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CLIMATE CHANGE AND ITS IMPACT ON AGRICULTURE

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EDITORIAL

Welcome to the April Edition of the magazine. As you can see, your magazine has undergone a complete make over and is blazing with colours. I am sure, the new look and feel will make the publication more popular.

Climate Change is the cover story of this edition, which talks about its impact on Indian agriculture. Incidentally, this month, the SAARC Summit being held in Thimpu (Bhutan) will also be debating the ramifications of Climate Change in South Asia's eco systems including India.

According to medium-term climate change predictions available, India will face a likely reduction in crop yields between 4.5 and 9 per cent by 2039. The long run predictions are still scarier--with crop yields anticipated to fall by 25 per or more by 2099. Undoubtedly, this will have a detrimental effect on farmers' income and purchasing power, with obvious down-the-line repercussions. Perhaps the silver-lining is that the National Action Plan on Climate Change is working on technologies to help rain-fed agriculture adapt to the changing climate patterns.

For policy makers in the farm sector, there is food for thought, coming from the mid-term appraisal of the 11th Five-Year Plan undertaken by the Planning Commission. The latter has taken a hard view of the growth targets envisaged. The basic strategy of 11th Plan was to augment agricultural productivity by improving farmers' access to technology and hastening diversification towards high value crops and livestock. Rationalisation of farm subsidies and efficiency-enhancement of agri-related public investments were also top on the agenda. But the review suggests, many of these targets are far from accomplished.

The appraisal comes up with a wide range of policy options including revamping the agricultural pricing system to make it more market-oriented. Delinking of MSPs from procurement prices and abolition of levies, stock limits and curbs on export of farm goods are part of that. The National Agriculture Policy has the vision of unhindered movement of agro-products across the country to achieve an all-India single open market.

The appraisal points to the need for unshackling strangulating controls that curb private investment in key areas, including logistics and storage. The review makes a timely recommendation to hasten diversification into high-value crops without losing focus on checking food-price inflation.

Clearly the gap between performance and promise needs to be bridged and the Planning Commission has sent out a signal that it is time to act.

A.K. Garg
Editor-in-Chief

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Organic Farming in Cocoa: Recipe for Revival

By **Venkatesh N. Hubballi ***

Cocoa was introduced in India in the early part of 20th century and has now become one of the important commercial plantation crops of the country. Cultivated mainly as an intercrop either with coconut or arecanut, Cocoa, as proved by research and commercial adoption, is the best companion with coconut.

Cocoa not only provides additional income per unit area but also enhances productivity of the soil in addition to raising productivity of coconut and arecanut. In this era of sustainable agriculture, cocoa suits the farmer with better economic returns.

Given the constraints in the coconut and arecanut industry in India, cocoa as an intercrop can overcome them and enhance the economic condition of the farming community, provided Government agencies take care of the guaranteed procurement and remunerative price for the cocoa beans.

The promotion of cocoa was significantly achieved up to the year of 1980, with developmental activities mainly concentrated in Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. Thanks to better marketing and pricing mechanism that existed during the above period, it led to total area coverage of cocoa cultivation of 32,000 hectares.

Processing Industries

Unlike other crops, cocoa completely depends on processing industries. During the period of 1981-83, there was no guaranteed procurement by these processing industries and a great deal of price fluctuation of cocoa beans resulted in a dwindling of cocoa cultivation in these major southern states of the country.

Thus farming communities started felling their cocoa plantations and the problem was compounded by continuous dwindling in Kerala and Karnataka to 15,000 hectares in 1995.

Revival

That decline has been arrested; there has been new momentum since the year 2001, following the Government of India's intervention and a positive approach from industries that revived the promotion of cocoa in India. Three factors are now driving the market. These include:

- Nature of cultivation;
- Quality of dry beans; and also,

• Competition among cocoa processors.

Considering the scope of area expansion to the tune of 3.00 lakh hectares in the interspaces of Coconut grooves, especially in the states of Karnataka, Tamil Nadu, Andhra Pradesh and Pondicherry, under irrigated conditions and in the best interest of the farming community, cocoa has a vast scope in improving economic conditions of cocoa farmers and in providing sustainable employment.

The Ministry of Agriculture, Government of India, has also given special thrust status for Cocoa development in India under National Horticulture Mission programme and has initiated many innovative programmes.

The nature of cultivation by the farming communities in the states of Kerala, Karnataka, Tamilnadu and Andhra Pradesh are mainly organic. Buyer competition is increasing, which is resulting in better prices for the farming community. The share of Indian organic cocoa to the world market however is negligible due to non-existence of chain management systems.

There is also a need to identify, to certify and to provide a better marketing network system for promoting organic farming of cocoa in India since organic produce fetches better price than conventional produce.

Impact of Horticulture Mission

The prevailing innovative programmes and financial assistance available under National Horticulture Mission need to be utilized properly. At present the cocoa sector is becoming receptive to organic farming and finding a prime place worldwide especially in the European market, where people are looking for ways to protect human and environmental health against the destructive effects of excessive use of chemicals and synthetic materials.

In the last five years, India lost considerable foreign exchange by way of importing cocoa beans and products from other countries; for instancd, Rs.184.58 crores in the year 2008-09, whereas export earning was only the tune of Rs.60.97 crores for the same year.

The domestic market in India is growing year-by-year. The consumption pattern has been drastically changed as the use of chocolate, especially in the middleclass and above, has become a tradition and culture. The Directorate of Cashewnut and Cocoa Development is taking essential measures to transfer the technologies available with research by conducting campaigns, workshops, seminars and also, establishing frontline technology demonstrations in the farmers' fields to create clear awareness and to convince farmers of the benefits of these technologies.

These transfer of technology programmes are mainly concentrated in the states of Kerala, Karnataka, Tamilnadu and Andhra Pradesh. By accelerating the system of organic cocoa farming and establishing an institutionalized network system it is possible to reverse the decline and accelerate cocoa farming in India for a better share of the world cocoa market.

The Ministry of Agriculture, Government of India, has also given special thrust status for Cocoa development in India under National Horticulture Mission programme and has initiated many innovative programmes

** The writer is Director at the Directorate of Cashewnut and Cocoa Development, Cochin under the Ministry of Agriculture*

Utilisation of Credit to Self Help Groups in Midnapur-An Empirical Study

By **Debabrata Lahiri**

Since 01 April 1999, the Government of India dovetailed Swarnajayanti Gram Swarojgar Yo-jana (SGSY) and all the programmes under Integrated Rural Development Programme (IRDP) into one programme. Now, financial assistance under this programme has been made group-wise rather than individual-centric. It has also been mentioned in the guidelines that half of the Self Help Groups (SHGs) would be of women only.

The programme also envisages identification of four or five key activities of non-farm in nature. After formation of the group, each member has to deposit Rs 30 per month for the initial six months for gradation to Grade-I. After attaining Grade-I status, the group would be entitled to receive Rs 10,000 and 15,000 as a revolving fund and a loan respectively. The revolving fund is provided by the Government through the District Rural Development Agency and bears no interest, while the loan is provided by the commercial banks, which bear interest.

Utilisation of funds by the SHGs has been different in different studies. For instance, the Comp-troller and Auditor General of India (CAG) (2003) concluded that in as many as nine states (Haryana, Himachal Pradesh, Kerala, Maharashtra, Pondicherry, Rajasthan and Sikkim, 83 per-cent of the Swarojgaries received assistance as individuals and the remaining 17 percent as members of the SHGs. Das, R et al (2001) in a study concluded that male member SHGs in-vested a major portion of their funds in crop production, while the all female member groups had invested their funds in weaving and textiles.

The SHGs consisting of both male and female members invested in crop enterprises, weaving, textiles and animal husbandry. Among the various types of combinations of male and female members in SHGs, the last one derived the maximum of profit. Rahana, R.K. et.al (2001), studied some SHGs that had been formed with the farmers of a sugar factory. The study was on the basis of secondary data for the period of 1968-1969 to 1999-2000.

Activities like cane development, transport, livestock and cattle camps, use of bio-fertilisers, crop yield competitions, and rural electrification had been pursued. The main aim of these activities was to increase the productivity of

sugar on a unit area basis and increase the recovery of sugar. Kundu et al (2001) concluded that the Grameen Banks played a vital role in development of the groups. The major part of the loan was utilised for animal husbandry and consumption expenditure.

The programme guideline also stated that most of the activities would be of the non-farm type. Instead it has been observed from above that activities pursued were farm related. The study was carried out to discover the extent of utilisation of funds in four Community Development Blocks namely Kharagpur-I, Chandrakona-I, Gardeta-I and Jhargram of Midnapur West District with the following objectives:

- To study the utilisation of own funds and loans provided to the groups after first gradation;
- Reasons for individual utilisation of revolving fund and loan; and,
- Individual activities pursued.

In Midnapur (West) district of West Bengal though a number of groups have been formed, there has only been four federation Community Development Blocks. The federated Community Development Blocks are those where at least 25 Grade-I SHGs had been functioning in every Gram Panchayat. Wherever, 25 SHGs had been functioning was considered as a 'Cluster' and the clusters together are considered as a Federation Community Development Block.

For the study in the four Community Development Blocks out of 791 SHGs, 508 SHGs (64.22%) had been studied. In SGSY programme it has been very difficult to identify utilisation of revolving fund and loan component separately because they were not provided by the bank separately. For most of the groups no separate account has been maintained, neither by the beneficiaries nor the commercial banks.

Table 1: Utilisation of Revolving Funds and Loans

Sl. No.	Name of the C.D. Blocks	Utilised		Total
		Individually	In Group	
1.	Kharagpur	153 (97.17)	13 (7.83)	166 (100.00)
2.	Chandrakona-I	178 (89.90)	22 (11.00)	200 (100.00)
3.	Garbeta-I	55 (90.16)	6 (9.84)	61 (100.00)
4.	Jhargram	75 (92.59)	6 (7.41)	81 (100.00)
	Total	461 (90.75)	47 (9.25)	508 (100.00)

The SHGs consisting of both male and female members invested in crop enterprises, weaving, textiles and animal husbandry. Among the various types of combinations of male and female members in SHGs, the last one derived the maximum of profit

Utilisation of Revolving Funds

Of the 508 SHGs studied 90.75 percent utilised the revolving fund and the loan individually. Only 9.25 percent of funds had been utilised in groups. Among the Community Development Blocks, the proportion in Jhargram was maximum to the extent of 92.59 percent in utilising the fund individually, followed by Kharagpur-I (92.17%), Garbeta-I (90.16%) and Chandrakona-I (89.00%). On the other hand, utilization in groups was maximum at Chandrakona-I (11%) fol-lowed by Garbeta-I (9.84%), Kharagpur-I (7.83%) and Jhargram (7.41%). Details are given in Table 1.

Though revolving fund and loan has been provided for group activity, most of it has been utilized on individual basis. By such individual utilization it may not be possible to start non-farm micro enterprises. In future it may lead to only misutilisation of revolving fund and loan altogether.

Reasons for Individual Utilization

Even though most of the revolving fund and loan were utilized on an individual basis, causes for such utilization are ascertained in this section. Taking into account all the Community Development Blocks together, here also there are differences in opinion among Swarojgaries to the extent of 30.39 percent played a vital role, followed by desire to start separate business (29.13%), lack of mutual trust (22.69%) and Swarojgaries not living in neighbourhood (22.69%) were the main reasons. Other reasons were shortage of workspace, shortage of capital and negligence of Gram Panchayat members. In Kharagpur-I and Garbeta-I Community Development Blocks de-sire among members to start separate businesses was the main reason by 29.65 and 53.09 percent respectively. While in Chandrakona-I and Jhargram Community Development Block difference in opinion among members was also by 30.04 and 35.58 percent respectively. Shortage of capital was expressed by 15.93 percent of the Swarojgries in Kharagpur-I Community Development Block. While in Garbeta-I

Table 2: Reasons for individual utilisation of revolving funds and loan

(No. of Swarojgaries)

Sl. No.	Name of the C.D. Blocks	Reasons							Total
		Differences in opinion among members	Does not live in neighbour-hood	Unfaithful to each other	Desire to start separate business by each member	Shortage of work space	Shortage of capital	Negligence by Pancha-yats	
1.	Kharagpur-I	64 (28.32)	18 (7.96)	18 (7.96)	67 (29.65)	20 (8.85)	36 (15.93)	3 (1.33)	226 (100.00)
2.	Chandrakona-I	91 (30.04)	26 (8.85)	108 (35.64)	67 (22.11)	7 (2.31)	2 (0.66)	2 (0.66)	303 (100.00)
3.	Garbeta-I	25 (30.87)	6 (7.40)	7 (8.64)	43 (53.09)	-	-	-	81 (100.00)
4.	Jhargram	37 (35.58)	1 (0.96)	29 (27.88)	31 (29.82)	3 (2.88)	3 (2.88)	-	104 (100.00)
	Total	217 (30.39)	51 (7.15)	162 (22.69)	208 (29.13)	30 (4.20)	41 (5.74)	5 (0.70)	714 (100.00)

(Figures in parentheses indicate percentage to total)
Note: As some members have cited more than one reason, the total count has increased.

