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CONTENTS

EDITORIAL

Prediction of a below average monsoon signals a difficult year ahead for the economy in general and agriculture sector in particular. Any shortfall in average rainfall will hit crop production in almost half the country's farm land which are not irrigated. The lending and recovery performance of Agriculture & Rural Development Banks are also highly sensitive to farm incomes. ARDBs which are already struggling to come out of a long spell of financial weaknesses and business stagnation, needs to take adequate measures before hand to avoid new set-backs to business even if this year's weather prediction comes true. Average loan recovery of ARDBs which are fully functional is only about 50%. Poor loan recovery by these banks cannot be attributed solely to factors beyond the control of banks like fluctuations in weather, markets and govt policies. The extent of impact of such factors on loan recovery is estimated not to go beyond 10-15% of demand. Banks with uncollected demand much more than this level, therefore, can substantially improve their position if internal issues in recovery are addressed. Foremost of such issues is inadequate knowledge about the borrower and the reasons for default in each case of non repayment. Borrower appraisal done at the time of issuing the loan a few years back is no longer relevant now in most of the cases. Banks need to update the borrower profile periodically. This happens in the normal course in case of borrowers who are given short term loans or sanctioned cash credit limit. In other cases updating the borrower profile with reasons for loan default should be carried out by the field officer. Once the reasons for default are known, banks should take measures relevant and appropriate to each case. For instance, default of a couple of monthly/quarterly instalments due to genuine financial difficulties should be tackled differently from a case of wilful default. It could be by ensuring its collection along with current dues in the next cycle of demand or by rescheduling such instalments over the remaining period of loan if the borrower does not have sufficient income to pay past dues along with current dues even after his income stream and financial position becomes normal. It is necessary to change the present repayment system of ARDBs to suit the convenience of the borrower. The practice of demanding the entire amount repayable during a year in lumpsum which is still followed by many ARDBs, helps neither the borrower nor the bank. Studies show that on the average about half of the income of farming households comes from non

farming activities. Banks should spread out its repayment demand throughout the year based on the accrual pattern of the total income of the borrower instead of linking only to the income from the project/purpose financed. ARDBs are also financing a large number of non farm sector units in rural and semi urban areas for agriculture processing, small businesses, trading etc. Non farm sector business invairably requires short term loans also for meeting incremental working capital needs to ensure full scale operations and timely repayment of loan. Similarly, banks should make arrangements for daily collection towards repayment from small businesses and trading units in which cash accruals take place continuously. While paying a small amount from daily turnover is not difficult for such units, chances of default could be high if they are asked to make lumpsum payments at monthly or quarterly intervals. Encouraging opening of thrift deposit accounts to aggregate routine savings and surpluses of borrowers will also help to improve loan repayment.

Strictly pursuing legal recovery measures in the case of wilful defaulters probably is the most important step to be taken by ARDBs to maintain high recovery levels. A borrower who fails to make even partial payment against monthly/quarterly instalments continuously for more than a year without giving an acceptable reason for the same should be considered as a wilful defaulter. Wilfull default, if not dealt with legally will vitiate the climate of recovery and set a trend of abnormal growth in the number of such defaulters year after year. In fact, because of their failure to intiate timely legal recovery steps, many banks are facing a situation of unmanageable increase in overdues even in years when crops are good. In some States in addition to the failure to deal with wilful defaulters strictly, ARDBs also do not charge interest on defaulted interest which acts as substantial financial incentive for delaying repayment as much as possible. Banks themselves have to be blamed for increasing default in loan repayment in such cases.

While rainfall and other external factors do impact loan recovery to a certain extent, ARDBs can certainly improve overall recovery performance if they take effective steps to recover overdue loans on account of shortcomings in lending and repayment systems and not taking timely action against wilful defaulters.

K. K. Ravindran
Managing Editor

Influence of abiotic environment on population dynamics of mustard aphid in tarai region of Uttarakhand

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Abstract

The present study was conducted at Crop Research Centre (CRC) of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, District Udham Singh Nagar, Uttarakhand to develop weather based model for outbreak of mustard aphid (*L. erysimi, kaltenbach*) in tarai region of Uttarakhand. The experiment was laid out in Randomized block design(RBD)with dates of sowing Nov.5, 2009 and Nov. 9, 2010 and eight varieties of mustard BSH-1, YST-151, *Euraca sativa* (Mill cv, T-27, Taramira) , *Brassica alba* (White mustard), *Brassica napus* (Gobhi sarson, sheetal), *Brassica carinata* (Ethiopian mustard), *Brassica juncea* (Indian mustard, Varuna) and *Brassica nigra* (Banarasi rai).

B. carinata was found to be more resistant variety and *B. alba*, BSH-1, YST-151 and Varuna were more susceptible to aphid attack. Test of significance of the regression model showed that maximum relative humidity plays a significant role in outbreak of aphid population after two weeks. Maximum temperature from 22.0 °C to 24.2 °C, a minimum temperature range between 4.6 °C to 9.4 °C, with maximum relative humidity of 86 to 97 % and minimum relative humidity between 47 and 68% and the wind speed 2.1 to 3.4 kmph without rain fall showed favourable weather conditions two weeks prior to onset of mustard aphid.

Introduction

Mustard cultivation is practiced widely throughout the world. It is basically a winter crop and it requires a temperate climate to prosper. In India the mustard crop is grown during the rabi season i.e. October to November. The crop starts flowering in the months of November to February. The harvesting period is from February to March. It needs a right proportion of rainfall which is provided by the monsoon during the sowing season of the crop. The mustard crop actually acts as a very good cover for soil in winters. Rapeseed and mustard yields the most important edible oil content from the seed. Though the oil content varies from 30 to 48%. In the case of white mustard, the oil content ranges from 25 to 33%. The oil obtained from mustard is the

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main cooking medium in Northern India and cannot be replaced by any other edible oil. The seed and oil are used as a condiments in the preparation of pickles and for flavouring curries and vegetables. The oilcake is mostly used as cattle feed. The leaves of young plants are used as a green vegetable. The use of mustard oil for industrial purposes is rather limited on account of its high cost. Oilseeds occupy an important place in agriculture and industrial economy. Among different insect pests attacking mustard, the mustard aphid (*Lipaphis erysimi Kaltenbach*) is the most serious and destructive pest and is a major limiting factor for its cultivation.

The rate of reproduction varies from 5 to 9 youngs in a single day by a single female and the total number of youngs produced by the female varies from 76 to 188. Abiotic factors viz., temperature, light, moisture etc. have a direct influence on insect distribution and development. Among these weather parameters, temperature plays an important role in determining the growth rate of insects. Wind and rain are having their importance not only for survival but also for disposal of insect population. The pest remains active throughout the growth period and has been observed feeding on foliage, inflorescence and pods. The incidence and spread of aphid is largely influenced by weather conditions. Hence, it was felt pertinent to assess the relative importance of weather variables in mustard aphid population dynamics. The nymphs and adults of aphids suck sap from leaves, stems, inflorescence and pods as the plant shows stunted growth, withered flower and deformed pod. This pest may reduce about 30 to 90% yield of mustard without any control measure (Rouf and Kabir, 1997). Weather conditions play the most favorable role for its rapid multiplication (Sinha et al., 1989; Rana et al., 1993; Singh and Malik, 1998). Aphid occurrence and severity of infestation have been reported to be inconsistent during different crop seasons.

Different authors observed different times of initiation of aphid infestation on *brassica*. Infestation is reported to start in the first week of January (Biswas and Das, 2000) second week of February (Aslam et al., 2002) depending on the location and the season. Similarly population peaks are also reported to occur at different times during the *brassica* growing seasons. Peak aphid population has been reported in second week of February (Singh and Lal, 1999: Biswas and Das, 2000), last week of February (Rohilla et al., 1996) and second week of March. The temperature range of 16.5 to 20.6°C seems to have favored the pest multiplication (Talpur and Khuhro, 2004). The mustard aphid, *Lipaphis erysimi* (Kaltenbach) is a serious pest of cruciferous crops in India.

Mateials and methods

The study was conducted at Crop Research Centre (CRC) of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, District Udham Singh Nagar, Uttarakhand. The Crop Research Centre is situated at 29°N latitude, 79.3°E longitude and 243.8 mt. above the mean sea level and lies in the narrow belt to the south from the foothills of Shiwalik range of Himalayas known as Tarai region.

Eight varieties of mustard BSH-1, YST-151, *Euraca sativa* (Mill cv, T-27, Taramira), *Brassica alba* (White mustard), *Brassica napus* (Gobhi sarson, sheetal), *Brassica carinata* (Ethiopian mustard), *Brassica juncea* (Indian mustard, Varuna) and *Brassica nigra* (Banarasi rai) were sown in Randomized Block Design (RBD) with three replications. Each *Brassica* species was treated as one treatment. Sowings were done on 5/11/2009 and 9/11/2010.

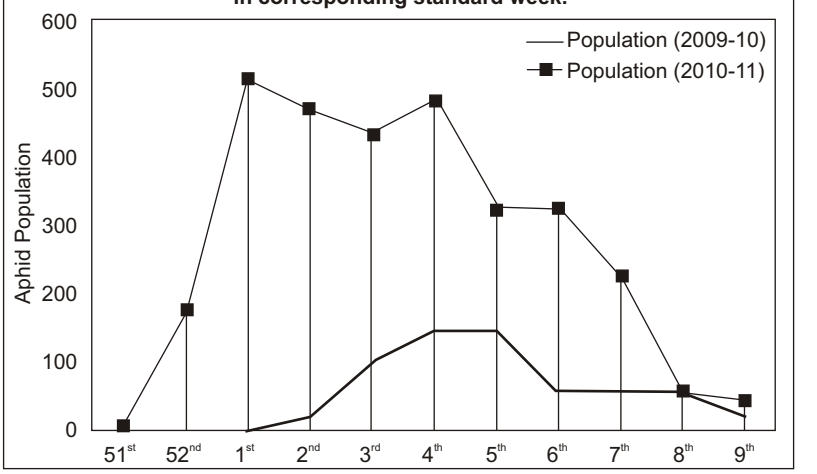
Observations

Observations were taken on ten plants selected randomly and tagged in each replication at weekly intervals. The number of aphids were counted on a 10 cm apical central shoot of inflorescence. The population of mustard aphid was estimated by counting the number of aphid (nymphs and adult). Canopy temperature and mean relative humidity were taken using Infra Red Thermometer and digital hygrometer respectively.

Relation of weather parameters with aphid population (pooled) during experimental years

The population of aphid during different meteorological weeks depicted in figure 1, which indicates that the aphid population appeared on mustard during 4th and 5th standard meteorological weeks during experimental year 2009-10 where as during year 2010-11, aphid appeared in 51st and 1st standard weeks. During the year 2009-10, maximum temperature showed a highly significant negative correlation (-0.813**) while

Figure 1: Aphid Population Trend during experimental year 2009-10 & 2010-11 in corresponding standard week.



minimum temperature showed positive correlation though non significant. The population of *L.erysimi* reached its peak (146.7 aphids) in 4th standard meteorological week when the maximum temperature was 15.7 °C while minimum was 6.4 °C. High relative humidity was found to be more favourable to the aphid population with 97% of maximum relative humidity. There after population started to decline gradually and it reached its lowest (21.6 aphids per 10 cm central shoot) when the maximum temperature was 24.0°C and minimum temperature of 8.0°C and maximum and minimum relative humidity of 87% and 38% respectively. During the year 2010-11, the population reached its peak when the temperature declined. The aphid population found to be its maximum (514.7 aphids) when the maximum temperature declined to 15.4 °C. Maximum and minimum temperature showed a negative significant correlation (-0.622*) and (-0.697*), respectively with population. The maximum relative humidity (95%) had positive correlation and minimum relative humidity (69%) showed a significant positive correlation (0.744*) with aphid population. As the temperature started rising, the aphids started disappearing from the shoots of mustard. The aphid population reached its lowest (41.3 aphids) when the maximum temperature was 23.5°C, minimum was 4.2°C with 91% and 32% maximum and minimum relative humidity respectively. The variations in population trend is because of the direct effect of weather variables. It is evident from the research, that aphids require 20.6 to 22.5°C maximum temperature, high maximum relative humidity (94 to 97%) and 51 to 69 % minimum relative humidity for incidence of *L.erysimi* on various *Brassica* species.

It was found that the weather conditions were same during 1st standard week in year 2009-10 and 51th, 52nd standard week during 2010-11. Temperature and relative humidity are key abiotic factor that regulates insect population dynamics, developmental rates, and seasonal occurrence. By computing population trends with meteorological records, its possible to know the occurrence of outbreaks in the area under study and would certainly help in formulating pest management strategies against *L. erysimi*.

The statistical model has been developed for mustard aphid based on weather parameters and results indicated that aphid population arrives on *B. alba* during 2nd standard week and requires the maximum temperature in between 16.5 to 25.0 °C, minimum temperature 7.5 to 8.5°C, maximum relative humidity 90 to 97%, minimum relative humidity 41 to 69 % and wind speed 2.1 to 4.8 kmph.

In *B. carinata,* model predicted that the first appearance of aphid occurs during 6th standard week where aphid requires maximum temperature 19.8 to 23.0 °C, minimum temperature 6.0 to 8.8 °C, maximum relative humidity 92 to 97%, minimum relative humidity 49 to 62 % and wind speed 5.4 to 6.3 kmph.

Model predicted that the aphid starts to appear on *B. napus* during 5th to 6th standard week when the maximum temperature was 20 to 22.5 °C, minimum temperature 8.1 to 13.1°C, maximum relative humidity 89 to 97%, minimum relative humidity 45 to 50% and wind speed 3.5 to 4.7 kmph.

Aphid population starts to appear on *B. nigra* during 52th to 2nd standard week, when maximum temperature 19.2 to 21.5°C, minimum temperature 7.2 to 9.4°C, maximum relative humidity 92 to 97 % minimum relative humidity 34 to 41 % and wind speed 1.8 to 2.5 kmph.

In BSH-1 model predicted that the first appearance of aphid occurs during 52nd to 2nd standard week where aphid requires maximum temperature 20.0 to 24.2 °C, minimum temperature 5.5 to 8.3°C, maximum relative humidity 90 to 97%, minimum relative humidity 32 to 55 % and wind speed 0.8 to 3.2 kmph.

On Taramira aphid starts to appear during 2nd standard week when the maximum temperature was 15.7 to 19.6 °C, minimum temperature 4.6 to 9.0 °C, maximum relative humidity 92 to 97%, minimum relative humidity 59 to 69 % and wind speed 2.1 to 4.3 kmph.

The model indicates that the aphid population arrives on Varuna during 1st and 2nd standard week when the maximum temperature in between 19.6 to 22.4 °C, minimum temperature 5.5 to 8.1 °C, maximum relative humidity 92 to 97%, and minimum relative humidity 51 to 69 %, wind speed 2.1 to 3.5 kmph.

The aphid population started to appear on YST-151 during 51st to 2nd standard week when maximum temperature 19.6 to 22.8°C, minimum temperature 5.7 to 9.0 °C, maximum relative humidity 92 to 97 % minimum relative humidity 51 to 69 % and wind speed 1.9 to 2.1 kmph.

It was observed from past data that aphid on mustard from last week of December to 2nd or 3rd week of January. Maximum temperature from 22.0 °C to 24.2 °C, minimum temperature range between 4.6 °C and 9.4 °C, with maximum relative humidity of 86 to 97 % and minimum relative humidity between 47 and 68 %. The wind speed 2.1 to 3.4 kmph without rain fall showed favourable weather conditions two weeks prior to onset of mustard. Test of significance indicates that minimum temperature; maximum relative humidity and wind speed plays an important role and significantly

affected the aphid population. The model predicts first arrival of population of *L. erysimi* two weeks prior by observing daily weather conditions. The weather conditions for the attack of aphid on mustard can easily be predicted two week before its arrival. In order to prevent losses from aphid attack on mustard, it can be suggested that early sowing of mustard is beneficial.

Scope of the study and Conclusion

The indiscriminate use of pesticides led to problems of pest resistance to chemicals, resurgence of pests and hazards to humans, animals and environment. The strategy of management rather than control by integrating ecologically compatible options widely known as Integrated Pest Management (IPM) is in vogue currently to shift the paradigm of insecticide treadmill to "eco physiological treadmill". Eco because it takes into account what is happening within the natural environment consisting biotic and abiotic factors, physiological because attempts are being made to understand pest population development and their influence on yield through increasingly fine-tuned analysis. Since IPM is essentially an ecological approach to pest management, it requires the knowledge of the interaction between pests and its environment. Understanding the factors affecting population abundance of the pest during the crop as well as off seasons would guide in formulating strategies of their management. While the factors of influence on pests may be abiotic or biotic, the former is the driving force for the latter and hence describing the pest population build up in relation to environment/weather variables should aid in pest forecasting.

Weather-based models are very useful in forecasting life stage and management dates for insect pests and diseases. Early warning helps pest managers to get better results and more efficiently use their time. Regression (empiric) models are based on linear or polynomial relationships between predicted value (e.g., population density) and one or several factors (e.g., temperature, abundance of food or enemies). These models do not represent the mechanisms of population change even at the mythological level. They are used to estimate population density from one or several predictors which may be: population abundance in the previous year, weather parameters, site characteristics, etc. These models are useful for making immediate decisions concerning population treatment. However, they are specific to the data sets they were derived from. Any significant change in climate, forest cover, or management strategy may affect the correlation between variables and the validity of regression model may be changed.

Such study will provide an opportunity to pest challenge by manipulating the manageable ecological parameters in the form of planting or harvesting time adjustment, varietal selection, timely pesticide application, etc. Therefore, the present study is formulated to observe the aphid population fluctuations in relation to the weather parameters.

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Role of dairying in diversification of Indian agriculture with particular reference to eastern region

Dr. C.L. Dadhich*

"The close relations of people and cattle benefited both species for 10000 years. They still do"
The Bin Luxor Egypt 1450 BC

Livestock rearing in general and dairying in particular occupied an important place in Indian agriculture since centuries. However, milk production was mainly for home consumption till the advent of demand led white revolution in late 1960s. Demand for milk increased rapidly with urbanization in India. By and large, production of milk also kept pace with demand for milk. However, all the states did not respond positively to demand. Majority of states in southern, western and northern regions responded positively, while eastern and north eastern states gave luke-warm response. As a result spatial imbalance in milk production was further accentuated causing regional disparity in income generation in rural areas. The pace of diversification of agriculture was also adversely affected in these regions. The primary objective of this paper is to recapitulate the growth pattern of milk production in India and suggest measures for upscaling milk production particularly in north eastern and eastern region. Keeping in view the importance of dairying in states of these regions, four states viz., Assam, Bihar, Orissa and West Bengal were purposively selected for this analysis to coincide with jurisdiction of Agro-Economic Research at Santiniketan. The paper is divided into five sections. Section I gives brief account of Indian dairy economy; and its role in diversification of agriculture; Section II deals with present position of milk production in selected states. Potential of dairy development in these states is discussed in section III. Suggestions are given in section IV and section V contains concluding observations.

I - DAIRY ECONOMY

In 2009-10, India produced 112.5 million tonnes of milk constituting 15.8% of milk production of world, India is largest producer of milk in the world. The value of milk output for 2009-10 was ₹228809 crore which was higher than value of paddy (₹135307 crore) and wheat (₹103226 crore). The sector employs about 10 million people in principal status and almost a million people as secondary occupation (Balakrishnan, 2008). There are more than 70 million households engaged in milk pro-

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duction in India. India is among the most cost effective producers of milk in the world (IFCN, 2008). A unique feature of Indian dairy is the high share of buffalo milk at almost 53%. Growth in milk production accelerated in last four decades coinciding with the implementation of operation flood programme of NDDB envisaging dairy development through producer owned dairy co-operative structure. Over the last four decades, both population and foodgrain output grew at around 2%, while milk production grew at about double of population. This facilitated a consistent and secular shift upward in per capita availability of milk from 112 grams/day in 1970-71 to 263 grams/day in 2009-10.

The contribution of agriculture GDP in total GDP has been falling substantially, from a level of 23% in 1999-2000 to 14.6% in 2009-10 at constant prices. In contrast, decline of only one and half per cent is witnessed in contribution of livestock GDP to total GDP during 1999-2000 to 2009-10 at constant prices. This suggests that while the importance of agriculture is waning in total GDP, the significance of livestock is gaining importance in agricultural sector the share of livestock in agriculture GDP increased from 23.1% in 1999-2000 to 33.5% in 2009-10. Incidentally, dairy sector contributes more than two thirds to livestock GDP.

The stability in livestock income is far stronger compared to income deduced from agricultural activities. The analysis of national accounts statistics reveals that the agricultural growth has been fluctuating over the years, the growth in value of milk has remained steady over the years. This is a unique characteristic of the sector and it is empirically found that the economic reliance of this sector increases during periods of environmental adversities.

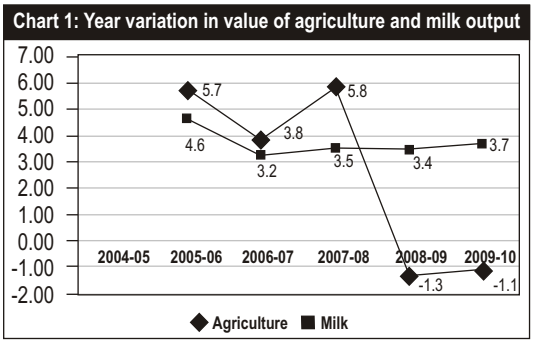

TABLE 1. VALUE OF AGRICULTURAL AND MILK OUTPUT AT CONSTANT PRICE 2004-05

Item (1)	2004-05 (2)	2005-06 (3)	2006-07 (4)	2007-08 (5)	2008-09 (6)	2009-10 (7)
Agriculture	458495	484588	503122	532555	525706	520663
Percentage variation over previous year	-	5.7	3.8	5.8	(-)1.3	(-)1.0
Milk	123907	129729	133900	138643	143350	148687
Percentage variation over previous year	-	4.6	3.2	3.5	3.4	3.7

State-wise in 2009-10 highest milk production was recorded in Uttar Pradesh; (20.2 million tonnes) distantly followed by Andhra Pradesh (10.4 million tonnes), Rajasthan (9.5 million tonnes), Punjab (9.3 million tonnes), Gujarat (8.8 million tonnes), Maharashtra (7.6 million tonnes), Madhya Pradesh (7.1 million tonnes), Bihar (6.1 million tonnes), Haryana (6.0 million tonnes), Tamil Nadu (5.7 million tonnes), Karnataka (4.8 million tonnes), West Bengal (4.3 million tonnes), Kerala (2.5 million tonnes), Orissa (1.7 million tonnes), Jharkhand and Uttarakhand (1.4 million tonnes each). These 16 major milk producing states accounted for 95% of milk production in the country. Three major milk producing states of eastern region were Bihar, West Bengal and Orissa, Assam the major milk producing state of north eastern region was also selected for indepth analysis.

II - DAIRYING IN SELECTED STATES

As mentioned earlier among the selected states highest milk production in 2009-10 at 6.1 million tonnes was recorded in Bihar (per capita milk availability of 175 grams/day) distantly followed by West Bengal 4.3 million tonnes (per capita availability 133 grams/day, Orissa 1.7 million tonnes (per capita availability 112 grams/day) and Assam 0.8 million tonnes (per capita availability 69 grams/day). Unlike share of buffalo milk at 53% for all India level, selected states have only 25% buffalo milk. However at disaggregate level buffalo milk constituted 45% in Bihar, 4% in West Bengal, 12.5% each in Orissa and Assam. Interestingly, this is cow milk belt.

