness as cause of suicide. The discussion with victim households of Madhya Pradesh amply highlighted the lack of access to mental health services in rural areas. Hence, Primary health care and

support system to vulnerable farmers must be strengthened so that illness does not serve as a trigger factor to an already indebted farmer. Without exception, the victim households of all the states were honest enough to accept that victims were alcohol addicts. Therefore, rehabilitation centre for drug abuse and alcohol addiction should be established.

• Health insurance programme for the farmers be enhanced not only covering the Government Hospitals but should also include the private hospitals. A scheme like Employees State Insurance (for industrial workers), called "Farmers' State Insurance Scheme (FSIS)" that will enable the farmer to seek medical treatment from the ESI hospitals may go a long way (suggested by Deshpande and Arora, 2010).

Suggestions that can be implemented in long run

Failure of rain, attack of pest and disease leads to crop loss. This was reported as one of the causes for farmer suicides across states. Prominent states among them are: Maharashtra, Punjab, Haryana and West Bengal. Hence, there is a need to install automated weather stations so that farmers are alerted on natural calamities and can take precautionary measures. The Government of Maharashtra launched the Crop Pest Surveillance Project (CROPSAP) during 2009-10. Though the scheme was not a huge success, further refinement and proper measures in implementation can aid the farmers in suicide prone states.

Another important request of victim households was to improve the access to market within their reach. For instance, cotton is purchased at a few agricultural market centres rather than at affordable distance by Cotton Corporation of India (CCI).

Construction of large tanks, watersheds, de-siltation of community tanks and completion of irrigation projects has to be given top priority so as to ensure water availability.

COMMODITY REVIEWS

Foodgrains

During the month of December,2017 the Wholesale Price Index (Base 2011-12=100) of pulses decreased by 3.52%, cereals decreased by 0.07% & foodgrains decreased by 0.64% respectively over the previous month.

ALL INDIA INDEX NUMBER OF WHOLESALE PRICES

(Base Year 2011-2012=100)

Commodity	Weight (%)	WPI for the Month of December 2017	WPI for the Month of November 2017	WPI A year ago	Percentage change during	
					A month	A year
1	2	3	4	5	6	7
Paddy	1.43	148.8	149.2	145.1	0.54	2.55
Wheat	1.028	139.4	139.4	140.8	0.00	-0.99
Jowar	0.067	121.3	118.5	121.9	2.36	-0.49
Bajra	0.086	133.9	130.2	148.1	2.84	-9.59
Maize	0.189	117.9	119.1	138.6	-1.01	-14.94
Barley	0.014	142.9	140.4	153.6	1.78	-6.97
Ragi	0.007	217.6	217.3	178.1	0.14	22.18
Cereals	2.824	142.3	142.4	142.7	-0.07	-0.28
Pulses	0.639	134.2	138.4	210.6	-3.52	-36.28
Foodgrains	3.465	140.8	141.7	155.2	-0.64	-9.28

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

The following Table indicates the State wise trend of Wholesale Prices of Cereals during the month of December, 2017.

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Rice	Mixed	West Bengal	Gujarat	A.P.	Assam
		Karnataka	U P	Jharkhand	
		Orissa		Kerala	
Wheat	Rising	Delhi	U.P.	Punjab	Jharkhand
		West Bengal			Karnataka
		Gujarat	Rajasthan		
		M.P.			
Jowar	Rising	U.P.		Gujarat	
		Tamil nadu	Karnataka	Maharashtra	
		Delhi	Rajasthan		
		A.P.			
Bajra	Falling		A.P.	Maharashtra	Delhi
			Rajasthan		

Commodity	Main Trend	Rising	Falling	Mixed	Steady
		Gujarat	U.P.		
		Karnataka	Tamil nadu		
Maize	Falling	Haryana	U.P.		Gujarat
		Karnataka	M.P.		
			Punjab		
			Rajasthan		