Community Development Block none of the Swarojgaries expressed opinions on shortage of workspace, shortage of capital or negligence of Gram Panchayats. De-tails are given in Table 2.

Thus, in order of opinions expressed, differences in opinion and desire to start individual businesses were the main reasons for individual utilisation. Wherever there was an attempt to start group activity, shortage of workspace, members not from same village and working capital prevented the starting of group activities.

Individual Activities

Since most of the Swarojgaries divided the total amount of revolving fund and loan amongst themselves, it was pertinent to know the nature of economic activities pursued. As many as 21 activities were identified. Taking all the four Community Development Blocks together, the maximum investment was in dairying, goatery, poultry business and meeting immediate family expenses with percentages being 20.72, 20.94, 9.25, 9.09 and 11.98 respectively. Investment in Community Development Blocks on individual basis was more or less similar.

The Swarojgaries also made investments in non-productive activities such as meeting immediate family expenses, daughters' marriage, money lending, repayment of previous loan, depositing in banks etc.

On the other hand an insignificant proportion of funds were invested in enterprises like paddy dehusking, manufacturing of copper ornaments (in Chandrakona-I Community Development Block only), incense stick, bamboo works, paper packet and sal leaf plate making. Details are given in Table 3.

Thus the very spirit of SGSY identifying 4-5 key activities was ignored altogether. As a result was that identification of key activities were not based on the need of Swarojgaries. The Swarojgaries made investments in as may as 21 activities of which most were for non-productive purposes.

Conclusion

Individual utilization of revolving fund and loan among the Swarojgaries may have resulted in increased misutilisation of funds and desire to start individual businesses and starting of non-farm enterprises. Group activities were rendered difficult by shortage of workspace, shortage of working capital and members not belonging to the same village. Further the utilization suffered due to proliferation of many as 21 activities, while it would have been desirable to identify 4-5 key non-farm activities on a Gram Panchayats basis.

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Table 3: Activities under Individual Utilisation

(No. of Swarojgaris)

Sl. No.	Name of the C.D. Blocks	Activities											Sub-Total
		Dairying	Goatery	Poultry	Piggery	Pisci-culture	Rice making	Puffed rice making	Tailoring	Copper ornaments	Incense Stick making	Bamboo Works	
1.	Kharagpur-I	123 (21.82)	137 (24.29)	65 (11.53)	13 (2.30)	2 (0.35)	5 (0.89)	20 (3.55)	6 (1.06)	-	3	5	379
2.	Chandrakona-I	127 (20.67)	117 (19.06)	69 (11.24)	6 (0.98)	5 (0.81)	27 (4.40)	52 (8.47)	2 (0.33)	19 (3.09)	20 (3.26)	8 (1.30)	452
3.	Garbeta-I	41 (17.90)	42 (18.34)	3 (1.31)	-	3 (1.31)	3 (1.31)	3 (1.31)	1 (0.44)	-	1 (0.44)	-	97
4.	Jhargram	67 (20.88)	66 (20.56)	23 (7.17)	3 (0.93)	1 (0.31)	19 (5.92)	13 (4.05)	7 (2.18)	-	-	3 (0.93)	202
	Total	358 (20.72)	362 (20.94)	160 (9.25)	22 (1.27)	11 (0.64)	54 (3.13)	88 (5.09)	16 (0.93)	19 (1.10)	24 (1.39)	16 (0.93)	1130

(Figures in parentheses indicates percentage to total)
Note: As members are performed more than two (actually 2 to 8) activities so the total count has increased

Table 3: Activities under individual utilisation (Contd.)

(No. of Swarojgaris)

Sl. No.	Name of the C.D. Blocks	Activities											Total
		Sub-Total	Business	Agri-culture	Immediate family expenses	Purchase and leasing in land	Daughter's marriage	Money lending	Repay need of loan	Deposit in bank	Paper Packet making	Sal leaf plate making	
1.	Kharagpur-I	379	59 (10.46)	23 (4.08)	69 (12.23)	3 (0.53)	6 (1.06)	1 (0.18)	6 (1.06)	12 (2.13)	3 (0.53)	3 (0.53)	564 (100.00)
2.	Chandrakona-I	452	44 (7.17)	14 (2.28)	63 (10.26)	9 (1.47)	7 (1.14)	7 (1.14)	14 (2.28)	3 (0.49)	1 (0.16)	-	614 (100.00)
3.	Garbeta-I	97	23 (10.04)	41 (17.90)	28 (12.23)	11 (4.80)	5 (2.18)	6 (2.62)	13 (5.68)	1 (0.44)	-	4 (1.75)	229 (100.00)
4.	Jhargram	202	31 (9.66)	10 (3.12)	47 (14.64)	1 (0.31)	1 (0.31)	1 (0.31)	3 (0.93)	19 (5.92)	-	6 (1.87)	321 (100.00)
	Total	1130	157 (9.09)	88 (5.09)	207 (11.98)	24 (1.39)	19 (1.10)	15 (0.87)	36 (2.08)	35 (2.03)	4 (0.23)	13 (0.75)	1728 (100.00)

(Figures in parentheses indicates percentage to total)
Note: As members are performed more than two (actually 2 to 8) activities so the total count has increased.

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A Case for Boosting India's Agri Exports

By **Pallavi**

Agriculture is the mainstay of the economy of India. About 65-70 percent of the population is dependent on agriculture for their livelihood. Agriculture and allied sectors contribute about 22 percent of India's GDP. India enjoys a comparative advantage in agriculture. Therefore, there is immense scope for increasing farm income and employment by enhancing agro-based exports by consolidating rather than jeopardizing the food security already achieved.

Surplus Agriculture

Exports of agricultural products add to the competitiveness of production, productivity and quality in relation to other exporting countries. On account of the green revolution, Indian agriculture has been transformed from subsistence agriculture to surplus agriculture. Further, due to the emergence of liberalization as well as globalization, the scope of commercialization of Indian agriculture having export oriented bias has increased manifold. Agriculture plays an important role in India's export, and has great significance in economic development. The Agriculture sector provides employment to a large portion of the population, capital for its own development and surplus for national economic development. Agricultural export has a direct impact on economic growth, as it raises the agricultural wages by supplying labour, which will lead to rise in productivity, resulting in wage increase. It is also useful in employment generation.

Agriculture expansion can bring unutilized and underutilized land and labour resources into use, which can be poverty reducing. Manufactures with agricultural content also contribute a great deal to their demand. Slow growth in agriculture restrains the demand for manufactured goods. It will also affect industrial growth. A prosperous sector would require a large volume of inputs from the industrial sector such as fertilizers, insecticides, water pumps, agricultural tools and equipments of all kinds. As such, an increase in agriculture sector requires industrial processing and provides the base for new resource based industries.

Thus, exports have the potential to transform agriculture and bring about considerable improvement in the economic conditions of the peasants. Export of agricultural and allied products will not only generate foreign exchange but will also give an opportunity for bringing about agriculture revolution in the country. Along with the monetary gain the export will fetch, it will also have far reaching effect on modernization of agriculture production and up gradation of technology in all stages of agricultural pursuits like tilling, sowing, harvesting, threshing, storage, transportation etc. To grow faster, the agriculture sector should be made export-oriented. Table-1 contains data on the value of agriculture and allied products export from India.

An analysis of Table-1 reveals that during the period under review, agriculture and allied products export in total exports of India, varied from 19.88 percent in 1995-96 to 9.25 percent in 2008-09. However, after the initial increase in 1996-97, the percentage share of agriculture and allied products decreased for four consecutive years. In 2001-02, it remained stable. From the year 2002-03

to 2005-06, it again declined but again showed a marginal increase for two years. However, the share of agriculture and allied products again decreased in the subsequent year of 2008-09 and reached its lowest level.

In 1995-96, the percent share of agriculture and allied exports stood at 19.88 percent. For more than four decades, industry remained highly protected and agriculture served as a source of cheap raw materials for the domestic industry, a very huge segment of which was inefficient and globally non-competitive. This led to a dampening effect on the agriculture exports and investment in agriculture. The new economic policy since 1991-92 has tried to correct this imbalance and agriculture has started to achieve some advantages through competitive exports. A number of policy changes had been introduced for making agriculture exports more feasible. Indian agriculture thus begun to appear internationally competitive and two important policy changes made this possible. Firstly, the deliberate reduction in the excessive protection earlier accorded to the manufacturing sector. This had led to the improvement in the relative profitability of agriculture. Secondly, letting farming community receive market oriented prices so as to bring about a more equitable terms of trade in respect of agriculture sector.

There was also the encouraging indication of decreased level of subsidies for agriculture by advanced industrial countries. The share of agriculture and allied exports increased slightly in 1996-97, to reach its peak of 20.40 percent. It recorded a level of Rs. 24239 crores. Agriculture exports had been given special attention by the Government of India, since it was in this area that there appeared to be the greatest potential for raising farm incomes, tackling unemployment and earning foreign exchange. The impetus for agricultural growth in agriculture exports was visualized through enhanced infrastructure support and by building up an encouraging policy environment.

Pro Export Policies

Table - 1 Agriculture and Allied Products Export and Total Exports of India (Value: Rs. Crore)

Year	Agriculture and Allied Products Export	Total Exports	Percentage share of Agriculture and Allied Products Export in Total Exports
1995-96	21138	106353	19.88
1996-97	24239	118817	20.40
1997-98	25419	130100	19.54
1998-99	26104	139752	18.68
1999-2000	25016	159561	15.68
2000-01	28535	203571	14.02
2001-02	29312	209018	14.02
2002-03	33691	255137	13.21
2003-04	36247	293367	12.36
2004-05	38079	361879	10.52
2005-06	46703	456418	10.23
2006-07	58959	571779	10.31
2007-08	76006	655864	11.59
2008-09	77783	840755	9.25

Source: Economic Survey, Government of India, Ministry of Finance, various years.

A number of policy changes had been introduced for making agriculture exports more viable. Market determined exchange rate policy had also favoured agricultural produce exports. A number of measures like lowering of import duties on capital goods for green house equipment and plant and machinery necessary for food processing industries and also easier availability of credit for exports had also played an important role. Some of the restrictions on agriculture exports had also been removed. The items on the restrictive list had been pruned down and only a few items remained, which were subject to either licensing or quantitative ceiling. Thus, the policy changes introduced had also played a role in creating a favourable environment, for enhanced exports of agricultural commodities.

