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CONTENTS

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EDITORIAL

The National Workshop on Accelerated Recovery Drive organised by the Federation recently in Mumbai, brought to focus some of the best practices of ARDBs in loan recovery. Though the term 'Recovery' implies total collections against demand, some of the banks have drawn a distinction between 'repayment' representing collections received till due dates and 'recovery' taken as collections after due dates. Expenditure on loan recovery has become a major item in the transaction cost of ARDBs. Voluntary repayments are devoid of extra expenditure towards recovery and losses involved in delayed repayment. This helps these banks to channelize efforts to maximise the rate of voluntary repayment in total collections. High rate of voluntary repayment apart from its implications on cost and revenues also helps to keep the number of defaulters after due dates within manageable limits making effective post due dates follow up easier. These banks have taken a number of steps to reorient their loan and repayment systems to increase the rate of voluntary repayment. Repayment track record of loans already taken by loan applicants from any source and repaying capacity are given high weightage in sanctioning loans. Difficulties encountered by borrowers including undue delay and wasteful expenditure in getting the loan are found to have strong impact on repayment. Completing most part of the processing of loan applications at the place of the borrower or a contact point close to his residence and avoid visits to the bank by applicants in connection with loan processing unless it is absolutely required, are some of the measures taken to make the loan procedure hassle-free. Repayment schedule involving equated composite annual instalments for principal and interest which ARDBs have been following since inception has contributed significantly to default in repayment. Most of the Banks have now introduced monthly/quarterly demand relying on repaying capacity based on borrowers income from all sources instead of

counting only the income from the project financed. ARDBs in most of the States have also started offering saving products to members, especially Thrift and Recurring deposits, enabling them to aggregate their routine small savings for lump sum uses including loan repayment. Intensive preduedate follow up through telephone calls and SMS also helps to increase the rate of prompt repayment to a great extent. It is observed that the most important factor affecting recovery performance of ARDBs, is their approach in dealing with wilful defaulters. ARDBs which perform well in loan recovery are seen to be strict and consistent in taking legal recovery measures in the case of wilful defaulters without exceptions. It is also seen that borrowers tend to become wilful defaulters when they find that the bank is not strict about recovery actions. This happens when recovery proceedings of the bank do not progress to later stages after initial notices, which is very common in ARDBs in some States. Once the bank starts pursuing consistent policy and resist outside interferences, wilful default comes down drastically and first & second notices are enough to persuade reluctant payers to fall in line. It is seen that even States which badly underperform in recovery, there are a few cases of PCARDBs/Branches which achieve near 100% recovery consistently for many years. The unique factors contributing to their success are found to be proximity to borrowers and determination of staff to maintain the tradition of outstanding performance against all odds, underscoring the fact that more than anything else, it is the staff morale and attitude which decide the success or failure of institutions.

K. K. Ravindran
Managing Editor

A study of composition of livestock with special reference to dairy herd in India

Dr. C.L. Dadhich*

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

Livestock sector plays an important role in the Indian economy in general and agricultural economy in particular. Livestock sector is a major food and employment provider in India. The composition of livestock herd has an important bearing on Indian economy. In last 50 years, two revolutions viz. Green Revolution and White Revolution have brought about a major impact on the composition of livestock herd.

The main objective of this study is to capture the changes in composition of livestock herd. The study also lists the salient features of changes in composition and suggests the policy measures to gainfully harness the situation. The study covers period from 1966 to 2012 to coincide with inception of these two revolutions.

The comprehensive and systematic information on livestock sector is available from 1966 onwards through livestock census at an interval of five years. However separate information on indigenous cattle and crossbred cattle has been published for the first time in 1982. Information on in-milk animal and milk yield is reported from integrated milk sample surveys being annually conducted from 1992 onwards.

The paper is divided into five sections. The first section captures changes in composition of livestock herd. The second section reviews growing contribution of livestock sector. The third section deals with important developments in dairy sector. The fourth section gives policy prescription in the changed scenario. The fifth section summarises major observations.

Section I
Changing composition of livestock herd

The number of livestock increased by 0.8 per cent per annum from 350 millions in 1966 to 512 millions in 2012. At disaggregate level highest growth of 1.9 per cent was noticed in case of female buffaloes, closely followed by 1.6 per cent in case of goat, cow 1.0 per cent and 0.9 per cent in each of the male buffaloes and sheep. Contrastingly decline at the rate of 0.8 per cent per annum was noticed in case of each bullock and other animals. In short, as against the highest number of bullock (97 million) followed by cow (80 million) goat (65 million) and sheep (42 million) in 1966 and

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highest number of goat (135 million) followed by cow (123 million), buffalo (93 million), bullock (68 million) and sheep (65 million) was registered in 2012 (Table 1). Since the establishment of NDDB in 1965 the composition of livestock herd has undergone a significant change in general and dairy herd in particular, while number and proportion of buffalo in livestock herd have increased substantially, number and proportion of bullocks declined drastically. Goats, the poor man cow have also assumed importance. It is interesting to note that number of livestock declined from 72 (including 24 dairy stock) in 1966 to 42 livestock (including 18 dairy stock) in 2012. This indicates that age old relationship between people and livestock in general and dairy animals in particular is gradually thinning in terms of physical number. However, the benefits of close relationship in terms of value of livestock products is growing thicker and thicker with year on year.

Section II
Growing contribution of livestock sector

Livestock sector occupies an important place in Indian economy in general and agricultural economy in particular. It provides nutrient

Table I. Species-wise livestock: 1966 and 2012

Particulars	No. in millions		Percentage to total		CAGR %
	1966	2012	1966	2012	2012 over 1966
Workstock					
Cattle (Male)	96.7	68	27.6	13.3	-0.8
Buffalo (Male)	10.6	16	3.0	3.1	0.9
Sub-Total	107.3	84	30.7	16.4	-0.5
Dairy Stock					
Cattle (Female)	79.5	123	22.7	24.0	1.0
Of which Crossbred (Female)	-	34	-	6.6	NA
Buffalo (Female)	38.7	93	11.1	18.1	1.9
Sub-total	**118.2**	**216**	**33.8**	**42.1**	**1.3**
Small Ruminants					
Goats	64.6	135	18.5	26.4	1.6
Sheep	42.4	65	12.1	12.7	0.9
Sub-total	**107**	**200**	**30.6**	**39.1**	**1.4**
Others (Horses, Mules, Pigs, Donkeys & Camels and Yaks & Mithuns)	17.9	12	5.1	2.4	-0.8
ALL	**350**	**512**	**100.0**	**100.0**	**0.8**

Source:Livestock census 1966-2012

rich food products, draught power dung as organic manure and domestic fuel, hides and skin. With 512 animals, Indian livestock sector is one of the largest in the world. It has 56.7 per cent of World's buffaloes, 12.5 per cent of cattle, 20.4 per cent of small ruminants, 2.4 per cent of camel, 1.5 per cent of pigs and 3.1 per cent of poultry.

In 2011-12 livestock sector generated output with ₹4591 billion at current prices of which milk and milk products was ₹3055 billion (66.6%), meat ₹836 billion (18.2%) and eggs was ₹178 billion (3.9%). In physical terms livestock sector produced among others 127.9 million tonnes of milk, 5.5 million tonnes of meat and 66.4 million eggs in 2011-12. The share of livestock sector in gross domestic product (GDP) was 3.4%. However, its share in agricultural GDP was as high as 28.3 per cent (Basic Livestock Statistics, 2013) while share of agricultural GDP in total GDP is declining the share of livestock GDP in agriculture GDP is growing indicating that livestock GDP is growing faster than agricultural GDP. It is worth mentioning here that growth of rate of livestock sector was 1.5 times higher than growth in crop sector. Livestock sector provides cushion to overall agricultural growth (Planning Commission, 2012). It is indeed driver of growth for agricultural sector.

As a result of spectacular growth of milk production, per capita availability of milk production increased from 132 grams/day in 1960-61 to 290 grams/day in 2011-12 which is comparable with the world's per capita availability of 289 grams/day for 2011 (Economic Survey, 2012-13). Furthermore agricultural output is highly volatile, but value of livestock output is more stable (Dadhich, 2014). The value of milk output is higher than value of foodgrains.

Section III
Some important development in dairy sector

III.1: Growing Number of Dairy Animals

The number of female bovines increased by an average compound annual growth rate of 1.3 per cent from 118 million in 1966 to 216 million in 2012. Species-wise the number of crossbred female cattle grew by average rate of 7.1 per cent from 5 million in 1982 (bifurcation of indigenous and crossbred cattle was published first time in 1982) to 34 million in 2012. However, number of indigenous female cattle grew by 0.7 per cent from 86 million in 1982 to 123 million in 2012. On the whole, cattle both indigenous and crossbred taken together increased by 1.0 per cent from 79 million in 1966 to 123 million in 2012. In case of female buffaloes the number registered average annual growth of 1.9 per cent from 38 million in 1966 to 93 million in 2012. In short, in 1966, of the total female bovines, 79 million or 66.9 per cent were cattle, distantly

followed by 38 million or 33.1 per cent buffaloes. However, in 2012, of the total 216 million bovines, cattle constituted 56.9 per cent or 123 million (of which 34 million or 15.7 per cent were crossbred female cattle and 89 million or 41.2 per cent) indigenous cattle and 43.1 per cent or 93 million were buffaloes. This indicates that female bovine stock in India has undergone a metamorphosis changes from 3 better yielding animals (buffaloes) in 1966 to 6 better yielding animals (4 buffaloes and 2 crossbred cow) in 2012 in every 10 dairy animals (Tables IIA to Table IIE).

III.2: Trends in Young Stock

Young stock of female bovines increased by an average rate of 1.9 per cent per annum from 41 million in 1966 to 82 million in 2012. In terms of percentage it moved up from 34.3 per cent in 1966 to 38.2 percent in 2012. Species-wise, in 1966 young stock constituted 34.8 per cent in case of cattle and 31.8 per cent for buffaloes. However, in 2012, young stock formed 37.6 per cent for cattle (37.9 percent for indigenous cattle and 37.6 percent for crossbred cattle) and 38.9 per cent for buffaloes. An improvement in young stock ratio may be inter-alia on account of lower mortality rate of female calf and consolidation of herd size though eliminating culled animal, etc. Plausibly enough, improvement in young stock to breedable stock ratio is one of the important positive developments in Indian dairy sector, as this ensures better replacement in the dairy sector (Table IIA to Table IIE).

III.3: Growing Wet Ratio

The number of breedable animal increased by 1.5 per cent per annum from 77 million in 1966 to 130.7 million in 2012. Interesting enough, over the period of time, proportion of in-milk (wet) stock to breedable stock has moved up from 43.9% in 1966 to 61.7% in 2012. Species-wise in case of indigenous cattle in milk animals as a proportion of breedable animals moved up from 44.6% in 1982 to 54.7% in 2012. Similarly, in case of crossbred cattle in-milk animal proportion moved up from 59.3% in 1982 to 68.2% in 2012. So far, buffaloes are concerned the proportion of in-milk buffaloes recorded rise from 50.6% in 1966 to 65.8% in 2012. In short, in 2012 the highest proportion of in-milk stock to breedable stock was noticed in case of crossbred cattle (68.2%) followed by 65.8% in buffalo and 54.7% in case of indigenous cattle. Conversely lowest ratio of dry-stock was observed in case of crosssbred cattle 31.8% followed by 34.2% in case of buffalo and 45.3% in case of indigenous cattle (Table IIA to Table IIE).

III.4: Factors Contributing to Higher Milk Production

Comprehensive information on number of wet animals and yield is available from 1992 onwards. It may be observed from data presented in Table 3 that number of wet animals

increased from 57.4 million in 1992 to 80.5 million in 2012 or 1.8% per annum, while milk yield increased from 2.8 kg/day to 4.5 kg/day or 2.4% per annum during the reference period. This suggests that contribution of increase in wet animals is lower than that of yield in milk production. However, in case of four states, viz., Gujarat, Rajasthan, Uttar Pradesh and Bihar accounting for about 41% of total milk production, the growth rate of milch animals was higher than growth of milk yield. Incidentally between 1992 to 2007 growth rate of increase in milch animals was 2.1% vis-a-vis 1.7% growth of yield (Dadhich and Meena, 2010). Obviously since 2007 yield is moving faster than number of animals. However, a disaggregated analysis as presented in Table 4 indicates that while increase in number of wet animals contributed 51% (34% due to new addition and 17% due to improvement in wet ratio), yield increase contributed around 49% in increment milk production between 1992 and 2012. As, barring indigenous cattle, almost wet ratio has reached plateau, further improvement is neither feasible nor desirable. Under these conditions augmenting milk production by inducting the number of dairy animal will be self defeating. It may cause higher pressure on land for production of feed and fodder leading to enlarged competition between men and animals for food and fodder. This apart, increasing number of dairy stock will further accentuate global warming. Needless to say that only way out is enhancement in productivity of animals with technological break-through. Incidentally, wide variation between the milk yield across the states clearly suggests that with the use of improved technology (breeding and feeding) there is enough scope for increasing yield of animals which is far below their potential.

Section IV
Policy prescription in the changed scenario

The foregoing analysis revealed that since the advent of White Revolution preference for dairy animals is on the rise at the cost of work animals. Furthermore, slow but steady rise is witnessed in almost all the parameters of dairy animals. The growing proportion of young stock suggests that Indian dairy herd has young breedable animals as of now vis-à-vis in past. The sliding ratio of dry stock along with a rising ratio of wet animals also placed Indian dairy sector on sound footing. The favourable growth of young stock vis-à-vis breedable stock revealed that consolidation process has set in for Indian dairy sector with better replacement leading to younger herd.

Evidently, market led (Shah and Dave 2010) white revolution of late sixties has pushed up milk production, partly by increase in number of dairy animals on the one hand and partly by better management of these animals on the

Table II.A. Growth of Indigenous Female Cattle in India: 1982 to 2012

Year	Total Indigenous Female Cattle ('000)	CAGR (%)	Young Stock ('000)	CAGR (%)	Breedable Stock ('000)	CAGR (%)	Dry Animal ('000)	CAGR (%)	In-milk Animal@ ('000)	CAGR (%)	Milk Production (Lakh Kg per day)	CAGR (%)	Yield per breedable stock (Kgs/day)	CAGR (%)
1982	86082	NA	29777	NA	55714	NA	26275	NA	24827	NA	NA	NA	NA	NA
1987	91300	1.2	33840	2.6	56390	0.2	25030	-1.0	26940	1.6	NA	NA	NA	NA
1992	92431	0.2	34563	0.4	56313	0.0	24450	-0.5	27551	0.4	410.5	NA	0.7	NA
1997	88580	-0.8	33502	-0.6	54267	-0.7	22513	-1.6	27361	-0.1	485.0	3.4	0.9	4.2
2003	82961	-1.1	30750	-1.4	50962	-1.0	19229	-2.6	27626	0.2	530.4	1.5	1.0	2.6
2007	89236	0.2	32476	-0.8	54088	-0.1	17355	-6.3	30686	2.9	624.9	6.5	1.2	1.8
2012	89224	1.8	33807	2.4	54155	1.5	18475	-1.0	29649	1.8	751.3	9.1	1.4	3.1
Average Growth		**0.3**		**0.4**		**0.0**		**-2.2**		**1.1**		**5.1**		**2.9**

Table II.B. Growth of Crossbred Female Cattle in India: 1982 to 2012

Year	Total Crossbred Female Cattle ('000)	CAGR (%)	Young Stock ('000)	CAGR (%)	Breedable Stock ('000)	CAGR (%)	Dry Animal ('000)	CAGR (%)	In-milk Animal@ ('000)	CAGR (%)	Milk Production (Lakh Kg per day)	CAGR (%)	Yield per breedable stock (Kgs/day)	CAGR (%)
1982	4817	NA	1834	NA	2969	NA	915	NA	1762	NA	NA	NA	NA	NA
1987	7460	9.1	2850	9.2	4540	8.9	1240	6.3	2880	10.3	NA	NA	NA	NA
1992	10557	7.2	4064	7.4	6367	7.0	1781	7.5	4011	6.8	226.6	NA	3.6	NA
1997	14755	6.9	5411	5.9	9134	7.5	2432	6.4	5923	8.1	313.0	6.7	3.4	-0.8
2003	19741	5.0	7439	5.4	12050	4.7	3054	3.9	8177	5.5	427.8	5.3	3.6	0.6
2007	26216	15.5	10059	16.8	15664	14.4	3691	11.0	10716	16.0	657.9	20.4	4.2	2.8
2012	33760	14.4	12492	13.8	20985	14.9	5115	13.8	14305	15.0	887.2	20.0	4.2	0.1
Average Growth		**9.7**		**9.8**		**9.6**		**8.1**		**10.3**		**13.1**		**0.7**

Table II.C. Growth of Female Cattle in India: 1966 to 2012

Year	Total Indigenous Female Cattle ('000)	CAGR (%)	Young Stock ('000)	CAGR (%)	Breedable Stock ('000)	CAGR (%)	Dry Animal ('000)	CAGR (%)	In-milk Animal@ ('000)	CAGR (%)	Milk Production (Lakh Kg per day)	CAGR (%)	Yield per breedable stock (Kgs/day)	CAGR (%)
1966	79471	NA	27700	NA	51771	NA	25803	NA	20974	NA	NA	NA	NA	NA
1972	80574	0.2	27165	-0.3	53409	0.5	26330	0.3	22034	0.8	NA	NA	NA	NA
1977	82575	0.5	27957	0.6	54618	0.4	26592	0.2	26592	3.8	NA	NA	NA	NA
1982	90899	1.9	31611	2.5	58683	1.4	27190	0.4	26589	0.0	NA	NA	NA	NA
1987	98760	1.7	36690	3.0	60930	0.8	26270	-0.7	29820	2.3	NA	NA	NA	NA
1992	102988	0.8	40182	1.8	62680	0.6	26231	0.0	31562	1.1	637.1	NA	1.0	NA
1997	103335	0.1	38914	-0.6	63401	0.2	24945	-1.0	33284	1.1	798.0	4.6	1.3	4.4
2003	102702	-0.1	38189	-0.3	63012	-0.1	22283	-1.9	35803	1.2	958.2	3.1	1.5	3.9
2007	115452	2.8	42535	2.2	69752	2.4	21046	-4.2	41402	5.6	1282.8	12.6	1.8	3.9
2012	122984	4.6	46299	4.9	75140	4.5	23590	1.4	43954	5.3	1638.5	14.4	2.2	3.5
Average Growth		**1.4**		**1.5**		**1.2**		**-0.6**		**2.4**		**8.7**		**3.9**

Table II.D. Growth of Female Buffaloes in India: 1966 to 2012

Year	Total Female Buffalos Female Cattle ('000)	CAGR (%)	Young Stock ('000)	CAGR (%)	Breedable Stock ('000)	CAGR (%)	Dry Animal ('000)	CAGR (%)	In-milk Animal@ ('000)	CAGR (%)	Milk Production (Lakh Kg per day)	CAGR (%)	Yield per breedable stock (Kgs/day)	CAGR (%)
1966	38340	NA	12180	NA	25532	NA	12964	NA	12924	NA	NA	NA	NA	NA
1972	42164	1.6	12921	1.0	28612	1.9	15070	2.5	15070	2.6	NA	NA	NA	NA
1977	46015	1.8	14153	1.8	31265	1.8	11920	-4.6	16959	2.4	NA	NA	NA	NA
1982	53541	3.1	17339	4.1	32384	0.7	12052	0.2	17998	1.2	NA	NA	NA	NA
1987	60090	2.3	20950	3.9	38670	3.6	12740	1.1	23150	5.2	NA	NA	NA	NA
1992	66855	2.2	23049	1.9	43177	2.2	14383	2.5	25892	2.3	924.3	NA	2.1	NA
1997	71293	1.3	24524	1.2	46060	1.3	14322	-0.1	28409	1.9	1060.5	2.8	2.3	1.5
2003	80034	1.9	29060	2.9	50280	1.5	13905	-0.5	33319	2.7	1314.5	3.6	2.6	2.1
2007	85745	4.7	31271	6.3	52820	3.5	12999	-2.4	35643	5.8	1586.2	10.6	3.0	6.9
2012	92599	3.7	36013	5.5	55592	2.5	14482	1.0	36572	2.4	1854.1	9.0	3.3	6.3
Average Growth		**2.5**		**3.2**		**2.1**		**0.0**		**2.9**		**6.5**		**4.2**

Table II.E. Growth of Female Bovine in India: 1966 to 2012

Year	Total Female Bovine Female Cattle ('000)	CAGR (%)	Young Stock ('000)	CAGR (%)	Breedable Stock ('000)	CAGR (%)	Dry Animal ('000)	CAGR (%)	In-milk Animal@ ('000)	CAGR (%)	Milk Production (Lakh Kg per day)	CAGR (%)	Yield per breedable stock (Kgs/day)	CAGR (%)
1966	117811	NA	40508	NA	77303	NA	36243	NA	33898	NA	NA	NA	NA	NA
1972	122738	0.7	40717	0.1	82021	1.0	37630	0.6	37104	1.5	NA	NA	NA	NA
1977	128590	0.9	42707	1.0	85883	0.9	38512	0.5	43551	3.3	NA	NA	NA	NA
1982	144440	2.4	48950	2.8	91067	1.2	39242	0.4	44587	0.5	980.8	NA	1.1	NA
1987	158850	1.9	57640	3.3	99600	1.8	39010	-0.1	52970	3.5	1279.5	5.5	1.3	3.6
1992	169843	1.3	63231	1.9	105857	1.2	40614	0.8	57454	1.6	1561.5	4.1	1.5	2.8
1997	174628	0.6	63439	0.1	109461	0.7	39267	-0.7	61693	1.4	1858.5	3.5	1.7	2.9
2003	182736	0.8	67249	1.0	113292	0.6	36188	-1.4	69122	1.9	2272.7	3.4	2.0	2.8
2007	201197	3.6	73806	3.9	122572	2.9	34045	-3.5	77045	5.7	2765.8	10.4	2.3	2.0
2012	215583	4.2	82312	5.2	130732	3.6	38072	1.3	80526	3.9	2765.8	5.0	2.1	-1.1
Average Growth		**1.8**		**2.1**		**1.5**		**-0.2**		**2.6**		**5.3**		**2.2**

Notes: (1) NA refers to not available/applicable and CAGR for compound annual growth rate.

(2) Separate data on crossbred and indigeneous cows was first time reported in 1982.'

(3) Milk production is for the respective financial year ending in next March.

(4) @ Figures are for the date of enumuration, they may not necessarily tally with ISS figures which are average of three seasons.

Source: Various Government documents of Livestock Census for Animal Census and Basic Animal Husbandry Statistics for milk production

other. Though contribution of yield has been rising particularly since 2007 yet contribution of induction of additional stock is sizeable. India cannot afford the luxury of increasingly large number of dairy animals, to produce higher quantity of milk. There is an urgent need to speed up technology led second white - revolution through metamorphosis changes in genetics of animals by selective breeding and proper feeding to enhance the productivity of animals to cope up with growing demand for milk in the country. National Dairy Development Board (NDDB) deserve compliments for timely preparing national dairy plan (NDP) involving World Bank assistance to enhance productivity levels based on technology to usher in second white revolution with due emphasis on under developed dairy states of east India and north eastern states. Unlike first white revolution which was market led, second white revolution envisaged fair blend of both market and technology with due emphasis on regional balance (NDDB, 2008). Establishment of NDDB Dairy Services- as a subsidiary of NDDB to promote technology and market leased white revolution is a step in the right direction. All stake-holders should implement NDP with a sense of urgency to achieve noble mission of nutritional security.

Table III. State-wise productivity of Milch Stock: 1992 and 2012

State	1992			2012			CAGR (%)		
	No. of in-milk animals (Lakhs)	Yield (Kg/day)	Production ('000 tonnes)	No. of in-milk animals (Lakhs)	Yield (Kg/day)	Production ('000 tonnes)	No. of in-milk animals	Yield	Production
Andhra Pradesh	46.1	1.8	3103	59.6	5.9	12761	1.3	6.1	7.3
Bihar	27.5	3.2	3195	48.8	3.8	6845	2.9	0.9	3.9
Gujarat	34	3.1	3795	61.8	4.6	10315	3.0	2.0	5.1
Haryana	19.3	5.3	3715	25.2	7.7	7040	1.3	1.9	3.2
Karnataka	31	2.3	2590	38.9	4.0	5718	1.1	2.8	4.0
Kerala	11.2	4.6	1889	5.0	15.3	2791	-3.9	6.2	2.0
Madhya Pradesh	62.9	2.1	4879	64.7	3.7	8838	0.1	2.9	3.0
Maharashtra	43.5	2.6	4102	53.2	4.5	8734	1.0	2.8	3.9
Odisha	20.5	0.7	542	18.8	2.5	1724	-0.4	6.6	6.0
Punjab	29.9	5.1	5583	28.8	9.3	9724	-0.2	3.0	2.8
Rajasthan	45.6	2.8	4586	81.9	4.7	13946	3.0	2.6	5.7
Tamil Nadu	29.1	3.3	3468	31.8	6.0	7005	0.4	3.1	3.6
Uttar Pradesh	97.5	3	10649	164.2	3.9	23330	2.6	1.3	4.0
West Bengal	34	2.4	3023	34.0	3.9	4859	0.0	2.5	2.4
All India	574.5	2.8	57962	805.3	4.5	132430	1.8	2.4	4.2

Source: Basic Livestock Statistics 2013

Section V
Summing up

The analysis brings to fore that since 1966 the composition of Indian livestock herd has undergone a sea-change in favour of dairy stock at the cost of work stock and miscellaneous stock like horse, camel, pony, etc., while pre-pondence of cattle in dairy herd is on wane, the proportion of buffaloes has reached almost at par with cattle. Within cattle sector the share of crossbred cattle has moved up to the level of one third. This apart growing share of young stock has ensured young dairy herd to produce milk in India. The rise in wet ratio on one hand and fall in the dry ratio on other have contributed significantly to milk production in India.