2.1 Low proportion of dairy stock

As a result of demand led white revolution coupled with farm mechanisation in the country there was a shift in favour of dairy stock from work stock for the country as a

TABLE 2. STATE-WISE PROPORTION OF LIVESTOCK TO DAIRY STOCK

(in 000s)

States (1)	Livestock (2)	Of which Dairy Stock (3)	% of Dairy Stock to Livestock (4)
Assam	17227	5463	31.7
Bihar	30342	13160	43.3
Orissa	23057	6443	27.9
West Bengal	37419	12445	33.2
All Selected States	108045	37551	37.1
All India	529668	201196	37.9
Memo Item Gujarat	23513	15522	66.0

Source: Basic Animal Husbandry Statistics.

whole (Dadhich and Meena, 2011). However data presented in Table 2 reveal that barring Bihar the proportion of dairy stock to total stock was lower in the selected states as compared to all India level. Lowest proportion of about 28% was noticed in the state of Orissa. Incidentally in advanced dairy state this proportion was as high as 66%. This suggests that demand led dairy development was at low ebb in these states.

2.2 Prepondence of low yielding dairy stock

Composition of dairy stock as presented in Table 3 reveals Bihar had the highest dairy stock numbering 13.1 million followed by West Bengal 12.4 million, Orissa 6.4 million and Assam 5.5 million. Proportion of buffalo was highest at 41% in Bihardistantly followed by Orissa 9.2%, 5.1% in Assam and 2.2% in West Bengal as against 42.6% at all India. The proportion of indigenous cow ranged from 89.6% in Assam to 46.6% in Bihar with average of 69.7% for the region. All India average was 44.4%. However proportion of crossbred cow ranged between 5.3% in Assam to 16.7% in West Bengal with average of 12.8% for the region. All India average was shade higher at 13.0%. It is indeed misleading to compare status of crossbreeding programme on the basis of total dairy stock. It should be compared as a proportion of total female cattle. Taking this point in view, cross bred cattle as a proportion of total cattle was lower at 15.5% for the region as compared to 21.7% for all India. Incidentally crossbred proportion was as high as 83.6% for Punjab (Table 4). However, taking together buffalo and crossbred cow, that are considered as high yielding stock the proportion was 30% in the region as compared to 56% for all India. Thus the selected states have prepondence of low yielding stocks.

TABLE 3. STATEWISE DISTRIBUTION OF DAIRY STOCK AS 2007 IN PERCENTAGE TO TOTAL

States (1)	Type of stock			Total (6)
	Crossbred cow (3)	Indigenous Cow (4)	Buffalo (5)	
Assam	5.3	89.6	5.11	100 (5463)
Bihar	12.4	46.6	41.0	100 (13160)
Orissa	12.8	78.0	9.2	100 (6443)
West Bengal	16.7	81.1	2.2	100 (12465)
All selected states	12.8	69.7	17.5	100 (37531)
All India	13.0	44.4	42.6	100 (201196)

Figures in brackets are absolute figures. Source: Basic Animal Husbandry Statistics, 2010.

TABLE 4. STATUS OF CROSSBREEDING PROGRAMME OF CATTLE IN SELECTED STATES 2007

States (1)	Number of Cattle (in 000)		
	Crossbred (2)	Indigenous (3)	Total (4)
Assam	288 (5.5)	4895 (94.5)	5183 (100.0)
Bihar	1632 (21.1)	6127 (78.9)	7759 (100.0)
Orissa	823 (14.1)	5029 (85.9)	5852 (100.0)
West Bengal	2084 (17.1)	10114 (82.9)	12198 (100.0)
All Selected States	4827 (15.5)	26165 (84.5)	30992 (100.0)
All India	24686 (21.7)	89325 (78.3)	114011 (100.0)
Memo Item Punjab	1077 (83.6)	212 (6.4)	1289 (100.0)

Figures in brackets are percentage to total. Source: Basic Animal Husbandry Statistics 2010.

2.3 Poor yield of dairy stock

It may be observed from the yield data presented in Table 5 that yield of Indigenous cattle was as low as 0.9 kg/day in Assam, 1.2 kg/day in Orissa and 1.8 kg/day in West Bengal as against 2.1 kg/day for all India. Incidentally highest yield of 5.64 kg/day per animal was noticed in the state of Punjab. The higher proportion of Indigenous cattle with poor yield level have plagued dairy development in this region. However except Assam yield level of buffalo and crossbred cattle was almost close to that of all India average but far below the highest yield noticed in the state of Punjab.

2.4 Skewed distribution of milk production

As a result of high proportion of low yielding animals in this region; large number of animals have produced small quantity of milk (Table 6). On the whole this region accounted for 18.6% of total dairy stock in the country contributing only 11.6% of milk. This indicates remaining 81.4% dairy stock produced 88.4% of milk in other states. State wise, at the disaggregate level, Assam had 2.7%

TABLE 5. AVERAGE MILK YIELD IN SELECTED EASTERN STATES 2009-10

(kg/day)

States (1)	Category of in milk Animal			
	Crossbred cow (2)	Indigenous Cow (3)	Buffalo (4)	Average (5)
Assam	3.34	0.95	2.5	1.27
Bihar	6.19	2.91	3.92	3.72
Orissa	5.94	1.17	2.90	2.06
West Bengal	5.98	1.83	4.59	2.76
All selected eastern states	5.80	1.81	3.76	2.78
All India	6.87	2.14	4.57	3.94
Memo highest average state yield Punjab	10.41	5.64	8.51	8.88

Source: Basic Animal Husbandry Statistics 2010.

TABLE 6. STATE-WISE DAIRY STOCK AND MILK PRODUCTION 2007

(in per cent)

State (1)	Share of state dairy stock to total dairy stock (2)	Share of state milk productivity to total milk production (3)
Assam	2.7	0.7
Bihar	6.5	5.5
Orissa	3.2	1.5
West Bengal	6.2	3.9
All Selected States	18.6	11.6
Remaining States	81.4	88.4
All	100.0	100.0

Source: Compiled from Basic Animal Husbandry Statistics 2010.

dairy stock producing only 0.7% of the total milk in the country followed by Orissa with 3.2 per dairy stock producing. 1.5% milk, West Bengal with 6.2% dairy stock producing 3.9% milk and Bihar with 6.5% dairy stock producing 5.5% of milk produced in the country. In short distribution of dairy stock and milk production is highly skewed in the region.

2.5 Poor dairy infrastructure

Dairy infrastructure consists among others installed milk processing capacity artificial insemination performed, number of village dairy co-operative societies and membership thereof. In the absence of number of villages covered and pouring members, milk procured by dairy co-operatives has been used as proxy for the purpose of this analysis. It may be observed from data presented in Table 7 that about 40 Artificial Insemination for every 100 milch at all India level. The position is in this region at 30 Artificial insemination for every 100 milch is far below the average of the nation. State-wise Assam and Bihar performance was inadequate, while it was above average in West Bengal and closer to average in Orissa. Over all Artificial insemination service was far from satisfactory. Similarly, installed processing capacity in the region was far the adequate. As against 8% procurement somewhat production ratio at national level this region has achieved only 2.4%. While number of dairy co-operatives organised in the region compared a well, with milk produced in the region (as against 11.6% milk produced the proportion of the Societies organised was 10%), membership per society was strikingly low as compared to national level similarly, no especial efforts have been made in the region to augment the fodder supply through cultivation of fodder crops. There was area under fodder crops worth reporting.

On the whole inadequate dairy infrastructure is equally responsible for poor participation of the region in dairy development.

TABLE 7. DAIRY INFRASTRUCTURE 2009-10

State (1)	Milch stock (in 000) (2)	Artificial Insemination performed (in 000) (3)	Percentage of Colm 3 to Colm 2 (4)	Milk production kg/day (in 000 kg) (5)	Milk procured by Co-ops. Kg/day (6)	% colm 6 to colm 5 (7)	Processing capacity installed kg/day (in 000) (8)	% of colm 8 to colm 5 (9)
Assam	2852	204	7.2	2071	5	0.2	-	-
Bihar	4672	950	20.3	16800	700	4	785	4.7
Orissa	2990	1166	39	4500	200	5	199	4.4
West Bengal	6233	2776	44.5	11800	300	2	2081	17.6
All selected states	16747	5096	30.4	35171	1205	3.4	3065	8.7
All India	111090	44621	40.2	319000	25900	8	98316	30.8

Source: Basic Animal Husbandry Statistics 2010.

III - HUGE GROWTH POTENTIAL

In this dark cloud; there is ofcourse, a silverline in the form of satisfactory average yield of crossbred catle and buffalo. Apparently, barring Assam milk producers in the region gave adequate attention to high yielding animals. Thus, with the support of improved technology i.e. proper breeding and feeding dairying should be made a viable and high paying proposition. There is enough scope for upgrading the genetics of cattle, by crossbreeding with native yielding breeds if not with the exotic breeds. Availability of permanent pasture and other grazing land particularly in Assam and Orissa is another favourable feature of the region. Low per capita availability of milk on the one hand and growing demand of milk will sooner than later force the producers to adopt improved technology envisaged under the National Dairy plan of NDDB. Bihar is already on the growth path, other state should follow the suit. Keeping in view the growth potential of dairy sectors, the Eleventh Five Year Plan envisages a growth of 6 to 7% per annum for dairy and allied sectors to achieve a stipulated growth of 4% (Economic Survey 2011).

IV - SUGGESTIONS

While milk yield of Indigenous cows was striking, low barring Assam yield of crossbred cattle was almost close to the average yield at national level. This suggests that crossbreeding programme of cattle is technically feasible in the region. Like first green revolution, first white revolution has also bypassed eastern region. Market led first white revolution centred around comparatively better milk yield areas like Punjab, Haryan, Gujarat, Karnataka etc. This resulted in shifting of milch animals to these areas and higher production of milk was is through increase in herd size rather than enhancing the productivity of milch animals (Dadhich and Meena 2010). Concerted efforts are needed to take up crossbreeding of existing low yield indigenous stock with exotic or

improved native breeds. In this context, it is important to note that some of the upgraded Indian breeds of cattle viz., Gir, Red Sindhi Sahiwal etc are popular in other parts of the world. (World Dairy Report 2006 and 2007). The slowing growth of milk production in the major milk producing states, made it increasing important to usher in technology based and market led second white revolution in this region alongwith second green revolution as envisaged in the eleventh five year plan (Economic Survey 2009). The higher milk production in the region will go a long way in diversification of agriculture. It will not only ensure higher rural income but also ensure nutritional security in the region that have been very low as compared to per capita availability of milk in the country. In the meantime efforts are also required to improve the wet ratio of existing indigenous stock through proper feeding and management of animals. (Dadhich and Jaya Krishna, 2010).

V - CONCLUSIONS

Diversification of agriculture is imperative to ensure among others nutritional security and smooth flow of rural income stream. While value of agriculture output is highly volatile, value of livestock output in general and value of milk output in particular is steady and stable. Dairy sector is one of the main driver of growth of Indian agriculture. In this context its importance cannot be over-emphasised in the context of diversification of agriculture. Demand-led white revolution made rapid strides in majority of Indian states but largely by passed eastern region. Most of the states registered shift in the composition of livestock in favour of dairy stock, the eastern states did not witness perceptible shift in composition of livestock. The study brings to the fore that preponderance of low yielding indigenous cattle in dairy herd has adversely impacted the participation of this region in white revolution. This apart inadequate infrastructure has also caused untold damage to the growth of dairy sector and consequently non-diversification of agriculture. However, limited yet satisfactory induction of crossbreeding programme of cattle in the region indicates huge growth potential for dairy development. It does without saying that upgradation of indigenous cattle if not the exotic crossbreeding programme in a big way will place dairy sector on fast growth trajectory and go a long way in diversification on agriculture in the region.

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Marketing practices of inland fish farmers of Punjab

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Fish farming in controlled or under artificial conditions has become the easier way of increasing the fish production and its availability for consumption because of the rising demand for fish. Fish farming is catching up fast as a subsidiary occupation among farmers. The present paper analyzes the marketing practices and problems faced by inland fish farmers in Punjab. A list of all the fish farmers in Punjab was obtained from Fish Farmers' Development Authority. The fish farmers were mainly concentrated in five districts of Punjab i.e. Bathinda, Sangrur, Patiala, Ludhiana, Ferozepur. For meeting the objectives primary data were collected through a structured, non-disguised questionnaire from a sample of 100 farmers i.e. 20 farmers from each district which were chosen on convenience basis. The study found that mostly semi-medium and medium farmers are engaged in this activity. Majority of farmers have adopted poultry as a subsidiary occupation along with fish farming. Majority of the farmers had received training in fish farming from state fisheries department. The study revealed that catla, rohu and mrigal are most commonly reared varieties and the major source of fish fingerlings for farmers is private companies followed by state department of fisheries. Fish farmers were facing problem of inadequate technical help for fish production, losses during handling, improper packaging material and shortage of electricity

Fish is the one of the cheapest and most easily digestible animal protein and was obtained from natural sources from time immemorial for consumption by human beings. However, due to over exploitation and pollution, the availability of fish in natural waters have declined considerably forcing scientists to adopt various methods to increase its production. Fish farming in controlled or under artificial conditions has become the easier way of increasing the fish production and its availability for consumption. Farmers can easily take up fish culture as subsidiary occupation in village ponds, tanks or any new water body and can improve their financial position substantially. It also creates gainful employment for skilled and unskilled youths. Inland fish farming catching up fast as a

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subsidiary occupation. Fish species raised by fish farms include catla, rohu, silver carp, grass carp, common carp, mrigal and others.

Fish farming offers an alternative solution to the increasing market demand for fish and fish protein. Capture fisheries and aquaculture supplied the world with about 142 million tonnes of fish in 2008. It is estimated that the world demand for fish will rise to 170 million metric tonnes by 2020 (Ludhiana Tribune, 2011). China remains by far the largest fish-producing country, with production of 47.5 million tons (62% of global production in terms of quantity and 51% in terms of value) in 2008 (Anonymous, 2010). In 2010, the total fish production in India from all sources was 7.9 metric tonnes. In 2008, India was the sixth largest producer of marine and freshwater capture fisheries, and the second largest aquaculture farmed fish producer in the world. Fishing in India contributed over 1% of India's annual gross domestic product in 2008. India is a major supplier of fish in the world. In 2006 the country exported over 600,000 metric tonnes of fish, to some 90 countries, earning over $1.8 billion. Shrimps are one of the major varieties exported. The giant tiger prawn (*Penaeus monodon*) is the dominant species chosen for aquaculture, followed by the Indian white prawn (*Fenneropenaeus indicus*) (Wikipedia. Fishing in India).

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Punjab is not a leading state in fish production but it has made tremendous growth in inland fisheries during the last three decades because it has a vast network of natural water resources including 17,453 km of rivers, canals and drains and 23,000 ha reservoirs/lakes/wetlands. Fish production has increased from 2,800 tonnes in 1980-81 to 86,697 tonnes in 2006-07. Area under fish culture and fish production both have gone up by about 30 times. Fish farm units vary from 0.1 ha to

Leading fish producing states in India, 2007-2008

Rank	State	Total production (metric tonnes)	Rank	State	Total production (metric tonnes)
1	West Bengal	1,447,260	6	Maharashtra	556,450
2	Andhra Pradesh	1,010,830	7	Orissa	349,480
3	Gujarat	721,910	8	Uttar Pradesh	325,950
4	Kerala	667,330	9	Bihar	319,100
5	Tamil Nadu	559,360	10	Karnataka	297,690

more than 5 ha. Aquaculture in Punjab is 100% carp culture based with productivity 6.04 t/ha/yr, which is more than double the national productivity 2.60 t/ha/yr, but is much lower than the productivity of China, which ranks first in world's total aquaculture production. It is imperative to focus on aquaculture production and productivity enhancement through an integrated approach to marine and inland fisheries.

Overcoming the problem of malnutrition is on high agenda of the governments and nutritionists of developing countries. At present, about 40% of the world's population and 70% of India's population are seriously suffering from malnutrition and protein deficiency (Rao and Nagabhushanan, 1985). As such fish assumes an important place as protein supplement because it contains on an average 15-25% of proteins, Vitamin A and B, iodine and oils. At present per capita availability of fish in India at 5.4 kg per annum. This is very low as compared to the developed countries which stands at 20.3, 374.9 and 95.8 kg per annum in China, Peru and USA, respectively. The Nutritional Advisory Committee of Central Government has recommended intake of 85 g of animal protein per day per head. Assuming that half of it should be contributed by fish, it is estimated that about 8.5 million tonnes of fish are required to meet the present day requirement of fish proteins in India. However, in spite of all these merits, fish farming has not developed to the desired extent in India. The production and consumption of fish remained very low.

Things are even more pathetic on the fish marketing front. The marketing of inland fisheries in the country is characterized by the problems of irregularity in the fish supplies, elasticity of demand for the commodity, perishability of fishes and traditional practices adopted in fish marketing. Besides, there are several other serious problems associated with fish marketing such as inadequate cold storage facilities, transport bottlenecks and high transport costs, presence of large number of middlemen in the fish trade, lack of regulated market facilities and finally fluctuating fish prices (Chopra, 2011). Naturally, these problems exerted negative influence on the bargaining power of the fish farmers, their margins and a fair share in the consumers rupee, despite-high-prices-prevailing-in-the-market. An attempt is made to understand fish marketing practices of farmers of Punjab with a view to suggest the measures to improve the producers share in the consumers' rupee. With this background the study has been undertaken with the following specific objectives

i. To study the marketing practices of inland fish farmers in Punjab

ii. To study the problems faced by inland fish farmers in marketing of fish in Punjab

REVIEW OF LITERATURE

Many researchers have studied the economics of fish rearing in various states like Prabhakara and Shankara (1994) in Karnataka, Jayaraman et al (1993) in Tamil Nadu, Rao and Chaudhary (1988a) in Andhra Pradesh. Wide variation in the marketing margins were seen in the different varieties of fishes (Kathia and Chandra, 1990). The net share of producer in consumers rupee was worked out to be 70.3%, 69.7% and 67.0% for Catla, Rohu and Mrigal, respectively (Rao and Chowdhry 1988b). It was also noticed that the intermediaries in fish marketing are high i.e., from 5-6 and the retailers' margin was the highest (Naik, 1995; Ramana et al, 1990). Many farmers in Tamil Nadu are combining fish farming with duck farming in rice fields (Ganeshan et al,1991) and some are practicing reservoir fish rearing (Kathia et al, 1997; Rao and Raju, 1997) for better returns. For the small fish farmers the returns have been found better than large farmers because of better management(Ravikesh and Maurya, 1996). Many organizations like Fishermen' Primary Cooperative Societies from West Bengal (Lahiri, 1994), Fish Farmers Development Agency in Uttar Pradesh (Wadhuwani and Broadway, 1988), Co-operatives in Himachal Pradesh (Chauhan et al, 1989) are working towards the betterment of fish farmers in helping them market their produce and reducing the number of intermediaries for better returns. Larger fish farmers in Punjab are marketing their produce through the pre-harvest contracts for better returns (Singh and Chahal,2002). Many farmers quit fish farming due to marketing problems. Hence it became imperative to study the marketing practices and problems of the inland fish farmers.

MATERIALS AND METHODS

The population of study consist all the inland fish farmers of Punjab. A list of inland fish farmers of Punjab was obtained from Fish Farmers Development Authority. Inland fish farmers were concentrated in Ludhiana, Sangrur, Ferozepur, Bathinda and Patiala districts of Punjab where fish farming is taken as subsidiary occupation by most of the farmers. Out of the list of inland fish farmers in these districts 20 farmers from each district were selected on the basis of convenience sampling technique and willingness of respondents to participate in the study. In all 100 farmers were selected. Primary data was collected through a non-disguised structured questionnaire by personally visiting and interviewing selected respondents. Questions were framed on the marketing

practices such as segmentation, targeting, positioning and 4 Ps i.e. (Product, Place, Price and Promotion) followed by inland fish farmers. Various problems faced by inland fish farmers in marketing were also studied. Data was analyzed using various statistical techniques like average, mean scores, single mean Z test.

RESULTS AND DISCUSSION

The results have been discussed in three sections: (I) Demographic profile of the respondents (II) Marketing practice being followed by the inland fish farmers and (III) Problems faced by the Inland fish farmers.

I. PROFILE OF THE RESPONDENTS

Profile of the fish farmers has been outlined on the basis of age, education level, land holding, subsidiary occupation and time period since they are engaged in fish farming, objective of adoption of fish farming, fish varieties reared, subsidy available in this occupation etc.

The below Table-1 shows that majority of inland fish farmers (70%) are more than the age of 36 years. Out of the farmers practicing fish farming 95% respondents were matric and above in Bathinda, and about 80% were above matric in

Table 1: Age, Education level and Land-holding of inland fish farmers

Category	Number of respondents (%)					
Age	**Bathinda**	**Ludhiana**	**Patiala**	**Sangrur**	**Ferozepur**	**Overall**
25-35	6 (30%)	5(25%)	4(20%)	3(15%)	2(10%)	20(20%)
36-45	7(35%)	4(20%)	4(20%)	4(20%)	5(25%)	24(24%)
46-55	6(30%)	6(30%)	6(30%)	7(35%)	7(35%)	32(32%)
56-65	1(5%)	5(25%)	6(30%)	6(30%)	6(30%)	24(24%)
Education level	**Bathinda**	**Patiala**	**Ludhiana**	**Sangrur**	**Ferozepur**	**Overall**
Primary	0(0%)	2(10%)	2(10%)	2(10%)	2(10%)	8(8%)
Middle	1(5%)	2(10%)	2(10%)	2(10%)	3(15%)	10(10%)
Matric	7(35%)	6(30%)	7(35%)	6(30%)	7(35%)	33(33%)
10+2	7(35%)	6(30%)	6(30%)	5(25%)	6(30%)	30(30%)
Graduation	5(25%)	4(20%)	3(15%)	5(25%)	2(10%)	19(19%)
Land Holding	**Bathinda**	**Ludhiana**	**Patiala**	**Sangrur**	**Ferozepur**	**Overall**
Marginal farmers < 1 ha	-	3(15%)	0(0%)	0(0%)	0(0%)	3%
Small farmers 1-2 ha	-	2(10%)	1(5%)	1(5%)	1(5%)	5%
Semi-medium farmers 2-4 ha	3(15%)	4(20%)	4(20%)	14(70%)	2(10%)	27%
Medium farmers 4-10 ha	8(40%)	5(25%)	11(55%)	4(20%)	12(60%)	40%

Table 2: Subsidiary occupation of inland fish farmers (N=100)

District	Number of respondents (%)		
	DAIRY	POULTRY	NONE
Sangrur	5(19%)	12(22%)	3(15%)
Bathinda	4(16%)	8(15%)	8(40%)
Patiala	5(19%)	13(24%)	2(10%)
Ludhiana	5(19%)	11(20%)	4(20%)
Ferozepur	7(27%)	10(19%)	3(15%)
Overall	26	54	20

Table 3: Duration of engagement in Fish farming (N=100)

No. of years	Percentage of respondents					
	Bathinda	Ludhiana	Patiala	Sangrur	Ferozepur	Overall
1—5	1	2	5	3	1	12
6—10	11	8	7	7	5	38
11—15	6	6	3	6	8	29
>15	2	4	5	4	6	21

Ludhiana, Patiala, Sangrur and Ferozepur. Overall 80% respondents were above matric. Majority of the inland fish farmers (40%) fall in the category of Medium farmers, while looking in the individual districts Bathinda and Ludhiana has majority population i.e. (45%) and (30%) respectively in large farmers category, Patiala and Ferozepur has (55%) and (60%) respectively in medium, Sangrur has 70% in semi medium category. Hence mostly medium, semi medium and large farmers adapt inland fish farming.

Subsidiary occupations of inland fish farmers

The respondents were asked about the subsidiary occupations like dairy, piggery and poultry in which they are engaged (if any) in addition to fish farming.