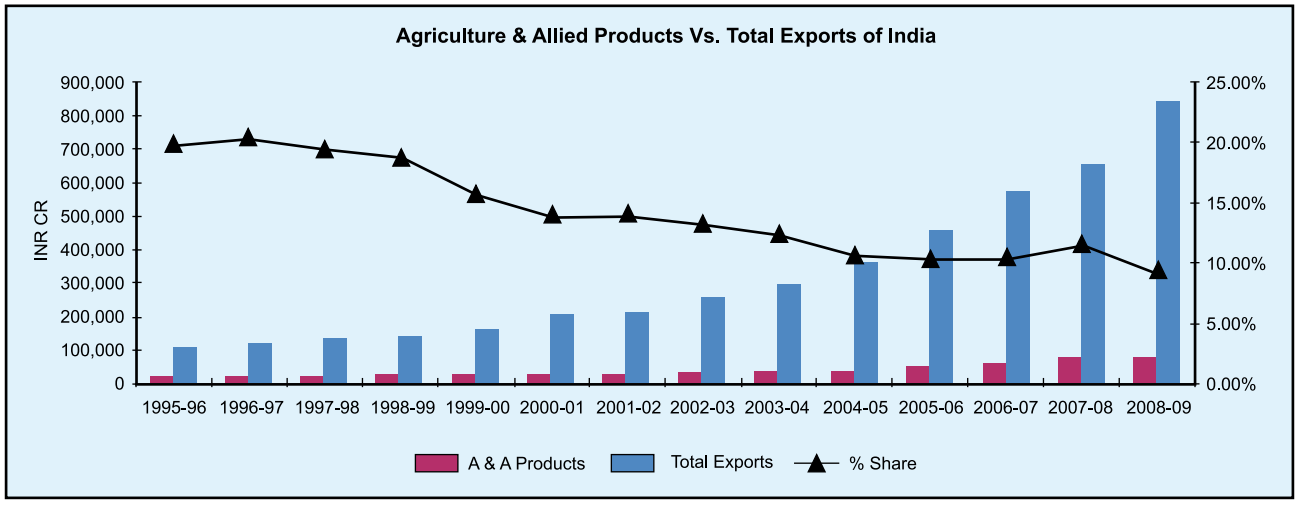
However, the percent share of agriculture and allied exports decreased marginally for four consecutive years, i.e., from 1997-98 to 2000-01. During this period, there was a great deal of competition in the agriculture sector, due to the demand for high quality products and also the stringent legislation concerning health and safety standards of the importing country. In 2000-01, India's agriculture export registered 14.02 percent. Agri-exports from India faced a number of constraints that arose from conflicting domestic policies relating to production, storage, distribution, food security, pricing concerns etc. Unwillingness to decide on basic minimum quantities for export made the country's supply sources unreliable.

Higher domestic prices in comparison to international prices of commodities of bulk exports such as sugar, wheat, rice etc, also made India's export commercially less competitive. However, in the year 2001-02, the percentage share of agriculture and allied exports remained constant. After further opening of the trade regime under WTO from April 2001, it became all the more essential that farmers looked not only to the domestic market but also grab opportunities in the international market for improved value added realization and diversification.

Reason for Stagnation

But the stagnating agri-exports from India can be attributed partly to distorted

Share of Agriculture and Allied Exports in Total Exports of India



domestic prices for products like rice, wheat, oil meals, tea, coffee, etc. Weakness in export infrastructure which was specific to agri-exports, like storage, port handling facilities, lack of large scale processing technology and export quota restrictions made supply sources of India unreliable and hindered the exploitation of full potential of Indian agricultural exports. From 2002-03, the percentage share of agri-export has declined continuously for four years. In spite of the advantage of diverse ago-climatic conditions, enabling production of large variety of products in various seasons, India's export potential had not been adequately addressed. The main reasons attributed were low level of agri-processing, grading, quality control and poor or lack of quality, branding and packaging.

Infrastructure specific to agriculture exports like storage and fast track, inland and mechanical port handling facilities were also major limitations. However, the share rose marginally in 2006-07 and 2007-08, but declined again in the subsequent year. The share was at its lowest level of 9.25 percent in 2008-09.

Items of Exports

Important items of agriculture exports are coffee, tea and mate, oil cakes, tobacco, cashew kernels, spices, sugar and molasses, raw cotton, rice, fish and fish preparations, meat and meat preparations, fruits, vegetables & pulses and miscellaneous processed foods, including processed fruits and juices.

Conclusion

Agriculture is considered an important source for exports. Taking into account the period from 1995-96 to 2008-09, it is observed that after the initial increase in 1996-97, the percentage share of agriculture and allied products exports in total exports decreased for four consecutive years. However, in 2001-02, it remained stable. It again declined for four consecutive years, i.e from 2002-03 to 2005-06 but witnessed a marginal increase for two years. However, the share again dropped to 9.25 percent in 2008-09. After the economic reforms and market liberalization backed by appropriate fiscal policy, monetary and export oriented trade policies, a thrust was given to agricultural exports. Promoting faster agriculture growth is essential because the surplus of agriculture produce plays an important role, for this is the quantity which is actually made available to the non-producing population of the world.

Thus, the pace of agricultural and allied products export depends a great deal on the rate at which agricultural production expands. Therefore, the urgent need of the hour is to accelerate growth in agriculture sector. There is in fact vast potential in agriculture sector. Development of rural infrastructure, rural extension services and agro-based and food processing industries are crucial for harnessing this potential. Indian agriculture suffers mainly from low yields per hectare, volatility in production and great disparities of productivity over regions or crops.

Increased R&D expenditure backed by modern technologies and compatible institutions must be given focus. Technological developments like evolution of high yielding varieties of seeds, increased utilization of modern inputs and cultivation practices in the agriculture sector will lead to a considerable increase in the agriculture production. The marketed surplus of the agriculture commodities will thereby also increase substantially. Only if a country increases the quantum of their agricultural produce in abundance, a genuine export can be materialized.

Export–oriented production would certainly be helpful in strengthening the agricultural economy of the country. Markets of major countries should be periodically surveyed and monitored to link production with export marketing to provide benefits to the producers and traders and accelerate valuable foreign exchange earnings. Thus, there is the need to develop adequate marketing infrastructure and export facilities to boost agriculture and allied exports of the country. Agro-exports can be conducted efficiently, if the commodities of exports are produced in a systematic manner, agricultural produce is of the desired quality and the export potential is supported by well-coordinated promotion efforts.

(The writer is a Ph.D Research Scholar at the Faculty of Commerce of Banaras Hindu University, Varanasi, UP

Palampur Cooperative Tea Factory – A Case Study

A tale of Superior Growth in Output and Quality

By **Parmod Verma*, Sonika Gupta**, D. K. Sharma* and K. L. Sharma*****

Cooperative organisations can deftly protect and promote the interests of the weaker sections of society when they are truly democratic. A case study of Palampur Tea Cooperative tea factory in the Kangra Valley of Himachal Pradesh unveiled its financial position and contribution towards the Tea industry of Himachal Pradesh.

Development of Tea Sector

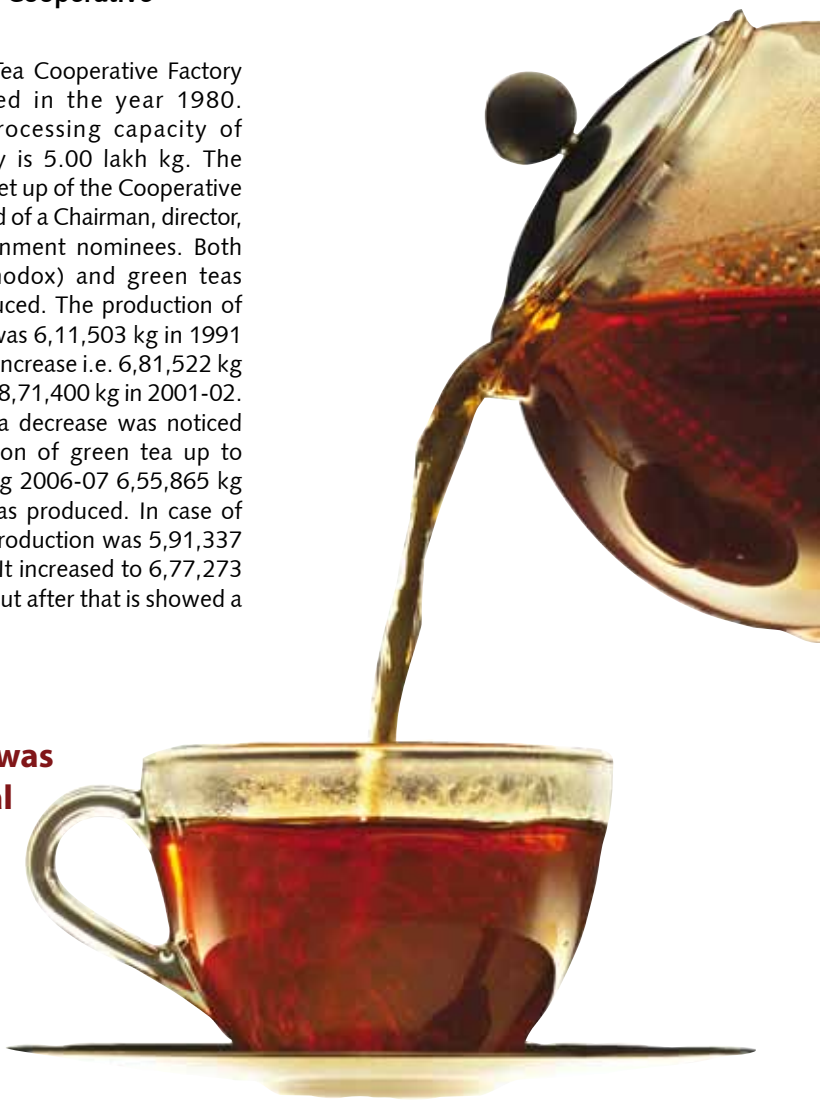
In Himachal Pradesh, out of the total area of 2,312 hectares under tea cultivation, 1,100 hectares (ha) are in a state of neglect. Apart from this, 7,700 hectares of additional area has been identified as non-traditional area suitable for cultivation of tea.

The tea industry has seen miraculous development in the last decade thanks to sustained efforts of all the dedicated developmental agencies viz. Tea Board, H.P. Agricultural University, Industries Department of the State Gov't., Cooperative Tea Factories, and CSIR. Overall annual production of tea improved in the state from 677 tonnes in 1985-86 to 1300 tonnes in 1993-94. Quality of tea also showed improvement.

The average price, which was only Rs 13.70 in 1985-86, rose to Rs 95.00 a kg in 2008. In 1995, black tea of the Palampur Cooperative Tea Factory fetched a highest price of Rs 300/kg and the Sidhbari Cooperative Tea Factory Rs 525/kg.

Palampur Tea Cooperative Factory

The Palampur Tea Cooperative Factory was established in the year 1980. The annual processing capacity of this tea factory is 5.00 lakh kg. The organizational set up of the Cooperative Society consisted of a Chairman, director, and two government nominees. Both black tea (orthodox) and green teas are being produced. The production of green tea that was 6,11,503 kg in 1991 showed steady increase i.e. 6,81,522 kg in 1995-96 and 8,71,400 kg in 2001-02. But thereafter, a decrease was noticed in the production of green tea up to 2003-04. During 2006-07 6,55,865 kg of green tea was produced. In case of black tea, the production was 5,91,337 kg in 1991-92. It increased to 6,77,273 kg in 1995-96 but after that is showed a



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decrease over the year to a present level of 2,06,255 kg i.e. a decrease of nearly 70 percent.

Award

Regular supply of tea to the auction centres, particularly at Calcutta, has ensured its wider exposure. Standard of tea manufacture has improved considerably. Recently, the Palampur Cooperative Tea Factory has been awarded the Chairman's Challenge Trophy for providing quality tea and realizing highest All-India price amongst the cooperative factories and other awards of Tea Board of India for 1991. The Department of Tea Husbandry and CSIR has standardized agro-technology for higher tea yields and processing technology for quality tea manufacture, processing of value add product of tea and production of organic tea.

Incentives

The tea produced in the factory is sent to Amritsar (green tea) and Calcutta (Black tea) markets for further sale. The prices received are higher for black Kangra tea than green Kangra tea. For improving tea production in the state, the government gives incentives to growers in terms of subsidies on chemicals, fertilizers, pesticides and planting materials through Technical Officer Tea (earlier under the department of industry but at present under Agriculture Department of HP).

Challenges

The major problems faced in tea production are fragmentation of land, old plantations, poor management of tea gardens, diversion of land to other areas, shortage of labour in peak seasons, trade barriers and sluggish export markets, and lack of incentive prices to tea growers. Goli, Mashdana, Superfine, Half round, Lachha, Fine, Mungra, Zirri and Gulli are the superior grades of green tea whereas Sommi, Young, Staky, Hyson, Phatkan, Fanning, Chura, Gunpowder and Dust were considered as the inferior grades of green tea.

During the year 2002-03 Goli grade received the highest average wholesale price of Rs.73.01/kg followed by superfine (Rs.65.18/kg), Mashdana (Rs.64.98/kg) and Half round (Rs.55.24/kg). Dust grade of green tea received the lowest price of Rs.9.05/kg. In case of black tea BOP (Broken Orange Pekoe), FBOP (Flowery Broken Orange Pekoe), FP (Flowery Pekoe), P (Pekoe), BOPF (Broken Orange Pekoe Fanning), FBOPF (Flowery Broken Orange Pekoe Fanning), BPF (Broken Pekoe Fanning, D (Dust) and Broken mixed are the main grades. The price was highest for BOF (Rs. 41.5/kg) followed by PD (Rs. 38.00/kg) and OP and EPS (Rs. 35.00 /kg).