It goes without saying that establishment of NDDB in 1965, gave a big push through market led white revolution. All these healthy developments not only enhanced the contribution of milk in value of livestock products, but milk as pushed highest valued agricultural commodity in India. These positive developments placed India on the top of milk production in world. The study also pointed out that the close relationship of people and livestock in general and dairy stock in particular in terms of numbers is thinning out. However, the benefits of this relationship in value of livestock products is gradually growing thicker and thicker.

During the period under review, two factors viz., rise in number of

Table IV. Contribution of milch animals and yield in incremental milk production

Sr. No. (1)	Particulars (2)	1992 (3)	2012 (4)	Incremental (5)
1.	Milk Production (million tonnes)	57.9	132.4	74.5
2.	Milk Yield (kg/day)	2.8	4.5	1.7
3.	Annual Milk Yield (kg)	1022	1643	621
4.	Increment milk production due to rise in yield (million tonnes) (57.4 x 292)	-	-	16.8
5.	Wet Animals (millions)	57.4	80.5	23.1
6.	Increase in wet Animals due to rise in wet ratio (million)	-	-	78
7.	New wet animals added (million) (23.1 – 7.8)	-	-	15.3
8.	Incremental milk production due to rise in wet ratio (million tonnes) (7.8 million x 1643)	-	-	12.8
9.	Incremental milk production due to addition of new animals (million tonnes) (15.3 million x 1643)	-	-	25.1
10.	Contribution of incremental yield in percentage	-	-	49.1*
11.	Contribution of incremental wet ratio in percentage	-	-	17.2*
12.	Contribution of additional animals in percentage	-	-	33.7*

*These three parameters are percentage of total incremental milk production.
Source: Compiled from Livestock Census and Dairy Statistics, Government of India.

dairy stock and improvement in milk yield have contributed at 51 per cent and 49 per cent respectively in milk production that grew at more than 4 percent annually. However, in four major states, viz., Uttar Pradesh, Rajasthan, Gujarat and Biha arer accounting for 41 per cent of milk production, rise in number of milch stock has taken precedence over yield improvement. Increase in milk production through addition of milch stock is not sustainable and will be self defeating in the long run. Concerted measures by all viz., NDDB, Central/State Government, Dairy Co-operatives, Dairy Producers Companies and Dairy Farmers are required to obtain the milk production through rise in yield rate rather than rise in milch stock without loss of further time.

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Financial feasibility of private investment in dry land agriculture

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ABSTRACT

The objective of the study was to analyse the cost, returns and financial feasibility of private investment pattern in dry land agriculture in Northern Karnataka. The financial feasibility analyses were employed in this study. The investment on jasmine garden was ₹ 175350 per ha. The investment on digging of pits constituted the highest proportion followed by investment on plant protection and planting material. The per ha investment on citrus garden was ₹ 239757. The initial investment in establishing a ber garden was ₹ 68947 per ha. The total investment cost in the pomegranate garden was ₹ 232000 per ha. In establishing a sapota garden the initial investment was ₹ 72255 per ha. The investment on contour bund, nala bund, farm pond and land leveling and bunding for all the categories of farmers in both the zones was financially feasible. The B:C ratio (Benefit Cost Ratio) for different land development structures was more than two. The NPV was positive at 12 per cent discount rate for nala bund. The internal rate of returns was more than 30 per cent for all the structures. The investment in jasmine citrus, ber, pomegranate and sapota was found to be financially feasible and profitable. The period required to recover initial investment incurred in establishing the gardens was found less than 3 years. The post investment period productivity, number of working days and annual income of the respondents were much higher in both the zones across all categories of farmers. All the land development activities were financially feasible.

Key words: Costs, Returns, Investment, Dry land agriculture

INTRODUCTION

India is the second most populous country in the world. The basic needs of the human beings as well as the livestock have been increasing enormously with rising population. The country has 329 million hectares of geographical area, of which 144 million hectares are arable land. More than two thirds of this arable land continues to depend on monsoon even after the realization of full irrigation potential.

The post independence period of agricultural development was characterized by a major emphasis

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Table 1. Investment in horticulture crops

(₹ per ha)

Crops	Initial investment (₹)	Establishment cost (₹)				Total investment (₹)
		I year	II year	III year	Total	
Jasmine	97165	18040	24055	36090	78185	175350
Citrus	141085	22770	30360	45543	98672	239758
Ber	48565	8200	12183	-	20383	68948
Pomegranate	150000	24000	28000	30000	82000	242000
Sapota	28922	10000	13332	20000	43332	72255

on self-sufficiency in food grain production in the shortest time period possible. In the process, however, it overlooked the developmental needs of the vast tracts of dry land farming. The neglect was not only in the field of crop research but also in the fields of credit and extension support. The frequent failure of rainfall and the associated fluctuating productivity in dry land regions often constitutes multi facet problems and call for concerted effort to create quality assets in dry land areas.

Both public and private investments are made in agriculture to improve the quality of rural assets and enhance their productivity. The major areas of public investments in agriculture included investment in irrigation, treatment and reclamation of land, watershed development, farm supplies, electricity, flood control, agricultural research and education, investment made for creation of warehouses, processing and distribution agencies like Food Corporation of India, State Trading Corporation, Seed Corporations, Agro-industries and markets. Absence of either public or private investment leads to lopsided development in the economy since they are both complimentary to each other.

There has been a great concern in the country in the recent years that the public investment in agriculture has been declining. For example, the share of public investment in agriculture in the total investment has declined from 35.30 per cent in 1960-61 to 16.20 per cent in 1996-97. The proportion of investment in agriculture in GDP has continued to decline (Hirashima, 2000). The decline in public investment has also induced a decline in private investment, which is cause of serious concern (Planning Commission, 1995). The private sector investment in agriculture comprises of investments in the household sector and corporate sector by both in organized and unorganized sectors. The organized segment contains big firms primarily engaged in agro-processing and plantation sectors, the investment estimates of which are available in their accounting books. The

Table 2. Financial feasibility of investment in land development structures

SN	Land Development Structure	Pay back period (years)				B:C ratio			
		Small	Medium	Large	Overall	Small	Medium	Large	Overall
		North Eastern Dry Zone							
1	Contur bund	3.24	2.62	2.76	2.87	3.28	3.06	3.70	3.34
2	Nala bund	12.61	11.02	6.84	10.62	2.01	2.46	2.89	2.45
3	Farm pond	2.90	3.01	3.19	3.03	3.85	3.05	3.25	3.38
4	Land leveling and Bunding	3.98	3.15	3.10	3.41	2.55	3.89	3.28	3.24
		Northern Dry Zone							
1	Contur bund	3.02	3.55	2.33	2.96	2.08	2.89	3.35	2.77
2	Nala bund	11.98	9.80	6.59	9.45	2.18	2.23	2.44	2.28
3	Farm pond	2.67	2.98	3.13	2.92	3.42	3.02	3.13	3.17
4	Land leveling and Bunding	3.22	3.06	3.09	3.12	2.35	2.95	3.14	2.81

SN	Land Development Structure	NPV (₹)				IRR (%)			
		Small	Medium	Large	Overall	Small	Medium	Large	Overall
		North Eastern Dry Zone							
1	Contur bund	1997	2899	2690	2528	29	37	34	35.0
2	Nala bund	119	786	365	423	17	19	18	18.3
3	Farm pond	15869	17786	18788	17482	30	30	31	30.33
4	Land leveling and Bunding	14688	18197	18327	17070	39	26	29	31.33
		Northern Dry Zone							
1	Contur bund	1788	2445	2340	2191	27	34	38	33.00
2	Nala bund	109	464	255	276	15	17	16	16.00
3	Farm pond	13434	5343	16344	15040	29	32	33	31.00
4	Land leveling and Bunding	13010	15349	17000	15119	20	25	26	30.00

unorganized sector however does not have any such systematic information. These are very small and cottage agricultural enterprises like dairy, poultry agricultural implements units etc. Information on investments in such units is diverse and diffused. It is accounted through some benchmark surveys conducted by the Central Statistical Organization (CSO). For household components, CSO along with Reserve Bank of India conducts All India Rural Debt and Investment Surveys once in ten years to estimate their contribution to investment in agriculture. The household components of private investment in agriculture is categorized into seven components viz., (1) land reclamation, (2) bunding and other land improvements, (3) orchards and plantations, (4) wells and other irrigation sources, (5) agricultural implements, machinery and transport equipments, (6) farm

Table 3. Financial feasibility of investment in horticulture crops

SN	Particulars	Jasmine	Citrus	Ber	Pomogranate	Sapota
1	Net Present Value (₹/acre)	4,60,972.50	5,28,661.00	2,97, 444.60	1,90,215.24	1,31,280.00
2	Benefit Cost Ratio (B:C Ratio)	2.62	2.68	2.20	2.24	2.01
3	Internal Rate of Return (%)	69	56	55	46.66	61
4	Pay Back Period (Years)	2.08	3.02	2.50	4.60	2.78

houses and animal sheds and (7) other capital expenditure.

The nexus between private investment and agricultural growth, agriculture growth and poverty alleviation are well articulated in literature. Given the positive impact of agriculture growth on poverty alleviation, the role of private investment in agriculture as one of the major engines of agriculture growth has been well documented in the development policy prospective. The capital assets depreciate continuously due to use and obsolescence. Hence, a regular private investment is essential. In this context, it is pertinent to identify the pattern of private investment in dry land agriculture, the priority of private investment, sources of such investment and constraints faced by the farmers in such investments in dry land areas. Therefore, it is necessary to study the viability of investment in dry land agriculture in Northern Karnataka.

Material and methods

The present study aims at analyze the investment pattern and financial feasibility of private investments in dry land area of Northern Karnataka. Hence, two major agro-climatic dry zones namely North Eastern Dry Zone (NEDZ) and Northern Dry Zone (NDZ) spread in north Karnataka which have vast tracts of dry lands were selected purposively for the study. Keeping in view, all these points of the ten zones in the states, it was proposed to study investment details in two important dry zones of the state viz., north eastern dry zone and northern dry zone.

North Eastern Dry Zone covers an area of 1.76 mha spreading in parts of Raichur and Gulbarga districts. The zone is spread across 11 taluks of these districts. The principal crops grown are paddy, hybrid sorghum, sunflower, pigeonpea, bajra, rabi sorghum chickpea and cotton. Northern Dry Zone covers an area of 4.78 mha including Bijapur, Bagalkot, Gadag, Bellary, Koppal and parts of Dharwad, Belgaum and Raichur districts. The zone cuts across 35 taluks of these districts. The important crops grown are bajra, pigeon pea, green gram, sunflower, rabi jowar, chickpea, maize, groundnut, cotton, wheat, paddy and sugarcane.

The required primary data was collected from the farmers through a structured questionnaire by

personal interview method. The primary data included the information on investment pattern in horticultural crops, cost of seeds, FYM, fertilizers, plant protection chemicals, human labour, bullock labour, machine labour, land revenue, land rent, yield levels, selling prices of crops and gross returns. The data pertained to the agricultural year 2007-08.

The private investment decision of farmers in irrigated area differs widely from those in dry land areas. The farmers in dry land areas are much concerned and guided by the extent and magnitude of the profitability in different investment opportunities which are limited when compared to those in irrigated areas. It is important to boost private investment in dry land areas in view of its vast area and any improvement in such areas would bring enormous changes in the agricultural scenario of the state.

The multistage sampling design was adopted keeping each zone as a stratum for eliciting the required information from the farmers. From each of the selected zones 20 per cent of the taluks with a minimum of two taluks were randomly selected at the first stage. From each selected taluk, two villages were considered at the second stage. In the third stage, ten farmers were randomly chosen from each sample villages in such a way that it included four small farmers (up to 2.00 ha), four medium farmers (2.01 to 4.00 ha) and two large farmers (above 4.00 ha). The information was generated from 180 sample farmers comprising 72 small farmers, 72 medium farmers and 36 large farmers spread over 18 villages of 9 taluks in north eastern dry zone and northern dry zone in north Karnataka.

The collected data were processed using following analytical tools viz., tabular presentation method, budgeting technique and financial feasibility analysis. The data collected were presented in tabular form to facilitate easy comparisons. This technique of tabular presentation was employed for estimating the farm size-wise composition and magnitude of private investment in dry land agriculture. The data were analyzed with the aid of statistical tools like averages and percentages to draw the meaningful results.

Financial appraisal techniques were used to evaluate the feasibility of investment. The discounted cash flow technique, which has an advantage of reducing cash flows to a single point of time, was used to facilitate the tests of feasibility. The discount factor permits the determination of the present value and has found application in evaluation of projects. Four conventionally used project evaluation techniques were used in the present study to evaluate the feasibility of investments,viz., Internal Rate of Return (IRR) and Pay Back Period (PBP).

Results and discussion

The per ha investment in citrus orchards indicated that the investment was heavy to the tune of ₹239757 when compared with the other horticulture crops like pomegranate (₹232000), jasmine (₹175350), sapota (₹72255) and ber (₹68947). The cost of establishing the crop in the all four horticulture crops such as jasmine, citrus, pomegranate and sapota was for three years. But, in ber crop the establishing cost was for two years only ₹8200 during first year and ₹12182 during second year. Among jasmine, citrus, ber, pomegranate and sapota the initial per hectare investment cost in pomegranate was higher ₹150000. The respondents from the north eastern dry zone concentrated on horticulture crops like ber, citrus and pomegranate due to suitable soil and climatic conditions. Similarly in the northern dry zone the respondents concentrated on jasmine, pomegranate, sapota because of suitable soil and favorable climatic conditions (Table 2).

The feasibility analysis showed that investment on contour bund, nala bund, farm pond and land leveling and bunding in north eastern dry zone for all the categories of farmers was (Table 3) financially feasible. The B:C ratio for different land development structures varied from 2.45 in the nala bund to 3.38 in farm ponds. The NPV was the highest for farm pond (₹17,482) and the lowest (₹423) for nala bund. The internal rate of returns was more than 30 per cent. The non-discounting measure, payback period showed that the investment on nalabunds was recovered with in a period of 12.61 years where as in the case of other structures it was less than 3.9 years.

The investment on all the land development structures like contour bunding, nala bunds, farm ponds and land leveling and bunding for all the categories of farmers in northern dry zone was financially feasible. The payback period of investment on these structure was 11.98 years in nala bunds and less than 3.22 years in other structures. The IRR was appealing and slightly higher for large farmers and medium farmers when compared to those for small farmers. The NPV was positive in all the structures for all the farmers. The B:C ratios of all the structures across different farmers were appealing and it was more than 2.18. The investment analysis has clearly showed that investment on land development structures in dry land areas on all sizes of farmers was financially feasible.

The investment on jasmine enterprises as revealed by investment analysis was found to be financially, feasible and profitable. The investment on citrus, sapota, ber and pomegranate orchards was found to be financially feasible.

The studies on santra (orange) and grape garden conducted by Gupta and George (1974) showed that the internal rate of return for

santra was 39 per cent and for grape it was 49 per cent. Nagesh et al. (1990) have also reported that the net present value was positive in the cultivation of cashew crop. The studies on cashew crop by Nagesh (1991) indicated the internal rate of return of 18.88 per cent. The studies by Gupta and George (1974), on orange (39%), Menon (1979) on grape, Krishnaraja (1990) on arecanut (27%), Mohandas (1982) on coorg madrian showed that the internal rate of return in horticulture crops was higher than the opportunity cost of capital. Ramahcandra (2006) reported that the net present worth was positive (₹.131280.00 at 12%) internal rate of return was 21 per cent in the cultivation of sapota crop. Another study related to sapota crop by Ramahcandra (2006) reported a high internal rate of return (21%).

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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 & Purpose	Period	Scale of finance
1.	Minor Irrigation	9 Years	₹75,000 to ₹4,00,000
2.	Land Development	-do-	90% of the project cost
3.	Farm Mechanisation	5-9 Years	85% of the cost of Machinery
4.	Purchase of Agriculture Land	10 Years	Upto ₹12.00 Lacs
5.	Horticulture/Plantation	5-10 Years	₹25,000 to ₹3,55,000 per Hectare
	Medicinal & Aromatic Plants	-do-	90% of the project cost
6.	Animal Husbandary	5-7 Years	90% of the project cost
7.	Construction of Rural Godowns	Upto 9 Years	90% of the project cost

Non Farm Sector

Sr.No.	Name of the Scheme/Purpose	Period	Scale of finance
1.	Rural Housing	Upto 10 years	Upto ₹6.00 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.	Public Transport Vehicles	Upto 5 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 rate of interest to be charged from the ultimate borrowers has been reduced to 13.25% P.A. w.e.f. 01.04.2015 for all type of loans advanced by the DPCARDBs in the state of Haryana.

Note:-

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

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Conventional method of hybrid seed production in cotton

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Cotton is a leading commercial crop grown for its valuable fiber. India has the largest area under cotton cultivation in the world (9.1 million ha.) (Singh Phundan, et al. 2000) and grows all four cultivated species namely, *G. hirsutum, G. barbadense, G. herbaceum and G. arboreum* on commercial scale. The major cotton growing states are Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka. However, the productivity of cotton in India is low due to its rainfedcultivation in major areas (66%) and inadequate use of quality inputs (Santhy, et al. 2008).

India is the pioneer country for commercial cultivation of cotton hybrids which covers more than 50% of the cotton area. Cotton hybrids have 50% higher productivity than varieties (Santhy, et al. 2008). Moreover, hybrids have wider adaptability, high degree of resistance to biotic and abiotic stresses and better fibre quality. Hybrids can be developed with comparatively lesser time frame than straight varieties. The hybrids are highly productive and have uniform fibre quality. Hence, the different methods for production of cotton hybrid is discussed here under.

A. Procedure for hybrid seed production (Conventional)

In cotton, hybrid seed production is carried out by manual crossing. The crossing refers to hand pollination. The crossing technique consists of three main steps, viz.,

1. Selection of bud,
2. Emasculation, and
3. Pollination.

Materials required:

- Tissue paper bags (10 x 15 cm) red and white colored or straw tubes. Magnifying glass,
- Tray,
- Thread,
- Note book and pencil etc.,

1. Selection of Bud

The selection of flower bud for emasculation is an important step in hybrid seed production. The crossing work is initiated after one week of flower initiation. The flower buds of proper stage (buds which are likely to open the next day) are selected for emasculation. Such buds have generally cream colour and are well developed.

2. Emasculation

The process of removal of anthers from the selected flower bud is referred to as emasculation.

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Anthers of selected buds are gently removed with the help of nail of the thumb as suggested by Doak (1934). Then after, the emasculated buds are covered with tissue paper bag of red colour to prevent natural out-crossing. The best time for emasculation is 3-6 PM. Some people use straw tube to cover the ovary of emasculated bud. Whereas, emasculation is not required when hybrid seed is produced using male sterility.

Emasculated flower bud

Emasculated flower bud covered with red paper cover

Problems associated with Emasculation

There are two main drawbacks of emasculation.

i. The seed of such hybrids is very expensive because several labourers are engaged daily for emasculation process during crossing period.
ii. Hand emasculation causes some injury to the female part resulting in poor hybrid seed setting.

3. Pollination

Emasculated buds are pollinated the next morning with the pollen of male parent. The best time for pollination is 8-11 AM, because the stigma receptivity is maximum during this period. Generally, 4-5 buds are pollinated by one flower of male parent. After pollination, the red tissue paper bags are replaced by white tissue paper bags. For identification, a label or thread is also tied on the pedicel of crossed bud for identification of crossed bolls.

Dusting

Stigma after dusting

It is required to take some precautions after pollination:

- After pollination, keep suitable identity by tying a cotton thread for easy picking and avoiding mixing.
- Remove all un-emasculated and unused flowers (other than crossed ones) daily so as to retain only genuine crossed flowers (bolls) on the female parent.
- Destroy leftover collected male flowers after use.

Further steps to be followed during the process of hybrid seed production are follows:

i) Rouging

Remove off-type plants, if any, in female and male parents before crossing is commenced.

ii) Topping

Top and side shoots may be nipped suitably to control optimum growth and better boll development. Inadequate or excessive irrigation should be avoided. Stop irrigation a week before last picking.

iii) Picking

- Pick completely opened crossed boll (kapas) as and when ready in baskets and sort out.
- Any bolls without thread be kept aside and only genuine crossed bolls are kept separately for use.
- Remove hard locks, stained kapas etc. keep good crossed boll kapas for processing.
- Dry well-cleaned kapas in shade after each picking and store in a good place picking-wise lots.
- Slow ginning is to be practised to recover good quality seed and without cutting the seed.
- After ginning, the seeds may be kept well spread, air dried, without heaping

iv) Acid delinting

With 100ml of commercial sulphuric acid/kg seed treated for 2-3 minutes and washed thoroughly with lime water/fresh water till free of acid.

v) Seed treatments

Gunny bags first in bulk (7% moisture content). Pack in polythene bags (700 guage) as per pack size/qty. heat seal to polythene bag for sale. Gada cloth bags may be used with appropriate description on bags and with suitable labels.

B. Other methods of hybrid seed production (Male sterility based)

There are two male sterility system are available for production of cotton hybrid.

1. Use of cytoplasmic genetic male sterility

In this system, a combination of both nuclear genes and cytoplasmic genes determine the fertility or sterility. The major drawback in this is that the, there is limited availability of number of restorers in this system of male sterility. The following plan is being used for maintaining cytoplasmic genetic male sterility and for production of fertile F1 hybrid seed for commercial cultivation is as follows.

1) **Maintenance of eMS' A' line:**'A' CMS lines X 'B'isogenic line for pollen fertility
2) **Maintenance of 'B' line:** Selfing since pollen is fertile
3) **Maintenance of 'R' line:** Selfing since pollen is fertile
4) **Hybrid seed production:** AxR

2. Use of genetic male sterility

In this system, only the nuclear genes will determine the fertility or sterility and the lines controlled by recessive genes are used to produce hybrid seed. Maintenance of genetically double recessive male sterility is done by crossing male sterile plants by pollen obtained from corresponding heterozygous male fertile plants. The major drawback in this is that the cross population segregates into male sterile and male fertile plants inthe ratio of 1:1 (male

sterile: male fertile plants). The male fertile plants have to be rogued out at flowering stage. This results in very low stand of the (50% stand reduction) male sterile plants reducing the hybrid seed yield. To overcome this is to sow two or three seeds per dibble and fertile plants thinned out at the flowering stage to ensure that enough male sterile plants are left.

Isolation distance

Seed fields should be isolated from the contaminants. Therefore, the cotton hybrid seed production plot should have 30 m isolation distance on all sides from other fields.

Seed Standards

Factor	Standards
Pure seed (minimum)	98.0 %
Inert matter (maximum)	2.0 %
Other crop seeds (maximum)	10/kg
Weed seeds (maximum)	10/kg
Germination minimum)	65 %
Moisture (maximum)	10.0 %
Genetic purity (%) (minimum)	90 %
For vapour-proof containers (maximum)	6.0 %

All certified seed lots which have been produced by adopting emasculation shall be subjected to grow-out test and shall conform to the following minimum genetic purity requirements.

Merits and De-merits for conventional method

1. Very poor seed setting (about 25%) due to emasculation.
2. The availability of pure hybrid seeds in time is also amajor limitation due to the requirement of Grow-out test for genetic purity which does not fit in the period between seed production and planting in the next season.
3. Parrot beak boll formation due to low dusting of pollen when same flower is used to pollinate more than 4 female flowers
4. The high cost of conventional hybrid seeds is due to requirement of emasculation and pollination which can be reduced to some extent through use of male sterility.
5. The yield of male sterility based hybrids is 10-15% lower than conventional hybrids since restoration of sterility is again a problem.

Reference

Santhy, V., Khadi, B.M., Phundan Singh., Vijaya Kumari, P.R., Deshmukh, R.K. and Anshu Vishwanathan (2008) Hybrid seed production in cotton. CICR Technical Bulletin NO: 35.

Singh Phundan., Kairon M. S and Singh, S. B (2000) Breeding Hybrid Cotton CICR Technical Bulletin, No. 14.

THE GUJARAT STATE COOP. AGRICULTURE AND RURAL DEVELOPMENT BANK LTD.

489, ASHRAM ROAD, AHMEDABAD 380 009
Email: gscardb@gmail.com www.khetibank.org

KHETI BANK Phone: (079) 26585365-70-71 Fax: (079) 26581282 / 8269

The Bank was established in 1951 to extend long term and medium term loans to farmers for agriculture and allied agricultural activities through 176 branches and 17 district offices located at each taluka places and district places respectively in the State of Gujarat.

THE BANK FINANCES FOR :

Farm Mechanisation: Tractor, Thresher set and other implements etc.