Table-2 reveals that highest number of farmers in Ferozepur (27%) and Patiala (24%) are engaged in dairy and poultry as subsidiary occupation in addition to inland fish farming. Overall 26% of inland fish farmers are engaged in dairy and 54% of inland fish farmers are engaged in poultry as subsidiary occupation in addition to fish farming and no farmer was doing piggery with fish farming, 20% are those who are not engaged in any other subsidiary occupation in addition to fish farming.

Duration of engagement in Fish farming

The respondents were asked about the year of starting the fish farming.

The above Table-3 represents that majority of fish farmers in Bathinda (11%), Ludhiana (8%), Patiala (7%), Sangrur (7%) were engaged in fish farming from 6-10 years while in Ferozepur majority (8%) of fish farmers were engaged in

fish farming from 11-15 years. Majority (88%) of inland fish farmers were engaged in fish farming from more than 6 years.

Training facilities and sources of training in inland fish farming

The inland fish farmers were asked about whether they have obtained any training in fish farming or not and the source from which they had obtained training. Farmers were getting training from more than one source, so multiple responses were obtained as shown in Table-4

The below Table-4 reveals that highest number of inland fish farmers who have got training are from Ludhiana (80%) followed by Sangrur (75%), Patiala (70%), Bathinda (65%) and Ferozepur (60%). The majority of the Inland fish farmers (70%) had received training but 30% are those who have not got any training. Highest number of farmers who have got training from university are from district Sangrur, highest number of farmers who have got training from private companies are from district Bathinda (33%) and highest number of farmers who have got training from department of fisheries are from district Ludhiana (24%). Overall majority of the inland fish farmers i.e. 50 had received training from department of fisheries, 9 from private companies and 11 from the agricultural University.

Subsidies availed

The inland fish farmers were asked about the subsidy they had availed. Subsidies at the central and state level are available for construction of new pond, renovation/reclamation of ponds and tanks, integrated fish farming, construction of fish hatchery, establishment of fish feed unit, subsidy on inputs etc.

Table-5 reveals that the majority of

Table 4: Training facilities and sources of training in inland fish farming (N=100)

Parameter	Number of respondents (Percentage)					
	Bathinda	Sangrur	Patiala	Ludhiana	Ferozepur	Overall
Received training	13(65%)	15(75%)	14(70%)	16(80%)	12(60%)	70%
Did not received training	7(35%)	5(25%)	6(35%)	4(20%)	8(40%)	30%

District	Number of respondents (Percentage)		
	University	Private companies	Dpt. Of Fisheries
Bathinda	2(18%)	3(33%)	8(16%)
Sangrur	3(28%)	1(12%)	11(22%)
Patiala	2(18%)	2(22%)	10(20%)
Ludhiana	2(18%)	2(22%)	12(24%)
Ferozepur	2(18%)	1(11%)	9(18%)
Overall	11	9	50

*Multiple responses

Table 5: Subsidies availed (N=100)

Parameter	Number of respondents (Percentage)					
	Bathinda	Sangrur	Patiala	Ludhiana	Ferozepur	Overall
Availed subsidy	12(60%)	16(80%)	10(50%)	14(70%)	15(75%)	67%
Did not availed subsidy	8(40%)	4(20%)	10(50%)	6(30%)	5(25%)	33%

Table 6: Fish varieties being reared by farmers (N=100)

District	Number of respondents (Percentage)					
	CATLA	ROHU	MRIGAL	SILVER CARP	GRASS CARP	COMMON CARP
Bathinda	20(20%)	20(20%)	10(18%)	9(21%)	9(19%)	15(24%)
Sangrur	20(20%)	20(20%)	14(24%)	7(16%)	11(23%)	11(18%)
Patiala	20(20%)	20(20%)	13(23%)	10(23%)	10(21%)	14(23%)
Ludhiana	20(20%)	20(20%)	12(21%)	8(18%)	8(17%)	12(19%)
Ferozepur	20(20%)	20(20%)	8(14%)	10(22%)	9(20%)	10(16%)
Overall	100	100	57	44	47	62

*Multiple responses

the inland fish farmers (67%) had availed subsidy but still 33% are those who have not availed any subsidy. The lowest number of subsidy receivers is in Patiala (50%) and the area with highest number of subsidy receivers is Sangrur (82%). They did not reveal the type of subsidy availed.

II. MARKETING PRACTICES FOLLOWED BY THE INLAND FISH FARMERS

Product practices of fish farmer

In this section kind or varieties of fishes reared, fingerlings requirement, quality control, production and input requirements are discussed.

Fish varieties being reared by farmers

Farmers were rearing more than one type of fish hence multiple responses were obtained. Table-6 reveals that catla (100) and rohu (100) are commonly reared varieties followed by common carp (62), mrigal (57), grass carp (47) and silver carp (44). All the farmers in all districts reared catla and rohu while other varieties were reared by 50% of the farmers.

Fingerlings requirement per acre and Source of fingerlings

Respondents were asked about the fingerlings requirement per acre per year and the source of fingerlings. Farmers were getting fingerlings from more than one source so multiple responses were obtained

Above Table-7 shows that average requirement of fingerlings is highest in Bathinda (5900) while lowest in Ferozepur (5700) and average requirement for overall Punjab is 5800 fingerling per acre. For majority of respondents' (78),

Table 7: Average fingerlings requirement per acre and source of fingerlings (N=100)

District	Average fingerlings per acre				
Bathinda	**Sangrur**	**Patiala**	**Ludhiana**	**Ferozepur**	**Overall**
5900	6000	5600	5800	5700	5800
Source of fingerlings (Number of respondents and Percentage)					
District	**Fisheries Dpt.**			**Private. companies**	**Nursery**
Bathinda	8(18%)			18(23%)	5(22%)
Sangrur	9(20%)			16(20.5%)	4(17%)
Patiala	7(16%)			13(17%)	7(31%)
Ludhiana	11(24%)			14(18%)	4(17%)
Ferozepur	10(22%)			17(21.5%)	3(13%)
Overall	45			78	23

*Multiple responses

major source of fingerlings is private companies followed by fisheries department (45) and their own nursery (23). The scenario is same in individual districts with Bathinda (18) highest in procuring fingerlings from private companies and Ludhiana (11) in procuring from fisheries department.

Yield for past five years

This section discusses the yield for past five years in Bathinda, Sangrur, Patiala, Ludhiana, Ferozepur and overall Punjab.

Table-8 reveals that in all districts and overall Punjab there had been a significant rise in the yield of all varieties except silver carp and common carp.

Table 8: Yield for past five years in different districts

District	Yield in quintals per acre					
Bathinda	**Catla**	**Rohu**	**Mrigal**	**Silver carp**	**Grass carp**	**Common carp**
2006	5.00	4.60	4.90	3.89	2.44	3.43
2007	5.10	4.75	5.30	3.89	2.44	3.57
2008	5.40	4.90	5.80	4.33	2.78	3.64
2009	5.75	5.00	5.70	4.00	2.78	3.64
2010	5.90	5.10	5.90	4.00	3.00	3.64
Av. Produce	5.43	4.87	5.52	4.02	2.69	3.63
% increase	18%	11%	20%	3%	23%	6%
Sangrur	**Catla**	**Rohu**	**Mrigal**	**Silver carp**	**Grass carp**	**Common carp**
2006	5.05	4.55	4.90	2.22	2.00	2.54
2007	5.25	4.60	5.30	2.22	2.00	2.57
2008	5.50	4.90	5.80	2.33	2.00	2.64
2009	5.65	5.10	5.70	2.33	2.00	2.64
2010	5.80	5.20	5.90	2.33	2.22	2.64
Av. Produce	5.45	4.87	5.52	2.29	2.04	2.63
% increase	15%	14%	20%	5%	11%	4%

Patiala	Catla	Rohu	Mrigal	Silver carp	Grass carp	Common carp
2006	4.65	4.25	4.70	3.11	2.33	3.39
2007	4.70	4.35	5.10	3.11	2.44	3.43
2008	4.95	4.50	5.50	3.33	2.56	3.50
2009	5.20	4.70	5.40	3.22	2.56	3.50
2010	5.35	4.80	5.60	3.22	2.78	3.50
Av. Produce	4.97	4.52	5.26	3.20	2.53	3.49
Percentage increase	15%	13%	19%	4%	19%	3%
Ludhiana	**Catla**	**Rohu**	**Mrigal**	**Silver carp**	**Grass carp**	**Common carp**
2006	4.90	4.70	5.20	2.78	2.11	3.05
2007	5.20	4.65	5.30	2.78	2.00	3.00
2008	5.50	4.90	5.80	3.00	2.11	3.07
2009	5.75	5.10	5.70	2.89	2.11	3.07
2010	5.90	5.20	5.90	2.89	2.33	3.07
Av. Produce	5.45	4.91	5.58	2.87	2.13	3.06
Percentage	20%	11%	13%	4%	10%	1%
increase						
Percentage increase	20%	11%	13%	4%	10%	1%
Overall Punjab	**Catla**	**Rohu**	**Mrigal**	**Silver carp**	**Grass carp**	**Common carp**
2006	4.94	4.55	4.86	3.00	2.24	3.10
2007	5.10	4.61	5.20	3.00	2.13	3.03
2008	5.39	4.83	5.68	3.27	2.29	3.10
2009	5.62	5.01	5.58	3.11	2.29	3.10
2010	5.77	5.11	5.78	3.11	2.51	3.10
Av. Produce	5.36	4.82	5.42	3.10	2.29	3.11
Percentage increase	17%	12%	19%	4%	12%	-

Respondents were asked about the criteria for harvesting fish and they responded that weight of fish is the most important criteria for harvesting the fish. Fish is harvested when it attains a weight of 737gms on an average.

Inputs used by farmers

This section discusses the inputs used by fish farmers in their ponds. Farmers were using more than one input so multiple responses were obtained as shown in table 09.

Table-9 reveals that highest used feed is bran with 90 respondents using this feed followed by oil cakes (74), mustard cakes (51), Pellet cakes (48) and others (20). Usage of bran is highest in Ferozepur (22%) and lowest in Bathinda (18%). Usage of oil cakes is highest in Patiala (23%) and lowest in Sangrur (18%). Usage of mustard cakes is highest in Ludhiana (25%) and lowest in Sangrur (16%). Usage of pellet feed is highest in Sangrur (25%) and lowest in Patiala (15%).

Table 9: Inputs used by farmers (N=100)

Number of respondents (Percentage)					
District	**Bran**	**Oil cakes**	**Mustard cakes**	**Pellet feed**	**Others***
Bathinda	16(18%)	16(22%)	11(22%)	8(17%)	5(25%)
Sangrur	18(20%)	13(18%)	8(16%)	12(25%)	3(15%)
Patiala	17(19%)	17(23%)	10(20%)	7(15%)	4(20%)
Ludhiana	19(21%)	14(19%)	13(25%)	10(21%)	2(10%)
Ferozepur	20(22%)	14(19%)	9(18%)	11(23%)	6(30%)
Overall	90	74	51	48	20

*category other includes vegetables, bakery products etc.

Table 10: Quality control (N=100)

District	**Number of respondents (%)**			
	Control of predators	**good quality feed**	**Disease control**	**Control of weed fishes**
Bathinda	20(26%)	20(21%)	20(24%)	13(33%)
Sangrur	13(17%)	18(19%)	16(19%)	6(15%)
Patiala	15(19%)	17(18%)	15(18%)	9(23%)
Ludhiana	15(19%)	20(21%)	16(19%)	7(18%)
Ferozepur	14(18%)	19(20%)	17(20%)	5(13%)
Overall	77	94	84	40

*Multiple responses

Farmers using other feeds like vegetables, etc. are highest in Ferozepur (30%) followed by Bathinda (25%), Patiala (20%), Sangrur (15%) and Ludhiana (10%).

Quality control

The methods of quality control adopted by fish farmers are shown in Table-10.

The above table reveals that for majority of respondents major methods of quality control are good quality feed (94) and disease control (84) followed by control of predators (77), control of weed fishes (40).

Pricing practices of inland fish farmers

In this part marketing practices at price level are discussed i.e. criteria for setting up of price, prices obtained for produce, mode of payment, profits.

Criteria for setting up of price

The Table-11 reveals that majority of respondents (46%) have adopted value pricing as a price setting method followed by bid pricing (35%) and mark up (19%).

Fish prices for past five years

This section discusses the fish prices obtained by farmers for past

Table 11: Criteria for setting up of price (N=100)

District	Number of respondents (Percentage)		
	Mark up	Value Pricing	Bid pricing
Bathinda	3(15%)	9(45%)	8(40%)
Sangrur	4(20%)	10(50%)	6(30%)
Patiala	1(5%)	10(50%)	9(45%)
Ludhiana	5(25%)	8(40%)	7(35%)
Ferozepur	6(30%)	9(45%)	5(25%)
Overall	19(19%)	46(46%)	35(35%)

Table 12: Fish prices for past five years in Bathinda (N = 100)

District	Prices obtained by farmers in rupees/Kg				
	2006	2007	2008	2009	2010
Bathinda	37.75	39.5	43.25	47.5	60.5
Sangrur	39.25	41.75	44.75	49.5	60.5
Patiala	38.75	40	43.25	47.75	61.5
Ludhiana	38.5	40.5	44	48.5	60.5
Ferozepur	38	40.25	43.75	48.5	59.75
Overall	38.45	40.4	43.8	48.35	60.55

five years in Bathinda, Sangrur, Patiala, Ludhiana, Ferozepur and overall Punjab as shown in Table 12.

The above Table 12 reveals that fish prices has significantly increased from 2006 to 2010 approximately 60% increase in prices has been observed since last five years. The scenario is approximately same in all districts.

Mode of Payment to supplier

Respondents were asked about the mode of payment to the suppliers of inputs and the purchaser.

The Table -13 reveals that the majority of the inland fish farmers (72%) make payment in cash and 28 % in credit. In the intercity comparison Ludhiana (85%) has highest number of farmers making payment in cash and Bathinda has the lowest percentage i.e. only (55%), on the other side payment in credit is highest in Bathinda (45%) and lowest in Ludhiana (15%). Majority of the inland fish farmers (68%) receive payment in cash and 32 % sales is on credit. In the intercity comparison Patiala (85%) has highest number of farmers receiving payment in cash and Bathinda is on the lower end i.e. only (45%), on the other side payment in credit is highest in Bathinda (55%) and lowest in Patiala (15%).

Distribution practices of inland fish farmer

Distribution practices of inland fish farmers are discussed under

Table 13: Mode of Payment to supplier and Buyer (N=100)

Supplier	Number of respondents (Percentage)					
	Bathinda	Sangrur	Patiala	Ludhiana	Ferozepur	Overall
Cash	11(55%)	13(65%)	16(80%)	17(85%)	15(75%)	72(72%)
Credit	9(45%)	7(35%)	4(20%)	3(15%)	5(25%)	28(28%)
Buyer	**Bathinda**	**Sangrur**	**Patiala**	**Ludhiana**	**Ferozepur**	**Overall**
Cash	9(45%)	14(70%)	17(85%)	15(75%)	13(65%)	68(68%)
Credit	11(55%)	6(30%)	3(15%)	5(25%)	7(35%)	32(32%)

Table 14: Channel adopted for distribution (N=100)

District	Number of respondents (Percentage)		
	Auctioneer-retailer-vendor	Auctioneer-wholesaler-retailer-vendor	Direct to vendor
Bathinda	8(40%)	7(35%)	5(25%)
Sangrur	11(55%)	6(30%)	3(15%)
Patiala	11(55%)	5(25%)	4(20%)
Ludhiana	10(50%)	6(30%)	4(20%)
Ferozepur	9(45%)	8(40%)	3(15%)
Overall	49(49%)	32(32%)	19(19%)

subheads viz. distribution channel, services by intermediaries, place of consumption of produce.

Channel adopted for distribution

Respondents were asked to tell the channel adopted for distribution of produce. Responses recorded are shown in Table -14.

Above Table-14 indicates that 49% of respondents have adopted auctioneer-retailer-vendor distribution channel followed by auctioneer-wholesaler-retailer-vendor (32%) and Direct to vendor (19%) distribution channel. The distribution channel auctioneer-retailer-vendor has been adopted by maximum respondents in district Sangrur (55%), auctioneer-wholesaler-retailer-vendor distribution channel is adopted by maximum respondents in district Ferozepur (40%) and the distribution channel Direct to vendor is adopted by maximum respondents in district Bathinda (25%)

Services provided by intermediaries

Respondents were asked to tell the services provided by the intermediaries. Intermediaries provide services like head loading, packaging, transportation etc. Farmers were using more than one service so multiple responses were obtained.

Table 15 shows that 51 respondents out of 100 told that head loading is done by intermediaries, 83 told that packing is done by intermediaries,

and 80 told that transportation is done by intermediaries.

Place of consumption of produce

The place of consumption of produce is more than one so there were multiple responses.

All the farmers have told that the place of consumption is Punjab but out of 100 respondents 67 are sending their produce to Haryana or Himachal also in addition to Punjab. Number of respondents sending their produce to other place of consumption is highest in Ludhiana (25%) and lowest in Ferozepur (15%).

Promotional practices of farmers

Farmers were not using any promotional media for promoting their products.

Problems faced by Inland fish Farmers

The respondents were asked to rate each problem on the five point scale ranging from 5 (strongly agree) to 1 (strongly disagree) and their mean scores were calculated.

The most important problem was in adequate technical help (Mean value 4.33) followed by lack of proper packaging (4.20), losses during handling (Mean value 4.15), improper subsidies availability (3.70), seasonal demand (3.5) for fish, lack of price information (3.26), proper transportation (3.95), unorganized markets (3.90), distant market places (3.68), lack of access to consumer markets (3.51) and lack of technical help for promotion (4.02). In general the

Table 15: Services provided by intermediaries (N=100)

District	Number of farmers		
	Head loading	Packing	Transportation
Bathinda	10	18	15
Sangrur	11	15	17
Patiala	11	18	16
Ludhiana	10	16	14
Ferozepur	9	16	18
Overall	51	83	80

*Multiple response

Table 16: Place of consumption of produce (N=100)

District	Number of respondents (%)	
	Punjab	Others*
Bathinda	20%	18%
Sangrur	20%	22%
Patiala	20%	19%
Ludhiana	20%	25%
Ferozepur	20%	15%
Overall	100	67

*category other includes Himachal and Haryana.

Table 17: Problems faced by Inland fish Farmers

A. Product related	Bathinda	Sangrur	Patiala	Ludhiana	Ferozepur	Overall	Z value
Inadequate Technical help	4.45	4.25	4.4	4.3	4.25	4.33	20.90*
Inadequate inputs availability	3.1	3.05	3.05	2.9	2.9	3	0.00
Improper subsidies availability	4	3.5	4.1	3.5	3.4	3.7	10.38*
Low demand for the product	2.1	1.8	1.95	1.85	2.15	2.18	-10.64
Seasonal demand	3.6	3.45	3.45	3.5	3.5	3.5	9.95*
Losses during handling	4.25	4.15	4.3	4.1	3.95	4.15	16.73*
Lack of proper packaging material	4	4.05	4.1	4.55	4.3	4.2	22.56*
Lack of processing plants	3.6	3.65	3.75	3.6	3.55	3.63	12.98*
B. Price related							
Low price	3.25	2.95	3.1	3.1	2.7	3.07	0.73
Lack of awareness about appropriate price for product	3.35	3.15	3.2	3.5	3.1	3.26	4.13*
Irregular payments	3	2.95	3.15	3.2	2.95	3.05	1.04
Less transparency in price	3.4	3.05	3.2	3.1	3.05	3.16	2.75*
C. Place related							
Lack of proper transportation	3.9	4.1	4.05	3.9	3.8	3.95	23.10*
Unorganized markets	4	3.9	3.95	3.9	3.75	3.9	16.63*
Lack in access to the consumer market	3.5	3.35	3.45	3.8	3.45	3.51	7.25*
Distant market place	3.65	3.75	3.6	3.7	3.7	3.68	14.50*
D. Promotion							
Lack of technical help for promotion	4.05	4.05	4.05	4	3.95	4.02	23.95*
E. General							
Lack of govt. support	3.9	4.25	4.2	4.1	3.9	4.07	18.12*
Lack of disbursement of subsidies in time	3.75	3.7	3.85	3.7	3.65	3.73	16.36*
Electricity	4.35	4.7	4.45	5	4.25	4.52	24.23*

* Significant at 5 % level of significance, Z-critical is 1.96, μ=3

most important problems were shortage of electricity (Mean value 4.52) followed by lack of government support (4.07) and lack of disbursement of subsidies in time (3.73). Z values for all values were found to be significant at 5% level of significance except the availability of adequate inputs, low price and irregular payments.

Conclusion

Marine fish production is decreasing and the inland is increasing at the rate of 10% annually in India. There is a demand and supply gap which can be filled by inland fishery. Many farmers are adopting inland fish farming as a subsidiary occupation. Punjab can play a very important role in enhancing fish production by utilizing the saline water areas i.e., Bathinda, Faridkot, Ferozepur and Muktsar. For enhancing fish production it is recommended that an institution/ agency for the purchase of fish directly from farmers should be created and provision of minimum support price, improvement in the

input supply system such as improving the quality and quantity of seeds supplied, improving the subsidies disbursement system so that subsidies can be disbursed in time and establishment of state fisheries boards on the pattern of National Fisheries board.

The major constraint in the marketing of fish is lack of storage facility. Being a highly perishable commodity, proper cold storage facilities should be provided to fish the farmers. Fish packaging is very essential to transport fish to distant markets. New techniques should be developed for packaging of fish so that fish can be transported to distant markets. Due to distant market places there is a need to develop efficient transport facilities. Water availability is a major constraint in fish farming. Adequate levels of water can only be maintained by adequate supply of electricity to pump the water. Fish farmers should be provided electricity on the priority basis. Farmers face huge losses due to lack of technical guidance. Adequate guidance should be provided to the farmer at village level for improved fish productivity.

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THE HARYANA STATE COOPERATIVE AGRICULTURE AND RURAL DEVELOPMENT BANK LTD.

Sahakarita Bhawan, Bay No. 31-34, Sector - 2, Panchkula

The Haryana State Cooperative Agriculture and Rural Development Bank Ltd., is the specialised institution in the State, which caters to the Long Term credit needs of the farmers for the upliftment of the economic position of the agriculturists and allied fields.

The bank advances Long Term loans to the farmers for the following purposes :-

Scale of finance and periodicity of Major Sectors

Farm Sector

Sr.No.	Name of the Scheme	Period	Scale of finance
1.	Minor Irrigation	9 years	₹1,00,000 to 3,50,000
	i. WCS/UGPL	-do-	90% of the project cost
2.	Farm Mechanisation	5-9 Years	85% of the cost of the Machinery
3.	Purchase of Agriculture Land	10 Years	Upto ₹10.00 Lacs
4.	Horticulture/Plantation	5-10 Years	₹ 40,000 to 1,55,000 per acre
	i. Medicinal & Aromatic Plants	-do-	90% of the project cost
5.	Animal Husbandry	5-7 Years	90% of the project cost
6.	Rural Godowns	Upto 9 Years	90 % of the project cost

Non Farm Sector

Sr.No.	Name of the Scheme	Period	Scale of finance
1.	Rural Housing	Upto 10 Years	Upto ₹ 5.00 Lacs
2.	Marriage Palaces	Upto 10 Years	90% of the Project Cost
3.	Community Halls	Upto 10 Years	90% of the Project Cost
4.	Village Cottage Industry	Upto 10 Years	90% of the Project Cost
5.	PublicTransport Vehicles	Upto 10 Years	85% of the Project Cost
6.	Rural Educational Infrastructure	Upto 10 Years	90% of the Project Cost
7.	Other SSI Units	Upto 10 Years	90% of the Project Cost

Rate of Interest

The Loans for the purpose of Non-farm Sector, Rural Housing and Purchase of land are being advanced @ 15.00% p.a. w.e.f. 3.8.2012. All other loans are being advanced @ 14.00% p.a. w.e.f. 3.8.2012 and a rebate of 5% is allowed on all slabs to regular pay masters.