Procurement of Rice

The total procurement of rice in the current marketing season i.e 2017-2018, up to 29.12.2017 stood at 23.93 million tonnes, as against 21.28 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 2017-18 (upto 29.12.2017)		Corresponding Period of last Year 2016-17		Marketing Year (October-September) 2016-17		2015-16	
	Procurement	%age to Total	Procurement	%age to Total	Procurement	%age to Total	Procurement	%age to Total
1	2	3	4	5	6	7	8	9
Andhra Pradesh	1198	5.01	828	3.46	3725	9.78	4326	12.65
Chhatisgarh	2336	9.76	2803	11.71	4022	10.56	3442	10.06
Haryana	3966	16.57	3570	14.91	3583	9.40	2861	8.36
Maharashtra	84	0.35	101	0.42	309	0.82	230	0.67
Punjab	11832	49.43	11044	46.14	11052	29.00	9350	27.33
Tamil Nadu	0	0.00	8	0.03	144	0.38	1191	3.48
Uttar Pradesh	1776	7.42	544	2.27	2354	6.18	2910	8.50
Uttarakhand	32	0.13	299	1.25	706	1.85	598	1.75
Others	2712	11.33	95	0.40	12210	32.04	9301	27.19
Total	23936	100.00	21282	100.00	38105	100.00	34209	100.00

Source: Department of Food & Public Distribution.

Procurement of Wheat

The total procurement of wheat in the current marketing season i.e 2017-2018 up to 31st August, 2017 is 30.83 million tonnes against a total of 22.96 million tonnes of wheat procured during last year. The details are given in the following table:

Procurement of Wheat

State	Marketing Season 2017-18 (upto 31.08.2017)		Corresponding Period of last Year 2016-17		Marketing Year 2016-17		(April-March) 2015-16	
	Procurement	%age to Total	Procurement	%age to Total	Procurement	%age to Total	Procurement	%age to Total
1	2	3	4	5	6	7	8	9
Haryana	7432	24.11	6752	29.41	6722	29.32	6778	24.13
Madhya Pradesh	6725	21.82	3992	17.39	3990	17.40	7309	26.02
Punjab	11706	37.98	10649	46.38	10645	46.42	10344	36.83
Rajasthan	1245	4.04	762	3.32	762	3.32	1300	4.63
Uttar Pradesh	3699	12.00	797	3.47	802	3.50	2267	8.07
Others	18	0.06	10	0.04	9	0.04	90	0.32
Total	30825	100.00	22962	100.00	22930	100.00	28088	100.00

Source: Department of Food & Public Distribution.

Commercial Crops

Oil Seeds: The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 129.2 in December, 2017 showing an increase of 1.7% and a decrease of 38.7% over the previous month and year respectively. The WPI of copra (coconut) increased by 7.5%, cotton seed by 2.4%, gingelly seed by 6.6%, rape & mustard seed by 1.9% sunflower by 1.0% and soyabean by 2.5% over the previous month. wpi of niger seed decreased by 1.2%, safflower (kardi seed) by 1.8% and groundnut seed by 2.7% over the previous month.

Manufacture of Vegetable and Animal Oils and Fats: The WPI of manufacture of vegetable and animal oils and fats as a group stood at 111.2 in December, 2017 showing an increase of 1.0% and 1.0% over the previous month and year respectively. The WPI of copra oil increased by 4.0%, mustard oil by 1.3%, sunflower oil by 1.3%, groundnut oil by 1.2%, cotton seed oil by 2.4%, rapeseed oil by 0.1% and soyabean oil by 0.3% over the previous month.

Fruits & Vegetable: The WPI of fruits & vegetable as a group stood at 162.2 in December, 2017 showing a decrease of 14.1% and 26% over the previous month and year respectively.

Potato: The WPI of potato stood at 117.7 in December, 2017 showing a decrease of 1.6% over the previous month and a decrease of 39.2% over the previous year.

Onion: The WPI of onion stood at 363 in December, 2017 showing an increase of 8.2% and 41.4% over the previous month and year respectively.

Condiments & Spices: The WPI of condiments & spices (group) stood at 128.2 in December, 2017 showing an increase of 1.5% over the previous month and a decrease of 63.5% over the year. The WPI of chillies (dry) increased by 2.4% over the previous month. The WPI of black pepper increased by 2.3% and turmeric decreased by 0.3% over the previous month.

Raw Cotton: The WPI of raw cotton stood at 107.6 in December, 2017 showing an increase of 5.8% over the previous month and a decrease of 50.8% over the year.

Raw Jute: The WPI of raw jute stood at 154.4 in December, 2017 showing an increase of 1.3% and a decrease of 61.7% over the previous month and year respectively.