Horticulture / Plantation: Mango, Chickoo Plantation Chickoo Plantation, Green House etc.

Animal Husbandry : Dairy development, Cattle rearing, Cattle sheds, Bullock cart, Sheep & Goat rearing, Poultry, Sericulture, Fisheries etc.

Land Development : Land levelling, Land reclamation etc.

Non Farm Sector: Small scale industries, Cottage industries including service sector, Rural housing, SRTOs, Rural godowns, APMCs, Cold storage, Consumer loan, Gold Loan etc.

Minor Irrigation: Construction/repairs of irrigation well, Shallow tube well, Deep tube well, Installation of pumpsets, Pipelines, Lift irrigation, Drip irrigation, Check dams, Sprinkler irrigation, Solar Pumps etc.

Kissan Credit Card: KCC for Purchase of Fertilizers, pesticides, equipments and maintenance, and payment of electricity bills etc. It is a medium term credit requirement of its borrowers who are regular in their repayment obligation to the Bank.

Rural Housing: Construction of new houses, repairing and renovation of old houses.

Financial Details of the Bank (₹ in Crores)

Sr. No.	Details	31.03.2013	31.03.2014
1	Owned Funds	511.94	542.90
2	Loans Disbursed	190.09	177.50
3	Fixed Deposit Outstanding	205.59	215.06
4	Profit	37.52	23.50
5	Dividend	12%	12%

Bank accepts Fix Deposit at following rate of interest.

1 year and above 8% p.a. Double 108 months

0.25% additional interest for senior citizens, Bank's employees and Share Holders Double 105 months

Bank accepts Thrift Deposit at 5%

Salient Features

1. Interest payable: Quarterly/half yearly and yearly as per demand
2. Monthly Income Scheme is available
3. TDS is not deducted on maturity of FDs
4. FD outstanding as on 31.3.14 is within the own fund limit.
5. All the loans issued by the Bank are theoretically recoverable since they are secured by registered mortgage of land and as such FDs mobilized by the Bank are fully secured.
6. Loan against FD to the extent of 75% of FD is available.
7. Thrift Deposit Scheme, 3 months and 6 months Fixed Deposit Scheme is introduced from November 2011.

DIVIDEND ON SHARE IS REGULARLY PAID TO SHARE HOLDERS.

FOR FURTHER DETAILS, PLEASE CONTACT US OR THE BRANCHES OF OUR BANK IN THE STATE.

Shri Dhirenbhai B. Chaudhari
Chairman

Shri Dolarbhai V. Kotecha
Vice Chairman

Shri D. B. Trivedi
Managing Director

Performance evaluation of co-operative agriculture service societies in Himachal Pradesh: A study of Solan district

Dr. Mamta Mokta*
Mrs. Hans Raj **

Introduction

The cooperative movement was one of the first social movements of modern times, with roots at the beginning of the industrial revolution, and was an integral part of the early labour movement. The movement for worker cooperatives, workplace democracy, and social enterprises is resurgent around the world today. The cooperative movement of the present and near future operates primarily in the spaces that the corporate system cannot and will not fill. Cooperatives can provide a dignified living for the many millions who would otherwise be unemployed or marginalized. Grassroots social movements have turned to cooperatives in response to the depredations of globalism and the worldwide deep recession, to improve people's living conditions and to empower them. Many of the new social enterprises are arising from spontaneous initiatives of grassroots groups, and many are being organized, coordinated, and backed by non-profit development organizations, governments, and communities. Cooperatives and social enterprises are the world's best hope of achieving peace, prosperity, and social equity in this new century, and it is there that the eyes of the world need to turn.

Primary Agricultural Cooperative Societies (PACS) are playing a crucial role in improving the economic and social conditions of the common masses of India. They provide short term and medium term loan to the members/farmers at reasonable interest rates to meet their various needs. These societies are also engaged in distribution of controlled/non-controlled consumer goods under Public Distribution System and Fertilizer to the common masses of the State. Primary Agricultural Cooperative Societies are supporting the farmers of the State in marketing their agriculture produce. They are providing credit to the farmers for agriculture purposes at cheap and easy terms.

The cooperative movement has been conceived as the movement of the masses for the masses and by the masses. Today, cooperatives are looked upon as agencies of economic growth, creating wealth and employment especially in the rural areas. The benefits of cooperatives in the present set up can be viewed from different angles such as economic, social and educational.

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The Department of Cooperation was established in 1948 immediately after the formation of the state of Himachal Pradesh. The main objective of the Department has been to eliminate exploitation of common man by middlemen and money lenders by ensuring credit facilities to farmers at low rate of interest through Cooperative institutions. The focus is on amelioration of the socio-economic conditions of the people. It also envisages enabling empowerment for people to come together for constituting organizations for mutual benefit, build up synergies and drive economic benefits.

Objective of study

The objective of the study was to evaluate the performance of Co-operative Agricultural Service Societies in Solan District of Himachal Pradesh.

Methodology

The Performance of Co-operative Agricultural Service Societies was evaluated on the basic of data collected through the secondary sources is included Publication of Government of India, State Government relating to cooperatives, Publications of registrar of cooperative societies. Publication of economic and statistics data by the department of cooperative. Publication of national union of India,Publication of RBI and NABARD, Books, Journals, Articles, newspapers, Annual administrative reports, proceeding of cooperative societies, Published and unpublished documents related to the co-operative societies. The office records relevant to the present study was collected from the various offices of the co-operative sector based at Shimla Headquarter, Division, District, Sub-division and local level.

Cooperative movement in Himachal Pradesh

In Himachal Pradesh, cooperatives are looked upon as agencies of economic growth creating wealth and employment for rural people. The first cooperative society in Himachal Pradesh was organized at Panjwar in Una district of Himachal Pradesh in the year 1892. As such Pradesh can legitimately be proud in giving a lead to the entire country in cooperative field. Cooperative movement in Himachal Pradesh over the years has remained comparatively weak due to a various reasons, like backward population, absence of modern means of communication and backward nature of agriculture especially in early years. In 1948 there were only 663 cooperatives in the state, but at present these societies has increased 4709 in the year 2012. Presently, there are several cooperative institutions which have been able to achieve outstanding success in the development of weaker section in rural areas. Cooperatives are doing an excellent job especially in Primary Agriculture Cooperative societies.

Performance of Primary Agriculture Cooperative Societies (PACS) in Himachal Pradesh

This study deals with growth and expansion of Primary Agriculture Cooperative Societies, Credit Distribution, Recovery and its activities. The analysis has been done for the year 2005-06 to 2011-12. Data of 2012-13 is collected from the cooperative department but not yet published. The credit distribution and recovery by Primary Agriculture Cooperative Societies in Himachal Pradesh is on the basis of short term and medium term criterion has also been discussed. Primary Agriculture Cooperative Society at grass root level in cooperative credit institution is playing a pivotal role in the disbursement of short term rural credit, medium term credit and long term credit. The reorganization of the primary agricultural credit societies was undertaken in the year 1976 keeping the viability aspects of the Primary Agriculture Cooperative Societies in consideration. The main objective of the Primary Agriculture Cooperative Societies are to borrow funds from members as well as from others to be utilize for giving loans to the members for productive purpose and to act as the agent for the joint supply of agriculture domestic and other requirements of its members and for the joint sale of produce. Primary Agriculture Cooperative Societies improve the agriculture sector by providing credit for inputs like fertilizers, seeds and pesticides etc. Primary Agriculture Cooperative Societies are playing an important role in the development of socio - economic condition of the rural population of the state.

Growth in number of societies and membership in Primary Agriculture Cooperative Societies in Himachal Pradesh

The growth of Primary Agriculture Cooperative Societies in Himachal Pradesh is shown in Table-1 as is evident from the number of societies

Table 1

Growth of Primary Agriculture Cooperative Service Societies in Himachal Pradesh

YEARS	NUMBER OF SOCIETIES	MEMBERSHIP
2005 – 2006	2086	1030234
2006 – 2007	2091	1043887
2007 – 2008	2092	1052212
2008 – 2009	2092	1072806
2009 – 2010	2097	1068320
2010 – 2011	2110	1088641
2011 – 2012	2117	1104136
2012 – 2013	2115	1127345
ACGR	0.17	1.13

Source: Data compiled from Annual Administrative Reports of Co-operative Department, Government of Himachal Pradesh, Shimla for various years.

has increased during the year 2005-06 to 2011-12. But in the year 2012-13 two societies has decreased. The number of societies in the year 2005-06 was 2086 and it has increased in the year 2012-13 i.e. 2115 with Annual Compound Growth Rate (ACGR) 0.17%. Membership has increased continuously from 2005 - 2006 1030234 to 1127345 in the year 2012-13. It shows the growth of 1.13 in term of Annual Compound Growth Rate (ACGR). Growth is not so good but it has been grow positively. It seems people are taking much interest in Primary Agriculture Cooperative Societies and becoming members of the societies.

Activity-wise performance of primary agriculture cooperative societies in Himachal Pradesh

Activity-wise performance of Primary Agriculture Cooperative Societies of Himachal Pradesh is discussed in Table-2 Agriculture produce marketing shows an increasing and decreasing growth. It was 571 thousand tones in the year 2006-07, but next year (2007-08) again declined and become 1660 thousand. In the year 2008-09 it increased in large scale i.e. 6137 thousand tones, but in 2012-2013 it is 1483 thousand tones. It has increased with 12.67% Annual Compound Growth Rate (ACGR). Distribution of consumer items is continuously increasing during 2005-06 to 2011-12. But in the year 2012-13 it has decreased. Consumer items are distributed in the year 2005-06 is 1912525 thousand tones and in the year 2012-13, distribution of consumer items are 507089 thousand tones. Annual Compound Growth Rate (ACGR) is 13.84% i.e. good growth in distribution of consumer items. This quantity is low as compare previous year but it is better condition as compare 2005-06. Growth of distribution of fertilizer

Table 2
Activity-wise performance of Primary Agriculture Cooperative Societies in Himachal Pradesh

Years	Agriculture Marketing	Distribution of Consumer Items	Distribution of fertilizer and Agriculture Implements
2005 – 2006	571	1912525	372014
2006 – 2007	2714	2207481	437983
2007 --2008	1660	3628340	422558
2008 – 2009	6136	3959017	353633
2009 – 2010	1243	5002763	453845
2010 – 2011	807	5769641	1132186
2011 – 2012	566	7794031	1442073
2012 – 2013	1483	95849	507089
ACGR	12.67	13.84	3.95

Source: Data compiled from Annual Administrative Reports of Co-operative Department, Government of Himachal Pradesh, Shimla for various years.

and agriculture implements is not good. In the year 2005-06 it was 372014 thousand tones. Further it has increased but in the year 2012-13 it has decreased i.e. 507089 tones only. Activity-wise performance of Primary Agriculture Cooperative Societies in Himachal Pradesh is not so much good, sometime Agriculture Marketing has declined but all over, Annual Compound Growth Rate (ACGR) is only 3.95.

Credit distribution of Primary Agriculture Cooperative Societies in Himachal Pradesh

The distribution of loans in Himachal Pradesh is shown in Table-3. It is evident from the Table-3 that the total loan advanced in Himachal Pradesh during the period 2005-06 to 2012-13 has shown an increasing trend. In the year 2005-06 total amount of loan advanced ₹34,72,693 thousand i.e. short term loan was ₹1,05,720 thousand and medium term loans were ₹33,66,973 thousand i.e. 3.05% and 96.95% respectively. In the year 2012-13, it has increased more i.e.₹4627925 thousand. Short term loans were ₹209571 thousand and medium term loans were ₹4337849 thousand i.e. 4.52 per cent and 93.7% respectively. Credit distribution of both short term and medium term has show good growth. But short term credit distribution has increased more with 8.92% Annual Compound Growth Rate (ACGR).

Loan recovery of Primary Agriculture Cooperative Societies in Himachal Pradesh

Recovery of Primary Agriculture Cooperative Societies in Himachal Pradesh is shown in Table-4 Total amount of loans recovered ₹1277921

Table 3
Credit distribution of Primary Agriculture Cooperatives Societies in Himachal Pradesh

(₹ in 000)

Years	Short Term Loan	Medium Term Loan	Total
2005-2006	105720(3.05)	3366973(96.95)	3472693(100)
2006-2007	105709(5.77)	1729181(94.23)	1834890(100)
2007-2008	101928(5.10)	1899906(94.90)	2001834(100)
2008-2009	82339(4.16)	1900881(95.84)	1983220(100)
2009-2010	106292(3.99)	2560647(96.01)	2666939(100)
2010-2011	113871(3.62)	3039976(96.38)	3153847(100)
2011-2012	132532(3.58)	3561933(96.02)	3694465(100)
2012-2013	209571(4.52)	4337849(93.07)	4627925(100)
ACGR	8.93	3.22	3.65

Source: Data compiled from Annual Administrative Reports of Co-operative Department, Government of Himachal Pradesh, Shimla for various years.*Figures in parentheses denote percentages to total loan distribution.

in the year 2005-06. Short term loans were recovered ₹73230 thousand i.e. 5.8% and medium term loans were recovered ₹1204691 thousand i.e. 94.1%, it was in the year 2005-06. Recovery of loan is good. From the year 2005-06 to 2012-13, recovery has been decreased and sometime increased, but all over it has been positively increased with 14.10% Annual Compound Growth Rate (ACGR).

Amount of recovered loan was increased ₹3670980 thousand in the year 2012-13. In which short term loans was recovered ₹128929 thousand (3.5%) and medium term loan was recovered ₹3470801 thousand (94.5%) by showing percentage of the recovered amount. It was fluctuating, but total amount of recovered loan was continuously increased during the period 2005-06 to 2012-13

Performance of primary agricultural service societies in solan district

There exist 413 co-operatives in Solan District. These include 164 Primary Agricultural Credit Societies (PACS), 83 Employees Credit Societies, 9 Marketing Societies, 18 Milk Supply/Livestock, 6 Weavers, 29 Industrial,15 Consumer,5 Labour Contract, 54 Non Credit,13 other types of Societies,13 Housing. There are three Tehsil Unions Namely Nalagarh, Arki and Solan. At the district level, there is Solan District Co-operative Marketing & Consumer Federation Ltd. The Jogindra Central Co-operative Bank Ltd; Bank is rendering banking

Table 4
Credit Recovery by Primary Agriculture Cooperative Societies in Himachal Pradesh.

(₹ In 000)

Year	Recovery of Credit		Total
	Short Term Loan	Medium Term Loan	
2005-2006	73230(5.8)	1204691(94.1)	1277921(100)
2006-2007	103656(8.1)	127469(91.8)	1377921(100)
2007-2008	86684(5.4)	1513684(94.5)	1600368(100)
2008-2009	152329(7.8)	2206927(93.4)	2359326(100)
2009-2010	77221(3.9)	1901543(96)	1978764(100)
2010-2011	92487(3.6)	2432937(96.4)	2525424(100)
2011-2012	102279(3.5)	2744549(94.9)	2899200(100)
2012-2013	128929(3.5)	3470801(94.5)	3670980(100)
ACGR	7.33	14.14	14.10

Source: Data compiled from Annual Administrative Reports of Co-operative Department, Government of Himachal Pradesh, Shimla for various years.
*Figures in parentheses do note percentages to total loan distribution.

services all over the district through its 20 branches. There are two urban Co-operative banks in the District. The district has a total of 164 Primary Agricultural co-operative societies including 149 co-operative Agricultural Service Societies; and 15 multipurpose co-operative Agricultural Service Societies. Primary Agricultural Cooperative Societies (PACS) in Solan district are doing well in terms of deposit mobilization, advances, recoveries, share capital, membership etc. Primary agriculture co-operative societies are the main institutional agency at grass root level, playing a pivotal role for extension of agriculture credit, inputs and distribution of consumer's goods at fair prices to the rural community. Solan district is concerned the cooperative structure plays significant role in the state. There are 74 types of cooperative societies working in the state and 22 types of cooperative societies in the Solan district.

These Societies are working in the different fields of the cooperatives like agriculture, milk production, industrial, handloom, etc.

Performance of cooperative societies in district Solan

The present section reviews the functioning of co-operative in Solan district. An attempt has been made to analysis the impact of Integrated Cooperative Development Project on different kinds of societies and to identify the strengths of co-operatives and the constrains under which they are operating.

More loan able funds for agricultural purposes. Over dues not only create hindrances but also affect credit utilization. Over dues discourage cooperatives to undertake additional activities.

That the number of Primary Agriculture Cooperative Societies (PACS) in Solan District which was 164 in 2007-2008 and is in a still figure i.e. 164. There is no increase till today. The total membership of societies increased from 56163 thousands in 2007-2008 to 57655 thousands in 2013-2014 which indicates an increase of 2.66 percent

Table 5
Profile of Co-operative Agricultural Service Societies in Solan District

Types of Co-operative Societies	Sub-Division				Total No. of Societies in the District
	Solan	Arki	Nalagarh	Kandaghat	
Primary Co-operative Agricultural Societies	37	17	65	30	149
Multi-Purpose Co-Operative Agricultural Service Societies	7	8	0	0	15
Total	**44**	**25**	**65**	**30**	**164**

Source: Area-wise list of co-operative societies as on 31.03.2011 in respect of Solan district.

Table 6
Progress of Primary Agriculture Cooperative Societies in District Solan

(Figures in 000)

Particulars	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	% age of Increase (2007-08 to 2013-14)
No. of Societies	164	164	153	164	164	164	164	0%
Membership	56163	54998	57798	56269	56762	57655	57655	2.66%
Share Capital (Total)	57113	59186	62654	62913	68952	70188	72255	26.51%
(Government)	28184	27199	27631	26609	26428	25429	23058	-18.19%
Reserve Fund	4164	4987	5294	5256	5867	6468	6568	57.73%
Other Fund	14562	21132	28565	30839	41221	52545	52956	263.66%
Deposits	151325	195376	201567	197892	228655	258929	259647	71.58%
Working Capital	425651	513477	378101	191464	510400	550635	562729	32.20%
Loan Advanced (Total)	65110	59776	56225	47302	88561	86709	89121	36.88%
(ST)	4222	6333	4423	5794	11935	23342	22343	429.20%
(MT)	60888	53243	51802	41508	76626	63367	66778	9.67%
Loan Recovery (Total)	56177	49456	147060	37403	65871	73333	80222	42.80%
(ST)	3261	3731	9039	4073	8282	7598	8192	151.21%
(MT)	52916	45725	132721	33330	57589	65735	72030	36.12%
Balance Loan (Total)	172223	187404	101750	111275	168495	181670	201574	17.04%
(ST)	7348	9686	5070	5953	10645	26188	30182	310.75%
(MT)	164875	177718	96680	105322	157850	155482	171392	3.95%
Overdue (Total)	70944	86516	29747	26686	29651	36532	38442	45.81%
(ST)	1737	3082	929	2157	1895	3930	4125	137.48%
(MT)	69207	83434	28818	24529	27756	32602	34317	-50.41%
Demand	127121	135972	-	64089	95522	109865	110844	-12.80%
Consumer Goods	121050	220381	271533	333272	330661	358237	384025	217.24%
Fertilizer	34446	32567	32238	28918	37564	39918	40876	18.67%
Societies in Profit (No.)	105	113	75	77	95	98	103	-1.90%
(Amount)	1725	2834	2176	2339	3525	3821	4022	133.16%
Societies in Loss (No.)	52	39	75	77	61	56	55	5.77%
(Amount)	1024	941	13139	7202	5227	6496	6612	545.70%

Source: Data collected from the office of Assistant Registrar Cooperative Societies Solan Himachal Pradesh.

in membership of the society in the district.

The share capital of cooperative societies in Solan district has risen up from ₹85297 in 2007-2008 to ₹95313 in 2013-2014 which indicates an increase of 11.74%, but the government share as decreased with -18.19% and reaches up to 23058 as compared to 2007-2008. Further, per society share capital has also increased from ₹520 in 2007-2008 to ₹581 in 2013-2014 and per member share of cooperative societies has also shown a significant increase during the same period. It indicates that though the total number of cooperative societies has decreased. There is a high rate of capital formation and people accepted the participation in cooperative movement.

Deposits of the cooperative societies have also increased to a great extent. Deposit which was ₹151325

in 2007-2008, has increased to ₹259647 in the year 2013-2014 with the increase of 71.58%. The per society deposits has also increased from ₹923 to ₹1583 during the same period, showing an increase of more than 71.51%. Per member deposits has also increased from 2007-2008 to 2013-2014 during this period, hence, it can be easily inferred that the cooperative movement is gaining popularity among the general masses.

Working capital of the cooperative societies is also showing increasing trend. In 2007-2008, the working capital which was ₹425651 increased to ₹562729 in 2013-2014 showing an increased by 32.20% by the end of March 2014. Such a jump in working capital provides an evidence of higher quantum of business activities undertaken by cooperatives in Solan district.

Table-6 shows that in 2007-2008 cooperative had advanced the short and medium term loan to its members of ₹65110 whereas it increased to ₹89121 by the end of March 2014, which shows the increase of 33.88% and is a positive trend to survival of the cooperative societies and also help to reduce the non performing assets (NPAs). Similarly, medium-term loan for agricultural purposes which was ₹60888 in 2007-2008 has also shown the minor increase i.e. 9.67%, and reached ₹66778 in 2013-2014.

The amount of short term and medium term loan overdues has decreased in 2013-2014 as compared to 2007-2008 which was ₹70944 in 2007-2008 and reached ₹38442 at the end of March 2014, but in the year 2007-2008 and 2008-2009 the over dues of cooperative societies was very high and it is continuously shows increase year by year. Poor recovery performance of credit institutions is an important obstacle for recycling,

With the advent of the Narasimham Committee on financial reforms and the implementation of some of its crucial recommendations, recovery has come to stay high on the agenda of recent reform process.

The loan recovered (Short Term) of the cooperatives societies of Solan district has increased to ₹8192 in 2013-2014 from ₹3261 in the year 2007-2008 with an increase of 151.21%, which shows its good working. The recovery of loan (Medium Term) in the Solan District has also shown positive results with increase of 36.12%. The recovery which was ₹52916 in 2007-2008 has increased to ₹72030 in 2013-2014 .

Findings

1. It was found that the number of Primary Agriculture Cooperative Societies (PACS) in Solan District which was 164 in 2007-2008 is in a still figure i.e. 164. There is no increase till today. The total membership of societies increased from 56163 thousands in 2007-2008 to 57655 thousands in 2013-2014 which indicates an increase of 2.66% in

membership of the society in the district.

2. It was also found that the share capital of cooperative societies in Solan district has risen up in 2007-2008 and in 2013-2014 which indicates an increase of 11.74%, but the government share as decreased with -18.19% and reaches up to 23058 as compared to 2007-2008. Further, per society share capital has also increased in 2007-2008 to 2013-2014 and per member share of cooperative societies has also shown a significant increase during the same period. It indicates that though the total number of cooperative societies has decreased. There is a high rate of capital formation and people accepted the participation in cooperative movement.
3. It was analysed that the Deposits of the cooperative societies have also increased to a great extent. Deposit has increased in the year 2013-2014. The per society deposits has also increased during the same period, showing an increase of more than 71.51%. Per member deposits has also increased from 2007-2008 to 2013-2014 during this period, hence, it can be easily inferred that the cooperative movement is gaining popularity among the general masses.
4. It was found that the Working capital of the cooperative societies was also showing an increasing trend. In 2007-2008, the working capital showing an increased by 32.20% by the end of March 2014. Such a jump in working capital provides an evidence of higher quantum of business activities undertaken by cooperatives in Solan district.
5. It was found that the amount of short term and medium term loan overdues has decreased in 2013-2014 as compared to 2007-2008 but in the year 2007-2008 and 2008-2009 the over dues of cooperative societies was very high and it is continuously shows increase year by year.
6. The loan recovered (Short Term) of the cooperatives societies of Solan district has increased in the year 2007-2008 with an increase of 151.21%, which shows its good working. The recovery of loan (Medium Term) in the Solan District has also shown positive results with increase of 36.12%. The recovery has also increased in 2013-2014 .
7. It was found that the primary agricultural cooperative societies have played a significant role in the overall development of cooperatives in the state as well as in the Solan district. It was analysed that inspite of its

various defects, there is no substitute for the cooperative movement.

Suggestions

On analysis of the secondary data of study, the following suggestions are offered which may help to overcome the problems faced by the beneficiaries and cooperative Agricultural Service Societies.

- The membership of the village cooperatives should be enlarged by broad basing it. Efforts should be made to bring agriculturists, labourers, rural artisans and weaker sections into the membership of village cooperatives. In the study area, Cooperative Agricultural Service Societies should make surveys for admitting agriculturist and non-agriculturist beneficiaries to raise their membership. These efforts will encourage the participation of the general public of the village to participate in the cooperative societies and also increase their share capital.
- It is a positive indications that the share capital has risen up in the year 2007-2008 to 2013-2014 but the government share has decreased in the year 2013-2014 as compared to the year 2007-2008. It is suggested that the membership drive should be started immediately so that the level of share capital could be maintained and increased positively. Government share should also be increased.
- It is suggested that the popularity gained by the primarly agricultural service societies in Solan district in the deposit mobilizations should be maintained for the bright future of the cooperatives.
- It is also suggested that the working capital of the cooperative societies which is in increasing trend should be maintained.
- Poor recovery performance of credit institutions is an important obstacle for recycling. It is also suggested that the effective more recovery efforts should be made and different and unique tactics for recovery purpose be applied.
- It is also suggested that the recovery camps / awareness camps should be organised in panchayat level so that the increasing trend in collection of overdues should be maintained or be increased effectively.