Note:-

For further details, kindly contact The Haryana State Coop. Agri. & Rural Dev. Bank Ltd., Panchkula or the District Co-op. Agri. and Rural Dev. Banks at District level and its branches at Tehsil & Sub-tehsil level in the State.

Shakuntla Jakhu, IAS
Chairperson

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Managing Director
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A snapshot of Income Tax applicable to PACS

A. K. Zakir Hussain *

The credit cooperatives were enjoying 100% tax deduction on the profit generated out of banking business for many decades under Sec.80P(2)(a)(i). According to this section, a cooperative society engaged in carrying on the business of banking or providing credit facilities to its members can deduct the whole profit generated out of such activity from its gross total income. Section 80P was amended by the Finance Act, 2006, introducing sub-section (4), which provides that the provisions of section 80P will not apply to any cooperative bank other than a Primary Agricultural Credit Society (PACS) or a Primary Cooperative Agricultural and Rural Development Bank (PCARDB). Therefore, other credit cooperatives like state cooperative banks, district cooperative banks, state agriculture and rural development banks, urban cooperative banks and employees' cooperative societies, liable to pay tax on their net profit from the Assessment year 2007-08.

Eventhough, PACS are retained under Section 80P, their income is not totally deductible from income tax. The income of PACS generated from non-banking activities are not deductible u/s 80P. PACS undertaking non-banking activities like consumer stores, super market, textile showroom, etc., are taxable under income tax Act. However, many of the PACS who are liable to pay income tax, ignorant about these tax provisions. Therefore PACS should assess their tax liability if any, file the income tax returns so as to avoid further complications of penal interest and penalty from income tax department. This article discusses the various income tax provisions related to PACS.

Deductions Available to PACS

1. PACS providing credit facilities to its members gets total deduction from its profit u/s 80 P(2)(a)(i). The profit here refers to those amounts, which are generated only through banking/credit business. Some of the income tax cases pertaining to the said section are detailed below:

To claim exemption under section 80P (2)(a)(i), a co-operative bank need not to deal only with its members. Banking business carried on by co-operative societies with non-members is also eligible for exemptions under section 80P (2) (a) (i). vide The Millie Co-operative Urban Bank Ltd. v. ITO (2007) 291 ITR 163 (Hyd-Trib): : (2007) 109 TTJ 116 (Hyd-Trib).

Interest received from employees

*Faculty Member, Institute of Cooperative Management, Kannur

on vehicle loans, house building advances, etc., are income incidental to banking business and, therefore, eligible to deduction under section 80P (2) (a) (i) Vide Asstt. CIT v. H.P. State Co-operative Agriculture & Rural Development Bank Ltd.: (2006) 104 TTJ (Chd-Trib) 864.

Entrance fees from members of a banking co-operative society whose bye-laws provide that co-operative societies are eligible individuals in the area wishing to secure financial assistance from it, become its members on payment of entrance fee, and the bye-law treated such fees as one of the sources of the bank's income, it was held that the payment of entrance fee was intimately connected with the banking business carried on by the assessee, and being part of income from business Vide Co-operative Central Bank Ltd. V. CIT (1965) 57 ITR 579 (AP).

Acquiring the immovable property and selling it at a profit is banking business the profit of which would be deductible under section 80P.-Vide Shri. Mahavir Co-operative Bank Ltd. v. Income Tax Officer (1991) 37 ITD 130 (Pune-Trib).

All investments, whether out of surplus or not, are essential and conducive to the promotion or advancement of the business of banking. Therefore, interest income earned by a co-operative bank by making investment of voluntary reserves is attributable to business of banking carried out by it and hence, entitled to deduction under section 80P (2) (a) (i). Vide CIT v. Baroda Peoples Co-operative Bank Ltd. (2006) 8 (I) ITCL 150 (Guj-HC): (2006) 280 ITR 282 (Guj): (2006) 190 Taxation 108 (Guj): (2005) 198 CTR (Guj) 1.

2. A flat deduction of ₹50,000 is deductible u/s 80 P(2) (c) from the overall profit generated out of non banking activities. A case law pertaining to the said section is detailed below:

Section 80P(2)(c) also provides a enhanced deduction upto ₹1 lakh for consumer cooperative societies. However, PACS undertaking consumer stores are eligible to the extent of ₹50,000 only. In the literature of law relating to co-operative societies there is a well-merited distinction between credit societies and consumer societies. When the section refers to a co-operative society engaged in providing credit facilities to its members it really refers to a credit society, whose primary object is the provision of loans or other credit facilities to its members. It does not include any society whose primary object is something other than the provision of loans or other credit facilities, to its members. It does not include any society whose primary object is something other than the provision of loans or other credit facilities to its members. It does not include any society whose primary object is something other than the provision of loans or other credit facility such as a consumer co-operative society Rodier Mill

Employees' Co-op. Stores Ltd. v. CIT [1982] 135 ITR 355 (Mad.)

When a PACS undertakes more than one non-banking activity, the standard deduction of ₹50,000 is available for the net profit generated from all the activities and therefore multiple deduction u/s 80 P (2) (c) is not available.

3. PACS which receives dividend from its share holdings in another cooperative society and interest received from another cooperative society from its deposits are fully deductible u/s 80 P(2)(d). Of course, both the dividend and interest received by PACS is part of banking business and therefore fully deductible from income.
4. Section 80 P(2) (e) provides for deduction of rent received by a PACS which let out its property for godowns and warehouse purpose.
5. Section 80P(2)(f) provides for deduction of income from Interest on House Property, if the Gross Total Income of such society does not exceed ₹20,000. The following conditions are required to be satisfied while claiming deduction under section 80P(2)(f).-
   (i) The gross total income of the society should not exceed ₹20,000.
   (ii) The income derived only from interest on securities and from house property, qualifies for deduction.

Eventhough, there are multiple deductions available to PACS, care has to be shown in claiming deductions. For instance, all rental income earned by PACS are not eligible for deduction u/s 80P but only in case of godown rent. However, making of wrong claim under section 80P is not at par with concealment or giving of inaccurate information, which may call for levy of penalty under section 271(1)(c). [2010] 322 ITR 73 (PUNJ. & HAR.).

Deductions not Available to PACS

1) Selling goods on credit

The non-credit business run by PACS like Consumer Store, Medical Store, Showroom, Fertilizer Depot., etc., is not entitled to claim deduction from income tax on the profit made from these activities, since these are not part of credit business. Some of the income tax cases pertaining to the said section are detailed below:

A person who sells goods on credit cannot be said to be carrying on the business of providing credit facilities. The words 'providing credit facilities' occurring in section 80P(2)(a)(i), should be constituted at similar to, or in to the 'carrying on the business of banking', the preceding clause in the same sub-section. The words 'providing credit facilities to its members' mean providing credit by way of loans and not selling goods on credit Kerala Co-operative Consumers' Federation Ltd. v. CIT [1988] 170 ITR 455 (Ker.).

The words 'providing credit facilities' in section 80P(2)(a)(i)

would have to be interepted to comprehend the business of lending services of credit facilities in connection with the business of banking CIT v. Co-operative Supply and Commission Shop Ltd. [1994] 76 Taxman 588/[1993] 204 ITR 713 (Raj.).

In order that a banking or providing of credit facility may constitute a business, it is necessary that these activities must be chief source of income. A person who advances loans or supplies goods on credit in connection with and in the course of some other business of manufacture of purchase or sale of goods, etc., cannot be said to be carrying on the business of banking or providing credit facilities Addl. CIT v. U.P. Co-operative Cane Union [1978] 114 ITR 70 (All.).

Exemption to selling goods on credit

The whole of income from the purchase of agricultural implements, seeds, livestock or other articles intended for agriculture for the purpose of supplying them to its members is deductible under section 80P(2)(a)(iv). Some of the income tax cases pertaining to the said section are detailed below:

Supply need not necessarily be to members Section 80P(2)(a)(iv) does not require that the supplies shall be made by the co-operative society only to members and to no one else CIT v. Guntur Distt. Coop. Marketing Society Ltd. [1985] 154 (AP).

It cannot be said that cattle feed meant for livestock has no connection with agricultural operations and as such is outside the exemption contemplated under section 80P(2)(a)(iv) CIT v. Thudialur Cooperative Agricultural Services Ltd. [1997]143 CTR(Mad.)362.

Where a society doing banking business was also running a consumer unit and it debited its consumer unit with interest which was credited in the banking unit as income, it was held that section 80P will not apply. Vide Malwa Mills Karamchari Presper Sahakari Sanstha Ltd. V. CIT (1983) 140 ITR 379 (MP).

The expenditure incurred by a cooperative society in respect of its activities of purchasing agricultural implements, seeds, fertilizers, etc., was allowable in its entirety and could not be disallowed proportionately Vide Baghapurana Cooperative Marketing Society Ltd. v. CIT (1989) 178 ITR 653 (P & H) and Punjab State Coop. Supply & Marketing Federation Ltd. v. CIT (1981) 128 ITR 189 (P & H).

Where the assessee cooperative society has purchased different kinds of manures and pesticides and mixed them up for the purpose of selling the same to the small farmers in retail it cannot be said that the assessee is indulging in any manufacturing activity or processing of goods. Therefore, the assessing officer was correct in granting deduction to the assessee

under section 80P(2) (a) (iv) in so far as the income relating to the sale of manures and pesticides. Vide CIT v. Thudialur Cooperative Agricultural Services Ltd. (1997) 143 CTR (Mad) 362.

2) Godown rent

PACS which let out its property for any purpose like auditorium, running government institutions, cooperative institutions, shops, etc., other than for godown or warehouse is let out for a purpose other than for storage, processing or facilitating the marketing of commodities, the income derived by a cooperative society from such income would not be deductible u/s 80 P(2)(e). [(Ahmedabad Maskati Cloth Dealers Cooperative Warehouses Society Ltd. (1986) 162 ITR 142 (Guj.)]. In above case, the society let out its property to a firm doing wholesale and retail business in cloth. In this case, as the purpose of the let out is not for godown, the society could not get deduction for the rent received.

However, the PACS can deduct an amount equivalent to 30% of rent received from the rent for arriving the taxable rental income. This is called standard deduction which is available for the prupose of repairs, renewals and other maintenance charges u/s 24(a). This deduction is available to PACS apart from the flat deduction of ₹50,000.

The above standard deduction is applicable to those PACS, which are letting their property and receiving monthly rent. For PACS which are getting daily rent from their property, are taxed under "Income from Business" and not under "Income from House Property". For this purpose, the net profit generated from such auditorium after deducting all related expenses from the rent received has to be taken for calculation of tax as per the income tax rates applicable to cooperatives.

3) Hire-purchase

Selling goods on hire-purchase basis does not amount to providing credit facilities-CIT v. Madras Autorikshaw Drivers' Cooperative Society Ltd. [1983] 143 ITR 981 (Mad).

Payment exceeding ₹20,000 in cash

As per Section 40 A(3) of the Income tax Act, if any payment exceeding ₹20,000/- is made otherwise than by an account payee crossed cheque or draft, the entire amount is disallowed. This means, if a PACS pay more the ₹20,000 by cash, the entire amount is treated as its income and tax is charged on such amount. This provision is designed to counter evasion of tax through claims for expenditure shown to have been incurred in cash. However, no disallowance will be made by paying in cash of any amount more than ₹20000/- for the following payments:

- Payment made to banking and other credit institutions including cooperative credit societies.

- Payment made to both Central and State Governments including payment of taxes, excise, railway freight, etc.
- Payment through the banking system, e.g., letters of credit, mail or telegraphic transfer, book adjustment in the same bank or between one bank and another and bills of exchange including hundies made payable to a bank.
- Purchases of capital asset by paying more than ₹20,000 in cash is allowable expenditure.
- If an assessee makes payment of two different bills (none of them exceeds ₹20,000) at the same time in cash considered to be allowable expenditure.

This provision shall not apply in respect of expenditure for which no deduction is claimed. For example, if a machinery is purchased by remitting cash, no disallowance can be made u/s 40A(3) as the PACS is not claiming any deduction from the income for the machinery purchased.

Penalty for certain payments

PACS making payments to its member or a relative of its member in respect of an expenditure which is considered to be excessive or unreasonable having regard to the market value of such goods or services, such excess amount is disallowed as per Section 40A(2) of the Income tax Act. For instance, a PACS where Mr. X is a member, purchases goods manufactured by the son of Mr. X for ₹5000 whose fair market price is ₹3000. In such case, the excess amount i.e. ₹2000 (₹5000-₹3000) shall be disallowed from the profit of the society.

In the above case, the excess amount i.e. ₹2000 is disallowed from the profit of the bank. This means the bank can claim only ₹3000 as expenditure and not ₹5000. Therefore, the bank not only loose ₹2000 by excess purchase value but also liable to incur income tax on ₹2000 which works out to ₹600 (i.e. ₹2000 @ 30%).

Tax Rate Slab

Income tax is calculated according to the rates given in the relevant Finance Act. Provisions for computation of taxable income are given by the Income tax Act. However, the tax rates are not given by the Income tax Act, but by the Finance Act which is passed by Parliament along with budget of the Central Government every year. First determine net income and tax payable thereon at the rates given below. The following rates are applicable to all co-operative societies including PACS for the financial year 2013-14:

Net Income Range	Rate of tax (%)
Up to ₹10,000	10%
₹10,000 to ₹ 20,000	20%
₹ 20,000 and above	30%

Further, in case of PACS having turnover exceeding ₹1 crore, surcharge at 10% on tax is levied additionally from the financial year 2013-14 onwards. However, the surcharge is subject to a marginal

relief i.e. if a PACS having a net income exceeding ₹1 crore, the amount payable as income tax and surcharge shall not exceed the amount exceeding ₹1 crore. With the above computed tax amount (i.e. tax plus surcharge), Education Cess (primary education of 2% and secondary education 1%) is payable at 3%.

Computation of Income tax for PACS

Total income is to be computed as follows, in the following order:

The income tax payable by banks is computed by classifying income as "Income from house property"; "Profit and gains from business or profession"; "Capital gains"; and "Income from other sources put together known as Gross Total Income (GTI). Compute taxable income of the previous year (i.e. the relevant financial year) under each head of income separately. From gross total income, subtract, as per procedures prescribed by the law, "deductions" mentioned in Chapter VI A of the Income-tax Act. The result will be the Net income. Compute income tax payable on the net income. Add surcharge when the net income exceeds ₹1 crore computed on tax payable. Add Education Cess on the tax payable plus surcharge. Add interest payable to reach total tax. Deduct the amount of prepaid taxes, if any, like "tax deducted at source", "advance-tax" and "self-assessment-tax". The result will be either tax payable or refundable or nil.

If a PACS has both income from business (both banking and non banking) and income from house property, then the taxable income from business and income from house property is computed as under:

Net profit as per profit and loss a/c	xxx
Less: Rental income*	xxx
(to be considered separately)	
Less: Income from non banking activity**	xxx
(to be considered separately)**	
Add: Items disallowed	xxx
(not eligible for deduction from net profit)	---
Income from Banking Business	xxx
Add: Income from trading activity	xxx
Add: Income from house property	xxx

Gross Total Income	xxx
Less: Deduction u/s 80P (2) (a)	
(i)- Income from banking business	xxx
Less: Deduction u/s 80P(2)	
(c) Standard Deduction	xxx

Net Income / Taxable Income	xxx

Tax on Net Income (as per tax rate)	xxx
Add: Surcharge 10% (if net income exceeds ₹1 crore)	xxx
Add: Education cess 3% on above	---
Total Tax Payable	xxx
---	
* Rent Received minus municipal tax	xxx
Less: 30% standard deduction of repair, etc.	xxx

Income from House Property	xxx

**Gross Profit as per Trading a/c	xxx
Less: All Expenses pertaining directly and	
Indirectly to Trading activity	xxx

Income from Non Banking Activity	xxx

To arrive at the income (i.e. the net profit) from non banking business, the expenses pertaining to such business is deducted from the income generated from the same. Some of the expenses which are paid exclusively for trading business like salary of the salesmen, electricity cost, telephone charges, etc. are deducted. A cooperative society was earning income which was partly taxable and partly entitled for deduction, proportionate share of expenses attributable to earning income which was entitled to deduction should be deducted in computing such income. [Kota Cooperative Marketing Society Vs. CIT 1994, 207 ITR 608 (Raj.)]. Therefore, as per this case, PACS can also deduct the proportionate cost of chief executive's salary, clerk salary from the income generated out of trading activity according to their time allotment or work load pertaining to such activities.

When the payment of income tax arise for PACS?

The income tax is imposed only when there is a profit. Since the profit generated out of banking business is fully deductible u/s 80 P(2)(a)(i), the profit from trading business and rent from letting of property other than for godown purpose are taken as basis for computing the income tax. From this amount a flat deduction of ₹50,000 is deducted [Sec. 80 P(2)(c)]. Therefore, PACS are liable to incur tax only when its profit from its non banking activities (if any) exceeds ₹50,000.

Mode of payment of tax

PACS pay income tax by filing up a Self Assessment Challan (Challan No. 280) and remit it either in the income tax office directly or in any nationalized banks. However, E-payment (online tax payment) is mandatory from 1.4.2008 for all PACS whose accounts are audited u/s 44AB.

Advance tax

PACS whose tax payable is ₹10,000 or more is obligatory to pay advance tax in 3 instalments in the relevant financial year itself. The ceiling amount of ₹10,000 to be arrived by deducting TDS if any paid the society from the total tax liability for the year. If the net amount (Tax liability minus TDS) is ₹10,000 or more, then advance tax payment becomes compulsory. The details are given below:

Time limit	Advance tax Payable
On or before September 15 of the previous year	up to 30% of the tax payable
On or before December 15 of the previous year	up to 60% of the tax payable
On or before March 15 of the previous year	up to 100% of the tax payable

The advance tax has to be paid in any bank using Challan No. 280. However, those PACS falling under Section 44AB, should make the payment by electronic mode as per circular No. 5/2008 dated

17.7.2008 of the income tax department. In case of PACS not complying with advance tax payment, penal interest under sections 234B and 234C at the rate of 1% per month on tax is levied. However, no penal interest is levied where the advance tax paid is 90% of the total tax payable.

Filing of returns

When a taxpayer's income exceeds the maximum amount which is not chargeable to income-tax before grant of deduction under Chapter VI A of the Act, such taxpayer is liable to file income tax return compulsorily. All PACS irrespective of loss making or profit making should file the income tax returns. The returns have to be submitted on or before the due date prescribed u/s 139(1) of the Act i.e. 30th September of the Assessment year (Assessment year means, the year following the financial year). The return has to be signed by the Secretary. For the year 2013-14, the returns have to be filed up before 30th September 2014. PACS whose accounts are liable to audit under section 44AB shall compulsorily furnish the return by furnishing the return electronically under digital signature or by transmitting the data in the return electronically and thereafter submitting the verification of the return in Return Form ITR-V. When return without digital signature is filed, PACS should print out two copies of Form ITR-V. One copy of ITR-V, duly signed by it, has to be sent by ordinary post to Post Bag No. 1, Electronic City Office, Bangaluru-560100 (Karnataka). The other copy may be retained by PACS for its record. Those PACS having compulsory tax audit should fill up the information about completion of tax audit in the space provided in the return and furnish a report of audit u/s 44AB electronically on or before the date of filing the return of income. Also, where the PACS having total income exceeding ₹5 lakh should furnish the return electronically.

If the return of income is not furnished in due date, then the bank is liable to pay penal interest at 1% per month or part of month, calculated under simple interest on tax payable (Sec.234 A). Section 80 and 139(3) of the income-tax Act which provides for carry forward of losses makes the taxpayer to file the return of income within the due date allowed u/s 139(1) as the law stood as of now. In case where a PACS suffered loss and fails to submit its return within the due date, shall not be eligible to carry forward the losses for adjusting the same in the profit of the following year. Further, in both the cases, the society is liable to pay a penalty of ₹5000/- (Sec.271 F). If a PACS files the loss returns in time, if may carry forward its shown loss to the subsequent 8 years and adjust the same with the profit generated in those subsequent years.

Section 80A(5) of the Act was introduced by Finance (No. 2) Act of 2009 with retrospective effect from

01-04-2003. Section 80A(5) states that, "Where the assessee fails to make a claim in the return of income for any deduction under section 10A or section 10AA or section 10B or section 10BA or under any provision of this Chapter under the heading 'Deduction in respect of certain incomes", no deduction shall be allowed. To streamline the deduction, the legislature enacted Section 80A(5) and one of the conditions is to make a claim in the return of income. As per Section 80A(5), PACS should claim the benefit available to it under section 80P by filing of income tax returns in time. If PACS fails to file the return and claim an income as deduction, then such deductions are not available and the PACS is liable to pay tax on such deducitons like income from banking business also.

Permanent Account Number

When the turnover of PACS exceeds ₹5 lakh, it is obliged to obtain Permanent Account Number (PAN). It may be obtained by filing an application in Form No. 49 A in duplicate. Under following circumstances, PACS have to apply for PAN:

- PACS paying income tax
- PACS filing the return
- PACS falling under payment of income tax
- PACS whose turnover exceeds ₹5 lakhs

The Assessing Officer shall not accept Income tax Returns unless PACS had received or applied for PAN. The PAN has to be quoted in all correspondence with the Income tax Department and on all tax documents, which include returns, challans, appeals, etc. This shall help the Income tax Department to give quicker service and maintain the records of PACS accurately. Penalty of ₹10,000/- is imposable u/s 272B for failure to comply with the PAN.

Conclusion

Most of the PACS are ignorant about various provisions of the income tax Act as it is a newer issue to them. This is likely to create lot of difficulties in the years to come as the tax department is stringing their rules and regulations with heavy interest and penalties for the tax evaders. Since many of PACS in India having good amount of credit business, the same need to be claimed as deduction by filing returns in time otherwise such deductions are denied by applying Section 80A(5). PACS in Kerala which are doing banking business on a huge extend, charged with income tax liability as they were not filed their returns in time. Further, in case any penalty paid by PACS due to non compliance of any of the applicable Act like Income tax Act, the Auditors got right to pass surcharge against the Chief Executive of such PACS and order for recovering the same from their salary. To avoid such difficulties and to run the business smoothly, the PACS have to equip with the provisions of income tax applicable to them.

Success Story: Guinness Book of World Record for tallest cultivated sugarcane by M. Venkatesh Gowda

An Indian sugarcane stalk has entered the Guinness Book of Records as well as Limca Book of World Records as the longest of its kind. The credit for setting the record for growing the sugarcane goes to Mr. M. Venkatesh Gowda, Additional Registrar of Cooperation Societies, Department of Cooperation, Govt. of Karnataka and Managing Director, Karnataka State Cooperative Rural Development Bank Ltd., Banglore.

He has entered the Guinness Book of Records by growing a 31ft-high sugarcane stalk at his house in Mysore. The normal height for sugarcane stalks is 10-12 ft. He planted the "Hebbala" variety of sugarcane in his kitchen garden. As the sugarcane grew more than 20 ft, Mr. Gowda dug a pit and planted a 25 ft bamboo to support and protect it from wind and covered about 10 ft of cane with cloth.

Well, he is again set to break his earlier record. In his Rajarajeshwari Nagar residence he has grown a sugarcane plant which has now grown to a height of 42 feet and is on way to break his earlier set Guinness World Record. Mr. Gowda has been felicitated 'Rajiv Gandhi Award' and "Kriyasheela Adhikari Award'.

M. VENKATESHGOWDA K. C. S.,
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RBI plans carrot-and-stick approach to curtail bad loans

To spur banks/financial institutions to agree collectively and quickly to a plan of resolution of stressed assets, the RBI held out the hope of a liberal regulatory treatment. This includes spreading the loss on sale of the asset over a period of two years; allowing takeout financing/refinancing over a longer period and not considering the same as restructuring.