Wholesale Price Index of Commercial Crops for The Month of December, 2017

Commodity	Latest	Month	Year	% Variation Over	
	Dec, 2017	Nov, 2017	Dec, 2016	Month	Year
Oil Seeds	129.2	127.1	210.6	1.7	-38.7
Groundnut Seed	113.8	117.0	249.3	-2.7	-54.4
Rape & Mustard Seed	138.2	135.6	234.8	1.9	-41.1
Cotton Seed	144.8	141.4	229.2	2.4	-36.8
Copra (Coconut)	210.1	195.4	130.1	7.5	61.5
Gingelly Seed (Sesamum)	128.3	120.4	317.9	6.6	-59.6
Niger Seed	203	205.5	317.6	-1.2	-36.1
Safflower (Kardi Seed)	133.2	135.6	160.2	-1.8	-16.9
Sunflower	100.2	99.2	163.8	1.0	-38.8
Soyabean	125.3	122.2	175.4	2.5	-28.6
Manufacture Of Veg And Animal Oils & Fats	111.2	110.1	110.1	1.0	1.0
Mustard Oil	120.9	119.4	127.6	1.3	-5.3
Soyabean Oil	105.9	105.6	161.5	0.3	-34.4
Sunflower Oil	104.1	102.8	133.9	1.3	-22.3
Groundnut Oil	105.9	104.6	213.5	1.2	-50.4
Rapeseed Oil	111.7	111.6	117.4	0.1	-4.9
Copra Oil	178.1	171.3	141.0	4.0	26.3
Cotton Seed Oil	102.4	100.0	205.3	2.4	-50.1
Fruits & Vegetables	162.2	188.8	219.2	-14.1	-26.0
Potato	117.7	119.6	193.7	-1.6	-39.2
Onion	363	335.5	256.8	8.2	41.4
Condiments & Spices	128.2	126.3	351.5	1.5	-63.5
Black Pepper	154.4	150.9	731.3	2.3	-78.9
Chillies(Dry)	116.7	114.0	396.0	2.4	-70.5
Turmeric	128.3	128.7	242.9	-0.3	-47.2
Raw Cotton	107.6	101.7	218.5	5.8	-50.8
Raw Jute	154.4	152.4	403.5	1.3	-61.7

Statistical Tables

Wages

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

(In Rs.)

State	District	Centre	Moth & Year	Daily Normal Working Hours	Field Labour		Other Agri. Labour		Herdsman		Skilled Labour		
											Carpenter	Black Smith	Cobbler
					M	W	M	W	M	W	M	M	M
Andhra Pradesh	Krishna	Ghantasala	Oct, 17	8	NA	200	500	NA	250	NA	500	400	NA
	Guntur	Tadikonda	Oct, 17	8	300	275	325	NA	275	NA	NA	NA	NA
Telangana	Ranga Reddy	Arutala	Oct, 17	8	600	250	400	NA	NA	NA	500	500	NA
Karnataka	Bangalore	Harisandra	Sep, 17	8	360	340	400	350	400	300	600	450	NA
	Tumkur	Gidlahali	Sep,17	8	250	200	250	200	250	NA	300	280	NA
Maharashtra	Nagpur	Mauda	Sep, 14	8	100	80	NA	NA	NA	NA	NA	NA	NA
	Ahmednagar	Akole	Sep, 14	8	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jharkhand	Ranchi	Gaitalsood	June, 17	8	229	229	229	229	229	229	317	317	NA

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

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily WorkingHours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Assam	Barpeta	Laharapara	Apr, 17	M	8	250	250	250	250	250	250	350	250	350
				W	8	NA	NA	200	200	200	NA	NA	NA	NA
Bihar	Muzaffarpur	Bhalui Rasul	June, 17	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Shekhpura	Kutaut	June, 17	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chhattisgarh	Dhamtari	Sihava	Oct, 17	M	8	NA	170	NA	170	150	175	300	200	200
				W	8	NA	150	NA	150	130	NA	NA	100	NA
Gujarat*	Rajkot	Rajkot	Oct,17	M	8	248	254	235	223	203	197	488	475	463
				W	8	NA	200	229	216	197	178	NA	NA	NA
	Dahod	Dahod	Oct,17	M	8	293	293	164	164	164	NA	371	321	286
				W	8	NA	250	164	164	164	NA	NA	NA	NA