The cooperative Agricultural Service societies mostly depend on central cooperative banks because of farmer's difficulty and procuring sufficient deposits. It is suggested that following steps should be taken for better future of the cooperative societies.

1. To build confidence of members and non-members in the viability of the societies. This can be made possible by undertaking several practical and productive steps.

2. Societies can attract deposits from members and non-members by providing more interest, giving the assurance regarding safety and security of invested funds and promising and delivering better returns.
3. On saving deposits, the societies could pay one and a half per cent more interest than the normal rates of the central cooperative banks.
4. Further, the cooperative Agricultural service societies could promote banking habits among agriculturists by convincing the farmers about the safety of their money as well as better accrued on their savings.

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सहकारी दर्शन के समक्ष चुनौतियाँ

डॉ. एम. आर. खान*

मानव के आदि जीवन काल में सहकारिता के बीज ही थे, जिनके कारण मानव एकांकी से झुंड और झुंड से सामाजिक जीवन जीने हेतु अपने को तैयार कर पाया। मानव जीवन के विभिन्न आयामों में सहकारिता के दर्शन के समाहीकरण के कारण ही मानव आज तक प्रगति के उच्चतम शिखर पर पहुँच सका है। यह सही है की मानव विकास में लम्बे समय तक सहकारिता एक औपचारिक विचारधारा के रूप में जन्म नहीं ले पाई थी। औपचारिक स्तर पर इस विचार धारा का उदगम १६ वीं शताब्दी के मध्य में हुआ था। परन्तु आज सहकारिता की गंध मानव मन–मस्तिष्क में इतने गहरे बैठ गई है कि दुनिया का प्रत्येक मानव सहकारिता के दर्शन को मानता है और अपने जीवन में लागू करता है, चाहे वह इस बात को स्वयं जानता हो या न जानता हो। सच तो यह है कि मानव "बानर" से 'नर' बनने की दीर्घ विकास यात्रा ही सहकारिता से शुरू होती है।

हर व्यवस्था अपने ढंग का इंसान गढ़ती है। सहकारिताबाद के सैद्धांतिक जनक राबर्ट ओबन ने भी सहकारी दर्शन के माध्यम से एक नया इंसान गढ़ने की सोची जो कि स्वार्थी न हो तथा स्वहित के साथ–साथ सर्वजनहित सुखाय की सोच रखे तथा आम आदमी के विकास में अपना योगदान दे। ओवन और उसके अनुयायी अपने इस विचार में कुछ हद तक सफल भी रहे हैं। उधर पूंजीवाद ने अपनी विचारधारा से एक ऐसा इंसान बनाया जिसने निजी हित के लिये सार्वजनिक हित को तिलांजली दे दी तथा व्यक्तिगत व्यवसायिक प्रतियोगिता को जन्म दिया। जिससे इस व्यवस्था ने विश्व में आश्चर्यजनक सफलताएं भी प्राप्त की तथा अपने अनुयायियों में बड़े पैमाने पर वृद्धि की परन्तु इसके बावजूद भी उसने इंसान को स्वार्थी ही बनाया है। जिसके दुष्परिणाम आज भी देखने को मिलते है।

मनुष्य के स्वार्थपूर्ण व्यवहार से निराश होकर समाजवादियों ने समाजवाद की परिकल्पना को साकार रूप दिया एवं एक ऐसे समाज की रचना की जिसमें व्यक्तिगत स्वतंत्रता एवं व्यक्तिगत व्यवसायिक प्रतियोगिता को कोई स्थान नहीं था तथा साथ ही समाजवादियों ने सहकारी व्यवस्था को भी अस्वीकार किया, परन्तु जैसा कि हम सभी जानते है कि समाजवादी महल धराशायी हो गया है तथा उनकी व्यवस्थाएं भी चरमरा कर रह गयी है।

पूंजीवाद व्यवस्था में स्वार्थी मनुष्य के कारण तथा समाजवाद में व्यक्तिगत विकास की सम्भावनाओं के न रहते हुए विश्व में सहकारी विचार धारा जोर पकढ़ने लगी जो कि उक्त दोनों व्यवस्थाओं के दोषों से दूर एक नयी व्यवस्था लेकर आयी थी जिसे बाद न केवल समाजवादियों ने अपनाया है, बल्कि पूंजीवाद देशों को भी उससे कोई एतराज नहीं है। आप विश्व के अधिकांश देश सहकारी व्यवस्था को

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अपनाये हुए हैं। भारत में सहकारी व्यवस्था को प्रारम्भ हुए ११२ वर्ष होने जा रहे है। हमारा सहकारी आंदोलन विश्व का सबसे बड़ा आंदोलन है। हर पांचवा व्यक्ति ४ लाख ८० हजार सहकारिताओं से कहीं न कहीं जुड़ा हुआ है जो इस बात का प्रमाण है कि हमने इस विचारधारा को आत्मसात किया है।

जब हमारा देश आजाद हुआ उस समय सहकारी आंदोलन बाल्य अवस्था में था शायद इसीलिये देश के प्रथम प्रधानमंत्री एवं सहकारिता आंदोलन के सशक्त पक्षधर पं. जवाहर लाल नेहरु ने देश की अर्थ व्यवस्था में सहकारी व्यवस्था के साथ साथ सार्वजनिक क्षेत्र को भी महत्व दिया। जिसने लगभग दो दशक तक अपनी सफलता के झंडे भी गाड़े, परन्तु देश की बदलती हुई परिस्थितियों के कारण वह व्यवस्था भी अब धीरे–धीरे असफल हो रही है।

सार्वजनिक क्षेत्र की तुलना में सहकारी क्षेत्र एक ऐसा क्षेत्र है जिसमें नौकरशाही प्रबंध में हावी नहीं है जो न केवल, स्वार्थ रहित व्यक्ति एवं समाज के निर्माण की बात करता है अपितु वह लोकतांत्रिक व्यवस्था का भी सूचक है तथा वह पूंजीवाद व समाजवाद के दोषों से दूर है। इसमें आम आदमी की हिस्सेदारी की व्यवस्था की वकालत की जाती है। इसलिए हमारे देश के संदर्भ में सहकारी की व्यवस्था ही अच्छी व्यवस्था सिद्ध हो सकती है तथा सिद्ध हुई भी है। यदि हम सहकारिताओ की उपलब्धि पर प्रकाश डाले तो हम पायेंगे कि इसके आकार–प्रकार एवं स्वस्थ में आशातीत प्रगति हुई है। इफको, कृभको एवं अमूल जैसी अंतराष्ट्रीय स्तर की संस्थाए सहकारी आंदोलन की ही देन है। इस आंदोलन के माध्यम से करोड़ों भारतीय किसानों को साहुकारों के चुंगल से बचाया है। तथा उन्हें खेती के काम में आने वाले औजार खाद बीज आदि उपलब्ध कराने में महत्वपूर्ण भूमिका निभाई है। सहकारी क्षेत्र ने देश के उन दूर दराज के इलाकों में जाकर अपनी सेवाएँ दी है जहां पर न तो सरकारी अमला पहुँच पाया है न ही व्यवसायिक बैंक और न हो अन्य संस्थाए पहुँच पाई हैं।

निश्चित तौर पर यह बात कहीं जा सकती है कि सहकारी आंदोलन ने ग्रामीणजनों की लम्बे समय तक सेवा की है, परन्तु इसके बावजूद भी यह क्षेत्र हमारे देश में उपेक्षित ही रहा है। प्रसिद्ध अर्थ–शास्त्री प्रो. ए. एस. खुसरो के शब्दों में "सहकारी क्षेत्र का अत्याधिक सरकारी हस्तक्षेप द्वारा गला घोटा जा रहा है। यह दया द्वारा हत्या का उदाहरण है। जरूरत से ज्यादा नियमन सरकारी हुक्मबाजी और काम करने की स्वाधीनता के अभाव द्वारा"।

एक तरफ तो सहकारी आंदोलन की शासकीय उपेक्षाओ का सामना करना पड़ रहा है, परन्तु दूसरी तरफ उसकी अपनी भी कुछ कमियाँ व कमजोरियाँ रही है जो कि इस आंदोलन की सफलता में बाधक रही हैं एवं सहकारिताओं के लिये चुनौती है। सहकारिताओ की अक्षमताओं एवं उनमें व्याप्त भ्रष्टाचार, भाई भतिजावाद एवं अनियमिताओं की कहानी हमसे छुपी नहीं है। कर्मचारियों की लगातार हो रही कमी एवं उनका एक बड़ा वर्ग अपने पदानुसार योग्य नहीं है और न ही प्रशिक्षित है। हमारी सेवाएँ भी गुणवात्मक दृष्टी से अच्छी नहीं कहीं जा सकती। अनेक बार तो ऐसा भी देखा गया है कि एक बार जो व्यक्ति सहकारी संस्थाओं की सेवाएँ ले लेता है उसे

इतने कड़वे अनुभव हो जाते हैं कि वह फिर लौटकर संस्थाओं की तरफ देखना पसंद नहीं करता। दूसरी तरफ आये दिन सहकारिताओं में व्याप्त भ्रष्टाचार के समाचारों के कारण आम जनता का हम पर विश्वास नहीं जम पाया है।

सहकारी संस्थाओं के मालिक, उपभोक्ता एवं उत्पादक की भूमिका निभाने वाले सदस्य भी अपने अधिकार एवं कर्तव्यों के प्रति जागरूक नहीं है, और न ही उन्हें इसका ज्ञान है। संस्थाओं के प्रति उनकी रुची भी बहुत कम है, जिसका कारण संस्था संचालन में उनका अपेक्षित सहयोग नहीं मिल पाता है।

मध्यकाल के पश्चात धीरे–धीरे नेतृत्व में समर्पण की भावना की कमी एवं दूरदर्शिता का अभाव होता गया तथा इसके कार्यकर्ताओं के निर्णय दलगत राजनीति से प्रभावित होने लगे। देश व समाज में लगातार होने वाले नैतिकता के अभाव से आंदोलन के सदस्य व नेतृत्व भी अछूते नहीं रहे। राबर्ट ओवन ने जिस सदस्य व नेतृत्वकर्ता की कल्पना की थी वर्तमान में उनके गुणों में लगातार कमी आती जा रही है। न तो अब वह निस्वार्थी रहा है और न ही आम सदस्य के विकास में उसकी रुची रही है। ओवन के सहकारी इंसान की कोई बात अगर रह गयी है तो वह केवल स्वयं के हित की बात ही है। सार्वजनिक हित सुखाय की बात अब गुजरे जमाने की बनकर रह गयी है।

आज विश्व में खुली अर्थव्यवस्था का दौर है। जिसमें उदारीकरण निजीकरण एवं विश्वव्यापी को महत्व दिया जा रहा है। इससे विश्व के साथ–साथ हमारे देश के आर्थिक परिदृश्य में भी बदलाव के संकेत भी मिलना प्रारम्भ हो गये हैं। देश में बहुराष्ट्रीय कम्पनियों के आगमन से सहकारिताओं को अनेक क्षेत्रों में उनसे प्रतिस्पर्धा करनी होगी तथा अपनी पहचान को भी बनाये रखना होगा। इसके लिये जरुरी है की हम अपनी कमियों को पूरा करने के साथ–साथ कमजोरियों को दूर करे तथा हमारे सिस्टम को अच्छा करके अपने पैरों पर खड़े हो। सरकारों पर भी इस बात के लिये दबाव डालना होगा कि वह सरकारी क्षेत्र को भले ही शीर्ष स्थान न दे परन्तु उसे महत्वपूर्ण राष्ट्रीय क्षेत्र के रूप में तो मान्यता प्रदान करें तथा उसमें यथा संभव शीघ्र अपना अनावश्यक हस्तक्षेप बंद करें।

यदि हम आने वाले दिनों में इन कार्यों को करने में सफल हो पाये तो सहकारी विचारधारा एवं दर्शन के लिये तथा इससे जुड़े आम सदस्य के लिये, सरकार एवं बौद्धिक एवं सक्रिय सहकारीजनों का सकारात्मक योगदान परिलक्षित होगा तथा ओवन के विचारों को हम २१ वीं शताब्दी में आम लोगों तक और भी प्रभावी तरीके से पहुँचकर सहकारिताओं की सफलता के द्वार खोल सकेंगे, अन्यथा सहकारिताओं के अस्तित्व पर भी प्रश्न चिन्ह लगने वाला है।

A note on - Ten effective recommendations for rain deficit moisture stress management in Horticulture crops

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It is in context of Indian Metrological Department (IMD) forecast about the occurrence of "below normal "South West monsoon for the year 2015 due to El Nino effect. Recently, horticulture commissioner GOI, dated 2nd June, 2015 also notified that, this is the second consecutive year when the prediction for South West monsoon has been made for below normal or aberrant monsoon. However, the aberrant monsoon may lead to moisture deficit which is likely to affect the horticulture crops in some states. Therefore, the following ten effective recommendations to overcome rain deficit moisture stress in Horticulture crops to be adopted by the growers.

1. Selection of suitable crops and varieties

- For rain-fed cultivation, the vegetable crops like dolichos bean, cowpea, cluster bean, lima bean, chilli, drumstick, brinjal, okra are suitable to grow.
- Among these, legume vegetables can be recommended for contingency crop-planning in an eventuality of late monsoon rains.
- Varieties having shallow root system and capacity to recover after the alleviation of stress need to be selected.

2. Improved method of seedling production

- The seedlings can be grown using coco peat, nylon net protection and bio-fertilizers/bio-pesticide inoculation at nursery stage has good potential for obtaining sturdy, uniform and healthy seedlings.

Seedlings grown on coco peat

- After transplanting to the main field, these seedlings will establish a better with less root damage and fare better in overcoming biotic and abiotic stresses particularly during water stress conditions.

3. Adoption of soil and moisture conservation techniques

- The agronomical measures for

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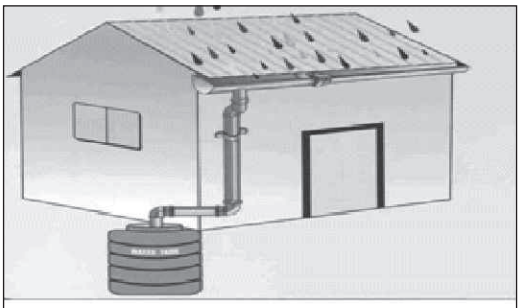
the in-situ soil moisture conservation such has contour cultivation, contour trip cropping, mixed Cropping, tillage, mulching and zero tillage to be adopted.

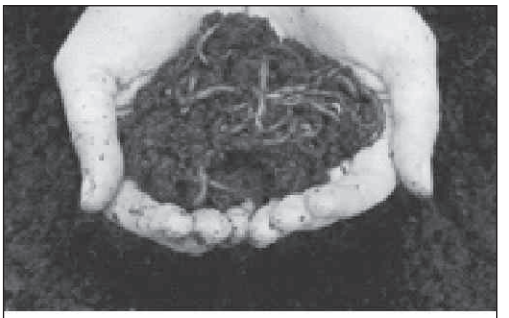


Rainwater harvesting

- Mechanical measures like contour bunding, graded bunding, bench terracing, vertical mulching etc. also need to be fallowed for effective soil and moisture conservation in dry lands.
- Another technology for efficient utilization of runoff is water harvesting recycling.
- Rainwater harvesting includes collecting runoff water into dug out ponds or tanks in small depressions, gullies and into storage dams of earth or masonry structures.
- Rain water harvesting is possible in areas having rainfall as little as 500 to 800 mm. Depending on the rainfall and soil characteristics, 10-50 % of the runoff can be collected in farm pond.

4. Enhancing soil organic matter content

- Incorporation of crop residues and farm yard manure to soil improves the organic matter status, improves soil structure and soil moisture storage capacity.



Application of vermin compost

- Organic matter content of the soil can also be improved by fallowing alley cropping, green manuring, crop rotation and agro forestry.
- Vermi composting can be followed for quicker usage of available organic matter in the soil and improving the soil moisture holding capacity.

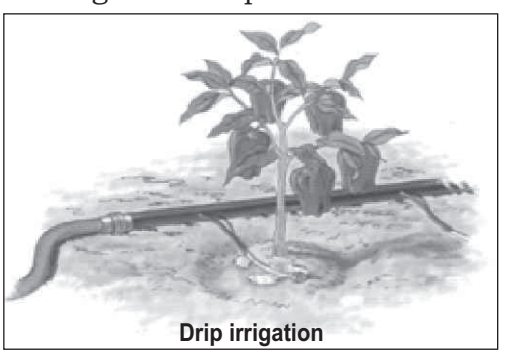
Application of foliar nutrition

5. Application of foliar nutrition

- The foliar application of nutrients during water stress conditions helps in the better growth by quick absorption of nutrients.
- The spraying of K and Ca induces drought tolerance in vegetable crops.
- Spraying of micro nutrients and secondary nutrients improves crop yields and quality.

6. Use of drip irrigation

- A considerable saving in water, increased growth, development and yields of fruits and vegetables and control of weeds, saving in labour under drip irrigation are the added advantages.
- It can be adopted in fruit crops and also to all vegetable crops including closed spaced crops like onions and beans.
- The saving in water is to the tune of 30-50 % depending on the crop and season.
- Generally inline drip laterals having emitting point spaced at 30cm distance and emitting at the rate of 2LPH is selected for vegetable crops.



Drip irrigation

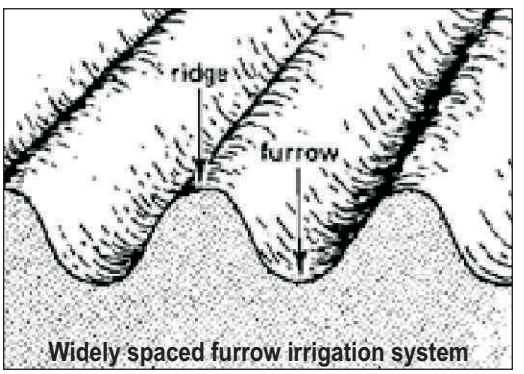
- In crops like chilli, brinjal, cauliflower and okra paired row planting is practiced and one drip lateral is used for two crop rows.

7. Moisture saving methods under limited water resource conditions

The following methods may be adopted under limited water conditions to save water.

a) Water saving irrigation method

Under limited water situations, water-saving irrigation methods like alternate furrow irrigation or widely spaced furrow irrigation systems can be adopted. Studies conducted on methods of irrigation in capsicum, tomato, okra and cauliflower indicated that adopting alternate-furrow irrigation and widely-spaced furrow irrigation saved 35 to 40 per cent of irrigation water without adversely affecting yield.



Widely spaced furrow irrigation system

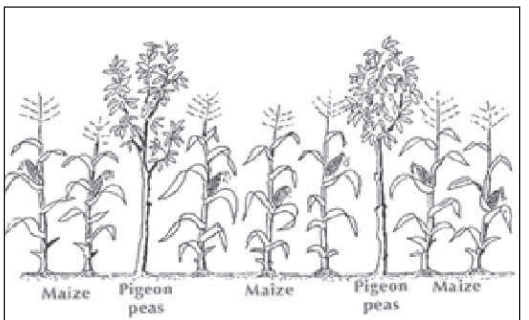
b) Mulching practices in vegetable production

The technique of covering the soil with natural crop residues or plastic films for soil and water conservation is called mulching. It can be practiced in fruits and vegetable crops

using crop residues and other organic material available in the farm. Recently plastic mulches have come into use due to the inherent advantages of efficient moisture conservation, weed suppression and maintenance of soil structure. In addition to soil and water conservation, mulches can improve the use efficiency of applied fertilizer nutrients and also use of reflective mulches are likely to minimize the incidence of virus diseases. For vegetable production generally polyethylene mulch film of 30 micron thick and 1 to 1.2 m width is used. Generally raised bed with drip irrigation system is followed while laying the mulch film.

Mulching Practice

8. Wind breaks, hedges and intercropping



Intercropping practice of Maize and Pigeonpea

- To overcome the adverse effect of high temperature and dry winds, tall growing trees need to be planted all along the boundary of the farm.
- Maize/ Sorghum can be grown all along the border of the plot to mitigate the effect of desiccating winds.

9. Use of protected cultivation of vegetables

- Structures for protected cultivation include green houses, plastic/net houses and "tunnels". Commonly used protected structures are polyhouses and net or shade houses.
- Rain-shelter is a simple structure covered with polyethylene sheet which helps in producing the crops which are affected by excessive rainfall.
- Net house cultivation and shade net cultivation provide better microclimate especially during summer in minimizing the high temperature effect and improving the relative humidity in the crops like tomato, French bean and capsicum etc.

Polyhouse

10. Control of leaf miner and mite during high temperature stress

- For management of leaf miner spray neem soap 4 grams / liter or triazophos at the rate 1.5 ml / l.
- To manage mites spray Abanectin 0.5 ml/l. Aphids may be observed in case of beans.

Reference

Dr. S.K. Malhotra (2015). Rain Deficit Moisture Stress Management in Horticulture crops, Horticulture Commissioner, Govt. of India, Ministry of Horticulture (Department of Agriculture and cooperation), Krishi Bhawan, New Delhi-110001.

Closing down of Apex Land Bank in Maharashtra

The Maharashtra government decided to shut the state's Apex Land Development Bank, putting an end to past efforts at reviving it. The state cabinet approved a proposal for closing down the bank. The bank which was promoted originally to provide a boost to the state's rural economy and to offer loans at affordable rates to farmers, has been in the red for over two decades. It had even gone under liquidation in 2002, but the state had revoked this in 2008 in an effort to resume credit supply after a farm debt waiver from the Union government helped write off a large component of the bank's outstanding debt. But with debt mounting again, the government has decided to close down the bank.

The Chief Minister said that the government plans to make good its losses by taking over properties owned by the bank and its 29 district branches. The government has also devised a one-time settlement scheme for the 38,000-odd farmers, who have got loans from the bank. No interest or penalty would be charged from such farmers. We plan to recover ₹300 crore through one-time settlement.

The government will dole out a ₹70-crore compensation package for 1,046 employees of the bank. Attempts will be made to accommodate staff below 50 years in another government service. The government plans to spend about ₹200 crore to pay off dues of bank's employees and other liabilities. The rest of the money would be ploughed back into the state treasury. On the basis of recommendations by an RBI-appointed expert panel, the previous Congress-NCP government had considered a proposal to infuse ₹500 crore to revive the bank. But just before the BJP-led government came to power in the state, a ministerial committee, under former cooperative minister Harshavardhan Patil, had proposed the bank's closure, arguing that the revival measures had not taken off. The Fadnavis government has backed the previous committee's proposal. A senior state official said that it was felt that the prime purpose of the land development bank is defeated now with other district cooperatives and private banks surpassing it in the business of providing loans to farmers.

Co-op banks' performance fail to match their size: RBI

Coming down hard on cooperative banks, RBI deputy governor R Gandhi said their share is below 5% despite being large in number, as they have not kept pace with technological advances and lack of

professionalism. Gandhi feels cooperative segment's true potential has not been fully achieved. Gandhi cited reluctance in adapting new technology, decline in cooperative character, lack of professionalism and lack of corporate governance in cooperative institutions as the major factors behind unsatisfactory growth in the sector. "A view need to be taken whether a fresh round of cooperative bank licensing is due, as well as they can put in place a definite migration process for well managed cooperative banks to make their transition", Gandhi said. "I am heading that committee we are looking into it", he added. On capital availability being serious concern for banks to shore up their capital, because they are all clearing the minimum capital requirement today". But we are looking forward for the years to come because there is continues increase in their business and the way the banking has to expand, naturally they will require additional capital & Basel III norms also require them to raise further capital, he added.

Cabinet extends recapitalisation of regional rural banks by 3 years

The Union Cabinet has extended by three years the validity of the recapitalisation scheme for weak regional rural banks (RRBs). The scheme, which was earlier valid up to March 31, 2014, has been extended up to 2016-17 to help RRBs improve their capital-to-risk-weighted assets ratio (CRAR). The minimum CRAR stipulated for RRBs stood at 9% and several of these banks are unable to maintain this level. With a view to bringing the CRAR to at least 9%, the KC Chakrabarty Committee has recommended recapitalisation support to the extent of ₹2,200 crore to 40 RRBs across 21 States.

The recapitalisation process had started in 2010-11. The share of the Centre in respect of some RRBs could not be released in the absence of the release of the share of State Governments. Therefore, the scheme was extended to March 31, 2014. A total of ₹1,087 crore had been released as on March 31, 2014, to 39 RRBs, including Central Madhya Pradesh Gramin Bank. The Centre is now widely expected to go in for Supplementary Demand for Grants to provide further funds to the RRBs that require capital support. Meanwhile, the Finance Ministry is gearing up to seek Parliamentary nod for additional capital infusion of about ₹12,000 crore in public sector banks (PSBs), which is also expected to be done through Supplementary Demand for Grants.

RBI introduces early warning system to detect frauds

The Reserve Bank of India (RBI) has put in place an early warning system to prevent financial frauds. The market intelligence units in its regional offices have been asked to pick-up early warnings on

unscrupulous practices followed by financial institutions. This is part of the restructuring of the apex bank's regional offices, to come into effect by May 15. “These units are expected to enable the bank in identification of new opportunities and trends in the financial sector detecting threats that such activities may post to the public,” it said. The unit will function under the overall supervision of a senior RBI officer.