In its discussion paper on 'Early Recognition of Financial Distress, Prompt Steps for Resolution and Fair Recovery for Lenders', the RBI said before a loan account turns into a non-performing asset (NPA), banks should identify incipient stress in the account by creating a new sub-asset category Special Mention Accounts (SMA). SMA is a special account created for reporting a standard account, which is moving towards the substandard category. SMA will have three sub-categories SMA-NF (classified on the basis of non-financial signals); SMA-1 (when principal or interest payment is overdue between 31-60 days); and SMA-2 (when principal or interest payment is overdue between 61-90 days).

The RBI plans to set up a Central Repository of Information on Large Credits (CRILC) to collect, store, and disseminate credit data to lenders. Banks will have to furnish credit information to CRILC on all their borrowers having aggregate fund-based and non-fund-based exposure of ₹5 crore and above. Systemically important non-banking finance companies (NBFC-SIs) will also be asked to furnish such information. In addition, banks will have to furnish details of all current accounts of their customers with outstanding balance (debit or credit) of ₹ 1 crore and above. Banks will be required to report, among others, the SMA status of the borrower to the CRILC. Individual banks will have to closely monitor the accounts reported as SMA-1 or SMA-NF as these are the early warning signs of weaknesses in the account. They should take up the issue with the borrower with a view to rectifying the deficiencies at the earliest.

However, to start with, reporting of an account as SMA-2 by one or more lending banks/NBFC-SIs will trigger the mandatory formation of a Joint Lenders' Forum (JLF) and formulation of Corrective Action Plan (CAP). In cases where banks/NBFCs-SIs fail to report SMA status of the accounts to CRILC or resort to methods with the intent to conceal the actual status of the accounts and the accounts subsequently turn NPAs, the RBI may prescribe accelerated provisioning.

JLF formation would be made mandatory for distressed corporate borrowers with aggregate fund-based and non-fund based exposure of ₹100 crore and above. JLF will explore various options to resolve the stress in accounts. The intention of the stressed assets resolution framework is not to encourage a particular resolution option, example, restructuring or recovery, but to arrive at an early and feasible resolution to preserve the economic value of the underlying assets as well as the lenders' loans. The options under the CAP by the JLF would generally include: rectification (for regularising the loan account), restructuring and recovery (when the first two options fail).

Poorna Shakti Kendras to empower rural women

To ensure the socio-economic development of women in rural areas, the National Mission for Empowerment of Women is promoting a model intervention project. At the heart of the project launched in 21 districts nationwide, including Pali in Rajasthan is the women's centre, Poorna Shakti Kendra, established in villages, for offering services to women at the grass-roots.

Working with the motto, hum sunenge nari ki baat (we will listen to women's voices), two women coordinators or Gram Samanvayaks in each Kendra will help women get pensions and voter identity and Aadhaar cards. "One of the important elements of the project is the stress on processes instrumental in bringing about women's empowerment through convergence strategies on the ground," says Minister of State for Rural Development.

Likewise, to encourage universal social mobilisation through self-help groups under the National Rural Livelihoods Mission (NRLM), attention is being paid to women's empowerment. "The NRLM proposes to ensure universal financial inclusion by facilitating opening of savings accounts by all SHGs, while encouraging their thrift and credit activities and other financial services," he says. Under the NRLM, there shall be one rural self-employment training institute in each district. Each will train at least 750 candidates of the below poverty level category.

To help make Hindi official, a Saral dictionary

A simplified dictionary for government officials will seek to promote the use of Hindi, it is being brought out by the Ministry of Home Affairs, nodal ministry for promoting the national language. A recent Parliamentary Standing Committee report on the MHA observed many ministries and departments were not using Hindi in their communications as the Official Languages Act prescribes.

The MHA informed the committee an eight-member panel has been constituted to promote the language and they were coming out with a saral dictionary.

The ministries and departments found not using Hindi often enough include Panchayati Raj, Chemicals and Petrochemicals, Scientific and Industrial Research, and Health and Family Welfare. "The committee understands that it is the constitutional duty of the Government of India to promote Hindi language and it is duty of the Department of Official Languages to promote/encourage use of Hindi language in all the departments/ministries of the country," observed the committee, chaired by M Venkaiah Naidu.

The Department of Official Languages is also coming out with an e-mahashabdkosh, an e-dictionary of Hindi and English words used on various government domains on the Internet. The Department of Official Languages under the MHA monitors the use of Hindi in about 10,000 central government offices across the country. This year it trained more than 4,500 officials in Hindi typewriting. An official said posts of Hindi translators are lying vacant in many ministries and departments.

RBI to make people aware about keeping currency notes clean

The Reserve Bank aims to create awareness among people about not writing anything on the currency notes and that they need to keep them clean, Deputy Governor K C Chakrabarty said. "Our aim is to create awareness among people that they should not write anything on the currency notes and need to keep the currency notes clean,"He added, the rules need to be strictly followed for cheques as per RBI guidelines if there was any kind of cutting or overwriting done on the cheque then it would be strictly considered invalid by the banks and would not be accepted.

Maharashtra farmers get ₹ 763 cr compensation

Farmers in Maharashtra have received ₹763 crore as compensation from the Agriculture Insurance Corporation for losses suffered during the kharif and rabi season of fiscal 2012-13, said Agriculture Minister of Maharashtra. The premium for compensation was ₹123 crore, of which ₹96 crore was given by the State Government, ₹26 crore by farmers and the rest by the Union Government. He said that claims relied on weather-based insurance instruments. Crops such as jowar got maximum claim of about ₹400 crore, followed by a compensation of ₹140 crore for chickpeas (harbhara).

He added that private insurance companies were not keen to provide insurance cover to farmers due to the unpredictable weather.

However, weather-based insurance and agronomical practices are crucial for the agriculture sector said Minister adding that they would be incorporated in the planning process. He said that the Agriculture Department is also keen to set up automatic weather monitoring stations, so that accurate data can be used for the planning process. A ₹100-crore project is in the pipeline, which will establish station across the State.

NPAs need priority tackling: RBI

Non-performing assets (NPAs) of the banking sector need to be tackled on a priority basis to ensure that they do not grow to alarming proportions. "The current levels of NPAs do not pose a systemic concern as the CRAR (Capital to Risk Weighted Assets Ratio) of the banking system is above the prescribed levels and many projects are just delayed, not unviable. But we cannot be complacent," Reserve Bank of India Governor Dr. Raghuram Rajan said.

The RBI said India was better prepared to handle the effects of tapering in the U.S. Federal Reserve's bond purchase programme starting January 2014, but continuing inflationary pressure was limiting what its monetary policy could do. It had also raised concern on the alarming bad assets in the banking sector, the RBI said in the report.

"Efforts during the past few months have been directed to make the Indian economy more resilient to the ultimate withdrawal of liquidity from the system and less reliant on unstable external capital for growth. The Fed's announcement that it will phase out QE-3 is a welcome signal that conditions have started on the path of normalisation," Dr. Rajan said. "The previous Financial Stability Report (FSR) December 2013 was released at a time of volatility unleashed by the Fed's announcement of tapering. As tapering got postponed, economies like India got time to put their house in order. Macro-prudential policy measures initiated by the Reserve Bank and the Government have brought some stability to the markets and exchange rate volatility has been contained thus far," he said.

The RBI said current account deficit had narrowed to sustainable levels. Foreign exchange reserves were adequate and fiscal consolidation was in progress. The outlook for the economy had improved, with export growth regaining momentum, but growth was still weak. "The challenges of containing inflationary pressures limit what monetary policy can do. To maintain the momentum gained by the respite, it is imperative that long-delayed legislative reforms are pushed through, stalled infrastructure project clearances continue and fiscal consolidation remains on track," Dr. Rajan said in the foreword.

Farm, industrial sectors account for most of the bad loans: RBI report

The growing share of bad loans is causing enough worry to India's ₹81 lakh crore banking sector, shows the RBI's latest Financial Stability Report. According to the half-yearly report, gross non-performing assets (NPAs) are likely to go up to 4.6% of total loans by September 2014 from 4.24% September 2013 from ₹1.67 lakh crore to ₹2.29 lakh crore.

In terms of gross NPAs, agriculture has the highest ratio at 5.5% at end-September 2013. The sector is followed by industries at 4.9%. Industries posted the highest share in re-jigged advances, 10.9% at end-September. Industries contributed the highest share of stressed advances in their loans portfolio 15.9% at end-September followed by services at 7.6%. Loans in retail fared much better. Its share in gross NPAs stood at 2.2%, while restructured standard advances to total advances were 0.3% at end-September.

Incidentally, the new private sector banks, with the largest share of the retail segment in their loans portfolio, around 30%, seemed to have benefited in terms of better asset quality relative to other bank-groups, shows the RBI report. Public sector banks have the lowest share of the retail segment in their loans portfolio around 16%.

Farmers need access to big markets to reap fruits of APMC reform

The governments need to back this reform in the Agriculture Produce Marketing Committee (APMC) Act by supporting the rise of alternative models through which farmers can access larger markets, and by setting up regulatory mechanisms that supervise the functioning of these models.

"Bihar too had abolished the APMC Act some years ago," says S Sivakumar, the chief executive of ITC's agribusiness unit. "But not much has happened there." New linkages between farmers and consumers have not come up; neither have farmers received their fair share of higher realisations nor consumers the benefit of lower prices. According to Sivakumar, it is incontrovertible that the APMCs have outlived their utility. Before they were created, traders used to buy produce from farmers by visiting villages. Often, at very low rates.

To supervise these transactions, and give farmers a better deal, the government came up with the idea of having all agricultural produce transactions at predetermined locations where officials could supervise them. Sivakumar feels APMC yards (essentially, mandis) are not needed anymore. "They were needed in the 1960s as a competitive price discovery mechanism, compared to the village trader system, prevailing till then. But no one can discover prices sitting in the village, by leveraging new

technologies, and bypass the APMC mandis. This certainly reduces transaction costs, including handling losses." The APMC yards have also seen instances, as in the case of onions, where a small number of traders have come to control the market, giving them undue pricing power over farmers.

There are other problems. According to YK Alagh, former chairman of Institute of Rural Management Anand (IRMA), not only are Indian farmers responding to the higher demand for non-cereals, they are also heading to small towns to sell their produce. "We are simply not creating the processing, market and transport infrastructure for them," he says. For that reason, he adds, "the APMC noise is largely misplaced. It will not have much impact either on food prices or farmer incomes, because it does not address the problem of improving the marketing infrastructure where it is needed close to the demand centres." Without addressing these questions of market access, not much will change. Says Narasimha Reddy, a Hyderabad based researcher who specialises in Indian agriculture, even under the new non-APMC regime, smaller farmers might struggle to access larger markets. If anything, the networks and individuals who control the existing trade in fruits and vegetables might become more dominant.

These new models could be like Hyderabad's Rythu Bazaars. For the longest time, Sekhar Goud, a farmer in Andhra Pradesh's Rangareddy district, used to sell his vegetables to traders in mandis. That changed in 1999, when the state government rolled out Rythu Bazaars (Telugu for 'farmer markets'). In these markets, set up in urban centres, farmers can sell directly to consumers, thus realising a better price. The model is working, says Goud. "We are happy with the prices we get." Today, Rythu Bazaars account of 41% of all vegetable supplies in Hyderabad, and about 10% of the total urban requirement in the state. They attract even small farmers, who bring their produce from 25-30 km afar in a state transport bus. That distance can be, at times, a limitation. "We see a lot of farmers sell their produce in distress in the evenings to clear stocks for the day (and return home) and fear of perishables," says MK Singh, CEO of Rythu Bazaars. "Wastage is anywhere between 30-50%."

In contrast, another model, like the Safal Mandi, on the outskirts of Bangalore, works on a larger scale. These started coming up about 10 years ago. Here, farmers from a 100-150 km radius are aggregated into producer organisations. They send their produce in truckloads to the mandi, where consumers - typically, businesses like retail chains or eateries buy through an electronic auction after the produce has been graded.

Aadhaar-linked bank A/Cs for all by 2016: RBI panel

A panel set up by the RBI to promote financial inclusion has proposed universal electronic bank accounts to all Indian citizens above the age of 18 by January 2016. While laying down its vision statement for financial inclusion and deepening, the panel headed by Nachiket Mor, who is also a director on the central board of the RBI, said, "every resident should be issued a universal electronic bank account automatically at the time of receiving their Aadhaar number by a high quality, national, full-service bank."

The committee has recommended that the RBI should issue a circular indicating that no bank can refuse to open an account for a customer who has adequate KYC proof which specifically includes Aadhaar. According to the panel, by January 1, 2016, each low-income household and small-business would have "convenient" access to providers that have the ability to offer them "suitable" investment and deposit products, and pay "reasonable" charges for their services. By 2016, the number and distribution of electronic payment access points would be such that every single resident would be within a 15-minute walking distance from such a point anywhere in the country.

It said each such point would allow residents to deposit and withdraw cash to and from their bank accounts and transfer balances from one bank account to another, in a secure environment, for both very small and very large amounts, and pay "reasonable" charges for all of these services. "At least one of the deposit products accessible to every resident through the payment access points would offer a positive real rate of return over the consumer price index," it said. However, opposing loan waivers and interest subsidies, it said the permission to price farm loans below the base rate should be withdrawn.

Cooperative farming will make agriculture remunerative

Welfare Organisation for Rural Development (WORD-Tirupati) and Sustainable Agro Alliance Limited (SAAL-Madurai) brought out the book, a compilation of 180 articles published over the past six years in the Farmers' Notebook column of The Hindu.

Expressing concern at the falling contribution of agriculture to the Gross Domestic Product, Chittoor Collector K. Ramgopal called cooperative farming the elixir to rid agriculture of its woes. An agriculture graduate himself, Mr. Ramgopal advised farmers to divide tasks among themselves to cut operational cost. “Strong leadership at the village level and farmers' willingness to look beyond their farm bund can ensure its success.”

K. Ramaswamy, Vice-Chancellor of the Tamil Nadu Agricultural University (Coimbatore), lauded the

efforts of The Hindu's agriculture correspondent M.J. Prabu and wanted the book made part of the curriculum. “Science journalists have the ability to look beyond what we [academics] see,” he said, seeking a higher allocation to strengthen the academic infrastructure to match the rise in the number of seats. ISCA president and former Vice-Chancellor of Sri Venkateshwara University R. Ramamurthi called farmers “rural innovators.”

RBI committee to review governance of bank boards

The Reserve Bank of India has constituted an expert committee to review the governance of bank boards in India. The committee will review the regulatory compliance requirements of the board of directors of banks, judge what can be rationalised and where requirements need enhancements, examine the working of the boards, including whether adequate time is being devoted to issues of strategy, growth, governance and risk management, the RBI said in a notification.

The committee will review central bank regulatory guidelines on bank ownership, ownership concentration and representation on the board, analyse the representation to see whether the boards have the appropriate mix of capabilities and necessary independence to govern the institution, and investigate possible conflicts of interest in board representation, including among owner representatives and regulators.

In this regard, it will also assess and review the 'fit and proper' criteria for all categories of directors of banks, including tenor of directorship, board compensation guidelines and any other issue relevant to the functioning of the boards and the governance they exercise. The committee is expected to submit its report within three months after its first meeting.

Women's Bank to give loans up to ₹ 1 crore without collateral

To promote women entrepreneurship, the country's first Women's Bank the Bharatiya Mahila Bank (BMB) has chosen to do away with collateral for loans availed by the fairer sex. The BMB will provide collateral-free loans for amounts up to ₹1 crore, which will instead be covered under the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE).

For loans availed for smaller amounts such as ₹20,000, the bank will completely waive off the requirement for collateral. “Women are moderate risk takers. So the question of collateral should not really arise,” said Usha Anantha subramanian, CMD, BMB. The issue of collateral also tends to discourage women from availing loans, she pointed out, since much of the immovable property tends to be in the name of the husband or father.

The CGTMSE is a credit guarantee scheme, where a premium is

paid either by the lender or the applicant, provides a guarantee cover for up to 80% of loans availed by women owned or operated micro and small enterprises.

Local area banks want more leeway to mobilise deposits

Local Area Banks want the Reserve Bank of India to classify them as 'scheduled banks' so that they can tap deposits from companies and temple trusts. Companies and temple trusts usually place deposits with scheduled banks. Scheduled banks are those in the second schedule of the RBI Act, 1934. For inclusion in the second schedule, a bank has to have paid-up capital and reserves aggregating not less than ₹5 lakh, and satisfy the RBI that its affairs are not being conducted in a manner detrimental to the interests of its depositors.

According to T. Eswara Chandra Rao, Managing Director of Vijayawada-headquartered Coastal LAB, if the banking regulator classifies LABs as scheduled banks, then temple trusts and companies will be inclined to place deposits with them. This will help diversify the sources of funds and ease the pressure on cost of funds.

In 1996, the RBI had come up with guidelines for setting up LABs. These banks were envisaged to promote rural savings as well as for the provision of timely and adequate credit for viable economic activities in the local areas. There are four LABs in the country Jalandhar-based Capital (the largest in the country); Coastal; Mahabubnagar-based Krishna Bhima Samruddhi; and Kolhapur-based Subhadra.

LABs lend, among others, for agriculture and allied activities, to small-scale industries, agro-industrial units and for trading activities. In its Report on Trend and Progress of Banking in India 2012-13, the RBI said LABs show promise of small-scale banking institutions that can be experimented with on a larger scale in future. The Reserve Bank's Discussion Paper 'Banking Structure in India: The Way Forward' has recommended the creation of more number of smaller banks in the private sector with the objective of achieving financial inclusion at the local level. Banks, such as LABs, pose less threat to systemic stability given their limited-area operations with little financial interconnectedness.

Frauds at co-op banks disturbing: Nabard

With State Co-operative Banks, District Central Co-operative Banks and Regional Rural Banks collectively reporting an over ₹100 crore jump in frauds in the last financial year, their supervisor Nabard has asked them to strengthen their internal checks and control systems. Nabard (National Bank for Agriculture and Rural

Development) said it is quite disturbing that although the number of outstanding frauds has marginally declined as at March-end 2013 as compared to the position obtaining a year ago, the amount involved has considerably increased from ₹612 crore to ₹ 728 crore.

The increase in the fraud amount is largely attributable to a few high-value frauds in the loans and advances segment. "It was further observed that in several cases, banks were either not reporting or reporting the fraud with undue delay. The actual amount involved (in fraud) could therefore be higher, said Nabard.

Banks may not get priority sector loans from RRBs at below market prices

Public sector banks may no longer be able to wangle a "lower-than-market" price when buying priority sector loans from regional rural banks they sponsor. The Department of Financial Services and the National Bank for Agriculture and Rural Development (NABARD) are keeping a close watch on such "lower-than-market" pricing.

This issue was flagged by the Financial Services Secretary, Rajiv Takru and NABARD Chairman, Harsh Kumar Bhanwala at a performance review meeting of all regional rural banks (RRBs) in the country. To correct this, Takru asked NABARD to work out a methodology, in consultation with the Reserve Bank of India, so that the sale of priority sector portfolio takes place at market driven price.

In the run up to the financial year end, banks typically buy priority sector loans via IBPCs from entities such as RRBs to meet shortfalls in their priority sector lending targets. IBPCs are a form of loan securitization of loans through which a bank buys the assets of another bank for a stipulated period. The RBI has mandated that banks lend 40 % of their total loans to priority sectors such as agriculture, micro and small enterprises, education and affordable housing. However, banks which are unable to meet this target buy it from the market. For RRBs, the priority sector lending for the last three years has been more than 80% as against the targeted level of 60%. So, RRBs are at liberty to sell their excess priority sector loans to banks seeking them.

However, since sponsor banks buy such loans at "lower-than-market" prices, a true price discovery of such portfolio is inhibited. "There are no authentic figures available to say how much is sold to such sponsored banks," Bhanwala said. Another NABARD official said that "majority" of the loans that the RRBs sell are to sponsor banks. Currently, there are 57 RRBs in the country. The sector has seen massive consolidation in the past decade when there were over 200 RRBs.

RRBs are three-way joint ventures between the central government (which holds 50% stake in all these banks), the state government where the RRB is located (15%) and the sponsor bank (35%). RRBs were created in the mid-1970s with a view to develop the rural economy and create a supplementary channel to the 'Cooperative Credit Structure'. Of the 64 RRBs as on March 31, 2013, 63 RRBs recorded profit. All the RRBs put together had an outstanding loan portfolio of ₹1.37 lakh crore, of which ₹1.02 lakh crore was lent to the agriculture sector. RRBs saw 6% (or ₹8,330 crore) of their total loans turning bad as on March 2013, higher than 5% a year earlier.

Nabard to help fund tiny infrastructure projects in villages

With banks focussing their energies on funding mainstream infrastructure projects, the National Bank for Agriculture and Rural Development (Nabard) is exploring the feasibility of supporting development of micro-infrastructure in villages. Nabard could support the 'gram panchayat' (a local self-government institution at the village level) to develop micro-infrastructure projects in villages in areas such as bore-wells, sanitation, electrification (solar/ biogas/ windmill), warehouse to store farm produce, and farm equipment power-tillers; combine harvesters, reapers, etc.

According to Harsh Kumar Bhanwala, Chairman, Nabard, while the banks fund mainstream infrastructure projects, there is a need to evolve a framework for meeting the funding requirements of micro-infrastructure projects so that villages prosper. Nabard is planning to ask the Indian Institute of Management, Ahmedabad, to carry out a detailed study on the feasibility of providing collateral-free finance to micro-infrastructure projects in villages. “When there is micro-credit, microfinance, and micro-insurance then why not micro-infrastructure?” asked Bhanwala.

In India, about 80 % of the total agriculture land-holding is fragmented and these farmers (with each holding less than two hectares) cannot afford to own mechanised farm equipment. In such cases, joint-ownership of equipments can be explored through joint liability groups. Though Nabard has not committed any capital for the micro-infrastructure foray, Nabard chief said his organisation could consider carving out a portion of the RIDF (Rural Infrastructure Development Fund) for micro-infrastructure projects.

RIDF comprises money that banks forfeit in a particular financial year for not meeting their priority sector targets. Banks have to set aside 40 % of their total loan portfolio for priority sectors such as agriculture, micro and small enterprises, education and affordable housing. When some banks are

unable to meet this target in full, they have to deposit the balance in the RIDF operated by Nabard, which in turn, invests in rural infrastructure development. The difference between financing for regular rural infrastructure and micro-infrastructure is that for the latter, funds will be made available for small and highly-localised projects, mostly on an individual basis.

Pay hike for Primary Agricultural Cooperative Societies' employees in Tamil Nadu

As many as 15,780 employees of the Primary Agricultural Cooperative Societies (PACS) will get pay hike in the range of ₹ 558 to ₹5,661. Likewise, 1,701 staff members of the Urban Cooperative Banks (UCBs) will see a rise in their salaries, varying from ₹419 to 9,344, Chief Minister Jayalalithaa, said in a statement. This will mean an additional expenditure of ₹26.89 crore for the 4,524 PACS and ₹13.33 crore for the 120 UCBs.

In the case of the PACS, the tenure of the previous wage settlement expired on March 31, 2013, and that of the settlement for the UCBs on November 27, 2011. The pay hike came into force with retrospective effect from April 1, 2013, for the PACS staff and Jan. 1, 2012 for the UCBs' employees. As per the details of the new wage settlement for the PACS, a 12% hike would be given to employees of the societies which had been recording net profits for five years, functioning on their own resources and without taking financial support from the District Central Cooperative Banks; one increment to employees of the PACS which had been registering good profits for three years and which had been giving 14% dividend to members of such societies; 10% increase to the staff of the societies which had been posting net profits for five years, while taking financial support from the District Central Cooperative Banks; 7% rise to those in the cooperative institutions that had earned profits for some years but had cumulative losses and 5% increase to staff of the societies which had been functioning under continuous losses and to those in the cooperative institutions that had loan outstanding of ₹1 crore and below.