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

State	District	Centre	Month & Year	Type of Labour	Normal Daily WorkingHours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Haryana	Panipat	Ugarakheri	Oct, 17	M	8	400	400	NA	NA	400	NA	550	400	NA
				W	8	NA	300	NA	NA	300	NA	NA	NA	NA
Himachal Pradesh	Mandi	Mandi	June,16	M	8	NA	182	182	182	182	182	300	300	NA
				W	8	NA	182	182	182	182	182	NA	NA	NA
Kerala	Kozhikode	Koduvally	July, 17	M	4-8	945	NA	NA	785	735	NA	885	NA	NA
				W	4-8	NA	NA	585	585	585	NA	NA	NA	NA
	Palakkad	Elappally	July, 17	M	4-8	945	500	NA	500	500	NA	8	NA	NA
				W	4-8	NA	NA	300	300	300	NA	NA	NA	NA
Madhya Pradesh	Hoshangabad	Sangarkhera	Oct,17	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Satna	Kotar	Oct,17	M	8	200	200	200	200	200	200	300	300	300
				W	8	NA	200	200	200	200	200	NA	NA	NA
	Shyopurkala	Vijaypur	Oct,17	M	8	NA	300	300	300	NA	300	300	300	NA
					8	NA	300	300	300	NA	300	NA	NA	NA
Odisha	Bhadrak	Chandbali	Aug,17	M	8	300	300	300	350	310	200	450	400	350
				W	8	NA	250	250	250	260	200	NA	NA	NA
	Ganjam	Aska	Aug, 17	M	8	300	250	250	300	300	250	500	350	300
					8	NA	200	200	250	220	200	NA	NA	NA
Punjab	Ludhiyana	Pakhowal	Aug, 17	M	8	480	480	NA	NA	400	NA	480	480	NA
				W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan	Barmer	Kuseep	Oct, 17	M	8	400	400	NA	400	NA	500	700	500	NA
					8	NA	NA	NA	NA	NA	300	NA	300	NA
	Jalore	Sarnau	Oct, 17	M	8	NA	NA	NA	300	NA	NA	350	300	NA
				W	8	NA	NA	NA	300	NA	NA	NA	300	NA
Tamil Nadu*	Thanjavur	Pulvarnatham	Sep, 17	M	8	NA	354	NA	346	373	NA	475	338	350
					8	NA	NA	135	122	137	NA	NA	NA	NA
	Tirunelveli	Malayakulam	Sep, 17	M	8	NA	275	350	213	383	NA	NA	NA	NA
					8	NA	187	162	NA	NA	NA	NA	NA	NA
Tripura	State Average		Oct, 17	M	8	361	323	311	317	304	306	359	324	275
				W	8	NA	256	256	252	253	280	NA	NA	NA

1.1 AVERAGE DAILY AGRICULTUREAL WAGES IN SOME STATES (OPERATION-WISE)-*CONCLD.*

(In Rs.)

State	District	Centre	Month & Year	Type of Labour	Normal Daily WorkingHours	Ploughing	Sowing	Weeding	Harvesting	Other Agri Labour	Herdsman	Skilled Labours		
												Carpenter	Black Smith	Cobbler
Uttar Pradesh*	Meerut	Ganeshpur	Sep, 17	M	8	300	283	262	250	262	NA	450	NA	NA
				W	8	NA	266	225	200	225	NA	NA	NA	NA
	Aurraiya	Aurraiya	Sep,17	M	8	170	175	185	307	171	NA	500	NA	.NA
				W	8	NA	NA	185	307	171	NA	NA	NA	NA
	Chandauli	Chandauli	Sep,17	M	8	200	200	NA	NA	200	NA	400	NA	NA
				W	8	NA	200	200	NA	200	NA	NA	NA	NA

M - Man
W - Woman
NA - Not Available
NR – Not Reported
* States reported district average daily wages

Prices

2. Month end Wholesale Prices of Certain Agricultural Commodities and Animal Husbandry Products at Selected Centres in India