An exclusive cell will also be created to monitor and take necessary action on complaints received, which do not come under the purview of the banking ombudsman. They will report to the consumer education and protection department in the central office. Regional offices will be categorised into three tiers. Tier-I or metro offices will comprise the four in Mumbai, New Delhi, Kolkata and Chennai. There will be 14 tier-II or non-metro regional offices in Ahmedabad, Bengaluru, Bhopal, Hyderabad, Jaipur, Guwahati and Thiruvananthapuram, among others. In addition, 10 offices in tier-III places such as Agartala, Kochi, Panaji and Raipur will be functional, RBI said.

A cluster-based functional approach will be adopted broadly covering supervision, market intelligence and research, currency and banking services, financial inclusion and customer service, human resource management and infrastructure. There will be no department of corporate services at the regional offices henceforth, while the urban bank department will become the department of cooperative bank supervision, according to the circular.

Follow norms, says Krishi Kendra review panel

A high-level panel set up to examine and review the performance of Krishi Vigyan Kendra (KVKs) has recommended strict adherence to norms. “In the case of NGOs, their credentials of dedicated working for espousing the cause of farmers and development of agriculture may be thoroughly examined before sanctioning KVK. The basic norms and criteria of quality sizeable land and potential of the host organisation to effectively implement the KVK should not be compromised,” it said in a report submitted to the government. The committee, headed by former Agriculture Secretary J N L Shrivastava had submitted its report. The panel also has called for an emphasis on skill development. “As per instructions from PMO, Skill Development training for rural youth has to be given more emphasis by KVK. The process of skill development may be strengthened by establishing linkages of KVKs with National Skill Development Council,” the report says.

The panel, which visited just four KVKs located near Delhi (three run by Agriculture Universities and one

run by an NGO), found that "KVKs lack expertise in the area of processing and value addition; agro-meterology; agri-business; and diagnostic services." It has also recommended KVKs to forge PPPs at the district level to technically support the initiatives of "private extension service providers".

The committee has recommended that apart from the quinquennial review, "external evaluation may also be initiated for critical monitoring and evaluation of KVKs". The report also says that the number of Zonal Project Directorates may be increased for better monitoring. Giving due importance to the North-east, the committee has recommended to ICAR to "create one more coordinating and monitoring unit in the region." The panel has also recommended that KVKs should be linked up with Sansad Adarsh Gram Yojna and Pradhanmantri Sinchai Yojna and MNREGS, adding that they should "proactively identify suitable technologies, service providers, experts and organisations." The KVK scheme is funded by the Centre and there are 641 centres in the country. Of these, 99 are run by NGOs.

Tribal farmers to form Co-ops for 'Farm to Fork' scheme

Over 2,000 farmer organisations in Chhattisgarh, Jharkhand, Madhya Pradesh, Andhra Pradesh and Telangana will be incubated to grow into a cooperative society, trust and ultimately, a company, as part of the plan being implemented by the National Bank for Agriculture and Rural Development, the country's largest development lender. "We have already identified over 300 farmer groups. We will be hand-holding them, helping with registrations and business process re-engineering to facilitate their take off," Nabard chairman Harsh Kumar Bhanwala told. These organisations will get help at each level from sourcing of inputs such as seeds, fertilisers and pesticides to machine requirements for management of farms, processing of produce, marketing and linking up with large value chains.

The Agricultural Produce Marketing Committee Act has been amended in some states to allow farmers to sell perishables directly to consumers to help farmers get better value for their harvest. However, even where the act has been amended, constraints on farmers and large customers remain, such as multiple registration requirements and limitations on sourcing of perishable fruits and vegetables. Nabard will use a ₹200 crore fund set up by the government to provide initial stage funding besides additional money through its NBFC arm. The move is aimed at facilitating creation of structures that would take the country's farm sector to the next level by bringing in cost efficiencies. The government has identified agri-reforms to enhance productivity and value as a key focus area.

"Land holdings in the country have come down from the 80s. Thus, farmers organisations can help in bringing costs down and making agriculture more efficient," Bhanwala said. These structures permit pooling of land so that farmers can come together and benefit from greater use of technology and reap the benefits of scale. Nabard has also launched a digitisation programme for self-help groups in rural India that can be expanded to offer multiple products, including government services and the sale of consumer goods. "I don't mind if an FMCG company wants to use the platform to sell its products," he said.

The bank funded 44 lakh self-help groups through a programme called e-Shakti. The pilot digitisation project was started in Ramgarh district of Jharkhand. This platform will allow members to receive transaction information through SMS, a facility that till now has been used only by banks. It also uses the Aadhaar identity programme, which helps curb the practice of multiple loans. "There are 74 lakh SHGs of which 44 lakh are bank funded...We are now looking to digitise them by providing tablets which is on a platform hosted by Nabard," Bhanwala said, adding that the second pilot project is being launched in Dhule in Maharashtra.

Protect the small farmer with the Farm Income Insurance Scheme

Data from the National Sample Survey Organisation (NSSO) shows that close to 60% of rural households are dependent on agriculture for their livelihood. More than half of them are at risk of defaulting on their debts with either banks or informal moneylenders. Many reports have pointed towards the debt burden and its resulting vulnerability at the household level as the primary factor for farmer suicides.

In a case of farmer suicide, a rubber farmer from Kerala blamed falling rubber prices and the lack of government support in his suicide note. The unfortunate incident is not an isolated one in India. Many small and marginal farmers are getting low prices for their produce because of increased global production and lower demand for various commodities. Reports from the Food and Agriculture Organization (FAO) show the declining food price index in most common commodities such as sugar, cereals and meat. The NSSO report also highlights the increasing input costs in agriculture and the alarming increase in consumption expenditure vis-a-vis income, especially among households with less than two hectares of land holdings. While minimum support prices (MSPs), announced by various State governments, have traditionally been the instrument used to fight declining prices, they have scarcely been effective at the farm level. For

example, among rice and wheat farmers, more than half the produce is consumed at the household level and the rest mostly sold to traders at much lower prices. Other challenges such as the impact of climate change on agriculture and the World Trade Organization's anti-MSP stress on reforms underline the need for a reliable mechanism to improve the resilience of small farm holders.

The attempt by the Gujarat government to reintroduce the Farm Income Insurance Scheme (FIIS) can reform agricultural insurance and prevent farm-level distress. The government's present National Crop Insurance Programme covers failed sowing, post-harvest losses, and losses from natural calamities on an individual basis. It is an area-based approach that covers a wide variety of food, oilseed and horticulture crops. However, low literacy, the absence of infrastructure to measure data accurately at the farm level, and the limited penetration of formal financial credit have made the scheme inefficient, leading to reduced trust among farmers. Additionally, in the current globalised market with widely varying market prices, the scheme is unable to protect farmers against price fluctuations. In a true market economy, the government must resist from distorting market prices through instruments like MSP, and rely instead on other financial instruments to protect farmers.

The FIIS, originally introduced in 2003 and withdrawn the next year, has been revived in Gujarat. The scheme's main thrust is that it tries to ensure guaranteed income by insuring the difference between the farmer's predicted income and the actual income. It calculates the predicted income by using the product of unit area yields and prices at the district level. Any decrease in the predicted income due to yield fluctuations or market fluctuations is insured under the scheme. By only considering yield losses from natural perils, it also ensures that farmers are incentivised to produce more, and that inefficiency in farming is not rewarded. The success of FIIS will depend on whether the government is willing to move away from the current mundane system of manual inspection and data gathering to the new era of big data and technology. When the FIIS pilot was tried a decade ago, it proved to be premature, but the time is right now to correct some of the errors in the previous scheme and move ahead.

The concerns over reliable yield and price data in the earlier attempts can be largely eradicated using present technologies. The maturing of satellite-based yield monitoring systems, integrating agricultural markets in India, and ensuring the efficiency of commodity exchanges will remove most of the concerns that arise over the large amounts of data needed for such a revolutionary scheme. Additionally, leveraging mobile phone penetration levels and mobile-enabled technologies can ensure the availability of real time

data, and reduce the moral hazard problems that afflict current insurance schemes.

FIIS also provides the government an opportunity to streamline some recently announced initiatives such as assessing soil health through soil health cards, and rationalising fertilizer and water usage by insuring only the efficient cost of production. It also incentivises farmers to use the available agriculture markets and engage with formal markets to take advantage of insurance in case of income dips. This will also bring in much-needed transparency in agriculture prices and bridge the gap between price discovery and realisation for the small holding farmer.

No slowdown in credit lending to agriculture sector

Credit growth in the banking system continues to languish below the 10% mark, far lower than the 14% seen a year back. But there is one segment that has managed to grow faster than last year loans to the agriculture sector. These grew 16.5% in February 2015, higher than the 13% in the same period last year. Public sector banks that are already weighed down by asset quality concerns have seen loans to the farm sector gallop. For instance, Indian Bank, Canara Bank, Central Bank, Allahabad Bank, Andhra Bank and Punjab National Bank have exposure of 17-19% (of loans) to the agriculture sector. These banks have grown their agri loan portfolio by more than 20% in the December quarter. State-owned banks have the highest level of bad loans within this segment too. India's largest lender, SBI, has about 10% exposure to the agri sector; of which 10% are bad loans. For IDBI Bank, about 14% of its agri loans is non-performing. For most other public sector banks, NPAs within this sector are at 5-6%.

The agri sector had a good run between 2007 and 2012, backed by rising demand and higher realisations. But given the moderation in minimum support prices (MSP), a more measured allocation to rural schemes such as MGNREGA, and plunging global commodity prices, the agricultural economy is likely to face challenging times ahead. Add to these the dodgy and erratic monsoons and we have the perfect recipe for a sharp rise in bad loans. Increased lending to the agri sector is the result of regulatory norms and lacklustre credit growth elsewhere. Under the priority sector lending (PSL) requirements, banks need to lend 18% of ANBC (adjusted net bank credit) to the agriculture sector. If a bank fails to adhere to the PSL norms, then it has to invest in low-yielding assets such as Nabard's Rural Infrastructure Development Fund (RIDF). The Budget has also increased the agriculture lending target to ₹8.5-lakh crore for 2015-16, up from the ₹8-lakh crore in the previous year. Two, the slowdown in

overall credit growth has primarily been driven by a fall in investment activity by corporates. The growth in this segment has slipped to 6% from 13% last year. With more than 40% of bank lending skewed towards the corporate sector, slowdown in this segment has bumped up the loan growth in the agri segment; home loans and vehicle loans to have grown a tad lower than last year.

RBI Governor tells officials to be professional

"If the rule book is so complicated that a PhD will need a few years to figure it out, the fault lies not with the customer but with us." That sentence in an internal memo Reserve Bank of India Governor Raghuram Rajan sent to top and middle-level executive's sums up the change he wants to see in their mindset. In the unusual letter, the Governor challenged the central bank's practices, calling on officials to focus more on customers, be open to ideas and keep costs on a tight leash. He also called on the bank's staff to be professional in their approach: "Responsibility does not end when you have passed the file on, it ends when the task is complete in other words, when the organization delivers."

Rajan began on a softer note, commending the effort that went into the event marking the bank's 80th anniversary, in Mumbai. "This event, and sundry other experiences I have had at the RBI, show that when we put our mind to it, there is very little we are not capable of." Unfortunately, he said, "not every action we undertake has the same level of professionalism and quality". The regulatory regime, he said, should be simple and customer-centric. "Could we look ahead, recognizing that the worst possible applicants usually are clever enough to evade the traps we place for them, while ordinary applicants get enmeshed in the red tape?" Sometimes, he said, "the problem is not with the rule itself but with poor drafting and communication". Potential applicants should be asked to read a circular to see if it is clear. A senior officer should be designated to make all stakeholders understand such circulars, he added. Rajan called for a mechanism for a free flow of ideas. "Many of our young officers have a fresh take on the operational work they are engaged in. Do we have adequate systems to get their inputs on what works and what does not, as well as ideas on how to change? What mechanisms do we need to put in place?"

The RBI governor also called on staff to be proactive in responding to communications, citing the approach of his former colleague, Professor Eugene Fama (University of Chicago). "No matter how lowly the student or faculty who gives him a paper to read and comment on, he delivers it back marked up within a

few days, at most a week. This, despite the fact that he is over 70 years of age, has won the Nobel Prize, and he really has no favours to curry."

Nabard launched initiative to digitise SHGs

Nabard has launched a project "Eshakti" for digitisation of all SHGs (Self Help Groups) in the country. The bank has, in the pilot phase, taken up two districts Dhule in Maharashtra and Ramgarh in Jharkhand for digitisation of SHG data. R Amalorpavanathan, Deputy Managing Director, Nabard, said the project, which was initiated in April, is nearing completion. "We will have collated the data of around 6,000 groups in these two districts alone. The database has been created; individual data linking their Aadhar and mobile number have been mapped. Banks are being given viewing rights of the activities of each of the groups. This will help banks to view the group activities and sanction loans from the comfort of the branch itself," he said.

Nabard is now planning to escalate the pilot phase to cover 10 districts (one each in TN, Karnataka, Gujarat, Orissa, Madhya Pradesh, Haryana, Assam) before the close of this fiscal. "After the first round of pilot, we will be able to sort out the technical issues," the Nabard DMD said. According to him, there are around 74 lakh SHGs in the country. "Though SHGs per se appear to be organised, they are largely unorganised when it comes to specifics. There are issues of multiple financing, inadequacies in account keeping and so on." To tackle such issues, Eshakti has been mooted in sync with Prime Minister's Digital India Initiative, he said, and explained that volunteers trained by the Application Service Providers (ASPs) capture the data of the SHG and its members and upload the same in a web-based server. Nabard has given a tablet PC for the volunteer group. It is loaded with cloud-based apps, delivered front-end in regional languages. Nabard has estimated the investment for extension of this exercise at ₹1,200 crore.

Tea industry launched pilot scheme with Israeli company to tackle drought

The Indian tea industry (ITA), especially the gardens in the north Indian tea estates in Assam and West Bengal, has suffered two consecutive years of crop loss due to drought like conditions in the first three months of the year. These two States account for 75% of India's annual tea output, which averages at around 1,000 million kg. The impact was severe in 2013, when nearly half the crop (amounting to nearly 20 million kg.) of the first quarter was lost to adverse weather

conditions. This year, the impact is perhaps less but "what is worrisome is that it is a decline on a decline, the trend is persisting and early estimates reveal that over a million tonne has been lost in March 2015 over the same month in 2014," Monojit Dasgupta, Secretary General of the Indian Tea Association, the apex body of the north Indian tea industry told.

He said that drip irrigation was being tried out on an experimental basis at certain tea estates with different agro-climatic conditions. He said that this was part of ITA's initiative towards establishing sustainable farm practices at the tea gardens. "We have recently associated with the Netherlands (Utrecht) based Solidaridad for this," he said. The organisation supports a network of nine regional centres, which pioneers, innovates and are transition managers in sustainable farm practices. The thrust really is on water-conservation and water-harvesting, Mr. Dasgupta said, adding that practices such as creation of water bodies, collecting water on roof tops of tea factories and ground water recharging would be addressed. While the January to March period was not one of high production, but the tea-season commences from March. And the production of some of the priciest teas commence during this period. Weather uncertainties worry the industry which has tried out methods such as 'canopy irrigation', which often leads to over irrigation of the plant leading to stunting and retarding of the root-system.

Govt's 'PudhuVazhvu' scheme rescuing tribals from usurious money lenders

Agriculture used to be an expensive proposition for P. Chokkalingam, who belongs to a tribal community living at Singapathi settlement located inside the Reserve Forest at Booluvampatti range of Coimbatore district. Hiring a tractor for his lands meant an expenditure of ₹700 for every hour. And he needed three hours for just one acre. Apart from this, other expenses for seeds, fertilizer, and drivers meant he had no option but to turn to loan sharks who lent at usurious rates. Now, he and 247 others farmers in the seven tribal settlements in Booluvampatti range spend just ₹100 an hour to hire a tractor, thanks to 'PudhuVazhvu' scheme of the State government. "We have a committee in all villages that receives financial assistance through this scheme to modernise agriculture by purchasing modern implements. We have also set up a vermicompost unit," says Mr. Chokkalingam, who also doubles up as a community organiser. Each village committee has ₹6 lakh to fund such activities besides an equal sum that is used for giving out low-interest loans. Singapathi alone has around 58 acres of farming land, filling with grain, urad dal, horse gram, flowers and vegetables.

Lack of formal finance may be problem-RBI Governor

Reserve Bank of India (RBI) governor Raghuram Rajan claimed that the 'complex problem' of farmer suicides could be arising out of lack of formal finance and not excessive burden of it, referring to non-institutional sources of credit that are often taken by farmers on harsh terms. “A tragic picture of farmer suicides has emerged. Researchers have found that it is a complicated matter to say why someone will take the extreme step of ending his life. Farmer suicide is a problem that one should neither take lightly nor offer too easy explanations for," said Rajan at an interactive session organized by Centre for Research and Industrial Development (CRRID).

"The studies that I've seen suggest that a variety of factors come into play. Often, it is the lack of formal finance rather than excessive burden of finance which is the problem," he added. He, however, underlined that the problem needs reasoned and not simplistic answers. The issue of farmer suicides came up while he was replying to a question by Satish Verma, RBI chair professor, CRRID, about non-institutional sources of credit through arthiyas (commission agents) in rural areas of Punjab. Rajan said that their dominance can be challenged only with expansion of formal banking sector in all areas. "New attempts have been made to take formal finance to every corner of the country and the Jan Dhan Yojna is a step in this direction. Besides, new priority sector norms have been introduced with specific limit for small and marginal farmers so that 7-7.5% of the lending is to those who are otherwise excluded," said Rajan.

A recent study by Dr Satish Verma had pointed out, "The commission agent is the sole contributor of non-institutional loans in banked villages and the largest in unbanked ones." The RBI governor was of the view 'Made in India' could help bail out agriculture sector as well, as there was a need to recognize the fact that it was a low production sector and it involved a lot of risk as manifested in the damage due to untimely rains. The solution lies in increasing productivity and also focusing on allied activities. There should be opportunities outside agriculture so that farmers have the option to leave farming to take up part-time jobs, he said.

MGNREGS failed to impact poverty, needs revamp

Noting that the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) has failed to make a substantial impact on poverty rates in states like Bihar, the World Bank has called for a revamp of the scheme with a greater focus on creation of capital assets. “Analysis of household survey data from Bihar shows that under the

ideal conditions, the rural poverty rate of 50% at the time of the survey could come down by at least 14% points the actual impact on poverty is only one percentage point," said the India Development Update that was released by the World Bank.

The report has advocated that the flagship scheme should be redesigned to create capital assets that would help improve rural productivity and issues such as unmet demand and payment of stipulated wages should be addressed. "If MGNREGS were to be implemented effectively, its design would ensure that there is no unmet demand for work. On-going efforts at convergence of the scheme with other programmes will ensure that the assets created are productive and of lasting value," said Rinku Murgai, lead economist, World Bank and one of the authors of the study on the scheme.

The World Bank report has, however, noted that the scheme has the vast potential to reduce poverty by providing employment and income and is better than a cash transfer scheme such as the JAM (Jan Dhan Yojana-Aaddhar and Mobile technology) trinity as it is better targeted and has a multiplier effect on economic activity. "In essence, the key benefit of MGNREGS is asset creation. It could be better than a cash transfer scheme but needs to have a better impact in poorer states," said Onno Ruhl, country director (India), World Bank, adding that it can be scaled up to help provide relief in rural areas where unseasonal rains have damaged crops.

The scheme has had a mixed performance across the country with states such as Andhra Pradesh showing a significant increase in consumption, land investment and asset accumulation and leakages in the scheme are not as bad as reported. But the report found that though the scheme is designed to ensure that there would be no unmet demand for work, at an all India level, 46% of households reported that one or more of their members would have liked to get employment under the scheme, only 25% secured any work over the course of the year according to the National Sample Survey Organisation (NSSO) 2009-10 survey. The World Bank's India Development Update also found that discrepancies between stipulated and actual wage rates was huge with workers in Bihar receiving on average a 10% lower wage than what was actually stipulated.

RBI introduces 'red flag' to clamp down on loan frauds

A Red Flagged Account (RFA) is one where a suspicion of fraudulent activity is thrown up by the presence of one or more early warning signals (EWS). These signals in a loan account should immediately put the bank on alert regarding a weakness or wrong doing which may ultimately turn out to be fraudulent. "A bank cannot afford to ignore such EWS but

must instead use them as a trigger to launch a detailed investigation into a RFA," the RBI said in a circular.

The threshold for EWS and RFA is an exposure of ₹50 crore or more at the level of a bank irrespective of the lending arrangement (whether solo banking, multiple banking or consortium). No restructuring or grant of additional facilities may be made in the case of RFA or fraud accounts, it said. Making penal provision stricter, the RBI said the provisions as applicable to wilful defaulters would apply to the fraudulent borrowers including the promoter director and other whole time directors of the company in so far as raising of funds from the banking system or from the capital markets by companies with which they are associated is concerned, etc. "In particular, borrowers who have defaulted and have also committed a fraud in the account would be debarred from availing bank finance from banks and financial institutions for a period of five years from the date of full payment of the defrauded amount," it said.

The initial decision to classify any standard or NPA account as RFA or fraud will be at the individual bank level and it would be the responsibility of the bank to report the RFA or fraud status of the account on the CRILC platform so that other banks are alerted. "Thereafter, within 15 days, the bank which has red flagged the account or detected the fraud would ask the consortium leader or the largest lender to convene a meeting of the Joint Lenders Forum (JLF) to discuss the issue," it said. The account would be red flagged by all banks and subjected to a forensic audit commissioned or initiated by the consortium leader or the largest lender under multiple banking arrangement. "The forensic audit must be completed within three months from the date of the JLF meeting authorising the audit. Within 15 days of forensic audit, the JLF will reconvene and decide on status of the account," RBI said. In case the decision is to classify the account as a fraud, the RFA status would change to fraud in all banks and reported to RBI and on the CRILC platform within a week.

Banks told to appoint internal ombudsman

In a move to further beef up the quality of customer service, the Reserve Bank of India (RBI) has advised all public sector banks and some private and foreign banks to appoint an internal ombudsman. The internal ombudsman would be designated Chief Customer Service Officer (CCSO). The apex bank, however, has made it clear that the CCSO should not have worked in the bank in which he/she is appointed as CCSO. The RBI is keen to ensure that there is undivided attention to resolution of customer complaints in banks. Hence, it has suggested the appointment of an internal ombudsman.

While all public sector banks will have to appoint a Chief Customer Service Officer, the private sector and foreign banks which have been told to appoint such officers (or internal ombudsman) are: ICICI Bank Ltd., HDFC Bank Ltd., Axis Bank Ltd., Kotak Mahindra Bank Ltd., IndusInd Bank Ltd., Standard Chartered Bank, Citi Bank N.A. and HSBC Ltd. These banks have been selected on the basis of their asset size, business-mix, etc, said a release.

The Reserve Bank introduced the Banking Ombudsman Scheme (BOS) in 1995 to provide an expeditious and inexpensive forum to bank customers for resolution of their complaints relating to deficiency in banking services provided by commercial banks, regional rural banks, and scheduled primary co-operative banks. From a total of 11 grounds of complaints, when the scheme was introduced in 1995, today BO Scheme provides for 27 grounds of complaints/ deficiencies in bank services. The Reserve Bank operates the BOS, free of cost, so as to make it accessible to all. The bank's internal ombudsman will now be a forum available to bank customers for grievance redressal before they can even approach the Banking Ombudsman.

PM Launched 3 Social Security Schemes

Prime Minister Narendra Modi launched three ambitious social security schemes, relating to the insurance and pension sector and intended at widening the process of financial inclusion. "Pradhan Mantri Suraksha Bima Yojana" (PMSBY), "Pradhan Mantri Jeevan Jyoti Yojana" (PMJJBY) and "Atal Pension Yojana" (APY) were simultaneously launched at 115 locations throughout the country.

ATAL PENSION YOJANA

- For all Bank Account Holders aged between 18 and 40 years.
- Monthly pension will be based on your contribution, i.e. from ₹42 to ₹ 210 per month.
- One can avail monthly pension of ₹1,000 to ₹5,000 from the age of 60 years.

PRADHAN MANTRI JEEVAN JYOTI BIMA YOJANA

Life Insurance worth ₹2 lakh for an annual premium of just ₹330

- For all Bank Account Holders aged between 18 and 50 years.
- Life insurance amount for your family, after you.

PRADHAN MANTRI SURAKSHA BIMA YOJANA

Accident Insurance worth ₹2 lakh for an annual premium* of just ₹ 12

- For all Bank Account Holders aged between 18 and 70 years.
- Insurance covers death and permanent disability due to accident.

*Period of Insurance, Annual: 1st June to 31st May.

The premium/investment will be

deducted from the account holder's saving bank account through 'auto-debit' facility. The person will be eligible to join the scheme through one savings bank account only.