In the case of Kangra tea the highest prices for green and black tea in Amritsar and Kolkata markets were Rs.48.34/kg and Rs.66.27/kg respectively in the year 1999-2000. In the case of arrivals of these teas in the market it was found that the arrival of green tea increased up to 1997-98 but after that its quality started decreasing over the years but the quality was higher than black tea. In the case of black tea the arrivals in the market increased up to 1999-2000 and started decreasing after that but higher than green tea.

Total production of tea made in Himachal Pradesh was 8,49,280.00 kg in 2008 and 8,53,200 kg in 2009. The respective average price of black and green tea was Rs.140.00/kg and Rs.74.38.00/kg during for 2009.

The total assets with Palampur Tea Cooperative Factory which was Rs.4.80 crores in 2004 increased to Rs.5.10 crores in 2009. The fixed assets which were of Rs.89.52 lakhs came down to 78.86 lakhs showing that there was no up gradation in the age old tea factory. The balance sheet of the factory also showed the loss of Rs.68.47 lakh in 2004.

Revival

However, there was a revival and in 2007 the factory earned a profit of Rs.6.45 lakhs and Rs.12.22 lakh in 2009 which is a good sign of progress. The manufacturing and trading account of the factory showed that in the year 2004 the purchase of green tea leaves was worth Rs.1.67 crores but it decreased to Rs.0.90 crores in 2009 whereas the expenditure on wages and electricity and water charges showed an increase

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from 2004 to 2009 i.e. 31.15 percent hike in electricity and water charges whereas, hike in wages was 20.24 percent. The table also showed that the manufacturing cost of tea decreased to Rs.1.70 crores in 2009 from Rs.2.42 crores in 2004 the decrease was 30.48 percent. The gross profit which was Rs.6.73 lakh in 2004 increased to Rs.49.70 lakh in 2009 i.e. a more than six times increase. The sales of tea also showed an decrease from Rs.2.37 crores in 2004 to Rs.2.30 crores in 2009 i.e. decrease of 3.28 percent In terms of total income and expenditure of tea factory, it was found that there was a decrease in income from Rs.77.05 lakhs in 2004 to Rs.66.91 lakhs in 2009 that is a decrease of 13.16 percent.

Financial Analysis

An assessment about the long term financial position can be made by studying the changes in fixed assets, capital and long term liabilities. The increase in the capital (0.29 percent) and long term liabilities (60.91 percent) and decrease in fixed asset (nearly 12 percent) in 2009 indicates that a part of capital and long term liabilities was used for financing a part of working capital as well. This is a reflection of good financial policy of cooperative tea factory in 2009 in comparison to 2004.

The change in retained earnings, reserve and surplus will give an indication about the trend in profitability of the concern. An increase in the reserve and surplus (33.52 percent) and profit and loss accounts is an indication of improvement in profitability of Palampur cooperative tea factory in the year of 2009.

The decrease of working capital in 2009 reflects decrease in the liquidity position of the Palampur cooperative tea factory over the year 2004. It was reported that there was a decrease in the purchase of green leaf (46.34 percent) and sale of tea (3.28 percent) in 2009 in comparison to 2004. In spite of this, there was a profit of Rs.12.22 lakhs which indicates that during 2009 not only did the product fetch a higher price in the market but there was also a judicial use of resources to keep down the expenses.

The percentage of current assets to the total assets was 12.36 in 2004. It went down to 7.66 in 2009. Similarly the percentage of current liabilities also

went down from 18.15 to 16.40 in 2009. Thus, the proportion of current assets has decreased by higher percent (about 5) as compared to decrease in the proportion of current liabilities (about 2) due to this reason there was little deterioration of working capital position of curative tea factory in 2009.

The proportion of shareholder's funds in the total liabilities has come down from 70.67 percent to 66.87 percent while that of secured loan has gone up from 10.24 percent to 15.54 percent. Current ratio analysis (0.70 in 2004 and 0.50 in 2009) further indicates that low working capital position of the tea factory from 2004 to 2009.

Hike in Quality

It can be concluded form the financial analysis of Palampur Cooperative Tea Factory that there is an improvement in the product's quality which is supported by the improvement in the price and increasing demand of Kangra Tea in the market. Improvement in the profit and decrease in the total expenditure in 2009 indicates that management has taken appropriate measures to improve the financial position of the factory.

For further improvement in the financial position of the tea factory it is important to enhance the production up to the total capacity of factory i.e. 5.00 lakhs kg made tea/annum to reduce the fixed cost and consequently total cost/kg of made tea.

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*Technical Officer Tea Dept. of Agriculture Himachal Pradesh***)*

Table -1 Balance sheet analysis of Palampur Tea Cooperative Factory (2004-09)

S. No	Particulars	Amount						Comparative analysis of balance sheet (2004 & 2009)		Common analysis of balance sheet	
		As at 31.3.2004	As at 31.3.2005	As at 31.3.2006	As at 31.3.2007	As at 31.3.2008	As at 31.3.2009	Increase/ (Decrease) Rs.	Increase/ (Decrease) percentage	2004	2009
A.	**Assets**									**100.00**	**100.00**
1.	**Fixed assets**	8951992.00	8391921.00	7911907.00	7769556.00	6984457.00	7886445.00	(1065547)	(11.90)	18.63	15.48
2.	Investment & securities	441993.00	441992.75	441992.75	391992.75	391993.00	343792.75	(98200.3)	(22.22)	0.92	0.68
3.	**Current assets & loan**									0.00	0.00
a)	Current assets	5938196.00	5483227.01	3840569.11	3524896.37	3896075.00	3903354.23	(2034842)	(34.27)	12.36	7.66
b)	Loans & advances	10676.00	10181.79	10061.79	9898.79	105.00	72.00	(10604)	(99.33)	0.02	0.00
4.	**Profit & Loss**									0.00	0.00
a)	Balance	25866657.00	32714189.61	34023335.51	37319776.52	36675171.00	40019268.37	14152611	54.71	53.82	78.58
b)	Profit(+)/loss(-)	+6847533.00	+1309145.90	+3296441.01	-644605.57	+3344097.00	-1221704.94	(8069238)	-	14.25	-2.40
	Total Assets	**48057047.00**	**48350658.06**	**49524307.17**	**48371514.86**	**51291898.00**	**50931227.41**	2874180	5.98	100.00	100.00
B.	**Liabilities**									100.00	100.00
1.	Share capital	33960565.00	33966225.00	33973225.00	34049552.00	34065225.00	34057725.00	97160	0.29	70.67	66.87
2.	Reserves & surpluses	453230.00	453230.00	453230.00	515152.00	56369.00	605138.00	151908	33.52	0.94	1.19
3.	Secured loans	4919030.00	7716117.00	7576751.00	6972085.00	7872078.00	7915307.00	2996277	60.91	10.24	15.54
4.	Current liabilities									0.00	0.00
a)	Staff cash security	17298.00	17238.00	18878.00	20672.00	22339.00	24461.00	7163	41.41	0.04	0.05
b)	Sunday creditors	8686114.00	6178009.06	7486034.17	6800042.86	8751996.00	8312953.41	(373160.59)	(4.30)	18.07	16.32
c)	Share application money adjustable	20810.00	19839.00	16189.00	14338.00	14891	15643.00	(5167)	(24.83)	0.04	0.03
	Total liabilities	**48057047.00**	**48350658.06**	**49524307.17**	**48371514.86**	**51291898.00**	**50931227.41**	**2874180.41**	**5.98**	**100.00**	**100.00**

Round table conference on Farmer Producer Bodies a Hit

By **Karuna Madan**

High profile agriculture finance body - Agricultural Finance Corporation Limited (AFCL) - recently organised a round table discussion on the role of farmer producer organisations in improving farmers' access to markets.

Held on 16 April, 2010 at the Bhabha Chamber, SCOPE complex in New Delhi, the event had guidance and support of Parvesh Sharma Principal Secretary, Department of Agriculture, Madhya Pradesh and had participation of leading luminaries from the agricultural sector. The talks saw active brainstorming among experts coming from diverse organisations such as JICA, National Dairy Development Board (NDDB), Mahila Chetna Munch, Action for Social Advancement, Access Development Services, Fresh-O-Veg, PRADAN, YES BANK, Agriculture and Organic Farming Group (AOFG) India and Zameen Organic.

Distinguished dignitaries who added value to the round table discussion included Dr Abhijit Sen, Member, Planning Commission, GC Pati, Additional Secretary, Ministry of Agriculture and VV Sadamate, Advisor, Agriculture, Planning Commission.

Dr Abhijit Sen, Member, Planning Commission initiated the discussion with his opening remarks that any form of farmer organisation is important where there is realisation of group efforts. He further mentioned that it was very unfortunate to see most of the government agriculture schemes moving towards individual benefits rather than group efforts. He asserted that the 11th Plan has taken into account the need to bring economies of scale to other side of agriculture like post harvest value addition rather than the production aspects.

FPO Concept

GC Pati, Additional Secretary, Ministry of Agriculture, appreciated the slowly emerging concept of Follow On Public Offer (FPOs). However, he stressed the need to have some legal policy framework so as to organise farmers in groups.

Rudra Pratap, Chief Executive Officer, Fresh-O Veg from Indore, said that irrespective of the collective model, income generation should be the priority and Follow On Public Offer must be looked as via media for that. Also he added that FPOs should be looked at as agri-enterpreneurship development models where a hybrid combination of NGO arm services for farmers and private limited companies for marketing the produce could be worked out.

Interestingly, Dr Jack Croucher from Dev Bhumi Natural Products Producer Co. Ltd, Uttarakhand, also admitted that finance was really a huge problem for FPOs due to large membership. But he further suggested that FPOs could be treated as a greater model to give true ownership to farmers and to incentivise their work within the entity.

Tushar Pandey, Executive Vice President and Country Head (Strategic initiative and Advocacy-Government), YES Bank Ltd added that the value chain and institutional support are most important factors for the socio-economic growth of farmers.

Anish, a practitioner from PRADAN, also advocated the concept of FPOs by discussing an interlink between the business and ownership which could go upto the value chain and beyond.

Besides, Dr EM Koshi highlighted his experiences of establishing farmer producer companies in different commodities and shared that value addition of the produce through FPOs could be one of the most economically benefitted model for both small and big farmers.

The experiences shared by other experts from ASA, NDDB also had concern on the fact of financial hitches for FPOs and prospects of value addition with push to entrepreneurship model.

Workable Models

Arjun Uppal from the DSCL group explained various models which work as producer companies. Some of the successful models exemplified were of NESTLE, NDDB, Sugarmills of DSCL.

However, it was concluded that these producer companies were initially set up as private limited companies but subsequently worked as producer companies by giving shares to the artisans. Hence the concept of FPOs could be broadened as farmer interfacing organisations.

On a query from Dr Sasaka, Lead Development Specialist, JICA that which category of farmers could be excluded from farmer organisations and who could most benefit from both social and economic perspective, the house was of the view that these organisations should be for farmers irrespective of their size of landholdings. The house agreed that agricultural and market risk and effects of globalisation are same for any farmer.

Dr NV Belavadi from National Dairy Development Board, Anand, focussed on the need of having plurality of institutions as farmer-owned and farmer-managed institutions. He said that the concept of cooperatives is becoming historical as they have now become state-controlled and non-user controlled institutions due to the legal framework and governance issues.

Nirmala Buch of Mahila Chetna Munch also agreed upon the view of plurality of institutions that could give farmers the required bargaining power, scale of knowledge input and market access. She strongly recommended member-owned organisations and stressed upon capacity building of the farming community. Also she added that such models should be for all farmers irrespective of their size of landholdings.

Ashis Mondal, Director, ASA, commented on the role of the government to scale up such models. He suggested the need to work out best models to reach a scale as multiplicity of models could be a challenge for the government in terms of procedural management at a very large scale.

Stressing the need to work out the unit cost of investment so as to facilitate the government, he declared standardisation of process to be a very critical factor in overall equations.