As for the UCBs, a 20% increase would be given to staff of 27 banks which had gained profits for five years successively and posted turnover of over ₹100 crore; 15% rise to the workforce of 37 banks which had earned profits for five years successively and recorded turnover in the range of ₹ 50 crore to ₹ 100 crore and 10% hike to staff of 42 banks which had netted profits for five years successively and registered turnover up to ₹ 50 crore.

RRBs pull ahead of the biggies, net higher CASA

Regional rural banks (RRBs), which are seen as a vehicle for financial inclusion, have managed to generate more current and savings accounts (CASA) than commercial banks and even some large private banks.

The share of low-cost deposits, or CASA, for such banks was 54.3% at the end of December 2013, compared with 43.89% for the country's largest lender, State Bank of India, and just 24.3% for Canara Bank. "This is even higher than certain private banks. Compared with their sponsor banks, RRBs have had a much higher CASA," said Harsh Kumar Bhanwala, chairman of National Bank for Agriculture and Rural Development (Nabard), which supervises RRBs. The ratio for ICICI Bank and HDFC Bank was 43.3% and 41%, respectively.

Until a few years ago, commercial banks relied heavily on CASA to bring down their cost of funds. But even large and successful banks have not been able to increase the share of CASA over the past 2-3 years as deposits have been hard to come by due to the economic slowdown.

A higher share of CASA implies that banks are able to raise funds at low costs since these deposits attracts much lower, and sometimes nil, rates than term deposits. "RRBs" higher CASA ratio shows the trust these banks have among the local community and the connect they have with locals," said Bhanwala.

Given this trend, experts say RRBs can help achieve greater financial inclusion by taping their CASA potential to the fullest. According to the Nabard, RRBs upped profitability in 2012-13, when 63 of 64 such banks earned a profit of ₹2,275 crore. This compares favourably with the previous fiscal, when 79 out of 82 RRBs earned a profit of ₹1,886 crore. Besides, 2012-13, the number of loss incurring RRBs declined to one from three in 2011-12 and the aggregate loss also went down to ₹2.07 crore from ₹1,091 crore on March 31, 2013 against ₹1,333 crore for 22 RRBs a year ago.

Deadline for exchanging pre-2005 banknotes extended to Jan 1, 2015

The Reserve Bank of India has extended the date for exchanging banknotes issued prior to 2005 to January 1, 2015. In late January, the central bank had advised that after March 31, 2014, it will completely withdraw from circulation all banknotes issued prior to 2005. Further, from April 1, 2014, the public will be required to approach banks for exchanging these notes.

Then it said, from July 1, 2014, to exchange more than 10 pieces of ₹500 and ₹1,000 notes, non-

customers will have to furnish proof of identity and residence to the bank branch in which she/he wants to exchange the notes. Subsequently, it clarified that from this date onwards, members of the public can exchange any number of these old series notes from the bank branches where they hold their accounts.

The public can easily identify the banknotes issued before 2005 as they do not have on them the year of printing on the reverse side. They can exchange such notes at a bank branch convenient to them. The RBI, in a statement, advised banks to facilitate the exchange of these notes for full value and without causing any inconvenience whatsoever to the public.

The RBI said the rationale behind its move to withdraw banknotes printed prior to 2005 is to remove them from the market because they have fewer security features compared to banknotes printed after 2005. It is standard international practice to withdraw old series notes. "This withdrawal exercise is in conformity with the standard international practice of not having multiple series of notes in circulation at the same time. "A majority of such notes have already been withdrawn through the banks and only a limited number of notes remain with the public," the central bank statement said. The Reserve Bank clarified that the public can continue to freely use these notes (printed before 2005) for any transaction and can unhesitatingly receive these notes in payment, as all such notes continue to remain legal tender.

Gujarat gets ₹1,800-crore Nabard loan for rural infrastructure in 2013-14

To boost rural infrastructure development in Gujarat, the National Bank for Agriculture and Rural Development (NABARD) had given advances of ₹1,800 crore during financial year 2013-14, said MK Mudgal, chief general manager.

"Recently, we have approved advances of ₹1,533.90 crore for developing infrastructure for irrigation and warehousing, which takes total amount of advances under the Nabard Rural Infrastructure Development Fund to ₹1,800 crore. Of these, ₹1,407.18 crore was provided as advance to Kutch branch canal system for development of three pumping stations in Kutch as well as creating canal network from 82.30 km to 357.158 km,"he added.

The project is being undertaken by Sardar Sarovar Narmada Nigam and, once completed, it will provide irrigation water to cover 1,75,889 hectares of land. Total expense of this project is pegged at ₹ 3,097.93 crore. Adding that ₹126.72 crore has been provided as advances for creating warehousing scheme, Gujarat State Civil Supply Corporation will develop about 68

warehouses which will take the storage capacity of rural and semi urban regions in 21 districts to 1,23,000 tonnes,

Women-run businesses face financing deficit

Women have a harder time raising funds for their business than men, according to a report by the International Finance Corporation (IFC), a World Bank arm. The gap in financing women-owned enterprises has been pegged at a whopping ₹6.37 lakh crore 73% of the total demand. Significantly, the report noted that there is empirical evidence that women tend to be better borrowers and customers, thus providing "value" (in terms of better credit quality, comprehensive banking relationships, and enhanced profitability) to their partner financial institutions.

According to IFC, the total funding requirement of women-owned enterprises in India, using 2012 data as a base, is around ₹8.68-lakh crore, which includes both debt and equity. The total formal finance extended to women-owned enterprises in 2012 was ₹2.31 lakh crore, said the report, 'Improving access to finance for women owned businesses in India'.

More than 90% of women-owned enterprises in India are self-financed and represent about 10% of all MSMEs (micro, small and medium enterprises) in the country. Collectively, they contribute 3.09% of industrial output and employ over eight million people. While 78% belong to the services sector, almost 98% of them are micro-enterprises. The report said that although funding needs of women-owned enterprises are not radically different from those of male-owned businesses, financial exclusion is at a higher level due to a combination of factors.

The constraints women entrepreneurs face include limited awareness and understanding of financial products/services; lack of collateral; and lack of confidence to approach financial institutions.

Blaming poor returns, 61% farmers ready to quit and take up city jobs: A survey

The study report on the State of Indian Farmer reveals some alarming facts, with 47% of those surveyed believing that the overall condition of the farmers in the country was bad and a whopping three-fourth preferring some work other than farming. The study was conducted by the Centre for the Study of Developing Societies (CSDS) in December 2013 had surveyed about 5,000 farm households across categories. It interviewed about 11,000 farmers in 274 villages of 137 districts across 18 States.

61% of the farmers surveyed said they would leave farming if they get jobs in the city. The biggest worry for farmers is securing a future of

their next generation, says Kumar. As much as 60% wanted their children to migrate to a city. "Education, health and employment have emerged as major responsibilities that worry Indian farmers," adding that a little less than half of them were dissatisfied with their present economic condition, but were optimistic their future. Majority (about 70%) of the farmers said their crops got destroyed at least once in the past three years. About 58% of them blamed both the Centre and State Governments for their problems.

The CSDS survey, which also interviewed 4,298 women, found that 67% of them felt that income from agriculture was not sufficient to fulfil the livelihood needs of their families. Of the 2,116 youth interviewed, only 20% said they would continue farming. A large section of farmers about 62% were not aware of the concept of minimum support price (MSP). Lack of awareness on MSP was largely found in Bihar, Jharkhand, Odisha and Uttar Pradesh to an extent. Among those who had heard of MSP, 64% said they were not satisfied with the prices fixed by the Government for their crops. Interestingly, 73% of the farmers had not heard about the new land acquisition law. Among those who were aware of it, 57% felt that farmers stand to lose from the law. Also, 70% were not aware of the direct cash transfer scheme. However, a third supported the idea of benefits going directly to their bank accounts.

Most of there surveyed felt that only rich farmers got the benefits of Government schemes and policies, and only a tenth of poor and small farmers were found to have benefited from these schemes.

RBI's bi-monthly monetary policy statement on April 1, 2014

Reserve Bank of India announced the First Bi-monthly Monetary Policy Statement for 2014-15 on April 1. This statement is in keeping with the recommendation of the Urjit Patel Committee. The committee said monetary policy reviews will ordinarily be undertaken in a two-monthly cycle, consistent with the availability of key macroeconomic and financial data.

The Expert Committee to Revise and Strengthen the Monetary Policy Framework, headed by Urjit Patel, Deputy Governor, RBI, had suggested that inflation should be the nominal anchor for the monetary policy framework. This nominal anchor should be set by the Reserve Bank as its predominant objective of monetary policy in its policy statements.

The nominal anchor (or the target for inflation), which should be set at 4% with a band of +/- 2% around it, has to be communicated without ambiguity, so as to ensure a monetary policy regime shift away from the current approach to one that is centered around the nominal anchor.

The committee said the RBI should adopt the new Consumer Price Index (CPI) based inflation (combined) as the measure of the nominal anchor for policy communication. The nominal anchor should be defined in terms of headline CPI inflation, which closely reflects the cost of living and influences inflation expectations relative to other available metrics.

NCMSL to get ₹130 crore funding from Nabard

The National Bank for Agriculture and Rural Development will lend ₹130 crore for the first time to a private sector company National Collateral and Management Services (NCMSL) through its Rural Infrastructure Development Fund.

Confirming the development, Mr. Sanjay Kaul, Managing Director, NCMSL, said it is for the first time that Nabard, which generally lends only to Government-owned warehousing entities, has utilised the special window opened by the Centre to fund established private sector warehousing companies like NCMSL, has proposed to utilise the fund to set up warehouses at 40 locations, as part of its ongoing project. It recently acquired 216 acres in tier-II and tier-III cities across 12 States to construct its own warehouses. The new warehouses, which are coming up in close proximity to agriculture mandis, will be of large format one lakh square feet against the conventional 15,000 sq ft. These warehouses will house quality testing laboratories since NCMSL's business model envisages facilitating delivery for futures trading or providing finance through warehouse receipts.

NCMSL intends to add three million sq ft warehouse capacity to handle 5.5 lakh tonnes of commodity. The company recently raised ` 100 crore as equity to fund its land acquisition initiative. The company recently entered into a new business vertical - to source agricultural commodities for small and medium enterprises and fast moving consumer goods companies. Over the last four years, the company sourced commodities for Food Corporation of India. Leveraging this experience, NCMSL kicked off the service in Bihar, Rajasthan and Andhra Pradesh. Large FMCG companies generally purchase their key agriculture input requirements during the peak arrival season and use them throughout the year.

RBI releases Discussion paper on Framework for Revitalising Distressed Assets in the Economy

The Reserve Bank of India released a Discussion Paper on 'Early Recognition of Financial Distress, Prompt Steps for Resolution and Fair Recovery for Lenders: Framework for Revitalising Distressed Assets in the Economy' on its website.The Discussion Paper outlines a corrective action plan that will incentivize

early identification of problem cases, timely restructuring of accounts which are considered to be viable, and taking prompt steps by banks for recovery or sale of unviable accounts. The main proposals in the Discussion Paper are summarized below:

i. Early formation of a lenders' committee with timelines to agree to a plan for resolution.
ii. Incentive for lenders to agree collectively and quickly to a plan is underway, accelerated provisioning if no agreement can be reached.
iii. Improvement in current restructuring process: Independent evaluation of large value restructurings mandated, with a focus on viable plans and a fair sharing of losses (and future possible upside) between promoters and creditors.
iv. More expensive future borrowing for borrowers who do not co-operate with lenders in resolution.
v. More liberal regulatory treatment of asset sales.

a. Lender can spread loss on sale over two years provided loss is fully disclosed.
b. Takeout financing/refinancing possible over a longer period and will not be construed as restructuring.
c. Leveraged buyouts will be allowed for specialized entities for acquisition of 'stressed companies'.
d. Steps to enable better functioning of asset Reconstruction Companies mooted.
e. Sector-specific Companies/Private equity firms encouraged to play active role in stressed assets market.

Multi state cooperative banks getting exemption from the purview of circular of 29th May 2013 on delegation of powers to state registrars to inspect them u/s 108 of Multi State Coop. Societies Act 2002

The Central Registrar of Cooperative Societies had delegated powers to the Registrar of Coop. Societies of the states/union territories under sec. 108 of the Multi State Coop. Societies Act 2002.vide its circular no. L-11017/10/2013 dt. 29.5.2013.With a view of to have proper regulation on large number of multi state coop. societies that existed in the states.

In view of existence of the fact that multi state urban cooperative banks are regularly inspected by RBI under the B.R. Act and the statutory audit is done by Chartered Accountants as per the provisions of MSCS Act 2002, NAFCUB requested the Ministry of Agriculture to revisit the issue and keep the multi state urban coop.

banks out of the purview of the circular.

Govt. of India has acceded to request and has sent a clarification circular to registrars of cooperative societies of all the states exempting the multistate urban cooperative banks from the purview of their earlier circular dt. 29th May 2013.The communiqué from the Ministry states "The representations of NAFCUB and multi state UCBs have been examined. On careful consideration of the matter, it has been decided to exempt the multi state cooperative banks from the purview of the aforesaid circular with immediate effect."

ISO 20022 messaging standard in new RTGS System from March 31, 2014

The new RTGS system is based on ISO 20022 standard messaging formats. The objective of introducing ISO 20022 standard message format for payment system is to bring about standardization in the messaging formats for various payment systems in the country and to conform to international standard. Standardization of message for payment systems would also enable interoperability.Keeping in view the infrastructure requirement / changes necessitated at participants end, the Reserve Bank had issued a circular RBI / 2012-13 / 355 {DPSS (CO) RTGS No. 1052 / 04.04.017 / 2012-13 dated December 31, 2012 advising participants of the RTGS system to be in readiness to handle ISO 20022 standard message format by March 31, 2013.

However, banks have not taken enough measures to handle ISO 20022 standard messages and are relied on temporary solution provided by their IT/service providers for conversion of message from/to the "R" series message as was being used in the earlier version of the RTGS.On their request the time for adoption of ISO 20022 standard messaging seamlessly without conversion from/to "R" series formats was extended up to March 31, 2014 by RTGS member banks.

RBI declines inclusion of "export' in Priority Sector Lending

The Reserve Bank of India has apparently turned down a long-pending demand of exporters, to bring the sector under priority lending norms for both Indian and foreign banks.A committee on this issue was set under G. Padmanabhan, Executive Director, and RBI, which gave its report in May 2013 with recommendations. In addition to inclusion of exports in priority sector lending, the panel recommended an extension of the swap facility, setting up a nodal agency for borrowing in foreign currency from abroad on a pool

basis and further lending to these companies in India at competitive rates.

The official said the central bank was now considering another committee to "analyse and examine" demands made by other sectors to also came into the priority lending bracket. RBI is concerned that sectors deserving priority will lose attention if a large number of segments are brought into the category.The commerce and industry ministry has taken up the matter with RBI Governor Raghuram Rajan. The latter, it seems, has expressed apprehension that such a move could affect the flow of priority sector lending to other such sectors already under its ambit, such as agriculture, micro and small enterprises, and advances to weaker sections.

India-based banks and foreign banks with at least 20 branches in this country have to lend at least 40% of their total net credit to priority sectors. These currently include agriculture, micro and small enterprises, and advances to weaker sections. For foreign banks with less than 20 branches, priority sector lending has to be 32% of total net advances.

Bank frauds double in 2012-13 to ₹8646 cr

Banks are facing difficulty in expanding their business, but the value of the bank frauds is galloping.Commercial banks in India managed to grow their business (deposits and loans) by just 15% in 2012-13, but the sums embroiled in frauds more than doubled to touch ₹8,646 crore.While the amounts involved in bank frauds increased eight times in the last five years, banks' business saw only a two-fold increase. What's particularly worrying is the exponential growth in large-value frauds, involving amounts of over ₹50 crore.

Researchers have found that bank frauds usually relate to diversion of loans, violating KYC (know-your-customer) norms and misuse of technology by unauthorized users to siphon off funds. As 56% loan-related frauds account for a lion's share of bank frauds. The modus operandi of large borrowers is usually to submit false financial statement, sell of the collateral without the bank's knowledge, inflating the cost of land to make up for equity contribution, getting loans against fake securities and understating revenues, according to a paper submitted by V. S. Kaveri, Professor at the National Institute of Bank Management, at Bancon 2013.

Borrowers also divert the loan for purposes not originally stated to the bank. Banks, too, end up abetting frauds through faulty lending practices, such as extending ad hoc credit to non-customers, sanctioning of loans not authorized and making centralized lending decisions without involving the branch.

Public sector banks are particularly susceptible to frauds, particularly when it comes to advances. PSU banks accounted for a whopping 87% of all fraud-related advances.

New private and foreign banks aren't exactly safe havens for their customers because they proved quite vulnerable to technology-related frauds. Private and foreign banks accounted for 51% and 41%, respectively, of the technology-related frauds as of 2012-13. These include frauds committed through internet, mobile banking or other channels of payments, using debit and credit cards.According to the 'Banking Ombudsman Annual Report', some of the complaints registered by customers include wrong debits to accounts, skimming of cards, unauthorized online fund transfers and cloning of ATM cards, among others.

Reserve Bank revises norms on general credit card scheme

The Reserve Bank of India revised its guidelines on the general purpose credit card scheme to ensure greater flow of entrepreneurial credit to individuals, particularly to borrowers of small means. "Any other credit card (such as Artisan Credit Card, LaghuUdyami Card, Swarojgar Credit Card, and Weaver's Credit Card, etc.) in existence and catering to the non-farm entrepreneurial credit needs of individuals should be included for reporting of credit extended through general credit cards (GCC), under the Financial Inclusion Plans (FIP). As the GCC is intended to cover all entrepreneurial credit, consumption credit extended to individuals should not be reported under GCC, "RBI said in a notification to banks. It clarified the issuance of GCC would not prevent banks from issuing any other credit card to their customers for their consumption needs. Consumption credit provided by banks is to be reported separately under the head of overdraft or consumption credit in the FIP reporting format prescribed by RBI. "These guidelines will supersede the GCC guidelines issued by Reserve Bank of India in December 2005 and May 2008, "the central bank said.

Changes in ARDBs

i) Shri Ajit Kesari has assumed charge as Authorised officer of the M.P. Coop. Agri & Rural Dev. Bank Ltd., w.e.f. 10th Jan. 2014.

ii) Dr. Pankaj Lalit, H.A.S. has assumed charge as M.D. of the Himachal Pradesh State Coop. Agri. & Rural Dev. Bank Ltd., w.e.f. 21st January 2014.

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• Paid up Share Capital & Reserves	: ₹ 7425.37 lakhs	₹ 8963.22 lakhs
• Deposits	: ₹ 118361.93 lakhs	₹ 133496.14 lakhs
• Loans & Advance	: ₹ 42223.38 lakhs	₹ 55418.49 lakhs
• Investments	: ₹ 47239.12 lakhs	₹ 53541.53 lakhs
• Money at Call & Short Notice	: ₹ 41609.52 lakhs	₹ 36055.34 lakhs
• Net Profit	: ₹ 1117.82 lakhs	₹ 1900.31 lakhs (Before Tax)
• Working Capital	: ₹ 145392.22 lakhs	₹ 163397.26 lakhs

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- *Cash Certificates*
- *Fixed Deposit linked with RDs*
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- *Children Education Deposits*
- *Crop Loans for Agriculture through KCC / SHG / JLG Cooperatives*
- *Term Loans for Agril. & Allied Agriculture*
- *Aquaculture Development One Thousand Ponds Scheme*
- *Loans for Housing / Housing Complex*
- *Loans for SRTO*
- *Consumer Durables Loans*
- *Loans to Technocrats & Professionals*
- *Loans to educated unemployed youths*
- *Cash Credit & Overdraft Facilities*
- *Loans for Children Education*
- *Loans for women through WDC Cell*
- *Integrated Village Development Scheme*
- *Term Loan for Tourism Development*
- *Personal loan to salary earners*
- *Bank Guarantee*
- *Safe Deposit Lockers & Other Ancillary Services*
- *Loans to Tribals under NSTFDC Schemes*
- *Loans to Physically Challenged under NHFDC*

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Good soil health leads to good crop

Maintaining soil health is an important aspect of agriculture that many farmers simply tend to overlook. In fact, poor growth, declining yield, pest and disease infestations are all chain reactions that can be associated with poor soil fertility. Periodical soil testing for any nutrient deficiency and seeking right advice from experts become essential for good crop growth. Mr. R. Paramasivam, from Mambattu village in Kancheepuram district, cultivates paddy, groundnut and watermelon (through drip fertigation). Inspite of good care and a lot of investment the farmer could not get a reasonable return. Poor vine growth, unproductive flowering and infestations plagued his watermelon crop.

The distressed farmer was trying to seek a solution for this problem when he happened to know about the National Agro Foundation experts visiting his village periodically to advise and guide farmers. He approached the experts during their subsequent visit when, through NABARD Farmers Technology Transfer Fund (FTTF), the foundation established a frontline demonstration using its "Resource conserving lean farming technologies" on watermelon crop in the village.

As a first step, the soil was tested and found to be deficient in micronutrients. A package of practices was advised based on the soil analysis report. The incidence of diseases was attributed partially to deficiency of nutrients also. Correcting the deficiency and nullifying the effect of excess is the key for a sound soil health management programme. Secondly, each nutrient plays an important role in the entire life cycle of a crop which cannot be substituted. "Farmers, out of ignorance, use certain type of fertilizers over and above the requirement especially nitrogen and phosphorus and neglect the deficiencies of other parameters, especially secondary nutrients like calcium, magnesium and sulphur, and micro nutrients like iron, manganese, copper, zinc, boron etc.," says Mr. M.R. Ramasubramaniyan, Director, National Agro Foundation.

The foundation offered both classroom and on-field training for the farmer to improve the soil fertility status, modified the fertigation schedule apart from providing nutrients like calcium, magnesium, zinc and boron externally by soil application. It advised a judicious mix of organic, bio and pest control measures and Panchagavya spray to boost female flower formation. In a matter of 2-3 months the results appeared to be quite good. The yield of watermelon increased to 14 tonnes from 10 tonnes per acre with an investment of ₹10,088.

Thrips menace in chilli and its management

Chilli or red pepper is a well known commercial condiment crop grown all over India. Thrips infestation is a persistent problem for chillies. Severe infestation leads to 30-50% yield loss. The thrips also attack other crops like tea, acacia, prosopis, castor, cotton, mango, onion, groundnut, chekkurmanis, pomegranate, pulses, brinjal, grapevine, citrus species and numerous weeds.

Tiny crawling nymphs and adults lacerate leaf tissues and consume the oozing sap. Leaves are curled, crumbled, twisted, deformed and ultimately shed down. Buds become brittle and also drop down. Severely infested leaves and buds develop bronze colour in appearance. Flower production and pod set are adversely arrested. Thrips also transmit leaf curl disease.

Adult thrips prefer to infest tender leaves and growing parts of shoots. An average of 100 eggs are laid by an adult at rate of two to four per day and the eggs are actually inserted into the leaf tissues. They hatch in five days. Nymphal and pupal period together last for another couple of weeks. Total life cycle is completed in 15-22 days. As many as 25 overlapping generations are observed in a year. Thrips reproduce sexually and by parthenogenitic viviparity. Summer season favours rapid multiplication of the pest.