Amendment to Prevention of Money Laundering (Maintenance of Records) Rules, 2005 additional documents for the limited purpose of 'proof of address'

RBI/2014-15/633 DBR. AML.BC. No.104/14.01.001/2014-15 June 11, 2015

1. Please refer to Rule 14(i) and proviso to Rule 2(d) at Sr.No.4 of Annex to circular DBOD.AML.BC.No.26/14.01.001/2014-15 dated July 17, 2014, on the applicability of 'simplified measures' to verify the proof of identity of 'low risk customers' if they do not have Officially Valid Documents (OVDs) for proof of identity.
2. The Government has since amended the Prevention of Money Laundering (Maintenance of Records) Rules, 2005 providing additional relaxations for the purpose of proof of address in addition to the relaxations in proof of identity under 'simplified measures' as contained in paragraph 2(d) of PML Rules. Thus, for the limited purpose of proof of address the following additional documents are deemed to be OVDs under 'simplified measures'.
    a. Utility bill which is not more than two months old of any service provider (electricity, telephone, post-paid mobile phone, piped gas, water bill);
    b. Property or Municipal Tax receipt;
    c. Bank account or Post Office savings bank account statement;
    d. Pension or family pension payment orders (PPOs) issued to retired employees by Government Departments or Public Sector Undertakings, if they contain the address;
    e. Letter of allotment of accommodation from employer issued by State or Central Government departments, statutory or regulatory bodies, public sector undertakings, scheduled commercial banks, financial institutions and listed companies. Similarly, leave and license agreements with such employers allotting official accommodation; and
    f. Documents issued by Government departments of foreign jurisdictions and letter issued by Foreign Embassy or Mission in India.
3. The additional documents mentioned above shall be

deemed to be OVDs under 'simplified measure' for the 'low risk' customers for the limited purpose of proof of address where customers are unable to produce any OVD for the same.

30 new cold chain proposals sanctioned

The Food Processing Ministry took a step further for the number of integrated cold storage facilities in the country which currently has a shortfall in handling capacity for at least 29-30 million tonnes (mt) of milk and dairy products, fruits and vegetables, fish and marine produce and cereals. Harsimrat Kaur Badal, the Food Processing Minister, announced the sanctioning for 30 new cold storage units. In total, there are 138 such facilities now sanctioned as part of the Integrated Cold Chain project. In its first year, the Ministry has operationalised 14 cold chain projects.

"Food wastage is a huge issue and we need to have a zero-tolerance approach with the population rising each year and the land available for cultivation shrinking. If availability increases with reduced wastage, it will curb inflation," she told. The 30 new units are expected to attract investment of ₹470 crore with Ministry grants amounting to ₹275 crore. "There is a need to handle 61 mt of produce annually but we only have a capacity for 31 mt so far. There's a lot of work to be done. This sector is a huge employment generator even for unskilled workers. It can play a pivotal role for uplifting farmers who face huge challenges," she added. With regard to mega food parks, she said that of the 17 sanctioned projects, two were already operational while a third would be in a few days.

Lending to services, priority sectors slowed in March 2015

RBI data on deployment of bank credit show that the outstanding loans to the services sector as on March-end 2015 grew 5.6% year-on-year to ₹14.12 lakh crore, against 16.1% to ₹13.37 lakh crore as on March-end 2014. This dip was on the back of de-growth in loans to tourism, hotels and restaurants, and transport operators. In addition, loans to non-banking financial companies (NBFCs), professional services, wholesale trade and other services saw an average growth of 5.5%.

Similarly, loans to the priority sector grew by a mere 7.7% to ₹20.22 lakh crore as on March-end 2015 against 22% growth a year ago at ₹18.78 lakh crore. The growth slowed due to a drop in credit to micro and small enterprises, manufacturing, rural housing, education, and de-growth in export credit, RBI data showed. "The overall economy has seen a downturn and it will continue to reflect on bank credit. However, a lot of credit demand has also shifted to the bond and the CP market because of their lower rates vis-a-vis

bank interest rates...Further commodity prices have seen some softening in the past one year," said Vibha Batra, Head of financial sector ratings at ICRA. Many oil importers, who used to borrow from banks, have reduced their demand due to the softening of oil prices globally. As the industry continues to be in a wait-and-watch mode, the services sector has invariably suffered the ill-effects.

Sugarcane cultivation should be banned in Marathwada: Madhav Chitale

Water management expert Madhav Chitale has said the Maharashtra state government should enforce a ban on sugar cultivation in districts that receive less than 700 mm rainfall, to effectively tackle the problems of financial crisis in the sugar industry. "To begin with, sugar cultivation in Marathwada should be completely stopped. There is no scientific justification for allowing the water-intensive crop in the drought-hit Marathwada. Why have sugar mills multiplied in the region that is not conducive for the cane crop," Chitale said.

Of the total 205 sugar mills in the state, 40% are in the eight drought-prone districts of Beed, Latur, Osmanabad, Aurangabad, Nanded, Parbhani, Jalna and Hingoli. Chitale said the crisis in sugar industry was an outcome of the wrong policies pursued by successive state governments for several decades, which could not be justified and sustained any longer. "Maharashtra is reeling under acute shortage of pulses and oilseeds that have to be imported in large quantity. Instead of cane cultivation, they should go for crop change and promote sowing of pulses and oilseeds, which require less water," he said.

According to Chitale, the state is facing almost 70% shortfall of pulses and oilseeds, leading to high price rise. "Any crop replaced with sugar cane will ensure better dividends to the farmers," he asserted. The water expert said the financial package of ₹6,000 crore given by the state government and the Centre to the sugar sector across the country could not be a lasting solution. "Setting up sugar factories and cane cultivation in Ahmednagar and Solapur in Western Maharashtra was a wrong policy. The rainfall shortage coupled with higher percentage of water evaporation in these districts is not suitable for sugar business," he said.

In the last 20 years, the state government had sustained the sugar industry with massive financial subsidies and loan waivers. The state government and the Centre are under pressure from experts like Chitale to go for major policy reforms in the sugar sector. Citing an example, Chitale said, "The Sahayadri range where there is plenty of rainfall and less water evaporation should be confined for

sugar cultivation. Kolhapur can be a sugar success story because of heavy rainfall and less water evaporation. In the past, it was known for producing jaggery."

Hinting that sugar mills came into existence because of political decisions instead of scientific studies, he said, "Sugar cultivation is going to be a loss making business for farmers. It is high time the decisions driven by yield per cubic mm were taken. The water and crop yield and financial returns to the farmers should be carefully weighed before taking any decision on crops. In place of sugar, farmers can look for alternative crop like cotton, cereals and pulses." Speaking about Western Maharashtra, which is called the sugar belt, the water management expert said it was wrong to say that the entire region is good for cane cultivation. According to Chitale, corrective measures are required in some Western Maharashtra districts too where rainfall is less. He said there had been lapses by the policy makers as eastern parts of Vidarbha region, "which is most conducive for sugar", were ignored. "During the British rule, a centre for sugar was set up in Bhandara district of Vidarbha. The districts of Gondia, Bhandara and Chandrapur along the Wainganga river have all the parameters to cultivate sugarcane," Chitale said.

Co-op banks told to set up management boards

The co-operative banking sector in India is facing three major issues and the sector is not able to utilise its full potential, said the Reserve Bank of India's Deputy Governor R. Gandhi. Mr. Gandhi, who was addressing a gathering at the Silver Jubilee Celebrations of National Institute for Rural Banking, said lack of corporate governance and professionalism, reluctance to adapt to technology, decline in co-operative character were the major issues faced by the co-operative institutions in the country.

"Today, most of the co-operative organisations are losing that co-operative nature. The institutions are facing some major issues which is preventing from utilising the full potential of co-operative banks in the country," said Mr. Gandhi. "Even with a large number of co-operative banks in the country, the total asset size and their share in the Indian banking sector is not more than 5 %. This means the true potential of these co-operative institutions has not been fully achieved," added Mr. Gandhi. He also said to improve professionalism in urban co-operative banks, Y.H. Malegam committee had given certain recommendations including establishing a Board of Management, consisting of persons with professional skills. "The RBI has started insisting it and now Urban Co-operative Banks have started appointing them. However, there are more than 100 banks which have not appointed any professionals."

Agriculture insurance coverage needs to improve, says RBI

The insurance coverage in the agriculture sector needs to be enhanced to protect the interest of farmers as well as banks lending to this sector, said the Financial Stability Report released by the RBI. The coverage of agricultural insurance continues to remain low, as only 4% of the farmers reported having crop insurance and only 19% of them ever used any crop insurance. The coverage, in terms of value of agricultural output, also continues to remain small. With limited coverage and relatively high premium, insurance schemes are prone to become unviable, it said.

Accepting that the crop insurance business is inherently riskier and costlier compared to other insurance products, the report said crop failures are not specific to one particular farmer, as weather-related events affect entire areas and populations at the same time. Farmers are often uninterested from buying an insurance product, as insurance companies calculate the loss for individual farmers by taking into account the average yield of the area (block) in the past three to five years. Though linking crop insurance with bank credit availed by a farmer protects the bank from losses (which indirectly helps the farmer too), it makes the insurance product a 'compulsory' add-on cost for a farmer, it said. To ensure faster settlement of crop insurance claims, the Insurance Regulatory and Development Authority of India is actively considering the possible use of satellite remote sensing technology as an efficient and reliable mapping tool for yield estimation, risk assessment, and settlement of crop insurance losses.

The regulator recently issued a draft regulation making it mandatory for insurance companies to provide cover to rural and economically weaker sections. The regulation mandates that insurers have to necessarily sell a specified percentage of policies and underwrite a specified percentage of the gross premium with respect to life and non-life insurance companies respectively, to rural and economically weaker sections. Stringent penalties are prescribed under the Act for non-compliance.

Agri boost: schemes for irrigation, reforms in mandi get CCEA nod

The government plans to spend ₹50,000 crore in five years (2015-16 to 2019-20) to provide irrigation facility to all farm lands. This will be part of new scheme 'Pradhan Mantri Krishi Sinchayee Yojana,' approved by the Cabinet Committee on Economic Affairs. Announcing the decisions Finance Minister Arun Jaitley said that spending will start from this year itself. In fact, ₹5,300 crore has been provided for the current fiscal. At present, 45% of total farm lands are irrigated.

Agriculture Secretary Siraj Hussain said that effort would be to bring in 6 lakh hectares under irrigation, besides providing drip irrigation facility in 5 lakh hectares during the current fiscal.

The scheme aims to achieve convergence of investments in irrigation at the field level, expand cultivable area under assured irrigation (Har Khet ko pani), improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision-irrigation and other water saving technologies (more crop per drop), enhance recharge of aquifers and introduce sustainable water conservation practices by exploring the feasibility of reusing treated municipal based water for peri-urban agriculture and attract greater private investment in precision irrigation systems. As a precursor to establishing a national market for agricultural produce, the CCEA also approved a scheme which will facilitate setting up a common market at the State level.

This will end various mandis in one State and farmers will have flexibility to sell their produce according to their convenience. Jaitley said that the scheme would cover all the 585 mandis in the country. "There will be one licence for the entire State beside single point levy. Electronic auctions will be used for discovery of prices," he said while adding that most of the States have agreed on the scheme. The scheme is Central Sector Scheme for Promotion of National Agricultural Market through Agri-Tech Infrastructure Fund (ATIF).

An amount of ₹200 crore has been earmarked for the scheme from 2015-16 to 2017-18. This includes provision for supplying software free of cost by DAC to the States and Union Territories (UTs) and for the cost of related hardware / infrastructure to be subsidised by the government up to ₹30 lakh per Mandi (other than for private mandis). The Centre will meet expenses on software and its customisation for the States and provide it free of cost to the States and UTs. It will also give grant as one time fixed cost subject to the ceiling of ₹30 lakh per mandi for related equipment or infrastructure in the 585 regulated mandis, for installation of the e-market platform.

e-Kisan Mandi to connect farmers with buyers directly

Bulk buyers of perishable commodities, such as fruits and vegetables, in New Delhi can sidestep middlemen while procuring fresh produce through the 'e-Kisan Mandi' portal, an exchange platform to be operated by the Small Farmers Agribusiness Consortium (SFAC). The portal is part of an overall project to establish a 'direct purchase system' linking farmers with buyers. The agency under the Agriculture Ministry was looking to construct an exemplary mandi with grading and cold storage facilities at a 1.6 acre plot in Alipur, close to the Haryana border.

The e-platform will allow large

buyers including exporters, caterers, hotels, and offline and online retail chains such as Big Bazaar, More, Grofers, etc to procure vegetables and fruits directly from farmer producer organisations (FPOs) operating in specialised growing hubs like Nashik (onions) and western Uttar Pradesh (potatoes) through 'local franchisees'. "We have created this facility for farmers and FPOs to bring the perishables to a local franchisee where the produce will be quality graded and sorted before being connected to an electronic platform. A large buyer in Delhi can simply go online to see the quality and grade of the produce on offer and participate in the auction," said Pravesh Sharma, Managing Director, SFAC. More than 200 buyers and sellers have already registered with SFAC to use the 'e-Kisan Mandi' portal.

The software, which was developed by commodities bourse NCDEX, was funded by the Centre. Delhi was picked for the launch since it was one of seven States/Union Territories that had delisted fruits and vegetables from the Agriculture Produce Marketing Committee (APMC) Act, allowing farmers to sell their produce to wholesale markets beyond designated mandis.

The platform is likely to be extended to States such as Maharashtra, Madhya Pradesh and Uttar Pradesh soon. "The franchisee can be a private player, an entrepreneur or a mandi trader, registered with us. They require only a terminal and access to the platform through the software. Farmers can go to them directly with their produce and it's the franchisees' job to verify the quality and quantity before sourcing them for auctions," Sharma said. Potato, onion, tomato, mango and banana, are the fruits and vegetables that will be traded to begin with. Currently, there are about 800 registered FPOs in India, of which 450 have been promoted by the SFAC. It is targeting the promotion of another 350 FPOs by the end of this year.

Karnataka to Bring its APMC markets on one E-platform

Karnataka is one of the first states to initiate reforms in agricultural markeing, will link all the 155 Agricultural Produce Market Committee (APMC) mandis under the single online platform in the next two years. Currently, 155 APMC mandis in the state operate under unified online market, where traders across the state and outside use online platform for buying 92 agricultural commodities from the farmers. "We will link atleast 100 APMCs to the common online market place by the end of this year and rest of APMCs will be integrated to platform by the end of next fiscal," Manoj Rajan, Managing Director & CEO, Rashtriya e-Market Services Private Limited (ReMs) told.

ReMs is the special purpose vehicle created by Karnataka

government and NCDEX spot exchange, which has been handling the integration of mandis through single online platform. Rajan said the Karnataka government has created online unified market where registered traders from inside and outside state will be able to participate in the auction process of agricultural commodities, thus leading to better price discovery by the farmers. "Though single registration traders are allowed to participate in auctions of various agricultural commodities being sold at various mandis across the state and the farmers have the choice to sell in any regulated or private market in the state and receive timely online payment", he said. He also said that states such as Odisha, Uttar Pradesh and Rajasthan are currently studying the Karnataka model of online unified market place.

Besides providing a single licence system, increased competition, easy and fast trading, better price discovery mechanism, the platform developed by ReMs provides value-added services including assaying and grading. For meeting the expenses required for online platform, ReMs charges 0.2% of the gross sale amount from the buyers and sellers. However, selling of fruits and vegetables are not included in the online marketing platform.

In July, 2013 the state assembly had passed the Karnataka Agricultural Produce Marketing (Regulation and Development) amendment bill, which envisages introduction of warehouse-based sales and single unified licence to traders. The legislation aimed at introducing market reforms in the agricultural marketing sphere by the introduction of warehouse-based sales, single unified licence to traders and improved marketing access. The bill envisages establishing a direct purchase centre to buy notified agricultural produce directly from the farmers by bulk buyers such as food companies. Learning from the Karnataka model, the agriculture ministry has decided to launch a National Agriculture Market (NAM) which would integrate all the 585 APMCs across the country through an online platform. Within next three years, all APMCs would be integrated under one platform. In the proposed online agri market place, the farmers bringing in produce to APMC market can sell their produce to local traders or buyers registered with online platform stationed outside the concerned APMC or the physical boundary of the state.

Nabard plans ₹30,000 cr irrigation loans to farmers

Even as the agriculture sector is facing distress and no letup is seen in farmer suicides, the National Bank for Agriculture and Rural Development (Nabard) has offered to refinance the conversion of short-term crop loans of farmers into medium-term loans and spend as

much as ₹30,000 crore in irrigation projects in the next three years. "We have assured all the banks about liquidity support," said HR Dave, Deputy Managing Director of Nabard.

"There are standing instructions from the RBI and Nabard that as and when there's a problem, convert the loan and don't allow the farmers to have distress that I have to repay so much of money," he said. "The instruction says whatever is due from the farmer is converted into longer term loan. So mentally his pressure is taken off. Then he has to be given a fresh loan. Whenever banks are to be refinanced, we are already there," Dave told. "Banks have already started converting loans. Maharashtra is converting almost ₹3,000 crore of crop loans into medium-term loans. Rajasthan has asked for ₹2,500 crore. Three or four states have already made demands," he said. Crop loans are normally for one year. This will be converted into five year loans, enabling farmers to take a fresh loan. "This is because if you default on a crop loan, then technically the borrower is not eligible for another crop loan. The loan conversion will enable the farmers to get a fresh loan," Dave said.

Nabard chairman HK Bhanwala said, "we are pumping around ₹30,000 crore into irrigation projects over three years. This year we are spending ₹10,000 crore in such projects." It uses two routes to spend this amount. First it has the RIDF (Rural Infrastructure Development Fund) where Nabard will be lending to farmers. "We have another window of giving refinance to banks. If farmers have drip irrigation projects, construction of wells, then we will refinance the banks," he said. Out of this year's amount, ₹3,000 crore will be through refinance.

Icrisat's $300 phablet to offer timely tips for farmers

Farmers in the country can now have customised tips on their phablet on the agricultural inputs they might require for their field. Based on the specific soil health of their small land holdings, scientists at the International Crops Research Institute for Semi-Arid Tropics (Icrisat) and Government of Telangana would send timely messages to the farmers through the phablet.

The Hyderabad-headquartered Icrisat launched the Green Phablet, priced at $300 (about ₹18,600), for farmers in Telangana. The institute would maintain servers to safe keep the information. And even if the users lose their device, they could get back the information in no time. "We are in touch with telecom provider Airtel to help us in this initiative. We however would like this open to other players as well," Icrisat Director-General David Bergvinson told. He signed a tripartite agreement with the Telangana Departments of Agriculture and Information

Technology to collaborate in transforming agriculture using digital technologies.

Icrisat would also take part in the T-Hub, the start-up initiative launched by the State Government. "We need to utilise geo-spatial information, remote sensing capabilities, cloud services and genetic technologies to make agriculture viable for farmers," the Icrisat Director-General said. In the first phase, the Telangana Government is planning to give the devices to the district level agricultural officers. "Specific information on soil health and other relevant parameters into the devices, prompting the scientists to come out with crop-specific, field-specific information," Telangana IT Secretary C Parthasarathi said.

RBI panel to push financial inclusion

The Reserve Bank of India has set up a 14-member committee for working out a medium-term (five-year) measurable action plan for financial inclusion. Financial inclusion is the process of ensuring access to appropriate financial products and services needed by all sections of the society in general, and vulnerable groups such as weaker sections and low-income groups in particular, at an affordable cost in a fair and transparent manner by mainstream institutional players.

According to its terms of reference, the committee headed by Deepak Mohanty, Executive Director of RBI will review the existing policy of financial inclusion, including supportive payment system and customer protection framework. The committee will suggest a monitorable medium-term action plan in terms of its various components, such as payments, deposits, credit, social security transfers, pension and insurance. It will also study cross-country experiences in financial inclusion to identify key learnings, particularly in the area of technology-based delivery models, which could inform people of RBI's policies and practices.

The committee will articulate the underlying policy and institutional framework, also covering consumer protection and financial literacy, as well as the delivery mechanism of financial inclusion encompassing both households and small businesses. It will do so with particular emphasis on rural inclusion, including group-based credit delivery mechanisms. The RBI, in a statement, said the committee has been formed in the backdrop of the Prime Minister urging it to take the lead in encouraging financial institutions and to set a medium-to-long term target for sustainable financial inclusion.

The Government is pushing financial inclusion through four schemes Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri

JeevanJyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha BimaYojana (PMSBY) and Atal Pension Yojana (APY). According to Finance Ministry data, banks had opened 16.73 crore basic savings bank deposit accounts under the PMJDY, which was launched in August 2014, up to July 8, 2015. The outstanding balance in these accounts aggregated ₹19,990.52 crore. About 51% of these accounts have zero balance. PMJDY's benefits include a RuPay debit card, ₹1 lakh accident insurance cover, and an additional ₹30,000 life insurance cover. It is a platform for Direct Benefits Transfer (DBT) which, in turn, will help plug leakages in subsidies.

The gross enrolment under the PMJJBY, which offers life insurance coverage of ₹2 lakh for savings bank holders in the age group of 18-50 years on payment of ₹330 a year, stood at 2.71 crore as on July 14. The gross enrolment under the PMSBY, which provides insurance coverage of ₹2 lakh on payment of ₹12 per annum, was at 7.87 crore. The gross enrolment under the APY, which will provide a fixed minimum pension ₹1,000 - ₹5,000 a month (depending on the monthly contribution and age at which the subscription starts) beginning from the age of 60, was at about five lakhs.

Bad loans remain a worry, burden taxpayers: Rajan

Reserve Bank of India Governor Raghuram Rajan expressed concern over the increase in the non-performing loans (NPL) of the banking sector. The situation, he said, had not reached peak levels yet, but there are concerns about the effect on the banking system and on taxpayers. “If you ask, am I worried from the perspective of 'are we in danger of a financial crisis?' The answer is: NO. Am I concerned about the losses that it implies and the effects on bank functioning, on losses to the taxpayer? YES, I am concerned about the size of the NPLs,” Rajan said while addressing the media after a meeting of the RBI's central board in Goa.

A recent International Monetary Fund report said the domestic banking sector was in trouble with a whopping 36.9% of the country's total debt being at risk among the highest in emerging economies. Total bad loans or gross non-performing assets (NPAs) of Indian banks will rise by ₹60,000 crore to ₹4 lakh crore in FY16, according to a Crisil Ratings report. This has prevented banks from lending more, despite two interest-rate cuts by the RBI. “Some banks have managed to start bringing down their bad loan positions; for others, they (NPLs) are still increasing. I would feel confident when there is a more uniform series of results across the banks,” Rajan added.

The RBI Governor said resolution of NPAs would be possible only with higher economic growth and the actions banks take. “The combination of action by banks as

well as growth tend to restore bank health," he emphasised. The stressed assets ratio (gross non-performing assets plus restructured standard advances to gross advances) for the system as a whole rose to 10.9% at the end of March 2015 compared with 10% in March last year. This means that nearly ₹7.05-lakh crore worth of bank loans now fall in the stressed category compared with ₹5.91-lakh crore last year. The pile of cases related to bad loans awaiting resolution with debts recovery tribunals (DRTs) across the country has more than doubled year-on-year to a whopping ₹3.75-lakh crore. The average gross non-performing assets (GNPAs) to gross advances ratio of the banking system had deteriorated to 4.1% at the end of March 2014 against 3.4% a year earlier. According to the RBI, industry segments such as infrastructure, metal & products, textiles, chemicals, engineering industries, and mining/quarrying accounted for over a third (36%) of GNPAs as of March 2014.

Co-op banks told to set up management boards

The co-operative banking sector in India is facing three major issues and the sector is not able to utilise its full potential, said the Reserve Bank of India's Deputy Governor R. Gandhi. Mr. Gandhi, who was addressing a gathering at the Silver Jubilee Celebrations of National Institute for Rural Banking, said lack of corporate governance and professionalism, reluctance to adapt to technology, decline in co-operative character were the major issues faced by the co-operative institutions in the country.

"Today, most of the co-operative organisations are losing that co-operative nature. The institutions are facing some major issues which is preventing from utilising the full potential of co-operative banks in the country," said Mr. Gandhi. "Even with a large number of co-operative banks in the country, the total asset size and their share in the Indian banking sector is not more than 5 %. This means the true potential of these co-operative institutions has not been fully achieved," added Mr. Gandhi. He also said to improve professionalism in urban co-operative banks, Y.H. Malegam committee had given certain recommendations including establishing a Board of Management, consisting of persons with professional skills. "The RBI has started insisting it and now Urban Co-operative Banks have started appointing them. However, there are more than 100 banks which have not appointed any professionals."

Third gender' to feature on all bank forms

RBI has directed banks to henceforth include 'third gender' in all their forms and applications, whether prescribed by the central bank or designed by the banks themselves. The move follows a

Supreme Court directive last year. Besides changes in stationery, banks will have to make changes to their core banking software to include the additional variable in the gender column. The Supreme Court had said that absence of a law recognizing hijras as third gender cannot continue as a ground to discrimination against them.

Modalities for implementation of Atal Pension Yojana (APY)

RBI/2014-15/609 DCBR.BPD (PCB) Cir. No. 9/12.05.001/2014-15 May 21, 2015

1. Government of India, Ministry of Finance has announced the launch of Atal Pension Yojana (APY) on May 9, 2015. The scheme, is a universal social security measure especially for the poor and the under-privileged, which will provide a defined pension, depending on the contribution, and its period to its subscribers. The enrolment under the scheme to be introduced from June 1, 2015. The APY will be focussed on all citizens in the unorganised sector, who join the National Pension System (NPS) administered by the Pension Fund Regulatory and Development Authority (PFRDA). Under the APY, the subscribers would receive the fixed minimum pension of ₹1000-₹5000 per month at the age of 60 years, depending on their contributions, which itself would be based on the age of joining the APY. The minimum age of joining APY is 18 years and maximum age is 40 years. Therefore, minimum period of contribution by any subscriber under APY would be 20 years or more. The benefit of fixed minimum pension would be guaranteed by the Government.