Parvesh Sharma added to Anish's suggestion that the basic idea of informal association was not of produce aggregation but for extension or accessing credit which later on felt a need to formally or informally federate in form of either cooperatives or producer organisations. He also exemplified the success of Farmer Field School model in the ATMA extension programme.

While discussing models, Dr Jack Croucher from Dev Bhumi Natural Products Producer Co. Ltd talked about the value chain aspect of producer organisations. According to him, all value chains could not be same and might not be conducive to farmers' participation.

On whether the current environment was conducive to farmer organisations and what major changes in the existing law could be suggested, Anish from PRADAN appraised the house about the working group on legislation. He said the report has been submitted to the Ministry of Corporate Affairs in which various issues are enlisted and could be annexured with proceedings of RTD.

Rudra Pratap added that a combination of producer company and extension could be a viable model as typical farm support, post harvest management, and costly mechanisation of small fragmented land holdings would be serious problem. FPOs could be a strong platform to address these issues and to work out policies to be suggested to the government. They could act as future lobby and pressure groups in making policies more aligned with the larger interest of the farming community.

Dr GN Murthy from ITC shared his experiences on extension support and strongly recommended incentivising extension services to farmers for improved productivity in a cost efficient manner which might be a possible way to mobilise to institutions.

Vipin Sharma from ACCESS Development Services was of the opinion that to reduce vulnerability, formation of FPOs has a strong rationale if farmers are able to manage necessary requirements for them to carry out their operations effectively and do on site value addition.

After the discussion, the house had very significant remarks of Dr VV Sadamate, Advisor (Agriculture), Planning Commission. He recollected that the first RTD on the same issue was organised by AFCL last year and intended to put this RTD into logical conclusion so as to orient the shape while taking care of legislative issues. He mentioned that the Planning Commission is looking forward to capture the outcome of this as it is focussed on farmer empowerment.

On the dos and don'ts (General Principles for FPOs), Dr Jack Crocher said that for a successful organisation, it should be self selective and not imposed from outside. He said that recognition of the need of the group is very important in terms of improving economic security as not all farmers ought to become entrepreneurs.

Atul Narania, CEO, Zameen Organic, sought to approach global market to promote the concept and to move forward the value chain collaborating producer with consumer.

Dr EM Koshi from AOFG India said that there should be provision in extension schemes like ATMA to address this issue and to support farmers' collectives. Also he said that farmers' groups should be registered societies which could be tax payees and farmers could be educated to pay tax.

Experience in MP

Ashis Mondal of ASA said that based on the experience of setting up of 13 to 14 FPOs in Madhya Pradesh under the DPIP programme, it is found that

The role of the government could be limited to institutional support or incentivisation with further role of forward linkages, training and inventory management with the private sector. A provision could be made to have loan lending to FPOs from the financial Institutions

primary producers at grassroot level are good receptors of idea of FPOs. He said that with the farmer member size of 1500-2000, and bulk aggregation of specific agri commodity, breakeven in the agri-business could be easily reached.

He highlighted that instability in the production is the major risk with FPOs and some risk management strategy needs to be worked out.

Dr NV Belavadi of NDDB said that selection and choice of produce by institute should be membership-driven and patronage cohesiveness in governance of contributing members is required.

Others were also of the similar view and shared with the house the need of monetary wise involvement of members and for extension and institutional support. In another question to who should take the lead to promote these, it was pointed out that the government should emerge in this issue and facilitate these organisations as the initial step and then leverage it to the farmer level or private level to take it up further.

The government should put money on awareness issues with a need to build multi-pronged strategy for providing infrastructural space or support like godowns, milk centres, cold storage houses etc. to FPOs.

The role of the government could be limited to institutional support or incentivisation with further role of forward linkages, training and inventory management with the private sector. A provision could be made to have loan lending to FPOs from the financial Institutions.

Responding to the question on how to meet the managerial challenge for large number of FPOs, the answer lay with collaboration of academic institutions at the grass root level. Also it was suggested that local Chief Executive Officers (CEOs) should be managed by training and skill development on business management issues. It was also suggested that AFCL could take the initiative to start such correspondence courses on rural financing and planning of FPOs.

Patronising Agri Business

Everybody unanimously expressed to a great need for a mother organisation to transform agriculture into agri-business which should have the capacity to give stimulus or incentives at different capability levels in geographic or other domains.

The idea is that they could intervene in the policy of the government, research or development cycle to promote the concept of FPOs for farmer empowerment and sustainable livelihood. The house also felt that AFCL could be the right platform and suited best to play lead role as mother organisation where guidelines for formation of FPOs could be drafted and published.

Also it could work as a knowledge hub to the investors in FPO models where people could refer to the matter, understand it and get instant solutions.

Watermelon
The Summer Doctor

By **D.Muthamizh Vendan Murugavel ***

Watermelon is the tasty and flavoured fruit that usually eaten during summer in order to keep body hydrated and refreshed, as it contains 90 percent water. This fruit has been used since ancient times by various peoples to protect the body from losing the necessary amount of water and from getting dehydrated during periods of drought. Watermelon was also used extensively when water sources were polluted. For instance, ancient Egyptians used to welcome tired and thirsty travellers that reached their regions with watermelons. They traditionally offered the visitors big slices of watermelon on trays in order to help them quench their thirst in the most natural and pure way. Its botanical name is Citrullus Lanatus.

Watermelons are crops that lend themselves well to small-scale and part-time farming operations. Watermelons are grown in rows in sand or sandy loams. Bees pollinate the watermelon plant and one month later a vine is produced. A melon is produced and is ready to be harvested within 90 days. The harvest is done by hand due to the watermelon's fragile surface. The peak production occurs in May, June, July, and August, but watermelons can be found from April through November. There are many varieties of watermelons and 1200 varieties are grown worldwide. In India watermelons are mainly cultivated in Maharashtra, Karnataka, Tamil Nadu, Punjab, Rajasthan, Madhya Pradesh and Uttar Pradesh.

Health Benefits of the Watermelon

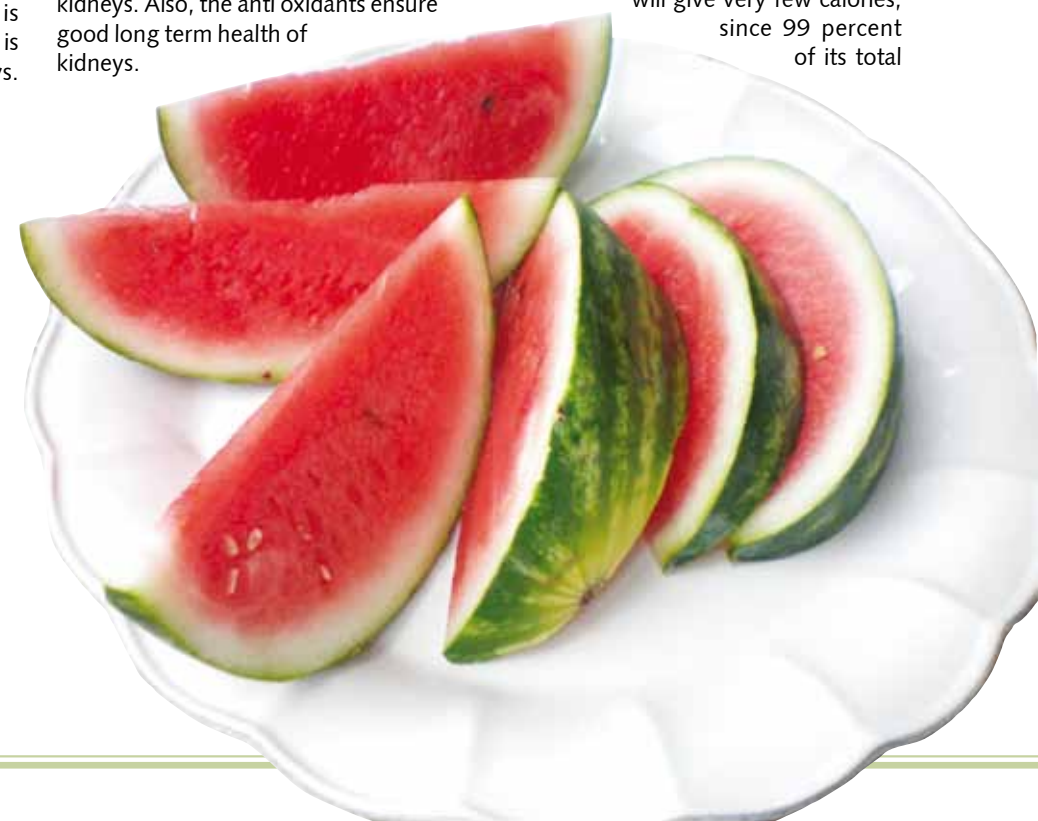
Kidney Disorders: The Watermelon contains a lot of potassium, which is very helpful in cleaning or washing off the toxic depositions in the kidneys. Moreover, it is helpful in reducing concentration of uric acid in the blood, thereby reducing the chances of kidney damages and formation of renal calculi. Added to these, being high in water content, it induces frequent urinating, which is again helpful for cleansing of kidneys. Also, the anti oxidants ensure good long term health of kidneys.

High Blood Pressure: A good amount of potassium and magnesium, present in water melons, is very good in bringing down the blood pressure. The carotenoids present in them prevent hardening of walls of arteries and veins, thereby helping to reduce blood pressure.

Prevent Heat Stroke: The Watermelon is effective in reducing the body temperature and blood pressure. Many people in the tropical regions eat the fruit daily in the afternoon during summers to protect themselves from heat stroke. In India, the fruit is being sold by vendors in almost every street during summers.

Diabetes: Diabetes patients, who are supposed to have low energy and low sugar diet, often complain about starving since they don't get to eat their staple diet to their fullest, giving them a feeling of being half fed. Watermelons can be a good supplement for them. In spite of being sweet in taste, a thick wedge will give very few calories, since 99 percent of its total

A carotenoid found in abundance in the watermelon, improves cardiac functions. Beta carotene, known for its remarkable anti oxidant and anti-ageing properties, also keeps people young at heart and prevents age related cardiac problems



weight is composed of water and roughage. Moreover, the various vitamins and minerals such as potassium and magnesium help in proper functioning of insulin in the body, thus lowering the blood sugar level. Arginine, another component found in watermelons, is very effective in enhancing the impact of insulin on sugar. Diabetes patients can also have curries, steaks, salads made from water melon rinds which are even lower in sugar.

Heart Care: Lypocene, a carotenoid found in abundance in the watermelon, improves cardiac functions. Beta carotene, known for its remarkable anti oxidant and anti-ageing properties, also keeps people young at heart and prevents age related cardiac problems. The roughage in watermelon and its very low energy, with help from vitamin-C, Carotenoids and potassium (potassium cuts the risk of a heart attack), helps reduce cholesterol and keeps the heart safe.

Macular Degeneration: Worry of our eyes can be left out on that beta carotene, that vitamin-C and those Lutein and Zeaxanthin. They will ensure protection of the eyes from macular degeneration. They are experts in that. These anti-oxidants will protect the eyes from other age related ailments such as drying up of eyes and optical nerves, glaucoma etc.

Impotence: Arginine present in the water melon is beneficial in curing erectile dysfunctions.

Other Benefits: Medical experts also found that besides tomatoes, watermelons are one of the richest sources of lycopene, which has been found to be effective in preventing cancer, and prostrate growth, and it repairs damaged tissues. Besides antioxidant properties, lycopene also helps improving short and long term memory and it is a detoxifier of the waste in the body and inhibits cholesterol formation. Watermelon seeds are rich in good fats and proteins. Watermelons also contain phytonutrients, which have very good effect on the health and proper functioning of internal organs, eyes, secretion system etc.

Signs of a good watermelon:

- The watermelon should be firm and free from bruises, cuts, and dents;
- Watermelons consist of 92 percent water. Therefore, the watermelon should weigh from 5-30 lbs; and,
- A creamy yellow spot indicates the area where the watermelon was sitting on the ground and was ripening in the sun.