Commodity	Variety	Unit	State	Centre	Dec-17	Nov-17	Dec-16
Wheat	PBW 343	Quintal	Punjab	Amritsar	1680	1750	1800
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1655	1650	1840
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1630	1650	1950
Jowar	-	Quintal	Maharashtra	Mumbai	2300	2200	2400
Gram	No III	Quintal	Madhya Pradesh	Sehore	3630	4250	8460
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1375	1320	1375
Gram Split	-	Quintal	Bihar	Patna	7000	7130	13000
Gram Split	-	Quintal	Maharashtra	Mumbai	5900	6300	12150
Arhar Split	-	Quintal	Bihar	Patna	7000	7400	10000
Arhar Split	-	Quintal	Maharashtra	Mumbai	6000	5500	7500
Arhar Split	-	Quintal	NCT of Delhi	Delhi	5150	5250	8300
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	5700	5500	9400
Gur	-	Quintal	Maharashtra	Mumbai	4100	4500	3850
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	5400	5400	4600
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2500	3000	2450
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3700	3625	4250
Mustard Seed	Black	Quintal	West Bengal	Raniganj	4200	4000	4500
Mustard Seed	-	Quintal	West Bengal	Kolkata	4250	4100	4750
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4600	4500	6050
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	4500	4350	4780
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1700	2200	2200
Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	2580	2580	2750
Castor Seed	-	Quintal	Telangana	Hyderabad	4250	3850	3200
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	6580	6150	8290
Copra	FAQ	Quintal	Kerala	Alleppey	13400	12800	7450
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	5200	5200	5500
Groundnut	-	Quintal	Maharashtra	Mumbai	5350	5600	6800
Mustard Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1330	1325	1425
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1377	1460	1565
Groundnut Oil	-	15 Kg.	Maharashtra	Mumbai	1460	1350	1500
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1740	1720	1950

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

Commodity	Variety	Unit	State	Centre	Dec-17	Nov-17	Dec-16
Linseed Oil	-	15 Kg.	Uttar Pradesh	Kanpur	1425	1425	1523
Castor Oil	-	15 Kg.	Telangana	Hyderabad	1425	1335	1118
Sesamum Oil	-	15 Kg.	NCT of Delhi	Delhi	1550	1565	1500
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2100	2100	2220
Coconut Oil	-	15 Kg.	Kerala	Cochin	2940	2730	1635
Mustard Cake	-	Quintal	Uttar Pradesh	Kanpur	1830	1825	2375
Groundnut Cake	-	Quintal	Telangana	Hyderabad	2571	2750	3357
Cotton/Kapas	NH 44	Quintal	Andhra Pradesh	Nandyal	5100	4300	5000
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	NA	4300	4556
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	3450	3500	3900
Jute Raw	W 5	Quintal	West Bengal	Kolkata	3500	3550	3900
Oranges	-	100 No	NCT of Delhi	Delhi	667	708	542
Oranges	Big	100 No	Tamil Nadu	Chennai	NA	NA	450
Banana	-	100 No.	NCT of Delhi	Delhi	550	550	350
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	650	670	498
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	100000	85000	76000
Almonds	-	Quintal	Maharashtra	Mumbai	72000	77500	70000
Walnuts	-	Quintal	Maharashtra	Mumbai	75000	80000	70000
Kishmish	-	Quintal	Maharashtra	Mumbai	17000	12500	11000
Peas Green	-	Quintal	Maharashtra	Mumbai	2800	2700	3400
Tomato	Ripe	Quintal	Uttar Pradesh	Kanpur	1120	3400	600
Ladyfinger	-	Quintal	Tamil Nadu	Chennai	2350	1400	1500
Cauliflower	-	100 No.	Tamil Nadu	Chennai	2700	3000	1600
Potato	Red	Quintal	Bihar	Patna	1000	700	1300
Potato	Desi	Quintal	West Bengal	Kolkata	650	630	650
Potato	Sort I	Quintal	Tamil Nadu	Mettuppalayam	2150	2140	1600
Onion	Pole	Quintal	Maharashtra	Nashik	2800	3000	550
Turmeric	Nadan	Quintal	Kerala	Cochin	14500	14500	15500
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	11300	11200	8200
Chillies	-	Quintal	Bihar	Patna	11200	11500	8000