2. The scheme will be implemented by member banks in accordance with the preliminary rules and terms finalised by the Government. Copies of Office Order dated May 7, 2015, Office Order dated May 8, 2015 and Scheme details, Notification dated April 30, 2015, FAQs and APY Subscriber Registration form and Acknowledgement of the same are in Annex I to V. The Central Government would also co-contribute 50% of the total contribution or ₹1000 per annum, whichever is lower, to each eligible subscriber account, for a period of 5 years, i.e., from Financial Year 2015-16 to 2019-20, who join the NPS before 31st December, 2015 and who are not members of any statutory social security scheme and who are not income tax payers. However, the scheme will continue after this date but Government Co-contribution will not be available. The Government co-contribution is payable to eligible PRANs by PFRDA after receiving the confirmation from Central Record Keeping Agency at such periodicity as may be decided by PFRDA. However, the funding support to the scheme would be

released only after approval of the Parliament through Supplementary Demand for Grants for making necessary budgetary provision.

3. As the scheme has to be implemented in a system driven IT mode by auto debit of the concerned account holder, the UCBs in co-ordination with PFRDA would also be required to introduce the necessary module for this purpose in their CBS package and in the software for the handheld devices of BCs to enable on-line enrolment etc. The acknowledgement slip may be made into an acknowledgement slip cum registration slip for APY.

4. All Primary Urban Cooperative Banks not operating under directions u/s 35 A of BR Act,1949(AACS) with full CBS implementation and having capabilities to build necessary modules in the CBS/hand held devices software for banks and BCs may participate in APY.

5. UCBs may appoint a Nodal Officer for implementation of the schemes and furnish to our Regional Offices the full details such as name of the bank, address, name of the Nodal Officers with details of their telephone numbers, email addresses etc. for onward transmission to Ministry of Finance, Government of India.

6. The details of the scheme are available at website www.jansuraksha.gov.in / www.financialservices.gov.in

RBI empowers banks to take control of debt-stressed firms

The RBI has empowered banks to take control of a company if it fails to meet specific milestones under the corporate debt restructuring (CDR) plan. Under a new strategic debt restructuring (SDR) scheme, banks, as majority owners, can then find professionals to run the company and then divest stake in order to recover their dues. The central bank has proposed a slew of measures, including setting a timeline of 30 days from the review of the restructured loan account for invoking the SDR. All loan agreements will include clauses to invoke the SDR.

Before a loan account turns non-performing, banks are required to identify the stress signs, and set up a Joint Lenders' Forum (JLF) to draw up a corrective action plan involving rectification and restructuring. If this too fails, the recovery action kicks in. Under the SDR, the conversion of debt into equity is to be completed within 90 days of the date of approval of the SDR package by the JLF. A senior public sector bank official said since banks will get control of a company under the SDR scheme, they will be able to check diversion of funds, put in place a professional management, turnaround the company and later sell their equity holding to recover their dues. To encourage conversion of debt into equity, the RBI said the

invocation of the SDR will not be treated as restructuring for the purpose of asset classification and provisioning norms. Equity shares acquired and held by banks will be exempt from the mark-to-market requirement.

To encourage new promoters to come in, the asset classification of the account may be upgraded to 'Standard' post divestment of stake by the lending banks. The conversion of outstanding debt (principal as well as unpaid interest) into equity should be at a 'fair value', the RBI said. In the case of listed companies, the acquiring entity will be exempt from the obligation of making an open offer.

Now ₹100 Notes to come with Numerals in Ascending Size in Number Panels

The Reserve Bank of India has issued ₹100 denomination banknotes in Mahatma Gandhi Series 2005 with a new numbering pattern. Now the numerals in both the number panels of these banknotes will be in ascending size from left to right, while the first three alphanumeric characters (prefix) will remain constant in size. Printing the numerals in ascending size is a visible security feature in the banknotes so that the general public can easily distinguish a counterfeit note from a genuine one. The Reserve Bank, in consultation with Government of India, has been improving security features of Indian banknotes so as to make their counterfeiting difficult and make it easy for members of public to identify genuine banknotes.

The design of banknotes with numerals in ascending size is similar in all other respects to the current design of ₹100 banknotes in Mahatma Gandhi Series 2005 except for the new numbering pattern. The banknotes will continue to have "₹" symbol on the obverse and the reverse, an inset letter 'R' in both the numbering panels, bear the signature of Dr.Raghuram G. Rajan, Governor, Reserve Bank of India, and the year of printing '2015' printed on the reverse of the banknotes. All the banknotes in the denomination of ₹100 issued by the Reserve Bank in the past will continue to be legal tender. The new numbering pattern will be introduced in a phased manner in all other denominations.

K. V. Kamath to head BRICS bank

India has named private banker K. V. Kamath as the first head of the new development bank that the BRICS group of emerging market economies is setting up. "Mr. Kamath has been appointed as the head of the BRICS bank." Union Finance Secretary Rajiv Mehrishi told. India has conveyed the decision to nominate Mr. Kamath for the

BRICS bank presidency to other BRICS nations Brazil, Russia, China and South Africa. Mr. Kamath's five-year term is to be followed by a Brazilian and then a Russian. The BRICS had agreed to set up the $100 billion development bank last year, a step that was at the time seen as one that could challenge the dominance of the West in the international financial system. The focus of the international financial system, however, has since then shifted to China's initiative, the Asian Infrastructure Investment Bank (AIIB).

The BRICS nations had also agreed last year that the New Development Bank, which will fund infrastructure projects in developing nations, would have its headquarters in Shanghai. Mr. Kamath, a veteran banker, with an eight-year stint at the Asian Development Bank, spent 13 years as ICICI Bank's head during which it went on to become India's second largest bank. He retired as ICICI Bank's CEO and Managing Director in 2009. A mechanical engineer by education and also, holds a degree from the Indian Institute of Management, Ahmedabad, and was honoured with the Padma Bhushan title in 2008. The BRICS bank will start with an initial paid-in-capital of $50 billion. Each BRICS country will contribute $10 billion. The bank will fund infrastructure projects in developing nations, and will have a $100-billion currency reserve arrangement (CRA) for helping out countries facing short-term liquidity pressures.

Changes in ARDBs

1) Shri K. Naga Malleswara Rao has assumed charge as Managing Director of the Andhra Pradesh State Cooperative Bank Ltd. w.e.f. 2nd April 2015.
2) D. Nethi Muralidhar has assumed charge as Managing Director of the Telangana State Coop. Apex Bank Ltd. w.e.f. 2nd April 2015.
3) Shri A.B. Das has assumed charge as Chairman of the Assam State Coop. Agri. & Rural Dev. Bank Ltd. w.e.f. 29th April 2015.
4. Shri P.S. Nargesh, has assumed charge as Managing Director of the Madhya Pradesh State Coop. Agri. & Rural Dev. Bank Ltd., w.e.f. 8th June 2015.
5. Shri H. Balashekar, K.C.S. has assumed charge as Managing Director of the Karnataka State Coop. Agri & Rural Dev. Bank Ltd., w.e.f. 26th June 2015.
6. Shri Jogendra Swain, has assumed charge as President of the Orissa State Coop. Agril & Rural Dev. Bank Ltd., w.e.f. 29th July 2015.

Better profits with smaller sized tubers

The lack of quality planting materials, particularly improved varieties, is a major constraint in expanding area under tuber crops. Naturally bulky, with very low multiplication rate and due to demand as a food source or for cash generation lead to very low availability of good quality planting materials with the farmer."When compared to rice or wheat, tubers can give satisfactory production even in partially shaded area and do not need much investment or labour compared with paddy or wheat. Encouraging cultivation of tubers like elephant foot yam is a good way of protecting farmers from total crop loss due to vagaries of nature" says Dr C. P. Robert, Programme Coordinator, CARD (Christian Agency for Rural Development)-Krishi Vigyan Kendra, Pathanamthitta District, Kerala.

It is a common practice in elephant foot yam cultivation that the cut portions of tubers containing the central ring are used as planting material. The big sized tubers usually produce 2-3 sprouts (setts) in the central ring and farmers divide the tubers according to the position of sprouts in the central ring. This leads to unevenly sized tubers with varying weights and also non-uniform growth in the field and wastage. The other disadvantage is using big sized tubers results in low multiplication rate of improved varieties and thereby increases the production cost.

Traditionally farmers use setts from one kg size tubers as planting material and the harvested tubers weigh 4-6 kg in size. Lately, due to the change in consumer preference the bigger tubers are less favoured in the market and fetch lesser price than smaller sized ones. The Kendra solved this problem by developing a pre-sprouting technique for the crop which yields small sized tubers. Explaining how it is done Dr. Robert says: The central bud is split into setts by passing the knife half way through the tubers. For example a two kg sized seed tuber is half split into 8 sets and after 2-3 hrs fresh cow dung is applied on the cuts. The tubers are then kept for bud sprouting. Within 30-40 days the cut segments develop sprouts and are separated for planting as independent setts. These can be planted at a spacing of 60cm x 60 cm while in traditional system a wider spacing of 90 cm x 90 cm is required. About seven tonnes of seed tubers is needed for planting in one hectare of land where as in traditional system about 9-12 tonnes is required.

The small tubers are easy to harvest and there is less weed competition due to the closer spacing adopted. "The technique is a modification of the Central Tuber

Crops Research Institute (CTCRI) developed technology and has been made more farmer friendly by addressing both seed production and commercial production needs" says Rincy K Abraham, Subject Matter Specialist (Horticulture). CARD KVK refined the technique a little more and today in the region the crop has much relevance as insurance coverage to farmers during periods of erratic weather and can give satisfactory yields in higher temperature.

Tips to overcome problems in cattle rearing

Lack of awareness on aspects of farm management in livestock hampers the full productivity of dairy animals. Some of the problems that are usually encountered in dairy livestock and their possible remedial measures are: High mortality rate in calves and poor growth. Remedial measure to be taken up are colostrum's feeding within an hour after birth, deworming, feeding antibiotics, early introduction to concentrate and greens (creep feeding).

Main problems among milking animals are reproduction based problems -mainly anoestrus, repeat breeding, long calving interval, low milk performance and mineral deficiencies. In such cases proper heat detection, feeding balanced rations and mineral supplementation, protection against thermal and ecto and endo parasitic infestation can help avert the problems. The productive performance of a dairy farm is viable if cows calve every year and produce milk for at least 300 days with high production efficiency. If there are 70-75 cows they should all be in milking. Proper recording of body weight gain, physiological activities and milk production can help in judging the performance of individual animals. From this one can identify the poorly producing animals and undertake the remedial measures in time. The animals which do not respond to improved feeding and management should be removed.

Milking management is very important task in dairy because it is the quality and the production of milk which matters most. Farmers should follow good milking management practices, especially cleanliness and hygiene at the milking place. Practice regular milking hours as far as possible and equal milking intervals. After washing the udder with antiseptic like KMnO4 and wiping it with a clean cloth, practise dry and full hand milking method followed by stripping. Complete the milking within 5-7 minutes gently without much noise.

Rapid roving team to resolve pest menace

The University of Agricultural Sciences, Dharwad (Karnataka) has initiated a new concept to help chickpea and pigeonpea farmers in the districts of Vijayapur and Bagalkote regions by ensuring timely

suggestions to save their crops from pests and infestations. Named Rapid Roving Survey Team, it consists of experts who will make an extensive survey of the chickpea and pigeonpea growing areas of the districts.

Every week the team will travel to around 25 to 30 villages taking stock of pest and disease incidence on the crop. Immediately after each survey the team is expected to prepare a status of each insect pest and disease along with the suitable management strategies to be followed by the farming community. This information on pest status and the adoptable management strategies will be made known to the needy farmers and agriculture department officials through print media, radio, television and SMS. The team, during their visit, will also educate the farmers by giving training and distributing technical folders containing the measures to be taken to keep the pest at bay. For example the team found that pigeonpea was susceptible to leaf webber, pod borer, infestations. The team advised the farmers on the right type of recommendations to be taken to tackle it.

Since the farmers in most of the areas grow the same pigeon pea crop for years the same variety becomes most susceptible to these infestations. To reduce the incidence in the ensuing season farmers were advised to adopt crop rotation like sorghum, bajra, safflower, cotton etc. based on the soil type and the moisture availability. Farmers were also suggested to go for seed treatment with *Trichoderma viridae* before sowing. Similarly for chickpea crop farmers have been asked to install bird perches. The rapid roving team is spearheaded by a well-known experts from the University.

CFTRI to help produce banana juice free of cost at farm-gate

The Central Food Technology Research Institute (CFTRI) is willing to transfer its innovative and cost-effective technology to make "clarified banana juice concentrate" from unsold and ripened fruit at the farm-gate, free of cost. The institute will also help farmers in setting up the facility."The entire facility, including the shed, would cost not more than ₹5 lakh," said Ram Rajasekharan, Director, CFTRI.

One of the most cost-effective solutions the institute has come out with for bananas that have reached the point of advanced ripening just before the onset of spoilage, is to make clarified banana juice. This product is a juice concentrate made of banana puree and clarified prior to concentration. Like in any fruit juice, specifications on pH (a measure of acidity of an aqueous solution), degree Brix (the sugar content) and microbial stability are addressed to make a safe and delicious product, said Rajasekharan.

According to him, the shelf-life of

the concentrate will be about a year and this can be used to make fruit juice, carbonated drink or as a sweetening agent for other juices. CFTRI has identified a few companies in Coimbatore that can manufacture necessary equipment for this. Being the largest producer of banana in the world, India produced 29,000 tonnes of banana in 2012-13. Of this, Tamil Nadu produced about 20%, followed by Gujarat (17%) and Maharashtra (14%).

Control of leaf spot in turmeric plants

Leaf spot of turmeric is the most important disease of turmeric. It has become as major constraint in successful cultivation of turmeric. The disease has resulted in drastic reduction in rhizome yield. Oblong brown spots with grey centres are found on leaves. Severely affected leaves dry and wilt. The disease is usually appears in October and November.

Proper spacing should be maintained (for single row planting: 45cm between rows and 15cm among plants and 4cm depth and Broad ridge system or paired row system under drip irrigation the farmers follow broad ridge system of planting in which 120 cm broad ridge are formed and two rows of rhizomes planted at a spacing of 15 x 45 x 45 x 15 cm and 4 cm depth. Select seed material from disease free areas. Infected and dried leaves should be collected and burnt. Crop rotations should be followed whenever possible and as far as possible use only rhizomes from known sources. Cultivate resistant/tolerant varieties. Proper spacing should be maintained. *Pseudomonas fluorescens* and *Trichoderma harzianum* can reduce the disease when the disease pressure is low.

Leaf extract of Ashoka *(Polyanthia longifolia)* and bulb extract of onion *(Allium cepa)* can be reduce the disease. Treat seed material with mancozeb at 3gm/litre of water or carbendazim at 1 gm/litre of water, for 30 minutes and shade dry before sowing. Spray mancozeb at 2.5 gm/litre of water or carbendazim at 1gm/litre; 2-3 sprays at fortnightly intervals. Spraying Blitox or Blue copper at 3 gm/lt of water was found effective against leaf spot. Rhizome treatment with carbendazim and mancozeb (0.1%) and foliar application of propiconazole (0.1%) at 45 and 90 days after planting (DAP) can help reduce the disease.

The village that defied drought

Anil Bonde, the then sub-divisional agriculture officer (SDAO) of Risod tehsil in Washim district, now SDAO of Khamgaon in Buldana district, worked day and night with villagers to implement the Rainfed Area Development Programme (RADP), sponsored by the Centre to raise a seed manufacturing, packing and grading unit which has brought

participating villagers nearly ₹3 crore in three years. This money helped villagers overcome economic crises that hit almost all villages in the region. The unit operated by the villagers has spawned not only an economic revolution, but also a system that transgresses caste and political divisions. The Shree Balnath Shetkari Krishi Vidnyan Mandal, which runs the seeds business, has representatives from across castes and religions, with affiliations to different political parties.

The project was registered with the Seeds Certification Authority of the state government. The villagers approached Padgilwars, a company manufacturing processing units. "They offered it to the village for ₹50,000 less," says Bonde. "So, the 13 members of the committee contributed ₹40,000 each to purchase our own unit," says Santosh Awtade, president of the group. The state government offered ₹2 lakh in subsidy and the unit was ready. The training followed and in the first year, the village produced 830 quintals of processed gram seed, which it sold to farmers for ₹6,500 per quintal, ₹600 less than the market price. The villagers also received a special Central government grant of ₹2,200 per quintal. The effort saw the 100 participating farmers grow richer by ₹70 lakh together. Next year, they also produced soybean seeds, followed by wheat last year. The earnings have multiplied to over ₹1 crore per annum now. Year 2014-15 saw quantum leap in the production of the ambitious project with seed production touching the 8,000 quintal mark.

The earnings were spent constructively to lay a 1.5 lakh-foot water pipeline to help agriculture. Though soybean was damaged here too due to drought, the people have the spare funds earned from the processing unit. "The pipeline has helped us grow rabi crop and utilise almost the entire land for the second crop, unlike in the past when everything would depend on the monsoon and soil moisture," says treasurer Bhagwan Parhad. The villagers have also purchased over 200 milch cattle under Central subsidy to usher in a white revolution. The village now produces about 800 litres of milk daily. Individual farmers have also started their own grading and packing units for the produce in their farms. Says Bonde, "Vidarbha has earned a bad name in agriculture giving rise to impression that farmers here are no good. Balkhed has shown the country what they can do."

Integrate rural job scheme with new irrigation programme: PM

Prime Minister Narendra Modi has called for integration of the Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGA) with the Pradhan Mantri Krishi Sinchai Yojana. This will help in creating more irrigation assets. He also called for a multi-pronged

approach to reach the goal of providing irrigation facilities for every farm through the scheme.

According to the Economic Survey for 2013-14, currently 63 million ha, or 45% of net cropped area, is irrigated. Under the Accelerated Irrigation Benefit Programme (AIBP), ₹64,228 crore of Central loan assistance (CLA)/grant had been released up to December 31, 2013. Noting that the rural job guarantee programme over the past few years was used for creation and augmentation of irrigation assets, Modi said, "NREGA should be integrated with the overall plan of Pradhan Mantri Krishi Sinchai Yojana." He also called for precise monitoring of outcomes. At the macro-level, the Prime Minister asked the Water Resources Ministry to identify river-interlinking projects that could be immediately taken up, and called for comprehensive mapping and identification of water bodies. He said satellite imagery and 3D photography could be used to guide villages to the best possible sources of irrigation.

An engineering graduate turns into a successful entrepreneur

Vagaries of the monsoon have forced a number of farmers growing traditional crops to seek viable alternatives. Trees such as teak and casuarina are becoming popular since once planted, the trees require little attention and water and their wood fetches a good price in the market. A young engineering graduate, P. Sakthivel, from Vegakollai in Cuddalore district, Tamil Nadu, is proving how this tree variety is able to fetch good income for him. Mr. Sakthivel's father is also a farmer and was concentrating on his nursery business, growing flowering plants. But Mr. Sakthivel (21 years) who is presently studying for a Masters in Electronics and Communication thought differently.

"I learnt, after a lot of searching, that Junghuhniana Casuarina variety can generate good income and started producing the seedlings in my nursery," says Sakthivel. About 35 women and 15 men work in his nursery and more than 50 workers are engaged in indirect supply of inputs like sand and fertilizer needed for his farm. The wood of this casuarina variety has a good demand in the market for making paper, ropes, and mirror frames. It is ideal for growing in dry lands and rain-fed areas.

It has long tapered roots, which penetrate deep into the soil. The tree reaches a height of 30-40 feet in 3-4 years of planting. The trunk of a full-grown tree measures about 40cm in girth.For propagating the seedlings, stems are selected from one year old trees and are dipped in a root inducing hormone solution for two minutes and planted in portrays kept under shade net for 50 days and then sold. The cost of one tray is ₹180 and has about 72 saplings in it. "There is very low risk factor in this type of cultivation. Hence it is always

profitable to take this up as a profession. Farmers should bear in mind that the ideal time for planting the saplings is during April-May in Tamil Nadu," says Mr. N. Madhu Balan, Horticulture expert in Dharmapuri.

The tree can be grown in any soil type and requires very little water. About 3,570 saplings are required for a hectare. Before planting it is advisable to plough the land well after applying farmyard manure. The saplings are to be planted either in straight lines or in triangles at a four feet intervals. Weeding should be done once a week for the first three months and thereafter once a month. Fertilizer application of about 100kg of diammonium phosphate (DAP) and 50kg of urea must be done on the sixth and twelfth months after planting. Compared to other crops the return from this variety is very high. "A farmer needs to spend about ₹35,000 towards cost of saplings, fertilizer and transport. One tonne of wood is priced at ₹7,500 in the market and farmers can earn about ` 4 lakh from one hectare in 4-5 years," says Mr. Sakthivel.

Mr. Sakthivel uses the Facebook as a major marketing channel for his product. His facebook page 'santhinurseryplants' has several hundreds of farmers from Kerala, Karnataka, Andhra Pradesh, and Maharashtra as customers. "I have been able to make this venture a success balancing both my study and business. My future plan is to try the same in tissue culture banana," says Mr. Sakthivel with a smile.

Controlling fruit sucking moths in citrus

Two species of fruit sucking moths *Eudocima fullonia* and *Eudocima materna* cause enormous damage. Since the attack takes place at the time of ripening, heavy losses result. On an average, these moths damage 3 to 5% of fruits every year. The moths are nocturnal and may be seen flying about in orchards after dusk, especially during rainy seasons. The moths pierce the ripening fruits and suck the juice, resulting in premature fruit fall, rotting and quality deterioration. Usually a circular spot appears at the site of feeding which gives a frothy jet of fermented juice which oozes out when squeezed. Fallen and decaying fruits in the orchard are powerful factors for attracting the pest from a long distance.

Systematic destruction of the breeding sites such as wild weeds and creepers around the orchards helps to check the pest population. Under smallscale situations, the moths can be captured by hand nets daily after sunset. Dispose all fallen and decaying fruits which attract the moths. Create smoke by burning dry grasses and leaves which can repel and drive away the pest. Set up light traps and food lures (pieces of fruits) to attract adult moths. Bag the fruits with polythene bags (300 gauge) punctured at the bottom. Spray with

carbaryl 50WP at 2gm/lit of water at the time of maturity of fruits. Use poison bait with the mixture of Malathion 50EC and fermented molasses (at1ml/lit.) Kill the moths with a bait containing gur 1kg + vinegar 60g + Malathion 50ml + water 10 litres. Wide mouthed bottles containing the bait solution should be tied to the trees at the rate of 1 bottle/10 trees when the fruits are in unripe conditions.

Untapped potential in ornamental fisheries

If there has been one area in agriculture-related activity that has seen continuous growth in the last two decades, it is the ornamental fish rearing business. Realising the immense prospects in this area, NFDB, in collaboration with premier institutions like the Central Institute of Fishery Education, has started skill development programmes, particularly for women so as to upgrade their technical knowledge and expose them to best practices in the sector. The board also arranged training in marine ornamental fisheries for about 250 members of women self-help groups from Kanchipuram district, Tamil Nadu, through Satyabhama University. Ornamental fish training and research institute, Udaipur, has been roped in by the board for organising training programmes in a big way. Sixteen batches have completed training so far in this institute benefitting 320 entrepreneurs.

The board has sanctioned ₹2.13 crore to establish ten ornamental fisheries hubs in ten districts of Tamil Nadu alone.The facilities include establishment of 250 backyard ornamental units exclusively for women SHGs along with training and exposure visits for the members. Plans are on to set up five ornamental fish retail outlets for better marketing. In addition, 10 transport vehicles are to be provided for each of the ten hubs. The board receives a number of applications regularly from Karnataka and Kerala.

As in the case of other sectors, fisheries too has its limitations which have for a long time not been considered seriously. Some of the main problems to be overcome are non-availability of skilled manpower, inadequate training facilities for breeding, farming of high valued species and labs for health management. In addition, inadequate infrastructure like few hatcheries, lack of quality brood stock, dependence on wild collection, lack of skilled manpower and limited exposure to quality standards in international markets, problems due to non-availability of export oriented market database, stringent export regulations, non-availability of containers to export live fish, non-availability of flights connecting to importing countries and trade permissions, insufficient aquatic

quarantine facilities to ensure export of disease-free fishes are some of the major problems the sector has been facing in the past.

Easy to carry, effective solar-powered insect trapper

Pest management is one of the major expenditures that can drill a hole in a farmer's pocket. Right from sowing till the crops are harvested and sold, pests need to be managed effectively and economically without creating a dent in the fragile economical condition of a farmer. A solar powered insect trapper developed by an entrepreneur, Mr. Abdul Kadhar, from Puducherry seems to promise both. It is not priced high (₹2,625 a piece) and secondly, it is proving to be quite popular among farmers in the Tamil Nadu region.