The Watermelon is an ideal health food because it doesn't contain any fat or cholesterol, is high in fibre and vitamins A & C and is a good source of potassium

Watermelon - Some Facts:

- Not only does it quench the thirst, it can also quench inflammation that contributes to conditions like asthma, atherosclerosis, diabetes, colon cancer, and arthritis.
- The Watermelon is an ideal health food because it doesn't contain any fat or cholesterol, is high in fibre and vitamins A & C and is a good source of potassium.
- The Watermelon consists of 92 percent water and 8 percent sugar.
- The Watermelon is actually a vegetable and not a fruit. It is also related to the pumpkin, cucumber and the squash.
- Every part of a watermelon is edible, even the seeds and rinds. In some parts of the world, watermelon seeds are even dried and eaten as snacks. Soups and juices are prepared using watermelon.
- The Watermelon is, of course, the favourite fruit of all weight watchers as it helps to reduce weight. It also lowers the risk of strokes.
- Watermelon is as rich in iron as spinach and also proves to be laden with vitamin A and C, beneficial natural pigments and other nutritive minerals. It can also make the skin pretty.

Conclusion

The Watermelon is an incredibly beneficial food that does not get a lot of publicity. There is nothing quite like a refreshing slice of icy-cold watermelon on a hot summer day. Watermelon is a healthy snack that is high in nutrients and low in calories. Try to make it a regular part of the diet as the fruit is available around the year but tastes best when it is in season, during the summer months and do your health a favour.

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A Brief Note on Solution Exchange - An Initiative of the United Nations in India

The United Nations in India, has since 2005, supported a knowledge-sharing initiative to help improve development effectiveness in support of India's Five Year Plans and the Millennium Development Goals. This initiative branded as 'Solution Exchange' develops 'Communities of Practice' for sharing knowledge and experience among practitioners from the government, NGOs, private sector, academia, activists, etc. The UN serves as a catalyst and plays a facilitative role, offering a free, impartial space where all development professionals are welcome to participate.

Solution Exchange is focussed on practitioners, and brings out tacit experiential knowledge sitting in the heads of practitioners, for the use of others through sharing. This leads to enhanced knowledge capture, storage, and use. Solution Exchange seeks to empower practitioners by offering them 'knowledge on demand' based on solutions from their peers. It has led to enhanced capacities of individuals and institutions, influence on programme implementation, influence on policies, and has made changes in knowledge and attitude of practitioners. Today there are thirteen functional Communities of Practice.

Solution Exchange believes that the development domain can also benefit by better Knowledge Management Practices (KMP). This comprises better knowledge capture, better knowledge storage, better knowledge sharing, better knowledge use and better knowledge creation. Solution Exchange connects development professionals in similar fields from diverse organisations ranging from Government, bilateral and multilateral development partners, and non-governmental organizations to academics, corporate, and the media.

These Communities of Practice (CoP) are people who share similar concerns and interests, through electronic e-mail groups and face-to-face interactions, with the common objective of problem-solving. Instead of advocating any particular viewpoint, they foster familiarity and trust between development practitioners who share similar passions for their work. The initiative has been in operation since 2005, and has grown dramatically over its years of existence. At present it has eleven Communities of Practice, with a membership base of nearly 16,000 members and 28,000 subscriptions (a member may be subscribed to multiple Communities).

It demonstrates a unique approach of finding practical solutions to complex development problems by synthesizing knowledge obtained as a result of encouraging participation, fostering partnerships and activating collaboration amongst a diverse range of development practitioners.

Solution Exchange is focussed on practitioners, and brings out tacit experiential knowledge sitting in the heads of practitioners, for the use of others through sharing. This leads to enhanced knowledge capture, storage, and use

The UN Country Team in India, with the Resident Coordinator as Chair, serves as the Steering Committee of Solution Exchange. The Solution Exchange Coordinator manages the effort, jointly supervising the "Resource Teams" – a Resource Person as Community Moderator, and a Research Associate providing additional support – who work within the different UN Agencies anchoring Solution Exchange Communities. This team adds value to the replies received from Community members by summarizing the responses, by providing comparative experiences from within and outside India, and by suggesting additional resources such as subject area experts and recent research or publications.

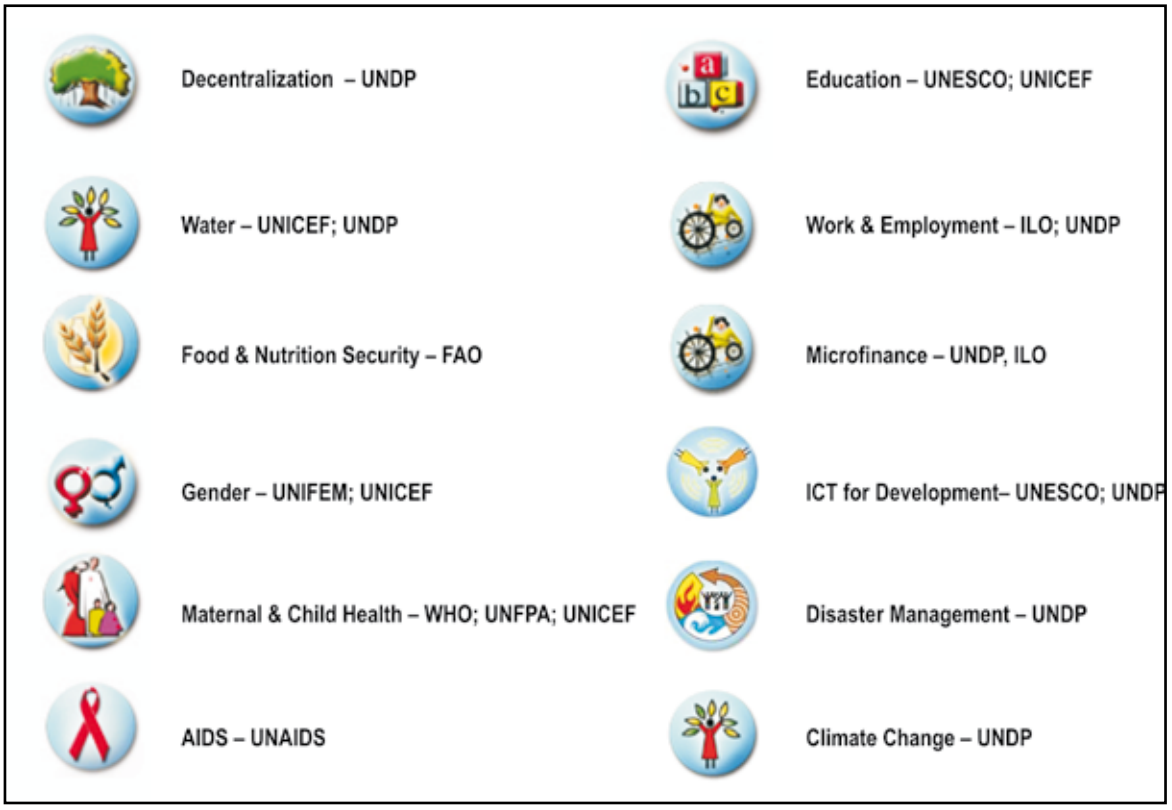
A 'Resource Group' of influential actors in the field, drawn from Government, research and policy institutes, apex NGOs, UN Agencies, bilateral donors and the private sector guides every Community.

The structure of a Solution Exchange Community is designed to be light and flexible, and so Resource Groups meet at most twice a year to review Community performance and identify priority issues for the coming year.

Each Community is guided by a group of eminent persons working in that sphere and is facilitated by the UN organization (s) with a mandate in that area. The Heads of these Agencies are Community 'Facilitators,' and play the role of convenors. Resource Teams support Community activities, both over the electronic network and in organizing face-to-face events.

Workshops are also being organized to bring Community practitioners together to identify burning issues — gaps in programmatic areas that could mean the difference between success and failure — and to build trust and recognition among members.

Active Communities of Practice and their Facilitating Agencies



** Please visit www.solutionexchange-un.net.in to get a better idea of Solution Exchange*

Solution Exchange for the Microfinance Community- Consolidated Reply

By **Harish Chotani, Consultant, Gurgaon**

I work as a Livelihood and Microfinance consultant and have been involved in the monitoring and evaluation programmes of Microfinance in India and abroad. In developing countries like India, vulnerable people and micro and small entrepreneurs have not been having access to a wide range of microfinance services, because microfinance institutions (MFIs) have traditionally focused on the provision of credit, and are therefore designed with the majority of the new products, on offering credit. The agenda of UN as well as Government on inclusion and especially financial inclusion has a great relevance as despite the existence of more than 40,000 branches of commercial, Regional and Rural Banks, approximately 73 percent of India's population does not have access to financial services.

The scenario of microfinance is changing at a fast pace and the microfinance sector is reaching a certain maturity wherein MFIs are starting to experiment with new financial products like insurance, remittances, and pensions including micro leasing. The importance of micro leasing is high for vulnerable and micro entrepreneurs as it allows the poor to use the costly equipment and even livestock, which otherwise are difficult to procure through credit, require small pieces of payments/instalments for using an asset, and mitigates the risk associated with the procurement of the asset. However, other clients may also be in need of accessing the leasing of products to enable them with leverage their financial resources for productive infusion.

There is a need for continued and concerted efforts of various stakeholders from the government, commercial, and MFIs to collaborate better and innovate on, financial products and its delivery mechanisms to reach the vulnerable and micro clients both in the farm and non-farm entrepreneurial ventures.

The importance of micro leasing has already been recognized by countries like Kenya and Bangladesh, where the MFIs have been providing hire and lease products. In India, experiments are taking place in some specific sub sectors and there are high possibilities for micro leasing initiatives in farm mechanization wherein agriculture equipment can be leased out to small and marginal-farmers.

As a first step to the Action Group on Micro Leasing*, I would like to request members to share the following:

- Experiences of micro leasing initiatives in India and other developing countries;
- Needs of micro leasing for the vulnerable and small farm/non-farm entrepreneurs and possible models/ mechanisms for extending micro-leasing; and,
- Existing programmes and schemes of government, NGOs and private sector where introduction of micro leasing can fill gaps to facilitate the poor in reducing their risks and financial burden.

Your suggestions will not only help in building background knowledge for an exploratory study on development of products, mechanisms and models for micro leasing, but could also be utilized by the MFIs, leasing companies, donors, Government and NABARD to support and provide micro leasing services to the poor. "Leasing is defined as contractual agreement between the two parties whereby arrangement that allows one party (the lessee) to use an asset owned by the leasing company (the lessor) in exchange for specified periodic payments."

Summary of Responses

The query on micro leasing elicited varied responses from members, who highlighted the importance of micro leasing for vulnerable and micro entrepreneurs. They noted that the concept has existed in different forms for a long time, for example jointly owned and leased fishing ponds or agricultural equipments.

Micro leasing respondents is a contractual agreement between two parties, which allows one party (the lessee) to use an asset owned by the leasing company (the lessor) in exchange for specified, periodic payments. There are numerous advantages to micro leasing over other forms of financial products, including:

- Less risk and lower possibilities of misusing resources as compared to taking productive loans, as entrepreneurs get productive assets to use for income generation;
- The poor get access to productive assets through affordable lease rentals (depending on the estimated income earned by the entrepreneur by using the asset);
- No margin money or collateral required in the majority of cases, unlike loan products;
- Entrepreneurs with scarce or no financial resources are able to undertake livelihood activities;
- Low risk for entrepreneurs as asset ownership is not transferred until lease term is over;
- Provides opportunities for MFIs to reach potential borrowers for expanding their markets;
- Entrepreneur or lessee has no obligation to repay a fixed sum towards principal or the interest at the end of every week/month, as they do with a term loan; and,
- Addresses an unmet need for financing of micro enterprises

Many countries have already recognized the importance of micro leasing wherein the MFIs provide hire and lease products for procuring agriculture equipment, livestock, rural crafts, power-looms, sewing machines, solar lighting units, etc. For example, in Kenya, an organization successfully managed a micro leasing experiment for bee keeping and in Latin America, some organizations are experimenting with equipment financing as a component of MF operations. Similarly, the Grameen Bank in Bangladesh is offering micro leasing to enable people to procure livestock, land for animal husbandry/ agriculture, power looms and power tillers etc. In Pakistan, Swiss Agency for Development and Cooperation is piloting a project on 'lease financing' for micro and small entrepreneurs. Another pilot project in Bulgaria implemented by a UN agency is using micro leasing as a financial instrument to promote micro and small business development.