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

Commodity	Variety	Unit	State	Centre	Dec-17	Nov-17	Dec-16
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	44000	38000	62000
Ginger	Dry	Quintal	Kerala	Cochin	13000	13000	16000
Cardamom	Major	Quintal	NCT of Delhi	Delhi	115000	118800	125000
Cardamom	Small	Quintal	West Bengal	Kolkata	105000	105000	125000
Milk	Buffalo	100 Liters	West Bengal	Kolkata	5200	5200	3800
Ghee Deshi	Deshi No 1	Quintal	NCT of Delhi	Delhi	70035	70035	34684
Ghee Deshi	-	Quintal	Maharashtra	Mumbai	46000	46000	46000
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	39350	39500	36200
Fish	Rohu	Quintal	NCT of Delhi	Delhi	13000	12000	13000
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	35000	34000	35000
Eggs	Madras	1000 No.	West Bengal	Kolkata	4500	5400	4200
Tea	-	Quintal	Bihar	Patna	21300	21300	21200
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	38000	38000	34000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	24500	23000	26000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	14500	13000	17500
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	3850	3600	4625
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	2270	2350	3600
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	13800	13200	13400
Rubber	-	Quintal	Kerala	Kottayam	11600	11500	11500
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	53000	37000	32700

3. MONTH-END WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2017

Commodity	Variety	Country	Centre	Unit	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
CARDAMOM	Guatmala Bold Green	U.K.	-	Dollar/MT	9000	9000	17500	17500	17500	17500	17500	17500	17500	17500	17500	17500
				Rs./Qtl	61335	60219	113383	112105	112928	112560	113138	112000	114363	113750	113085	111825
CASHEW KERNELS	Spot U.K. 320s	U.K.	-	Dollar/MT	10613	10692	11206	11662	11816	11717	11883	11544	11973	11652	11834	11199
				Rs./Qtl	72324	71537	72602	74708	76251	75363	76826	73879	78245	75740	76471	71562
CASTOR OIL	Any Origin ex tank Rotterdam	Netherlands	-	Dollar/MT	1454	1498	1884	1859	1835	1835	1835	1790	1806	1806	1751	1746
				Rs./Qtl	9907	10026	12206	11909	11840	11801	11862	11456	11802	11738	11312	11158
CHILLIES	Birds eye 2005 crop	Africa	-	Dollar/MT	4100	4100	7500	7500	7500	6800	6800	6800	6800	5800	5800	5800
				Rs./Qtl	27942	27433	48593	48045	48398	43738	43962	43520	44438	37700	37480	37062
CLOVES	Singapore	Madagascar	-	Dollar/MT	7500	8400	8800	8800	8750	9500	9500	9850	8500	8000	8000	7900
				Rs./Qtl	51113	56204	57015	56373	56464	61104	61418	63040	55548	52000	51696	50481
COCONUT OIL	Crude Phillipine/ Indonesia, cif Rotterdam	Netherlands	-	Dollar/MT	1840	1590	1610	1600	2100	1810	1810	2005	1600	1405	1540	1450
				Rs./Qtl	12540	10639	10431	10250	13551	11642	11702	12832	10456	9133	9951	9266
COPRA	Phillipines cif Rotterdam	Phillipine	-	Dollar/MT	905	838	800	832	840	838	838	837	821	807	818	793
				Rs./Qtl	6168	5607	5183	5327	5421	5390	5418	5354	5362	5242	5283	5067
CORRIANDER		India	-	Dollar/MT	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650	1650
				Rs./Qtl	11245	11040	10690	10570	10647	10613	10667	10560	10783	10725	10662	10544
CUMMIN SEED		India	-	Dollar/MT	2500	2500	2900	3500	3500	2900	2900	3300	3300	3300	3300	3300
				Rs./Qtl	17038	16728	18789	22421	22586	18653	18749	21120	21566	21450	21325	21087
MAIZE		U.S.A.	Chicago	C/56 lbs	366	371	359	359	371	385	385	342	339	351	345	337
				Rs./Qtl	981	976	913	904	942	973	978	860	871	897	876	846
OATS		CANADA	Winnipeg	Dollar/MT	337	333	312	304	323	345	331	301	309	359	326	296
				Rs./Qtl	2295	2226	2021	1949	2085	2221	2141	1928	2019	2333	2104	1893
PALM KERNAL OIL	Crude Malaysia/ Indonesia, cif Rotterdam	Netherlands	-	Dollar/MT	1820	1330	1190	1080	1200	1075	1075	1255	1350	1495	1470	1250
				Rs./Qtl	12403	8899	7710	6918	7744	6914	6950	8032	8822	9718	9499	7988
PALM OIL	Crude Malaysian/ Sumatra, cif Rotterdam	Netherlands	-	Dollar/MT	823	760	705	710	760	715	715	710	720	735	740	660
				Rs./Qtl	5605	5085	4568	4548	4904	4599	4622	4544	4705	4778	4782	4217
PEPPER (Black)	Sarawak Black lable	Malaysia	-	Dollar/MT	7900	7700	7700	7700	7200	6200	6200	5000	5000	5000	5000	5000
				Rs./Qtl	53839	51521	49888	49326	46462	39878	40083	32000	32675	32500	32310	31950
RAPESEED	Canola	CANADA	Winnipeg	Can Dollar/ MT	522	518	494	530	524	510	510	505	493	506	513	490
				Rs./Qtl	2720	2635	2400	2493	2510	2430	2546	2584	2585	2555	2605	2492
	UK delivered rapeseed, delivered Erith(buyer)	U.K.	-	Pound/MT	330	334	336	328	290	295	295	310	293	303	305	285
				Rs./Qtl	2833	2783	2717	2709	2395	2417	2464	2548	2566	2583	2625	2458
RAPESEED OIL	Refined bleached and deodorised ex-tanks,broker price	U.K.	-	Pound/MT	827	765	763	738	742	725	725	766	723	738	791	740
				Rs./Qtl	7099	6375	6169	6096	6127	5939	6054	6295	6331	6291	6808	6381
SOYABEAN MEAL	UK produced 49% oil & protein ('hi-pro') ex-mill seaforth UK bulk	U.K.	-	Pound/MT	325	329	310	310	271	284	284	278	285	291	285	291
				Rs./Qtl	2790	2742	2506	2561	2238	2327	2372	2285	2496	2480	2453	2509
		U.S.A.	-	C/lbs	35	33	32	32	32	31	31	34	35	33	34	33
				Rs./Qtl	5238	4825	4599	4505	4591	4446	4468	4796	5041	4728	4842	4648
SOYABEAN OIL	Refined bleached and deodorised ex-tanks,broker price	U.K.	-	Pound/MT	807	709	750	682	680	696	696	728	734	705	705	694
				Rs./Qtl	6927	5908	6064	5633	5615	5702	5812	5983	6428	6009	6068	5984