"Reducing and controlling the pest population using light traps is an age old practice in our country. Though there are several models and designs available I wanted to develop something that could be solar-powered and not dependent on fuel or electricity. The result is the LED technology for lighting with low ultra violet light to attract flying pests in crops," says Mr. Abdul. This device operates automatically, turning on the light during dusk (6:00 to 7:00 PM) and turns it off after five hours, sometime prior to midnight using a micro controller chip. Most of the damage causing insects are active only during that time, according to Mr. Abdul who adds, "It avoids capturing beneficial insects in the field." Installing one light trap in an acre attracts at least 10 adult pests a day. The device has been tested in different crop fields like paddy, sugarcane, vegetables, fruit crops like mango, pomegranate, guava, coconut, tea, coffee and jasmine crops across Tamil Nadu.

The trapper is capable in controlling flying insects, nymphs, adults of leaf folder, stem borer moths, fruit borers, moths, hoppers, aphids, white flies, fruit weevil and different crop beetles etc. The improved solar light trap was field tested in Sevaiyur village in Sivaganga district for about three months continuously on various vegetable crops and is effective. The device seems promising to farmers since it has been capturing adults of many sucking pest, borers, and flies thereby reducing the dependence on bio pesticide usage to the tune of 50%.

"It is perhaps the most environment-friendly practice as the source of light for trapping insects is the Sun. Hence, solar light traps need to be promoted in a big way as cost effective and environment friendly technology," says Dr. Sreenath Dixit, Zonal Project Director, Indian Council of Agricultural Research (ICAR) Hebbal, Bengaluru. Solar light traps have added advantage of very little or no maintenance, ease of carrying and installation. There is a need for encouraging small entrepreneurs to

come out with cost effective and innovative models of solar light traps. This will also expand avenues in agri-business and agri services adding more jobs. A demonstration of the product is uploaded in you tube with following link - https://www.youtube.com/watch?v=znS1i4e0kH0&feature=youtu.be.

Integrated management of safflower aphid

Out of a dozen insect pests, the safflower aphid causes 30 to 80% yield loss based upon weather conditions. Though safflower aphid causes economic damage to the crop, majority of growers seldom use control measures. The adult aphid is black and shining. With the help of its syringe like proboscis, both nymphs and adults suck the cell sap due to which the plant growth is stunted.

In case of severe attack, the plants start showing drying symptoms from lower leaves progressing towards the top. In Karnataka, the aphid first appears during first week of November and reaches a peak between end of December and end of January and disappears by the end of March. In Maharashtra it starts at the end of October and reaches peak by first week of January. However, in Delhi the aphid made its appearance in February and peaked during mid-March.

Management strategies

– Take up plant protection measures soon after appearance of the aphid.

– Early sowing escapes the peak pest incidence. In Karnataka, October and November sown crop had maximum infestation while, the September sown crop experienced less damage. In Maharashtra, mid-September was better for sowing to minimise aphid damage.

– Application of balanced fertilizer is also one of the components in aphid management.

– Higher the nitrogenous fertilizer, more will be the aphid infestation and vice-versa.

– Safflower, intercropped with sorghum, coriander and wheat reduces the pest population. Safflower with coriander not only reduces the aphid population on safflower, but increases the predatory population.

– Chemical insecticides are one of the inevitable components in the integrated pest management. Insecticides like thiamethoxam at 0.2gm/l, acetamipirid followed by imidacloprid were found more effective and economical. Among several seed dressers, carbosulfan 25 DS at 20 gm/kg of seed proved effective.

An entire village shuns using chemicals for growing crops

Farmers in Sorapattu village of Mannadipattu in Puducherry seem to have a lot of information on using integrated pest management (IPM) for protecting their crops rather than using chemical pesticides for the same. IPM means judicious combination and use of all locally available pest control agents. All the farmers in the village have invariably curtailed the use of plant protection chemicals and started following practices like using neem oil, neem cake, tricho cards, light trap, pheromone trap, and 'T' shaped bird perches, thus helping them save more than ₹5,000 per hectare towards crop protection (before they adopted this the cost was about ` 6,800).

The emphasis on IPM in the region has been in practice since 1994, in order to bring down the indiscriminate usage of pesticides to contain crop pests and diseases while conserving and protecting natural insects in crop ecosystem.Perunthalaivar Kamaraj Krishi Vigyan Kendra (PKKVK), Puducherry, in co-ordination with the agriculture department has been responsible in bringing this tremendous change in the attitude of the farmers towards this method. Pesticide consumption in this region has come down significantly from 163 metric tonnes in 1990-91 to 40.92 tonnes in 2013-2014, resulting in a two-thirds reduction in its consumption. Similarly, the number of pesticides outlets has decreased from 196 in 1990-1991 to 115 in 2013-2014, nearly a 30% decrease.

The lowest number of outlets was recorded in 2006-07 & 2007-08, according to Dr. N. Vijaykumar, subject specialist, who has been conferred nearly half a dozen awards by different sectors for his work on this subject. "The concept has spread well and widely accepted by the farming community. The scripting success on its adoption, the strenuous efforts and consistent follow-up confirm that farmers have realised the ill-effects of chemicals in various crops which include rice, groundnut, cotton, coconut, banana, vegetables, flowers and sugarcane over years," says Dr. Mohan Saveri Programme Coordinator. During the past 17 years between 1997 and 2014 a total of 69 training programmes were conducted involving more than 2,000 participants. Over the years, the duration of the trainings ranged from one to five days and more number of trainings conducted among different crops. Emphasis was placed on seeing is believing, teaching by doing and learning by practicing in these training sessions.

The success achieved in popularising these technologies is mainly due to the creation of awareness and transferring skills through participatory as well as farmer to farmer mode, by

conducting farmers' field schools, imparting training, printing and distribution of leaflets and pamphlets, conducting demonstrations and rendering prescription support farm advisory services. The Kendra took on the responsibility of making available different bio agents and bio control inputs for the farmers since sourcing them on time could prove very time consuming and laborious. The green revolution laid more emphasis on producing quantity and this led to indiscriminate and over use of chemical insecticides to control insect pests and produce higher yields.The Indian Council of Agricultural Research, New Delhi had conferred the Kendra with the best KVK award for promoting IPM through Integrated extension approaches to the farming community.

New cropping patterns to boost yield in Telangan

Cropping patterns in the largely dry Telangana are likely to change, shoring up farm production from India's youngest State. The State government has initiated a move to undertake a first of its kind detailed land resource inventory through elaborate and bio-resources mapping.'This data, which will help identify crops suitable to different soil types in the State, will then form the basis for kharif and rabi cropping patterns.

The Government has assigned the task of preparing the inventory to the Professor Jayashankar of the Telangana State Agricultural University. The university has selected some mandals in Mahbubnagar, Medak and Adilabad districts for a pilot project. “We have started collecting the data and we expect to complete the inventory for these mandals. We hope this data will help design new cropping patterns” D Raji Reddy, Director of Research at the university, said. After this pilot project, the programme will be extended to the rest of the State and the complete inventory for all the districts could be ready in a couple of years.

The programme, which is estimated to cost about ₹20 crore, is being undertaken with the help of National Bureau of Soil Survey and Land Use Planning. The entire exercise will see land mapping of the State on a scale of 1:10,000. “We will be collecting over 70,000 soil samples from all over the State, which will give us the different characteristics of soil in different districts,” Reddy told. The inventory will not only help identify suitable crops for different regions, but also help in identifying the kind of intervention necessary to increase farm yield. It will also assist agricultural planners to decide what kind of irrigation facilities, such as micro or drip irrigation, were suited for different districts. “We will be examining the soil samples from 18 to 19 different parameters to measure the precise health and characteristics of the soil,” he said.

Diversified farming ensures sustainable income

The farm of a young farmer, Mr. Joji P. Daniel, in Chittarickal village, West Eleri panchayat in Kasaragod district of Kerala is like a school for enthusiastic young farmers and agricultural students since they get exposed to a range of intense and diversified farming activities. His family owns about 9.5 acres and in four acres coconut trees (250 trees), 150 coconut seedlings, 150 nutmeg grafts, 200 banana plants and 400 tuber crops like elephant foot yam, colocasia and tapioca are grown.

In another two acres about 800 arecanut trees are grown with cocoa and pepper as intercrops. About 450 rubber trees are planted in another three acres which ensures a regular income. In the remaining 50 cents of land he cultivates different types of vegetables such as bitter gourd, cabbage, cauliflower, vegetable cowpea, tomato, chilli, amaranthus and little gourd. Besides being used for household consumption, the vegetables are sold on alternate days for about four months in a year.The farmer regularly attends farmers' meetings at the Central Plantation and Crops Research Institute (CPCRI) Kasaragod to get acquainted with latest technologies for sustainable farming. He promptly follows good agricultural practices like crop rotation, incorporation of leguminous plants for improving soil fertility, organic recycling of farm waste, mulching etc. In the coconut based integrated farming system, he maintains two cows and one heifer, poultry birds and also freshwater fishes like Tilapia and Carp varieties. Fodder grass variety, Co-3 is cultivated in the interspaces of coconut gardens to reduce the cost of animal feed. Around 15 stingless bee colonies established in the farm ensures enhanced pollination of crops and nutritional security.

"The highlight of his farm is that adequate soil and water conservation measures are adopted throughout the farm with around 300 rain pits and inward sloping terraces. Coconut husk burial is a common practice adopted in trenches made between rows of coconut palms for moisture retention," says Dr. George V.Thomas, Director of the Institute. Due to proper adoption of soil and water conservation measures, the coconut yield has increased from around 90 nuts to 130 nuts per tree in a year. He has constructed three farm ponds of 15 lakh litre storage capacity and a roof top water harvesting structure of 10,000 litre capacity. During peak summer there is no shortage of water in his farm whereas the neighbouring areas are hit by drought as prolonged dry spells are generally experienced in the district.

In his farm all crop residues are recycled to highly valued vermicompost. A biogas plant is also set up for fuel and slurry for

manure purpose."His technique of grafting nutmeg plants after attaining sufficient growth was found to be highly successful. Generally more than 50% of plants raised from nutmeg seeds are male plants. "Grafting was done on such plants, which proved to be fast growing and started yielding from 2-3 years after planting. In fifth year of planting the average production is 200-300 fruits per plant with an average yield of 2 kg mace per plant," explains Dr.T.S. Manoj Kumar, Programme Coordinator. The farmer is not only known for his passion, devotion and dedication towards farming but also for his innovative ideas for getting maximum returns of more than ` 10 lakh annually from his farm.During heavy rainfall, bud rot disease is a major problem in coconut palms in the district. During 2008-2009, disease spread was very severe. Mr. Joji, on behalf of a coconut cluster club formed by his group took necessary action for timely intervention in about 30 hectares guided by CPCRI specialists.

He is the recipient of several awards like Karshaka Sree, block level best coconut farmer award, best coconut farmer award by CPCRI and Regional agricultural research station, Pili code and is also the first recipient of the Karshaka Mithra award announced by the Government of Kerala in 2014.

Grey mildew disease management in cotton

Grey mildew is an important fungal disease, which has been affecting cotton yield in India. The disease increased by 10-30% this year when compared to the prevalence in last four years. It has become a major disease and needs effective control during early days only. Low temperature and humidity prevailing during the winter season also contribute to the disease intensity.

Initial infection appears as triangular, square or irregularly circular whitish spots of 3 to 4 mm size on leaves. As the disease severity increases, the smaller spots merge together and form bigger spots. The disease usually first appears on the lower canopy of older leaves when bolls set. Profuse sporulation gives them a white mildew like appearance. Irregular or angular translucent spots (areola) are formed by the veins of leaves. Disease severity is more spread in upper leaves, flowers and bolls. Leaves become yellow, turn to brown colour. Severe intensity of grey mildew disease leads to leaf curling and eventually the defoliation of green leaves and both surfaces of the leaves get uniformly covered by white powdery growth of the fungus. High humidity, low temperature help in the spread of this disease. This pathogen survives mainly on plant debris and volunteer plants.

Control measures

- First foliar spray of 3 gm wettable sulphur per one litre of water in the initial stages of the disease to be done.

- Dusting of 8-10 kg of Sulphur powder effectively controls the disease.
- Also about one gram of Carbendazim or Benomyl per litre of water is effective.
- If the disease intensity is more, new fungicides like one litre Hexaconazole or 300 gm Nativo-75 WG per hectare is required to control the grey mildew disease.
- Deep ploughing, rotation crops like cereals, growing regional tolerant varieties, are recommended.
- Crop residues should be removed and burnt.

Suitable onion varieties for Kerala

Onion farming in Kerala is set for a quantum jump as varieties suited to Kerala soil have been identified. On-farm trials conducted by the Kerala Agricultural University (KAU) for the past three years have led to popularisation of onion among the farmers in plains and coastal areas. More than one lakh seedlings produced by KVK and distributed to farmers in 2014 November are now getting ready in the small holder rural homesteads and terraces in urban, peri-urban areas.

The trials to identify suitable varieties for the plains and coastal areas were initiated under the leadership of Dr. Jalaja S. Menon, Horticulturist, KVK Thrissur three years back. Dr.Jalaja took the bold initiative to launch onion farming in the state said that the research attempts on the crop began in 2011.After preliminary trials to explore the feasibility, nineteen varieties cultivated in different parts of the country were screened for adaptability. The first trials were in experimental plots and then it was extended to farmers' fields."We did systematic studies to compare the crop yield of selected varieties.After field trials it was found that Agrifound Dark Red and Arka Nikethan are better performing varieties in the plains. The Onion fields in Kerala are recording a productivity of around nine tonnes per ha, which is appreciable."

The two varieties have been extensively distributed and widely accepted by farmers."Further studies are in progress to streamline good management practices for onion to enhance its productivity and feasibility in varied agro ecologies in the district," says Dr. Ranjan S. Karippai, Professor & Head, KVK.Three months from November-December to March April is the best season suited for this crop in the State. Standardised practices for onion cultivation in Kerala will be published shortly," says Dr. Menon.

Drip irrigation to be a must in Maharashtra's sugarcane farms

Taking a cue from Karnataka, the Maharashtra government has decided to make it mandatory for sugarcane farmers to use drip

irrigation systems in their farms. The fund raising and modalities of such a massive plan is being worked out by various departments of the State government. Karnataka has schemes worth ₹4,500 crore for shifting the entire 4.20 lakh hectares of sugarcane farms to drip irrigation in the next three years. In Maharashtra, sugarcane is cultivated on 9.37 lakh ha and therefore, expenses are expected to be double that of the neighbouring State.

A senior State government official said that sugarcane requires huge amount of water and its growth has been at the cost of other crops. Planning has started for raising the funds to implement the project. On an average, the per acre cost of drip irrigation system is ₹40,000. The net outgo from the State exchequer as subsidy is being worked out, the official said. A report on the sugar price policy for 2015-16 by Commission for Agricultural Costs and Prices under the Union Ministry of Agriculture, has pointed that in Maharashtra, sugarcane cultivation, which is on less than 4% of the total cropped area of the State, consumes 70% of irrigation water. Future growth of cane in Maharashtra is likely to be severely hampered by scarce water supplies unless much of sugarcane is put on drip irrigation or varieties are evolved that use less water, the report said.

The report has starkly mentioned that sugarcane in Bihar consumes just 822 litres of water to produce a kg of sugar compared with over 2,100 litres in Maharashtra. Jagadeesh Sunkad, consultant, Asian Development Bank, said that Maharashtra government has taken the right decisions but the implementation needs to be fine-tuned. Today, a farmer provides water to his sugarcane crop once in seven days but with drip irrigation he will require daily watering, which is again dependent on power supply, he said. Farmers require the right amount of subsidy, coupled with regular power supply and maintenance know-how at village level to service the drips otherwise it will be dead investment and only the plastic and agri-tech companies will benefit from it, Sunkad said.

A differently abled person makes a mark as an entrepreneur

When agriculture and its related activities are proving to be a tough task for normal individuals, Manisha, a differently abled person from Kerala is proving that physical disabilty is not a deterrent when it comes to making a mark in this field as an entrepreneur and getting recognised for it. Manisha's father, Mr. Philip M. Simon is an active member of Parivar (National confederation of Parents' Organisations for persons with intellectual and development disabilities.) It is an association recognised by the Ministry of Social justice and Empowerment.

The typical vocational activities that the differently abled are taught are making soaps, candles,

ornamental flowers, bags etc. However these are monotonous in nature and bore the children, so Manisha's father thought “Why not try something different like agriculture, horticulture or gardening,” since these are being increasingly used in training programmes for such people in foreign countries.“Initially she grew tomatoes and some other vegetables in grow bags and we could observe that this had a very good impact on her attitude.“She was very happy to see the crops. But I felt that she was more attracted towards pets and animals maybe because pets reacted to her. Animal-assisted therapy for mentally challenged or differently abled was also becoming a popular concept in foreign countries and I got an idea about involving her in some sort of farm animal rearing,” says Mr. Philip.

He contacted the Coordinator, Christian agency for rural development (Card), Krishi Vigyan Kendra at Pathanamthitta for advice. “We suggested to her parents that they can try rabbit rearing in their backyard or terrace if they are interested.The animals are docile and can be easily handled without any fear of getting harmed. With their approval, we asked them to attend a training course first for three days along with the girl to make her feel more comfortable with the animals,” explains Dr. C.P. Robert, Programme Coordinator, Christian agency for rural development (Card), Krishi Vigyan Kendra.

Eight female and two males (New Zealand White, Soviet Chinchilla and Grey Giant breeds) were given to them. From then on the family took great interest in maintaining the unit scientifically. All the cages are marked with a hutch card which has the details of the rabbits including the date of birth, fertility date and particulars regarding breeding and delivery. The rabbitery is divided into three parts with one for breeding females, one for the males, and another area for the kids and bunnies. Sick rabbits are placed in isolation sheds. Feed consists of wheat bran, maize husk and a pinch of salt. An automatic watering system made of cost-effective tubes takes care of the drinking water. A thermometer is fixed in the unit to display the temperature and humidity. If the temperature is higher than 30 degree celsius, fans are switched on and a green shade net pulled over the cages to keep the animals cool. “Manisha's skill for writing are not much developed. So she takes the help of her mother to maintain the breeding and health records of the animals. She is presently selling her rabbits at a rate of ₹150 per rabbit bunny and ₹300 to ₹350 per kg,” says Dr. Sency Mathew, specialist from the Kendra who has been closely interacting with Manisha for the last some years. The farm sells rabbits rabbit cages, feeders, waterers and rabbit feed through a website named 'Green carrot agro farms. 'Till date the unit has been able to generate a net profit of around ₹30,000 annually.

Impact of rising temperature on pests

Climate change resulting in increased temperature could impact crop pest insect population in several complex ways. Increased temperature can potentially affect insect survival, development, geographic range and population size. Temperature can impact insect physiology and development directly or indirectly through the physiology or existence of hosts. Depending on the development strategy of an insect species, temperature can exert different effects. Reproductive biology of an insect may be affected both positively and negatively. Climate, temperature and precipitation in particular, have a very strong influence on the development, reproduction and survival of insect pests and as a result it is highly likely that these organisms will be affected by any change in climate.

Warmer temperatures in temperate climates will result in more types and higher populations of insects. Some insects like arctic moths take several years to complete one lifecycle. Some crop pests are 'stop' and 'go' developers in relation to temperature they develop more rapidly during periods of time with suitable temperatures. Increased temperatures will accelerate the development of these types of insects, possibly resulting in more generations per year. Insects that spend important part of their life histories in the soil may be more gradually affected by temperature changes than those that are above ground simply because the soil provides an insulating medium that will tend to buffer temperature changes more than the air.

Rise in temperature in winter may help to continue the lifecycle of some pests. Lower winter mortality of insects due to warmer winter temperature could be important in increasing insect populations. Insect species diversity for a particular area tends to decrease with higher latitude and altitude indicating that rising temperature could result in more insect species attacking more hosts in temperate climates.

Simple technologies offer effective solutions

Compared to grains like paddy or wheat, vegetables are considered quick money for a farmer. It takes 3-4 months for the vegetable crops to start yielding and generate income compared to paddy, wheat or fruit trees. Having a shorter life span, the crops are more prone to insect pests and disease attack mainly due to their tender and soft skin. Be it traditional varieties or hybrids the fact remains that the crop gets infested with pests and till date complete control over the pests has been a challenging task.

"Especially farmers' dependence on pesticides and their indiscriminate use have made the pests resistant and also contaminate the vegetables since the soft skin

absorbs the toxic within it. Introduction of high yielding varieties and hybrids, no doubt, increased production manifold but also resulted in changes in pest scenario and many new pest problems have emerged," says Dr. T.N. Devaraja, Programme coordinator, Taralabalu KVK, Davanagere, Karnataka.

A survey carried out in the country indicates that 50-70% of vegetables are contaminated with insecticide residues, according to him. It becomes the responsibility of the scientists and agricultural experts to create awareness among farmers about the right dosage of inputs to be used and if needed suggest alternatives to chemicals while taking care to see the yield does not dwindle. Siddanur village in Davanagere district is a major tomato growing region and apart from tomatoes, maize, cotton, arecanut, banana, pomegranate and other vegetables are also cultivated.

Farmers have been spraying huge amounts of pesticides for management of pest and diseases in these crops especially tomatoes. But far from being solved the problem persisted.Some of the farmers contacted the Taralabalu KVK for a viable solution."The village is situated 17 kilometres away from the district headquarters and has 200 farm families. When the farmers met us we decided to set up a pilot demonstration unit on composite management strategies for the crop in a field of a volunteer farmer," says Mr. T.N. Prasanna Kumara, plant protection specialist at the institute.

It is a multidisciplinary model and has a special role in increasing the production of food grain, because it manages insect-pests through minimum use of pesticides, which helps in achieving higher production. Some of the technologies used in this method are nylon nets, planting marigold as trap crop, installation of bird perches, using 4-5 pheromone traps and application of bio inputs like trichoderma and neem cake. The net return from these practices in the field for 4-5 months was ₹1,69,000 from a hectare as compared to ₹91,250 previously.

Farmers should take into account that this income has been generated in the field which had carried out all the specific instructions and was monitored by the expert team. It was a pilot study to prove that adopting these types of practices can increase income from such crops, according to Mr. Prasanna.

"As of now there is no fixed slab on the market price for these vegetables and their sales has always been mercurial, sometimes farmers discarding the vegetables for lack of good price," says Dr. Devaraja. Farmers in the region were invited by the Kendra to see for themselves how this method has been helpful in increasing yield and income. The result is, today about 20 acres in the village have come under this technology.

Managing sugary ergot in sorghum

Ergot, usually known as sugary disease is widespread in India. Individual grains are infected and in some years grain formation is reduced to a large extent. In South India the disease is prevalent from October to January in the crop maturing stage during cold weather. Sometimes it is observed in the summer crop also. Ergot infection is conspicuous from blossoming of the cereals to maturity of the plants.

Infection is first evident in the conidial honeydew stage of the pathogen when masses of conidia are exuded in sugary suspension on the inflorescence. The exudation accumulates in droplets or adheres to the surface of the floral structure. Insects feed on this nectar-like mass and their presence is conspicuous around the infected spikelet. Soon the infected ovaries are transformed into black, horn like structures. Humid weather or rains at the heading time are favourable for infection. Late sown crops are infected to a large extent. Commercial grain sorghum hybrids will likely have a negligible incidence of ergot during normal growing seasons, because their high self-fertility results in rapid pollination, greatly reducing the risk of infection.

The seeds can be partially cleaned by immersion in 20% solution of common salt.The seeds float on the surface and can be manually removed. Adjustment of sowing time may sometimes helpful in managing the disease. There is no effective method of controlling sugary disease, though fungicides like ziram, captan or Propiconazole 0.2% foliar spray at the stage of just before earhead emergence and repeated 2-3 times at 5-7 days interval can help.

Lowering the mortality rate of buffalo calves

Calf mortality is a common occurrence in buffalo rearing. Poor and unscientific management in calf rearing practices such as delayed and under or over feeding of colostrums, prolonged suckling duration, not practising weaning, deworming and dusting schedule regularly are some of the common issues. Buffalo farmers are feeding less or more quantity of colostrum which affects the immunity of the calf and ultimately increases the percentage of calf mortality, due to naval illness and white scours. To overcome this, farmers should feed the colostrum within one to one and half hour of birth and before it is allowed to suckle the mother.

It should be given in a small quantity along with curd or butter-milk in a spoon of edible-oil to help in removal of meconium and creating acidic medium which will not allow E. coli infection in the calf's stomach.The ratio is 1 to 1.5 kg for smaller calves and 2.0-2.5 kg for larger calves up to the age of three months to ensure proper growth and vigour. Buffalo farmers should feed

properly balanced diet comprising necessary constituents of energy, proteins and micronutrients so that the calves gain body weight at the rate of 500 gm per day. Weaning the calves after three months of age with most suitable hygienic maintenance conditions is advised and the umbilicus must be cut with a sterilized blade or scissors and antiseptic applied on the cut portion. The calf should be kept on a dry, clean and warm floor free from unwanted material and the housing should provide necessary protection against inclement weather and predators.

For the control of endo parasites the animal should be dewormed with a dewormer for the first time after birth at the age of seven days and later repeated after three weeks interval at least up to the six months by using prescribed dose.Similarly ectoparasites should be controlled by regular spray of insecticides in the animal shed and surroundings.