Farm Mechanisation

Discussing the leasing scenario in India, members mentioned that in some sub-sectors various organizations are experimenting with micro leasing and there is a possibility for micro leasing initiatives in the areas of farm mechanization. Some of the existing programmes are as follow:

- Gambhira Cooperative leases agriculture machinery and other implements to its members and farmer groups;

- Maheswari Society leases looms to weavers on mutually agreeable terms; and,
- Mulkanoor Cooperative Rural Bank and Marketing Society Ltd lease tractors and other machinery to their members

Discussants also quoted two cases where micro leasing could be a good option. PRADAN working in Kesla, Madhya Pradesh has established a poultry cooperative where every member is provided with a shed in the backyard of his house, chicks and all the necessary raw material like feed and medicines. The amount spent is deducted from the payment of sale proceeds. Project Sukanya in Kolkata provides mobile kiosks to poor women entrepreneurs to market the products of SHGs. In both cases, micro leasing can be introduced for leasing productive assets to entrepreneurs.

Envisaging the different ways to expand the reach of micro leasing in India, members suggested leasing Point of Sale (POS) machines to business correspondents to reduce the burden of loans and fast track financial inclusion. Self-help groups (SHG) and/or Federations could acquire automobiles, mini-buses, vans, tractors with trolleys, and farm equipment on lease and then rent them to small and medium entrepreneurs. Members also suggested an option of leasing income-generating assets (i.e. vehicles, kiosks, small equipments) to SHGs enabling them to undertake activities collectively. In addition, discussants also recommended that block offices and MFIs can collaborate for leasing equipment to the farmers. Similarly, livestock activities like goat rearing and dairy can be facilitated through micro leasing services.

Discussants also suggested introducing micro leasing practices in urban and semi-urban areas for acquiring community assets, such as public toilets and educational tools for schools. They also suggested exploring the possibilities for tripartite tie-up arrangements with bulk suppliers/manufacturers of small value assets, target end-users and the lessees.

In this arrangement, NGOs can facilitate in assessing the specific needs of the lessees. Highlighting the fact that micro leasing practices are in line with the principals of Islamic banking (where paying/receiving interest is not acceptable), members advised looking at ways to create equity partnership/ hire-purchase of equipment for Muslim communities.

In addition, respondents recommended organizations build the capacity of their human resources to effectively handle micro leasing programmes, because it requires a different set of skills then those required for loaning. They also encouraged organizations taking up micro leasing to examine the regulatory environment before designing any leasing products. Respondents recommended an important document for reference during this process. Along with the above, members noted several other points for organizations to consider when taking up micro leasing:

- Economic life of the leased asset has to be longer than the lease period so that the lessee can continue using the asset after completing the payments;
- Lease rental prices need to be affordable, market determined and flexibly to accommodate any rise or fall in income generated from the asset;
- Lease finance needs to be backed by a built-in insurance product with the lease agreement to cover the risk of death/illness of the lessee and risks of theft or any other calamity;
- The lessor needs to have good operational, internal control and accounting systems, and know that lessors are usually not exempted from Value Added Taxes (VAT);
- Transaction costs could be reduced by accurately projecting cash flow during the lease period, with the assumption that micro-enterprises will meet lease payments; and,
- Non-financial support services like training on usage and maintenance of equipment could be provided to help in ensuring maximum returns from the leased asset

Finally, discussants argued that micro leasing can be a good tool for reducing poverty and restoring livelihoods in disaster affected areas. They recommended using established leasing companies and advised that MFIs can act as resource agencies for identifying potential partners and assessing their credit-worthiness. They also felt that micro leasing would help expand rural employment opportunities and play a crucial role in reducing migration, thus limiting the risks and vulnerabilities of the poor.

Comparative Experiences

International

From Sanjeev Peethala, UEVRP, GoI-UNDP Disaster Risk Management Programme, Mangalore

Bulgaria

Job Opportunities through Business Support (JOBS) Project Provides MF and Micro Loan: The project has adopted an integrated approach to job creation and economic development in rural areas. It assists in start-up, micro and small business development through a network of autonomous and locally owned Business Centres and Business Incubators. Through these centres leases are provided for purchase of manufacturing and agricultural machinery as well as equipment for the service sector. It has provided financial leases to 1,525 local businesses till September 2007.

Pakistan

Micro Leasing Program for Micro Entrepreneurs, North West Frontier Province: The Swiss Agency for Development and Cooperation (SDC) piloted a 'lease financing' programme for micro entrepreneurs in 1996. SDC collaborates with leasing organizations, 1) Leasing Association of Pakistan, 2) Network Leasing Corporation, 3) Orix Leasing Pakistan, 4) Crescent Leasing Corporation Limited and 5) Al-Zamin Modaraba to provide the loans. Since its inception, the program has provided loans to more than 4,000 micro entrepreneurs for a total cumulative disbursement of Rs. 40 million. From Induja Rai, OXFAM India, New Delhi

Bangladesh

Grameen Banks Initiative Provides Micro Leasing: In 1992, the Grameen Bank started an experimental leasing program by leasing power looms to weavers in Ariahazar area of Dhaka Zone. By the end of 1997, the Bank had leased 8,411 items in 111 different categories ranging from power tillers, power looms and livestock. So far, 96 men and 1,118 women have completed their leasing contract and now own the assets. Out of the total portfolio of the bank, leasing accounts for nearly 4 percent.

Kenya

Micro Leasing Project Provides Ownership of Bee Hives to Poor: K-Rep Development Agency (KDA), initiated asset financing for new beehive technology in western region of Kenya. It offered training to the farmers for using the technology before leasing the hives. As a strategy, fifty percent is deducted from the proceeds of bee products until the amount is fully paid. After full recovery, lessee becomes the owner of beehives. It has provided 2,226 beehives to the clients.

Read

Madagascar

Leasing Arrangements Give Farmers Access to Capital: Caisses d'Epargne et de Crédit Agricoles Mutuelles (CECAM), a federation of savings and credit cooperatives introduced leasing in 1991. It offers leasing facilities in agricultural activities (harrows, pumps, ploughs, carts, seeders, dairy cattle, draught oxen, brood hens). The borrower pays a down payment of 25 Percent of the original value of the asset. The interest rate used varies from 24 percent to 30 percent per year, for a maximum duration of 36 months. It has provided 25,000 leases to members.

(Compiled by Navin Anand, Resource Person and Monika Khanna, Research Associate)

COVER STORY

Climate Change and Its Impact on Agriculture

India needs AN Action Plan to tackle Threat to its Eco sytems and Agriculture

By **Mohammad Awais and Naheen Haider Zaidi**

Climate change has emerged a major challenge for sustainable human settlement. It has adverse impact on wildlife, agriculture, incidence of diseases, local weather, rise in sea level, and more heat waves etc. India is highly vulnerable to climate change as its economy is heavily depends on climate sensitive sectors like agriculture. People in India, especially the poorest, are vulnerable to the impact of climate change because the nation's economy is so closely tied to natural resources. More than 56 percent of workers are engaged in agriculture and allied sectors. Most of India's poorest people live in rural areas, almost totally reliant on natural resources for their food, shelter and incomes.

Climate change affects agriculture in complex ways. Climate change affects crop yields and cropping pattern due to direct effects of changes in atmospheric concentrations of green house gases in general and CO2 in particular. It affects food production directly through changes in agro-ecological conditions and indirectly by affecting growth and distribution of incomes, and thus demand for agricultural produce. Agricultural outcomes are determined by complex interactions among people, policies and nature. Crops and animals are affected by changes in temperature and precipitation, but they are also influenced by human investments such as irrigation systems, transportation infrastructure, and animal shelters.

However, uncertainties about where climate change will take place and how farmer will respond make it difficult to move forward on policies to combat its effects. If humanity along with the other flora and fauna has to survive on this planet, all nations – developed and developing – must make sincere efforts to mitigate the effects of climate change. Today it is the poor who experience the deathly impact of climate change. Tomorrow it will be humanity as a whole who have to face consequences.

In India, agriculture is the mainstay of the economy and more than 65 percent of the population is dependent on it. Although the contribution of the agriculture to Indian GDP has been declining considerably over the last few years, this sector continues to be the largest economic sector.

Today agriculture contributes about 14 percent of annual GHG emissions, and land-use change, including forest loss, contributes another 19 percent with the developing world accounting for about 50 percent of agricultural emissions and 80 percent of land-use change and forestry emissions. This paper reviews the impacts of climate change on agriculture and food security and suggests some strategies to mitigate the problem.

What It Means?

Climate change is perhaps the biggest challenge facing the world today. Weather is the condition of the atmosphere at a particular place and time. It is characterized by parameters such as temperature, humidity, rain and wind. Climate is the long term pattern of weather conditions for a given area. Climate change is the most important global environmental challenge facing humanity with implications for natural ecosystem, agriculture and health. Climate change refers to a statistically significant variation in either the means of climate or in its variability, persisting for an extended period. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.

The poorest people are likely to be hardest hit by the impacts of climate variability and change because they rely heavily on climate-sensitive sectors such as rain fed agriculture and fisheries. They also tend to be located geographically in more exposed or marginal areas, such as flood plains or nutrient-poor soils

Climate variability and climate change are resulting in a more severe occurrence of extreme events, such as droughts, floods and cyclones, which affect the poor most, and jeopardize agricultural production and livelihoods of rural communities. The impacts on countries like India are likely to be significant as about 20 percent of India's GDP is attributable to the agricultural sector which employs 57 percent of the total workforce.

Effects: The component of natural eco-system are very much sensitive to change in weather and climate, particularly to extreme weather events, decrease soil moisture, temperature change and increase in carbon dioxide in atmosphere. So vegetation and agriculture are likely to be affected from such changes in weather and atmosphere. Increase in CO_2 level may result in an increase in food production. It is predicted that a two fold increase in carbon dioxide will lead to a 10-15 percent increase in dry matter production provided all other factors remain constant.

Despite technological advances, such as improved varieties, genetically modified organism, and irrigation systems, weather is still a key factor in agricultural productivity as well as soil properties and natural communities. The effect of climate on agriculture is related to variability in local climates rather than in global climate patterns.

On the other hand, agricultural trade has grown in recent years and now provides significant amounts of food on a national level to major importing countries as well as comfortable income to exporting ones. The international aspect of trade and security in terms of food implies the need to also consider the effects of climate change on a global scale. More favourable effects on yield tend to depend to a large extent on realization of the potentially beneficial effects of carbon dioxide on crop growth and increase of efficiency in water use. Decrease in potential yields is likely to be caused by shortening of the growing period.

In the long run, the climatic change could affect agriculture in several ways:

- Productivity, in terms of quantity and quality of crops;
- Agricultural practices, through changes of water use (irrigation) and agricultural inputs such as pesticides and fertilizers;
- Environmental effects, in particular in relation of frequency and intensity of soil drainage, soil erosion, reduction of crop diversity;
- Rural space, through the loss and gain of cultivated lands, land speculation, land renunciation, and hydraulic amenities; and,
- Adaptation, organism may become more or less competitive. Organisms, such as humans may develop urgency to develop more competitive organisms, such as flood resistant or salt resistant varieties of rice.

The global warming is likely to affect the following phenomena, which will ultimately affect the agro-ecosystem:

- Evaporation will increase;
- Water and soil temperature will rise;
- Soil water will become insufficient;
- Cultivatable areas will be enlarged;
- The incidence of insect pests, diseases and weeds becomes higher;
- Snowing period will shorten;
- The deterioration of soil fertility will be quickened;
- The activity of microorganisms will increase;
- The decomposition of organic matter and fertilizers will be promoted; and,
- Soil and shore erosion will be quickened.

Rapid climate change, however, could harm agriculture in many countries, especially those that are already suffering from rather poor soil and climate conditions, because there is less time for optimum natural selection and adaptation.

Impact on Agriculture: Agriculture will be impacted by climate change in several ways. India is a large country with 15 agro-climatic zones with diverse seasons, crops and farming systems. For a majority of people in India, to this day, agriculture is the main source of livelihood. Again agriculture is the most vulnerable sector to climate change as it is inherently sensitive to climate variability and climate change will leave its impacts on Indian agriculture in various direct and indirect ways. This obviously means an impact on the lives

and livelihoods of millions of Indians.

Vulnerability: For instance, it is reported that about two-thirds of the sown area in the country is drought-prone and around 40 million hectares is flood-prone. The poorest people are likely to be hardest hit by the impacts of climate variability and change because they rely heavily on climate-sensitive sectors such as rain fed agriculture and fisheries. They also tend to be located geographically in more exposed or marginal areas, such as flood plains or nutrient-poor soils. The poor also are less able to respond due to limited human, institutional and financial capacity and have very limited ability to cope with climate impacts and to adapt to a changing hazard burden.