Avoid growing chilli after sorghum as sorghum is vulnerable to the pest. Do not follow chilli and onion mixed crops as both are susceptible to the infestation. Inter crop with Sesbania Grandiflora to provide shade which regulates thrips population. Sprinkling of water over the seedlings checks the population to a greater extent. Treat chilli seeds with imidacloprid 70 WS at rate of 12g/kg of seed. Soil application of carbofuron 3G at 33kg/ha or phorate 10G at 10kg/ha is preferable. Spray any one of the following insecticides once in three weeks: imidacloprid 17.8 SL 3.0 ml/10 lit, phosalone 35 EC 2 ml/lit, dimethoate 30 EC 1 ml/lit.

The paddy variety Punjab cannot get rid of

In a state where the groundwater table is fast getting depleted, farmers still prefer PUSA 44, a variety the government strongly discourages though it has not banned it. PUSA 44 has been sown on around 30 to 40% of the area under paddy cultivation in Punjab. In Patiala, Sangrur and Barnala districts, more than 70% of the area is under PUSA 44, says agriculture development officer (enforcement wing).

PAU provided seeds of two newly developed varieties -- PR 121 and PR 122 with an average yield of 76 and 79 quintals respectively per hectare. The output of P-122 is almost as high as that of PUSA 44; besides, it takes less time and is also disease-resistant. It failed to keep the

majority of the state's farmers away from PUSA 44, which requires at least three weeks more to mature than the recommended varieties do. PUSA means more water, more insecticide and more pesticide. "The PAU-recommended varieties save water as these mature in 130 to 140 days, almost 25 days faster than PUSA 44, which is also prone to bacterial leaf blight disease. Yet the demand for PUSA 44 is huge," says Dr Gurdyal Singh, joint director, Food Security Mission, Punjab.

According to the chief agriculture officer, "Punjab needs not only to decrease the area under paddy cultivation but also to decrease the area under PUSA 44, which is highly environment-unfriendly." In Jalandhar the demand for PUSA 44 has been so high that farmers managed to sow 30% of the total area with this variety despite the fact that it is no available with the agriculture department. With PUSA 44, a five-acre farm will yield 160 to 170 quintals (80 to 85 quintals per hectare) as compared to 140 to 150 quintals from other varieties. "There is a need to develop another variety that needs less time to mature and whose yield equals that of PUSA 44," says another farmer, Avtar Singh. "PUSA 44 gives 9 to 10 quintals more per hectare," says Harjit Singh, also of Jalandhar, who has sown PR 121 and PR 122 too on a small patch, just as an experiment.

Dr Naresh Gulati, deputy director, Agriculture Technology Management Agency, says "At the camps we organised, we promoted only the recommended varieties such as PR 121, PR 122, 118, 114, and 116 which save water, but farmers still ended up sowing PUSA 44 on more then 30% of their area." Rakesh Jain, president of the Punjab Rice Shellers' Association, says, "As per our survey, PUSA 44 is a high-yield variety and farmers need more grain from less space." Another advantage, he adds, is that there is less breakage in its seed at the time of shelling.

Growing different crops to script a success story

Mr. Poornaand Venkatesh Bhat from Uttara Kannada district, Karnataka a contractor-turned-farmer by choice, started cultivation in 21 acres but soon had to give it up since his land was bought by the Government to set up a naval base. He invested the money he received from the Government in 19 acres of barren wasteland. Through sheer hard work he transformed the barren land in a few years into a big arecanut, nutmeg and pepper based intercrop plantation.

“His contributions towards plantation crops in general and spices like nutmeg in particular are noteworthy. Majority of nutmeg plants during seedling stage are

males though sporadically some female seedlings are also found. There is no other way to identify the sex of the nutmeg plant during seedling stage. It takes a minimum of five years after planting to know the gender of the plant. But Mr. Bhat has succeeded in detecting the sex of the plant at seed stage and he intends to patent this process of sex detection," says Dr. S.Prabhu Kumar, Zonal Project Director, ICAR, Bangalore.

He has also identified and developed four varieties of nutmeg and has about 2,500 nutmeg trees in his garden, which is considered to be the world's largest nutmeg conservatory according to scientists from The Indian Institute of Spices Research, Kozhikode. Each tree in his farm bears about 1,000 fruits a year (from sixth year of planting). One kg of nuts contains about 170 dry fruits along with the hard outer shell and one kg of mace.

He is also an expert in arecanut and black pepper cultivation. He gets double the average yield from both these and is also involved in black pepper processing to manufacture white pepper, which has great demand in the export market. Till date 6,000 to 7,000 farmers from Karnataka, Goa, Tamil Nadu and Maharashtra have visited him to learn this process.

His arecanut, pepper, nutmeg, coconut nurseries are popular among farmers. In fact many farmers who have such plantations have bought the seedlings from his nursery. "Before starting nutmeg-arecanut cultivation I grew only turmeric. I was able to a get about 20 tonnes of turmeric from an acre. In fact this was considered quite a feat in the region and I had many visitors to my place after local media reported it," says Mr. Bhat.

Devastating effect of black caterpillar on coconut

Coconut is a major crop in Ramanathapuram district, Tamil Nadu. Except during the North East monsoon season the region has dry weather throughout the year. This weather condition is very much favourable for black headed caterpillar attack on the trees. Severity of attack is evidenced during February-August.

The caterpillars feed on the chlorophyll content of the leaves from the lower surface. Infested leaflets turn greyish brown in colour and dry. Severe infestation presents a burnt up look for the tree. Pest intensity reduces during the onset of monsoon.

The female moth lays white coloured eggs on the lower surface of the leaves. Newly hatched larva is greenish brown in colour with brown stripes which and constructs galleries on the lower surface of the leaflets. Grown up larva is light green having dark

brown head. Pupa is dark brown in colour and adult is a greyish white small moth. The total life cycle is completed in about two months.

Remove and burn infested leaves during summer season. Release larval parasitoids under the trees periodically from January at fortnight's interval (4-6 releases) to check the population of the pest. In case of severe outbreaks first go for insecticide treatment to reduce the pest population up to 50% and release parasitoids after three weeks. The parasitoids are available at Coconut Research Station, TNAU, Aliyar Nagar on demand basis. Spray malathion 50 EC at 0.05% or dichlorvos at 2 ml with 1 ml of sticking agent per litre of water on the undersurface of the leaves in case of severe infestation.

Root feeding with monocrotophos 36 WSC 10 ml diluted with 10 ml of water helps to minimise the infestation (harvest the nuts 45 days after root feeding). Make a slanting hole in the stem about 1.5 m above ground level and inject 10 ml of monocrotophos 36 WSC and plug the hole with clay mixed with copper oxychloride.

Not all weeds are harmful, some have beneficial properties too

Sometimes a farmer may use a seemingly unsuitable measure to solve an agricultural problem and derive success from it. And that is what Mr. R.Baskaran from Patteswaram village in Kumbakonam, Tamil Nadu, did to get a better yield in paddy at a time when several farmers in the Cauvery Delta region were facing losses during the last cropping season due to water scarcity.

"But when monsoon failed we used to go through a lot of hardship as water became scarce. It was during one such time last year that I heard about direct sowing method for paddy and its benefits. This method enables paddy crop to withstand drought and grow well. I decided to try it out and accordingly decided to cultivate white ponni variety in my seven and half acres and am able to see how it has been really effective," says the farmer. By adopting direct sowing method the farmer was able to reduce the crop period by 10- 15 days than what he normally spends at the nursery field. Application of organic manure according to him has also helped to increase the water holding capacity of his field. The tillers grew well and there was less chaff after the crop was harvested. "Even after the crop reached the harvest stage (130 days) the leaves had a greenish colour, probably due to the application of organic sprays like Amrithkaraisal and Panchagavya.

Apart from direct sowing and organic methods, the farmer observed a unique factor which according to him has contributed in managing the water stress in paddy eco system the role of weeds. In general, farmers always consider weeds to be harmful for the main

crop and destroy them. There are two categories of weeds: One, companion weeds, and the other, competitive weeds. Companion weeds help to maintain soil moisture and competitive weeds compete with the main crop for water and nutrients. To differentiate between them, one needs to closely observe the field to spot the difference.

"In my experience, weeds with longer roots are competitive weeds and those with shorter roots are companion weeds. I also noticed that many beneficial insects like lady bird beetle used these companion weeds as their shelter and preyed on different pests attacking the paddy crop. "I also noticed that my soil surface appears to be hard but because of the companion weed growth there is enough moisture in the soil for the main crop," explains Mr. R. Baskaran.

Several farmers who visited his field were surprised to see the good growth inspite of water shortage. The farmer cultivated white ponni variety which is normally known for water lodging and is a 140-day crop. However, use of organic methods and by direct sowing, the crop was able to stand upright with long tillers (20 cm) and came to harvest at 130 days (10 days earlier).

Management of jasmine bud worm

Tamil Nadu is a leading producer of jasmine in the country. Major jasmine growing districts in Southern Tamil Nadu are Madurai, Dindigul, Virudhunagar, Tirunelveli and Ramanathapuram. It is an ideal crop for small and marginal farmers, but insect pest bud worm attack poses a threat to jasmine cultivation. The larva bore into closed immature buds and feed on the inner floral structures during initial stage. They come out through a small hole made in the buds for attacking another bud in the same shoot. In case of severe infestation, the larva makes a web like pattern among the adjacent buds and feed on petals.

Infested flowers turn pale red in colour and they fall off from the plant. One larva attacks 2-3 buds in its life span. The female moth lay the eggs singly on the unopened buds, calyx and bud stalk etc. Newly emerged larva is creamy yellow in colour whereas grown up caterpillar is greenish with pale body hairs and black head. Pupation takes place in soil and sometimes within the web also. Adult is a small white moth with wavy lines on its wings and black colour patches on the wing margin.

Pest management: Collect and destroy infested flowers along with larvae at least once in a week. Proper pruning and hygienic maintenance of the bushes helps to minimize the pest incidence. Set up light trap to attract and kill the adult moths. Spraying of neem seed

kernal extract (NSKE) at 5% level is found effective. Spray any one of the follwing insecticides for controlling the pest viz., monocrotophos 36 SL at 2 ml or profenofos 50 EC at 1 ml or thiacloprid 240 SC at 1 ml per litre of water to check the pest population to minimize the economic loss.

Govt to spend ₹3,507 cr to boost oilseeds output in 12th Plan

The centre proposes to spend ₹3,507 crore during the 12th Five Year Plan to boost oilseeds output and bring an additional area of 1.25 lakh hectares under oil palm. "The Cabinet Committee on Economic Affairs approved the implementation of National Mission on Oilseeds and Oil Palm with an allocation of ₹3,507 crore," a statement said.

Besides enhancing the oilseeds output by 6.58 million tonnes, the Mission would also bring additional area of 1.25 lakh hectares under oil palm cultivation with increase in productivity of fresh fruit bunches from 4,927 kg per hectare to 15,000 kg per hectare and increase in collection of tree borne oilseeds to 14 lakh tonne. "The implementation of the proposed Mission would enhance production of vegetable oil sources by 2.48 million tonnes from oilseeds (1.70 million tonnes), oil palm (0.60 million tonnes) and tree borne oilseeds (0.18 million tonnes) by the end of the 12th Plan Period," the statement said.

The Mission would lay stress on increasing the Seed Replacement Ratio with focus on varietal replacement; increasing irrigation coverage under oilseeds from 26% to 38% and diversification of area from low yielding cereal crops to oilseeds crops. Under the mission, the recommended varieties and proven technologies would be demonstrated in a cluster approach to ensure participation of all categories of farmers, irrespective of the size of their holdings, social status. The national mission on oilseeds is built upon the achievements of the existing schemes of Integrated Scheme of Oilseeds Oil Palm and Maize, Tree Borne Oilseeds Scheme and Oil Palm Area Expansion programme during the 11th Plan period.

20 mt of wheat wasted in India every year-A report

India's poor harvesting methods coupled with inadequate storage and distribution system contribute significantly to the food wastage globally, says a report by Institution of Mechanical Engineers, UK. The report, shows that at present 4 billion tonnes of food is produced globally, out of which 30-50% (1.2-2 billion tonnes) is being wasted. There is an opportunity to feed 6 billion people on 2-2.8 billion tonnes of food.

Tim Fox, Head of Energy and Environment at the Institution of Mechanical Engineers, said, "The

reasons (for wastage) range from poor engineering and agricultural practices, inadequate transport and storage infrastructure to supermarkets demanding cosmetically perfect foodstuff and encouraging consumers to overbuy through sales promotion offers." Food wastage is a global challenge and the United Nations' mid-range projection predicts the global population will peak at about 9.5 billion by 2075. The report highlighted the food-water-energy nexus which means increase in yield would result in increase in demand for energy and water. It estimated that by 2030, there will be 30% increase in global demand for water, and energy requirements would increase by 40% by 2035.

In India, 20 million tonnes of wheat is lost annually due to poor harvesting and inadequate infrastructure, the report said. "This loss can be reduced by mechanical handling in field, gutters on buildings, sealing cracks and holes to stop rodents, installing temperature control for perishable products and standardised transport crates," Fox said. The report added that globally about 40-45% of the perishable products (dairy and fruits and vegetables) are lost. India loses about 18-40% of the perishable items due to poor infrastructure at farm level.

India's cold storage infrastructure needs to be beefed up. It needs a capacity of about 66 million tonnes, but currently has only 20 million tonnes. "We need a shift in consumer attitude, reliable electricity and chilled transport road, rail infrastructure," Fox said. Retailers need to curb wastage at the supermarket level by not promoting buy-one-get-one free schemes or food at half-price that leads to over purchase behaviour by the consumer. The report also said that the hospitality industry, globally, wastes about one-third of its procured food. At the household level, 30-50% of the food bought ends up in the bin.

Fox said, "At the international level, we need to encourage the transfer of knowledge of technology for sustainable future. Nations, on the other hand, need to reclaim national food policy, increase public awareness and deploy sustainable infrastructure. Citizens too need to do their bit by putting pressure on politicians to change retail practices." The Institute of Mechanical engineers is an independent body of engineers, which was founded in 1847, and focuses on finding sustainable solutions for the future.

Rising returns and rigid cropping pattern

The Agricultural Prices Commission (APC, later renamed as CACP) and the Food Corporation of India (FCI), both came into existence in January 1965. The APC was mandated to recommend

minimum support prices (MSPs) to incentivise the cultivators to adopt modern technology, and raise productivity and overall grain production in line with the emerging demand patterns in the country. FCI was mandated to provide an effective floor price by procuring grain at MSP whenever the market prices went below the MSP. In 1985, NAFED came into being with a mandate to provide price support operations for pulses and oilseeds, whenever their market prices went below the MSPs announced by the government. As of now, CACP recommends MSPs of 23 commodities, which comprise 7 cereals (paddy, wheat, maize, sorghum, pearl millet, barley and ragi), 5 pulses (gram, tur, moong, urad, lentil), 7 oilseeds (groundnut, rapeseed-mustard, soyabean, sesamum, sunflower, safflower, nigerseed), and 4 commercial crops (copra, cotton, raw jute and sugarcane).

Pricing policy of minimum support prices (MSPs), it may be noted, is not rooted in 'cost plus' pricing principle, though cost of production is certainly one of the important factors that go into the determination of MSPs. But there are equally important other factors such as overall demand and supply of the commodity under consideration, domestic and international prices, inter-crop price parity, terms of trade between agriculture and non-agriculture, and likely implications of MSPs on consumers of that product, which are all given as parts of the terms of reference of the Commission. In addition, the Commission also keeps in view the need for rational utilisation of water, land, and other production resources while recommending MSPs.

Detailed cost data used in its pricing policy is collected by DES, Ministry of Agriculture, New Delhi. As there exists a time lag of two to three years in dissemination of cost data and given the imperative of announcing pricing policy for ensuing year, the Commission projects cost of production (CoP) of various crops for two to three years hence. Accordingly, to improve the accuracy in projecting costs, the Commission started applying correction factor (CF) to projected costs with effect from the price policy report for the Marketing Season 2012-13.

While formulating price policy, the Commission considers weighted average CoP of different crops. In 2010-11, percentage of production that got covered at weighted average C2 cost in case of maize, for instance, was low at 42%. Equivalently, a majority of maize production (58%) was produced at costs higher than the weighted average C2 cost. In this backdrop, it is more appropriate to think of an alternative to the weighted average C2 cost viz. bulk line cost as an input in the formulation of pricing policy.

In FY11, MSP covered C2 cost of

96% of sugarcane production, 94% of barley, 93% of paddy, 92% of R & M and 88% of wheat production in contrast to 32% of lentil, 36% of sunflower and less than 50% of tur. When C2 cost is covered, it implies that farmers not only recover their paid out costs but also get rewarded for use of their own resources such as land, family labour and capital. And this explains, at least partly, farmers' preference to adhere to paddy-wheat and sugarcane cropping pattern vis-ã-vis pulses or oilseeds wherever feasible. On cost structure, fertiliser constitutes just 5% in the total cost of production. Lower prices of urea (due to control and subsidy) in relation to other fertilisers have led to its heavy use at the expense of P&K. This calls for inclusion of urea in the ambit of NBS regime and freeing up of its prices. And if in the process, weighted average prices of fertilizer increase anywhere up to 10%, just as an example, its impact on cost of production would be less than half percent. Not only this would reduce the unsustainable imbalance in the prevailing consumption pattern of fertilisers but would also rationalise the fertiliser subsidy.

Profitability structure exhibits an upward trend during the last decade (FY01 to FY11) in most groups of crops, albeit with minor fluctuation in pulses group. Gross returns per hectare as percentage of paid out cost plus family labour i.e. (A2+FL) cost was the highest in case of sugarcane. It increased from 101% in the first four years of the last decade (FY01 to FY04, say period t1) to 128% in next four years (FY05 to FY08, say period t2) and further improved to 177% by the end of the decade (FY09 to FY11, say period t3). Likewise, profitability during these three periods in cereals group increased from 56% to 80% and then to 81%, oilseeds from 63% to 83% and then to 89%, cotton from 45% to 63% and to 103% and raw jute from 23% to 48% and then to 83%. In case of pulses, it was 80% in period t1, increased to 102% in period t2 but ebbed to 89% in period t3. Out of 22 crops analysed, 8 crops (wheat, barley, tur, lentil, rapeseed & mustard, sesamum, cotton and sugarcane) have reaped 100% or more gross profit, another 10 crops (paddy, maize, bajra, gram, urad, moong, soyabeans, safflower, nigerseed and jute) between 50% and 100%, However, significantly higher level of sugarcane profitability may be read in the backdrop of its far longer gestation period (sowing to harvest period) of over 10 months compared with 3 to 6 months in cases of other crops.

Dried onions to the rescue

The fluctuating price of onions after monsoons every year has forced the Central Institute of Post Harvest and Technology (CIPHET) to conduct a training session on preservation of onions.

Dr D N Kadam, senior scientist and principal investigator of

business planning development (BPD) unit of CIPHET, said, "Few companies are already in the business of drying onions in Maharashtra and Gujarat but they are exporting their product, not bringing it in the Indian market. Our training aims at starting units for the domestic market so that the general consumer can be aware of such products. Though few companies have started selling onion flakes, they are not readily available off the shelf in the domestic market."

Dr Kadam said the aim is to promote small entrepreneurs and unemployed youth who can be self-employed. For a normal capacity plant, an investment of around ₹ 3 to ₹ 5 lakhs is needed to start up and this money is available as loan on easy instalments, he said.

The onions are first cut into pieces and excess water strained before drying. They are then put in a mechanical drier and later ground. The moisture maintained is minimum and gives it a shelf life of 9 to 12 months. The water strained from the onions can also be stored in the refrigerator without adding any preservative and it can be used to add flavour to the dishes by using just a few drops while cooking, he added. He also advises the general public to dry onions at home when they are available at cheaper rates and use the dried flakes or powder later when prices soar. Dr Kadam said in India, onion powder is used by companies making namkeen, chips, kurkure along with the masala they use to flavour these items. It is also used in readymade soup packets. However, the Indian consumer is still to start using it for domestic cooking because of lack of awareness and even lack of availability of the product.

Potato for diabetics

Shimla-based Central Potato Research Institute (CPRI) Director Bir Pal Singh, has developed and tested a technology that helps in maintaining low glycemic index (GI) for a potato variety, thus suitable for diabetics. Normally, potatoes have high GI, which means conversion of starch into glucose (sugar) is faster. "After eating potatoes...blood sugar levels rise very quickly. We got data of analysis done by National Institute of Nutrition (NIN), a public health and biotechnology centre at Hyderabad, and then tried to evolve a technology that slows down conversion of starch into sugar for potatoes preserved in cold storage. It has worked wonders," says Singh.

Explaining, CPRI Director claimed potatoes kept in cold storage at 3 to 4 degree temperature are most risk-prone for diabetics. This is a result of high GI caused by enzyme invertase. If the activity of invertase is suppressed by raising temperature to 10 to 12 degrees, potatoes will become relatively safer

for diabetics. CPRI has not so far released potato variety Kufri Chipsona (a series) on which tests have been performed successfully but scientists who developed the technology after six years of research and trials both in the lab and fields termed it a major breakthrough in promoting potatoes and potato products for India's health-conscious consumers.

CPRI has so far released at least 50 varieties of potatoes, including varieties specific to certain regions based on geography and climate, beside a few varieties particularly suitable for making chips and french fries. The institute has MoUs with 19 agricultural universities in the country for research collaboration for increasing production and coming up with disease-free potato varieties.

Agri franchising works

An agribusiness franchise can be defined as a right, permission, or licence (often established by contract) granted by an agribusiness firm (called the franchisor) to another agribusiness firm (the franchisee) to distribute, manufacture, and/or use the trade name of the former's products and services usually in a specified territory for a specified duration. In addition, the franchisor provides assistance in organising, training, and merchandising. In return, the franchisor receives a certain amount from the franchisee as initial fee and a royalty on business volumes conducted.

There have only been a few experiments in agribusiness franchising in India in the recent past by private and public agencies. NAFED (National Agricultural Co-operative Marketing Federation) has 2,000 franchisees across eight States of India for selling inputs, especially fertilisers (supplied by Indian Farmers' Fertiliser Co-operative, IFFCO) and seeds, with 1,400 of them in UP alone. Similarly, IFFCO, a national level fertiliser co-operative, has set up franchises in rural areas. It offers businesses such as rake handling, transportation, and warehousing of fertilisers and offers help in educational and promotional activities to 1,307 Primary Agricultural Co-operative Societies (PACS). Each PACS gets ₹ 60,000 for purchase of office furniture and agricultural implements. The insurance is provided by IFFCO-Tokio (IT) General Insurance Company. The PACS also sell seeds, pesticides, agricultural implements, and offer credit to member farmers.

Some years back, a private corporate agribusiness, Mahindra Shubhlabh Services Ltd (a subsidiary of tractor major-Mahindra and Mahindra), had set up dozens of franchises in rural India across States to provide one-stop solutions to small farmers.

Another major agro player, Aadhaar Wholesaling and Distribution Ltd (earlier Aadhaar Retailing and a joint venture company of Future group and Godrej Agrovet with 70:30 equity) has 33 of its 50 outlets run by franchisees in Gujarat and Punjab, though farm input sales are a small proportion of the total sales of these outlets (10-20%) and they are not involved in buyback of produce as yet.

More interesting is the case of another relatively new private sector potato supply chain company (Sidhivinayak Agri Processing Private Ltd (SAPPL). It has set up a new network of 36 franchisees in collaboration with a development project in Uttar Pradesh that provides farm input supply and produce buyback services to smallholders. The development project, Sunhara India, is funded by Bill and Melinda Gates Foundation and Implemented by Agribusiness Systems International (ASI), a US-based non-profit consulting firm for four years. The franchisees are appointed by SAPPL which has extensive experience with farmers and the potato crop and works in many States of India through the franchise route in potato seed supply and output procurement and, in turn, supplies to various potato processors. SAPPL helps the system work as it lines up markets for the produce and delivers seed and other needed inputs at the franchisee level, who are local entities and close to farmers as they have background in farming and related businesses locally.