3. MONTH-END WHOLESALE PRICES OF SOME IMPORTANT AGRICULTURAL COMMODITIES IN INTERNATIONAL MARKETS DURING YEAR 2017-*CONCLD.*

Commodity	Variety	Country	Centre	Unit	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SOYABEANS		U.S.A.	-	C/60 lbs	1055	1023	969	946	948	931	931	936	953	976	964	946
				Rs./Qtl	2639	2511	2304	2223	2246	2197	2208	2198	2286	2328	2286	2218
	US NO.2 yellow	Netherlands	Chicago	Dollar/MT	426	426	0	386	387	381	381	393	393	395	386	386
				Rs./Qtl	2900	2841	0	2474	2498	2449	2461	2513	2571	2569	2491	2486
SUNFLOWER SEED OIL	Refined bleached and deodorised ex-tanks,broker price	U.K.	-	Pound/MT	796	786	791	766	760	756	756	793	747	746	753	753
				Rs./Qtl	6833	6550	6395	6327	6276	6193	6313	6517	6541	6359	6481	6493
Wheat		U.S.A.	Chicago	C/60 lbs	425	441	426	408	433	445	445	409	421	436	423	392
				Rs./Qtl	1062	1084	1012	959	1024	1050	1055	961	1010	1040	1003	919

Source - Public Ledger

FOREIGN EXCHANAE RATES

Currency	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
CanDollar	52.06	50.83	48.6	47.01	47.93	47.7	49.98	51.2	52.46	50.53	50.81	50.91
UKPound	85.84	83.33	80.85	82.6	82.58	81.92	83.51	82.18	87.57	85.24	86.07	86.23
USDollar	68.15	66.91	64.79	64.06	64.53	64.32	64.65	64	65.35	65	64.62	63.9

Crop Production

SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING MARCH, 2018

State	Sowing	Harvesting
(1)	(2)	(3)
Andhra Pradesh	Summer	Winter rice, Summer rice, Jowar (R), Maize (R), Ragi (R), Wheat, Barley, Small Millets (R), Gram, Tur (K) other Kharif Pulses Urad (R), Mung (R), Other Rabi Pulses, Sugarcane, Chilies (Dry), Castorseed, Linseed, Cotton, Turneric, Onion (2nd crop), Tapioca
Assam	Small Millets (R), Summer Potato (Hills), Sugarcane, jute, Mesta	Wheat Gram,Tur(K), Urad (R), Tobacco, Rapeseed and Mustard, Linseed
Bihar	Jute	Wheat, Barley, Gram, Tur(K), Winter Patato (Plains), Sugarcane, Rapeseed and Mustard, Linseed Wheat, Barley, Gram, Tur (K), Winter Potato.
Gujarat	Sugarcane	Sugarcane, Chillies (Dry), Castorseed, Rapeseed and Mustard, Cotton, Onion
Himachal Pradesh	Sugarcane, Cotton	Rapeseed and Mustard, Linseed Winter Rice, Jowar (R), Wheat, Gram, Urad (R), Mung (R), Winter Potato (Plains), Summer Potato
Karnataka	Sugarcane	(Plains), Sugarcane, Linseed, Cotton, Turmeric, Cardiseed, Onion
Kerala	Sugarcane, Sesamum (1st crop), Tapioca (2nd crop)	Summer Rice, Sesamum (3rd crop), Cotton, Sweet Potato Jowar (R), Wheat, Barley Small Millets (R), Gram, Tur, Urad (R), Mung (R), Other Rabi
Madhya Pradesh	Sugarcane	Pulses, Winter Potato, Sugarcane, Chillies (Dry), Tobacco, Castorseed, Rapeseed & Mustard, Linseed, sannhemp Cardiseed, Onion Jowar (R), Maize (r), Wheat Barley, Gram, Tur (K), Other Rabi Pulses, Chillies (Dry), Tobacco, Catorssed,
Maharashtra	Sugarcane	Rapeseed and Mustard, Linseed, Cotton, Cardiseed, Onion,
Manipur	Maize, Jute	Wheat, Gram, Castorseed, Rapeseed and Mustard, Linseed,
Orissa	Sugarcane	Bajra, Ragi, Wheat, Barley, Urad (R), Mung (R), Rapeseed and Mustard,

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

State	Sowing	Harvesting
(1)	(2)	(3)
Punjab and Haryana	Winter Potato (Hills), Summer Potato (Hills), Sugarcane, Ginger, Chillies (Dry), Tobacco, Turmeric, Onion	Gram, Tur(K), Summer Potato, Sugarcane, Castorseed, Rapeseed and Mustard, Linseed, Turmeric
Rajasthan	Small Millets (R), Sugarcane	Wheat, Barley, Gram, Tur (K), Urad (R), Mung (R), Other Rabi Pulses, winter Potato (Plains), Castorseed, Rapeseed and Mustard, Linseed
Tamil Nadu	Summer Rice, Jowar (R), Sugarcane, Groundnut (Early), Sesamum, Onion	Winter Rice, Jowar (R), Bajra, Ragi, Small Millets (K), Mung (K), Other Rabi Pulses (Kulthi), Winter Potato, Sugarcane, Tobacco, Castorseed, Sesamum (Late), Cotton, Onion
Tripura	Autumn Rice, Sugarcane, Sesamum, Cotton Jute	Summer Rice, Urad (R), Mung (R), Other Rabi Pulses, Winter Potato (Plains), Sugarcane, Chillies (Dry), Rapeseed and Mustard, Wheat Barley, Small Millets (R) Gram, Tur (K),
Uttar Pradesh	Small Millets(R), Sugarcane, Ginger, Jute, Mesta, Tapioca	Winter Potato (Hills), Ginger, Tobacco, Casterseed, Rapeseed and Mustard, Linseed, Sweet Potato, Onion, Tapioca Wheat, Barlery, Gram, Tur (K), Urad (R), Other Rabi
West Bengal	Autumn Rice, Sugarcane, Ginger, Sesamum, Jute	Pulses, Winter Potato (Plains, Sugarcane, Ginger, Tobacco, Sesamum, Rapeseed and Mustard, Chillies (Dry)
Delhi	Sugarcane, Tobacco, Jute	Barley, Gram, Sugarcane, Tobacco

(K)--Kharif (R)--- Rabi