SAPPL provides all the information, products and even services such as soil testing to the farmers through the franchisees and buys back the potato crop, thus completing the whole value chain of the potato crop. SAPPL helped with training, input supply and in some cases with input licenses. The franchisee in general can sell all non-potato inputs from other companies. In terms of impact, the potato seed supply and buyback of potato on behalf of SAPPL made a big difference to the franchisee turnover. All franchisees had soil testing kits and potato quality testing facilities.

Silken touch, five times over

Soma Devi of Punjab has set about harvesting raising silk cocoons four or five times every year in a state that traditionally settles for twice a year because of its extreme climates between subzero and the high 40s. Silkworms are known to survive only in the range 22-28°C. Farmers in Punjab have been harvesting the main crop during March-April, when the leaf quality is ideal, followed by the second, smaller crop during September-October.

Soma Devi, who lives at Nangal Dattan village, began her

experiment, in the peak summer months of April-May, followed by August. She has created a 60ft×40ft shed in the middle of her three-acre farm, where she has grown trees all around to help bring the temperatures down a few degrees so that the worms can survive. She has shown that in the silkworm sheds, the required temperature can be maintained for a few weeks with a little hard work.

To be able to rear worms all year round, she has raised a mulberry farm where she had planted 600 trees with help from the state sericulture department. "I was planning the experiment for a long time but was not getting the worms during the summer months," she says. "This time we pressed the department a lot and they agreed," she says, confident that she can do it all year as long as the department ensures a regular supply. "During the summer months, instead of mulberry silkworms we provided her another variety, the eri silkworm, which feeds on castor leaves, which are found abundantly in the Kandi belt," says Sharma. Mulberry cocoons can be reared in around 25 days and eri in just 15 to 18 days, says Soma Devi, now motivating many women to rear this short-duration cash crop.

Pest attack? Mobile Apps to help rice farmers with cure

Rice, one of the oldest harvested crops, still relies on very old farming traditions. But soon, rice farmers are set to get Internet savvy as they can download a few Apps on their mobile phones that can help them diagnose pest attacks and get the right prescription of fertilisers. Rice Knowledge Management Portal (RKMP), run by the Directorate of Rice Research (DRR), is running a pilot on a diagnostic App that works on Android phones. The second App is on fertiliser recommendation and the third one is a slew of knowledge capsules. It provides vast data on eight categories of information on selection of varieties, land prescription, nutrition, water and pests.

RKMP runs a portal on rice, the single largest portal for any crop in the country, with a huge repository of knowledge on rice. Launched two years ago, the initiative under the National Agricultural Innovation Project built the portal with information gathered from 106 rice research centres across the country. The content is available in Bengali, English, Marathi, Kannada, Oriya, Punjabi, Tamil and Telugu. The portal contains 6,000 minutes of audio content in all these languages. Farmers can get information on what varieties should be grown on their lands. Policy makers can look for historic data on productivity and yield. Researchers can find past data on multi-location trials. The portal contains images of the crop at different stages. The images include the disease-hit plants.

Farmers can simply take an image on their phones and compare it with a relevant image on the portal. A suitable prescription too is provided accordingly. Based on the frequently asked questions at the Kisan Call Centre (1551), the portal narrowed down the common problems that bother the paddy farmers to 489 and provided detailed answers. Keeping in view the bandwidth issues and other constraints, RKMP also developed all the content in CDs in order to make it available offline that are being distributed for free to non-governmental organisations and the other agencies in need.

Managing nematode infestation in banana

Nematode infestation is one of the major limiting factors in banana production. Burrowing nematode, root-lesion nematode, spiral nematode and root-knot nematode are the major nematodes associated with banana. These cause extensive root and corm damage leading to 20-50 per cent fruit yield loss. Commercial banana cultivars like Nendran, Robusta, Grand Naine, Ney Poovan, Poovan and Rasthali are often infested by these nematodes. The nematodes penetrate the roots and destroy the plant cells. This leads to dark lesion on root surface. Under severe infestation the root turns black. These nematodes can migrate from infected roots to other parts of the plant. Adult females lay 200-300 eggs. They damage the xylem vessel and affect the uptake of water and nutrients.

Research on nematode management in banana is in progress for more than three decades through All India Co-ordinated Project on Tropical Fruits (AICRP-TF) at the Tamil Nadu Agricultural University (TNAU), Coimbatore. The following are some management options that help to overcome the infestation. Summer ploughing and exposing the soil to sunlight prior to planting for about two months. Selection of healthy sucker from nematode-free plants.

Grow marigold: Growing Sunhemp or marigold in and around the basin of plants during early stages of crop and incorporating their biomass one month later can reduce nematode build up.

Press mud application at rate of 15 tonnes per ha (5 kg/pit) or neem cake 1.5 tonnes per ha (500 g/pit) during planting can also help to avoid nematode build up. Application of farm-yard manure at 10 kg per plant 60 days after planting. Rotating banana with paddy. Application of Pseudomonas fluorescens liquid formulation at 4 lit/ha at two, four and six months after planting through drip system will help.

National vegetable initiative brings poly houses to Ludhiana, farmers see hope of direct selling

A central government scheme has helped farmers in Ludhiana preserve their vegetables better and encouraged them enough to think about shortening the supply chain to the consumer. Under the National Vegetable Initiative introduced in 2011-12, the horticulture department selected Ludhiana to start group farming for vegetables. The scheme includes setting up poly houses for better preservation of vegetables.

"Because of the interest shown by farmers, we have included 6,005 farmers of Patiala, Fatehgarh Sahib, Sangrur and Jalandhar from this year under the same scheme. The objective is to provide quality vegetables to the consumer directly from the farmer, and remove the middleman," says Dr Bhajnik Singh, nodal officer for NVI.

In Ludhiana, the scheme has so far involved hybrid vegetables on 702 acres and normal vegetables on 231 acres. The spending has been in the form of subsidies and setting up poly houses, says horticulture officer Dr Harmail Singh. The department has formed 74 farmer groups in various villages and setting up the poly houses at select places.

"I have a poly house and am carrying out open farming," says Davinder Singh of Mushkabad village, one in a society of 28 farmers formed by horticulture department. He grows coloured capsicum, tomato, chilli, bitter gourd and bottle gourd. Davinder says the farmers have started grading and packing their vegetables and are sending them to Delhi and Chandigarh markets, apart from some to Ludhiana. He feels the NVI should focus more on the marketing because the price gap between what the consumer pays and what the farmer gets remains wide. In Hando in Ludhiana, 78 acres is under tomato, brinjal, chilli, capsicum and cauliflower. Farmers have formed net houses here too. This village will too get facilities for marketing, grading, packing and even transport as well under the NVI, says Dr Harmail Singh.

Controlling anthracnose infestation in soyabean

The most important disease reported to cause economic losses to the soyabean is anthracnose. Symptoms of the disease typically appear during early reproductive stages on stem, pods and petioles as irregularly shaped brown lesions.

Foliar symptoms include necrosis of leaf veins, leaf rolling, petiole canker and premature defoliation. Reddish brown spots appear on the pods and later turn black. Anthracnosed plants are significantly shorter, with fewer pods and seeds with reduced seed weight

compared to non affected plants. Infected seeds often show brown discoloration.

To prevent the infestation farmers are advised to go in varieties that are resistant to this disease. Mehandi at 10 and 15% was found least effective and caused minimum inhibition (40.36%) of the test pathogen. Garlic extract at 20% concentration appeared to be best followed by onion, ginger and neem extracts. Fungicides like thiophanate methyl followed by pyrimethanil and tabuconazole sprayed two times at the stage of flowering was found to give good results.

In the field, Carbendazim at 0.1% or Mancozeb at 0.1% or four sprays of Dithane Z-78 (0.25%) followed by Cupramer (0.25%) and Ziram (0.25%) significantly reduced the disease. Seed treatment with Captan (0.2%) and two sprays of Bavistin (0.1%) at 15 days interval or seed treatment with MBC (0.15%) and two sprays of MBC (0.1%) at 15 days interval effectively controlled the disease.

Under integrated field condition, seed treatment with Carboxin, Tricoderma viride, neem leaf extract and Carbendazim as foliar spray significantly reduced the disease intensity and gave increased seed yield.

Punjab pushes alternatives in pesticide control

Amarjit Singh sets a trap with an electrical bulb on his 12-acre in Punjab's Char Ke village. "Under it we keep an open-mouth utensil filled with water, with 20 to 30 ml diesel or petrol mixed. We switch on the bulb for an hour at night and pests get attracted to the light. When we switch it off, all the pests fall into the mixture and die," says Amarjit, one of a handful of farmers using and encouraging pest control measures with minimal use of pesticide.

Another tool he uses is the pheromone trap, ideal for basmati fields. Pheromones are natural substances produced by members of a species and attract gender-opposites of the same species. "Such traps slowly release synthetic attractants that help in detection of a single species of insect," says Dr Naresh Gulati, deputy director at Agricultural Technology Management Agency. "Pheromone traps are very effective monitoring devices, and cheap. Once one buys a kit that comes with plastic tops and assembly materials, one needs only to buy fresh baits and trap bottoms from year to year, a negligible cost compared to that of expensive insecticides." The concern is that few are going for such techniques.

Punjab, a state that accounts for 18% of the pesticide used nationwide on farmland that accounts for only 2.5%, making it the country's highest user, has been suffering the impacts of contaminated soil and a poisoned food chain. A study by the Centre for Science and

Environment two years ago found exceptionally high pesticide residues in blood samples collected from Punjab's farmers. And much of their produce is consumed outside the state Punjab contributes 43% wheat and 30% rice to the central pool. The light trap and pheromone trap are among various alternatives (Integrated Pest Control) that the government and farmers such as Amarjit have been pushing, apart from judicious use of pesticides (Integrated Pest Management).

Under IPC, the options for detection and removal include small traps, natural products such as neem, aak, dhatura or butter milk, or spices such as heeng, turmeric, garlic or ash. If pesticide must be used, the push is for globally recommended, non-harmful varieties. Under IPM, the focus is on restricting the pest population within what is called the economic injury level, or EIL, rather than eradicating them completely as most strive to do. "Punjab farmers' approach has been pro-pesticide," says Dr K P Yadav, former assistant director and entomologist of Central Institute of Pest Management and Control.

"Farmers frequently over-water their crops, which then turn yellowish, and that could be mistaken for a fungal infection and farmers then go for costly sprays," he adds. "The harmful pesticides kill friendly insects, which would have eaten the harmful pests. Under IPM, we are explaining to farmers that there is a standardised number of pests that a crop can tolerate." "Using the right techniques, a farmer gets to know how many pests are not harmful to the crop. Just the sight of pests does not mean the crops require a pesticide spray," says Sukhpal Singh of Ghumman Kalan village, Bathinda, who won a national award in 2002 for his horticulture skills with IPM techniques. His 68-acre kinnow farm yields 130 quintals per acre against a statewide average of 90 to 100.

Amarjit of Char Ke, whose efforts have been lauded several times by the agriculture department, says, "When crops do cross the safe limit, we use a solution prepared from neem, aak, dhatura, bhang, and castor in our fields. To eradicate termite we mix heeng, a spice, in the water with which we irrigate our fields." He adds, "For clearing weeds we engage labour from our village, which keeps our money in our village rather than sending it into the pockets of big pesticide companies that are polluting the environment of Punjab." Pesticide sellers have been known to push products that experts say are not necessary. Joint Director (plant protection) Dr H S Bhatti conceded there is a dire need for every farmer to go for IPM and IPC techniques, but only with cotton has IPM been used to a large extent.

At Ghulal village in Ludhiana, brothers Jasbir and Amritpal Singh Ghulal have earned such a reputa-

tion that they have got visits from 150 agriculture scientists and entomologists, and from Britain's Prince Charles a few years ago. Jasbir, who won an award from Punjab Agricultural University in 2010, and his brother own Preet Golden Agro Farm where they cultivate vegetables, fruits, basmati, paddy, sugarcane, and herbs through organic farming with IPM techniques. They use neem, turmeric, butter milk, garlic and ash to control pests. "We attract birds by installing dana ghars (seed shelters) in our fields and such birds eat harmful insects too," says Jasbir Ghulal.

Filling the meat gap

The Jammu and Kashmir government is trying to promote sheep farming, with the state producing only half the meat it needs and even less milk. "So far we have helped set up of 400 mini-farms across the valley by providing farmers 500 ewes each," says Nazir Gurezi, Minister of State for Sheep Husbandry. "The government is helping more farmers establish farms so that the import of meat will go down." He says the deficit in production is 50% for meat and 40% for milk.

The landscape and climate of the valley make it suitable for sheep rearing but the concept of mini-farms was introduced only recently. Mubashir Dewani, a young veterinarian from North Kashmir's Bandipore town, ventured into sheep farming four years ago and is earning handsomely from his farm that has grown since. "After I postgraduated in veterinary sciences I started a farm in Bandipore with just 10 to 12 ewes. Over the time my farm has grown and now I have 200 ewes," he says. Dewani sees sheep rearing as a promising enterprise but stresses the right kind of focus. "The government should introduce the meat breed that is more likely to grow in our environment rather than the wool breed,'' he says.

Officials say the state, with the assistance of the central government, has made a number of schemes available for rearing sheep. "I took the benefit of one of the centrally sponsored schemes, under which the government provided me the inputs," says Pervaz Ahmad, who has set up a large farm in northern Kashmir's Baramulla town. "It is an easy job; even people with little know-how can easily adopt it as a career through proper management." Starting a farm does not require much funds, and the government provides subsidies to establish one. "There are good schemes introduced by the state animal husbandry department, but lack of awareness about these and about proper scientific skills leave many villagers wary about establishing such farms," says Abdul Khaliq Channa, who has set up a mini-

sheep farm at Rafiabad Sopore without government support. "My farm was inspected by state officials. They are ready to finance an expansion."

Dr Chesti, the retitred veterinarian, says steps need to be taken both at the government and at the local levels. "It is important that people are motivated to take it up as a profession. Though young people have established farms, the number is still low." Minister of state Gurezi says the government has already introduced programmes for artificial insemination and cross-breeding to increase the produce. "Initiatives such as cooperative societies and mini-farms have been introduced in every district."

What makes Maharashtra click in horticulture.

With 10% of its total area under horticulture, Maharashtra has a total annual production of 104 million tonnes. "The state has fruits under 15 lakh and vegetables under 5 lakh hectares. Horticulture today accounts for 25% of the state's total agriculture GDP," says additional chief secretary (agriculture) S K Goel. "Horticulture, however, needs latest pre and post-harvest technologies and infrastructure to become sustainable. Maharashtra has taken care of these support systems so well that the area has gone up from 2.5 lakh hectares before 1991-92 to 18 lakh hectare in 2013," he adds.

Horticulture in the state got a boost in 1990-91 when it was linked to the then Employment Guarantee Scheme (EGS), pioneered by Maharashtra and adopted in recent years by the Centre in the form of MNREGA. Small and marginal farmers were given all inputs free and their labour costs too were covered to encourage them to grow orchards. This led to huge increase in crops such as oranges and other citrus fruits (2 lakh hactares) in Vidarbha and grapes (1 lakh hectares) in western Maharashtra. Mango (4.5 lakh ha), cashew-nuts (1.5 lakh ha), onions (2 lakh ha), pomegranate (80,000 ha) and banana (1 lakh ha) orchards blossomed in various parts of the state. The state now leads the production chart in all these except mango. Production-wise figures in tonnes in that order are pegged around 8 lakh, 24 lakh, 20 lakh, 2.5 lakh, 50 lakh, 5 lakh and 60 lakh.

"This has become possible through a meticulous implementation of various training and technology scheme," says Goel. "Maharashtra is perhaps the only state where farmers are imparted training in horticulture practices. Further, we have adopted a public-private partnership model in fruit and vegetable cultivation. There are many technological programmes to develop quality, disease-free saplings, export facilities, pesticide residue monitoring, irradiation and vapour heat treatment [which

removes spongy tissues] technologies that ensures our exported fruits are not rejected." Not a single exported consignment of grapes and pomegranate has returned rejected in 2013.

Today, Maharashtra boasts seemingly unsurpassable figures of 98% of country's entire grape and pomegranate exports, and one-third of country's total onion production. For the first time, banana, too, has been exported to countries where it never used to be exported. Also, Maharashtra leads the chart with its 15,000 greenhouses, according to Goel. One of the main contributing factors for the horticulture growth has been drip irrigation. "We have the highest horticulture area under drip in the state. It's almost 100% for grapes, pomegranate and banana," Goel says.

Conservation farming: Haryana village shows the way

Even the biggest revolutions are known to have modest beginnings. Taraori, a village tucked away in Haryana, is witnessing something similar. At a time when the rest of the state is grappling with rapid depletion of groundwater and soil contamination, this village stands out like a bright spot amid the gloom and its new-generation farmers like Vikas Chaudhary who are ushering in a change.

Chaudhary, who owns 34 acre of cultivable land in this village (considered the country's Basmati hub), has been practising conservation farming methods, such as zero tillage, direct seeding and soil health-based fertiliser application, for the last three years. He is just one of the 20-odd farmers in the region using conservation farming methods. As a result, not only has the old practice of burning crop residues in the fields come to an end, but the use of fertiliser, particularly urea, has consistently fallen.

"Through frequent soil-testing, we have noticed that farmers have been using less potash, which improves water retention and improves resistance to diseases," told Chaudhary. Mukesh Kumar, another farmer with 25 acre of land, has also employed modern methods such as direct seeding (of paddy) and cultivation of wheat right after paddy has been harvested (zero tillage where crops are planted without disturbing the soil).

"Traditionally, farmers in Haryana and Punjab have been sowing wheat after rice harvesting. They till their land 6-8 times, which pushes up the production cost, leads to delays in planting of wheat and results in loss of residual soil moisture," said ML Jat, senior scientist in Global Conservation Agriculture Programme (GCAP) initiated by the International Maize and Wheat Improvement Programme (CIMMYT). Under GCAP, 20 villages in Haryana (around Karnal) have been selected for promotion of conservation farming methods. Out of that, five

villages Beer Narayana, Anjanthali, Pakhana, Sandhir and Taraori have been piloted as 'climate smart villages'.

According to a study conducted by the Indian Council of Agricultural Research (ICAR), zero tillage helps one save on planting time, fuel and water apart from improving the fertiliser's efficiency. The study also states that wheat yields from 'zero tillage' areas with residue retention were 0.5 tonne/hectare higher than those from conventional tillage areas. Groundwater levels in Haryana are depleting fast because of overuse for agricultural needs, threatening the future of agriculture in a state that's been at the forefront of wheat and rice production. Last year, data by the state's agriculture department, said that over the past 12 years, most districts have seen an average fall of 7.29 metres in the water table.

Harnessing the full potential of jackfruit

Jackfruit trees are found in almost all the districts in Kerala. It is estimated that in a year the State alone produces about 16 million fruits. “But not all of the fruits are consumed; a large part goes waste. Our emphasis over years has been on ensuring employment and income generation for farmers more particularly rural women by making best use of this underutilized fruit along with papaya, pineapple, rose apple and plantains for making several edible preparations like halwa, toffee, fruitball, pickles, chutney powder, squash, jam etc,” says Dr. C.P.Robert, Programme Coordinator, Christian agency for rural development (CARD), Krishi Vigyan Kendra, Pathanamthitta, Kerala.

CARD identified the potential of processing and value addition in jack to be a money spinning venture and developed a set pattern of Good Manufacturing Practices (GMP) as a guideline for making traditional preparations from the fruit which otherwise proved a major impediment in home scale production practices. The institute trained entrepreneurs on packaging and labelling with reference to GMP, setting up of facilitation centres, registration and licensing, quality control measures and effective marketing strategies.

Efforts have also been on till date for refining the traditional products which have much demand in the local market. The institute has been conducting regular advanced national level training on jack-fruit production technology with special emphasis to processing and value addition. The training tried to explore hidden potentials of the fruit right from the propagation techniques to marketing. “The training covered topics like propagation techniques, processing and preservation technologies, traditional food products, commercial food products, packaging/ label-

ling, processed products and quality standards, credit availability and preparation of new projects. The trainers were also taken on a field visit to see SHG called GRAMA (Group Rural Agricultural Marketing Association) in Kottayam that has been producing and marketing over 30 jackfruit products.

According to Ms. Shana Harshan, subject specialist at CARD, "we have listed about 25 technological and 41 traditional products that are marketed by trained entrepreneurs in and around the district. The products are available at our Agro products display centre (APDC) which is run for showcasing our entrepreneur's products." CARD's intervention in promoting this concept has brought to the limelight a substantial number of women entrepreneurs specialised in agro-processing and value addition.

One among them is Ms. Meena Suresh a homeopathy practitioner from Ayroor Grama Panchayath. Ms. Meena was one of the 100 trainees selected under the Kerala Government Food Security Project implemented by CARD during 2009-10 for exploring the potential of jackfruit and other fruits to provide livelihood option to rural women. "She utilises the Agro processing hub facility at the campus and presently manufactures 17 different products under the brand name 'Yummy.' All her products carry the phrase "promoted by CARD-KVK, Pathanamthitta" on its label thus instilling confidence among consumers to buy it," says Dr. Robert.

Raw materials are mostly sourced from her own farm or locally. Processing, preservation, storing the pulps for value addition during off season are mostly done at the processing hub. She sells 25% of her products through the APDC and is presently in the process of establishing her own food processing unit. She was conferred a national award during the annual jack fest held at Thiruvananthapuram, in 2013.

Breeding and health management in dairy

Breeding and health management are the two key points for dairying to be profitable. There are two ways to increase the breeding efficiency of buffalo and cows. First is selection of genetically superior females, free from any reproductive and systemic diseases, and no physical abnormalities, having yearly calving, good growth of calves and lower age at first calving. Timely observance of heat and mating of females at appropriate time and pregnancy diagnosis can help improve reproductive efficiency and thus genetic progress.

Artificial insemination is the most successful method for breed development and should be given due importance because maintain-

ing a number of breeding bulls is a costly issue and reduces the rate of genetic improvement. If farmers maintain breeding bulls then care should be taken to see that the animal conforms to the breed type and should be a progeny from high yielding breed. The bull should be free from disease and vaccinated and tested for any infections regularly. Record keeping is a must for all breeding activities and milk production of the females in the herd. Breeding bulls should be allowed to walk regularly and not kept tied so that they may not become fat and have problems in natural mating or in donating semen.

Special drive for vaccination against various contagious diseases such as Foot and Mouth Disease (F.M.D.), Haemorrhagic Septicaemia (H.S.), Black quarters disease (B.Q) etc. must be followed according to the schedule. The animals should be served at the doorstep by local veterinarian and awareness created among the dairy livestock keepers. Free inputs should be made available for various diseases and for parasitic control. This would certainly avoid the expenses incurred on routine treatment and production losses due to illness.

41 crop varieties under nuclear agriculture programme

The BARC (Bhabha Automic Research Centre) had developed 15 varieties of groundnut, 8 of mung bean (greengram), 5 of urad bean (blackgram), 4 of tur (pigeonpea), 3 of mustard, 2 of soybean and one each of chavali (cowpea), sunflower, rice and jute. "If the country has to be food self-reliant, then it is imperative to embrace nuclear agriculture technology, especially when the agriculture land is getting scarce and demand for food is growing exponentially," Suresh G Bhagwat, Head, Nuclear Agriculture & Biotechnology Division of BARC said

These 41 varieties of different crops developed by BARC's Nuclear Agriculture and Biotechnology Division at Trombay, in collaboration with some of the agriculture universities in different states, have been gazette-notified by the Union Ministry of Agriculture for commercial cultivation by farmers in different states. BARC has also developed several protocols for micro propagation of elite varieties of banana.

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I, K.K. Ravindran, hereby declare that particulars given above are true to the best of my knowledge and belief.

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