Declining agricultural productivity in the face of climate change and competition for limited water resources in India could have far reaching consequences. With nearly 70 percent of India's population living in rural areas and around 60 percent of the labour force engaged in agriculture, sustaining increases in agricultural productivity and efficient use of land, water, and energy resources will have a large impact on the livelihoods of hundreds of millions of people.

Indian farmers face a difficult task of meeting the food needs of a growing population while coping with decreased areas of arable land, increasingly scarce water supplies, and greater intensity and frequency of extreme weather events. New agricultural technologies and practices can help develop more adaptable crops that produce significantly higher yields while helping to mitigate food shortages and volatile pricing.

Climate change and agriculture are interrelated processes, both of which take place on a global scale and over the next century may have significant effects on crop production and food availability. It is speculated that by 2050, there would not be any glacier in the world. The melting of ice would result in frequent floods significant rise in sea level. Floods will destroy standing crops, forest fire will be a common phenomenon in drought- affected areas, more water will be necessary for irrigation, cultivable will become infertile, and rainfall at regional level exhibits an increasing or decreasing trend. These changes will in turn cause deterioration of existing eco-systems.

Effect on India

Climate change is affecting India in a big way and its impacts are many and serious – erratic monsoon, migration of agriculture zones, spread of tropical diseases, sea level rise, change in availability of fresh water, floods, droughts, heat waves, storms, hurricanes etc. Abrupt climate change could make large areas of the country uninhabitable. The impact of climate change on agriculture could result in problems with food security and may threaten the livelihood activities upon which much of the population depends. Climate change can affect crop yields (both positively and negatively), as well as the types of crops that can be grown in certain areas by impacting agricultural inputs such as water for irrigation, amounts of solar radiation that affects plant growth as well as the prevalence of pests. The overall effects of global climate changes on agriculture might help to properly anticipate and adapt farming to maximize agricultural production.

Food Security

Climate change will have an adverse impact on food security. Food cost will increase as food availability (cereals, livestock products, fish) will decrease. Disadvantaged regions and socially and economically backward people will be affected more. Food security would be further exacerbated by loss of cultivable land and nursery areas for fisheries, by inundation and coastal erosion in low lying areas. Predictions based on modeling studies indicate that substantial losses are likely in rain-fed wheat in South and South East Asia. A 0.5° C rise in winter temperature would reduce wheat yield by 0.45 tons per hectare. Bundelkhand region in India is the worst sufferer of climate change. There has been acute draught and distress including starvation deaths for last 3-4 year. 25 percent of people did not have two-square meals and only 5 percent had nutritionally balanced food.

Impact on Crops

The climate change will affect crop yields and cropping pattern due to direct effects of changes in atmospheric concentrations of green house gases in general and carbon dioxide in particular. For example, an increase of temperature from 1 to 4°C can reduce grain yield of rice by 0-49 percent, potato by 5 to 40 percent, green gram by 13-30 percent and soybean by 11-36 percent.

Climate change can shorten Rabi season and decrease yield. Vulnerability to disease and pest increases. High

Bundelkhand region in India is the worst sufferer of climate change. There has been acute draught and distress including starvation deaths for last 3-4 year

temperatures affect the quality of produce. Increase in temperature can reduce 1000 grain weight and the amylase content and also adversely affected grain elongation and aroma in basmati. Increases in temperature cause distress to dairy animals affecting milk production. Studies indicated that India looses 1.8 million tones of milk production due to climate stresses.

The impact should be higher on C3 crops such as wheat and rice than on C4 plants like maize and grasses. The predicted changes to agriculture vary greatly by region and crop. Findings for wheat and rice are reported below:

Wheat Production

- It is estimated that we could lose 3.9 million tones of wheat due to climatic change by 2020, 11.7 million tones by 2050 and 23.5 million tones of wheat by 2080;
- It is found that increases in temperature (by about 2ºC) reduced potential grain yields in most places. Regions with higher potential productivity (such as Northern India) were relatively less impacted by climate change than areas with lower potential productivity (the reduction in yields was much smaller);
- Climate change is also predicted to lead to boundary changes in areas suitable for growing certain crops;
- Reductions in yields as a result of climate change are predicted to be more pronounced for rain fed crops (as opposed to irrigated crops) and under limited water supply situations because there are no coping mechanisms for rainfall variability; and,
- The difference in yield is influenced by baseline climate. In sub tropical environments the decrease in potential wheat yields ranged from 1.5 to 5.8 percent, while in tropical areas the decrease was relatively higher, suggesting that warmer regions can expect greater crop losses.

Rice Production

- Overall, temperature increases are predicted to reduce rice yields. An increase of 2-4ºC is predicted to result in a reduction in yields;
- Eastern regions are predicted to be most impacted by increased temperatures and decreased radiation, resulting in relatively fewer grains and shorter grain filling durations;
- By contrast, potential reductions in yields due to increased temperatures in Northern India are predicted to be offset by higher radiation, lessening the impacts of climate change;
- Although additional CO_2 can benefit crops, this effect was nullified by an increase of temperature.

Agriculture is one of the major sources of greenhouse gas emissions. Climate change has been a cause of serious concern if the agricultural sector has to grow in the context of country's overall economic growth, to respond to rural households' livelihood, country's food security and poverty alleviation

The Copenhagen Experience

Amidst buzzing expectations, rallying protestors, leaked emails and draft Danish texts, the much awaited 15th United Nations Climate Change Conference (COP15) took place at Bella Center in Copenhagen from the 7th to the 18th of December 2009. The conference with participants from 192 countries representing governments, business community and civil society, was aimed to evolve a successor to Kyoto protocol the first phase of which expires in 2012. The core issues, such as the cut in GHG emission by developed and developing nations and the financial assistance to poorer nations of the world to cope with climate change, were discussed and quite expectedly a consensus was not reached.

After much deliberation and discussion the Copenhagen Accord was reached which was drafted by the US, China, India, Brazil and South Africa on December 18. It was "recognized", but not "agreed upon", in a debate of all the participating countries the next day, and it was not passed unanimously. The document recognized that climate change is one of the greatest challenges of the present and that action should be

taken to keep any temperature increase to below 2ºC.

The document is not legally binding and does not contain any legally binding commitments for reducing CO2 emissions. Although the Heads of States participating in the conferences were cautious enough to use words like 'pleased' and 'meaningful', the futility of the whole exercise was widely evident in their measured optimism.

"As serious as it is, climate change is just one of a host of challenges that will reduce grain yields for smallholder dry land farmers of the future," cautioned William D. Dar, Director General, ICRISAT. Climate change is not a possibility but a real threat, the signs of which are apparent from the untimely rains, drought, flood and declining crop productivity. The Intergovernmental Panel on climate change (IPCC) concluded in its most recent assessment that "At lower latitudes, especially in seasonally dry and tropical regions, crop productivity is projected to decrease for even small local temperature increase (1-2ºC), which would increase the risk of hunger."

With the changing climate, the crops will be facing newer challenges. The scientific communities who are sensitized with the issue are on the path to realize their goal of evolving varieties which are resistant to draught and other calamities. Agriculture uses 70 percent of the world's fresh water. Draught resistant crops that are more efficient users of water are under development which will help in improving productivity even by conserving valuable resource like water. It will also help in mitigating the effects of global warming to certain extent.

Mitigation Strategies

Agriculture is one of the major sources of greenhouse gas emissions. Climate change has been a cause of serious concern if the agricultural sector has to grow in the context of country's overall economic growth, to respond to rural households' livelihood, country's food security and poverty alleviation. There are several agricultural practices which can be fine tuned to reduce the emission of green house gases from the agricultural fields. Agricultural scientists can play a significant role by designing suitable long term experiments to continuously monitor fluxes of water, energy, nutrients, gas exchange and salts in major crops and cropping systems in a changing scenario of climate for devising location specific strategies.

Some of the strategies to negate the impacts of climate change on agriculture are as follow:

- Improve management of rice production through judicious use of organic manure, fertilizers, irrigation water, nitrification inhibitors, fertilizer placement and their scheduling;
- Improved management of livestock population especially ruminants and its diet;
- Increase soil organic carbon through minimal tillage and residue management;
- Improved energy use efficiency in agriculture through better designs of machinery, and by resource conservation practices;
- Change land use by increasing area under bio-fuels, agro-forestry – but on the cost of food production;
- Devising agronomic practices which may moderate the predicted climate changes and promotion of conservation agriculture practices such as zero tillage, bed planting, residue management and crop rotation; and,
- There is a need to develop contingency plans to cope with weather related aberrations such as cold, heat wave and drought. These contingent plans should be such that they can be practically implemented on short notice/warning.

Conclusion

Climate change is the major, overriding environmental issue of our time and the single greatest challenge facing environmental regulators. It is a growing crisis with economic, health and safety, food production, security and other dimensions. The changing temperature and rainfall pattern and increasing carbon dioxide levels will undoubtedly have important effects on global agriculture and thus on food security. Assessment of the effects of climate change on agriculture might help to properly anticipate and adapt farming to maximize agricultural production. Understanding the relationship between climate change and agriculture is an essential first step towards enacting effective and efficient solutions. Climate change will have dramatic consequences for agriculture. Developing economies and the poor would be the hardest hit because they do not have the resources to cope up with the changes.

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Need for a Win-Win Scenario

By **G. Kalyan Kumar**

Farming in is an age-old means of livelihood. But uncertainties bog down the life of Indian farmers, putting their financial fortunes in doldrums. So, the proposition of a sustained farm income is an attraction.

The entry of many industries into the farm sector in early 90s, searching for linkages with the producing community, in terms trading, processing, exports etc. to evolve convenient systems/models to ensure timely and consistent supply of raw material of the desired quality at low costs became the kernel of this connect with the Indian farmer and sowed the seeds of contract farming in India.

Its cushion came from the Government too; India's National Agriculture Policy envisages that "Private sector participation will be promoted through contract farming and land leasing arrangements to allow accelerated technology transfer, capital inflow and assured market for crop production, especially of oilseeds, cotton and horticultural crops". Further the UPA government's Approach Paper to the Eleventh Plan also eloquently pitched for increased contract farming.

Rationale

Defined as a system for the production and supply of agricultural/horticultural produce under forward contracts between producers/suppliers and buyers, the root of such an arrangement lies in the commitment of the producer/seller to provide an agricultural commodity of a certain type, at a time and a price, and in the quantity required by a known and committed buyer, typically a large company. Contract farming usually involves the following elements – pre-agreed price, quality, quantity or acreage (minimum/maximum) and time.

Legacy

Contract farming has its origins in the United States, where corporate penetration of agriculture is probably the most advanced and agricultural trade is dominated by transnational corporations like Cargill, Archer Daniels Midland and Monsanto, which are active at every stage of the agriculture system. These corporations try to dominate the market through a combination of horizontal and vertical integration.

India

In India, contract farming took wings with the foray of Pepsi Foods Ltd (PepsiCo) in 1989 when it installed a tomato processing plant in Hoshiarpur, Punjab. PepsiCo pursued a method where the cultivator plants the company's crops on his land, and the company provides selected inputs like seeds/saplings, agricultural practices, and regular inspection of the crop and advisory services on crop management.

Later on PepsiCo and other companies used similar methods for the cultivation of food grains (Basmati rice), spices (chillies) and oilseeds (groundnut) as well, besides vegetable crops such as potato. Since contract farming is based on private corporate interests that are inherently profit-driven, ecological requirements of a region can come under pressure. Much of the recent corporate interest in Punjab agriculture has been in basmati farming, which is one of the great water-guzzlers.

Pepsi Foods Ltd or PepsiCo entered India in 1989 by installing a Rs 22 crore state of-the-art tomato processing plant at Zahura in Hoshiarpur district of Punjab. Pepsi intended to produce aseptically packed pastes and purees for the international market. However, before long, the company recognised that investment in agro-processing plants would not be viable unless

the yields and quality of agricultural produce to be processed were up to international standards. At that time, tomato had never been cultivated in Punjab for its solid content, with a focus on high yields and other desirable processing characteristics such as colour, viscosity and water binding properties. Furthermore, little effort was made to create a database on the performance of various varieties and hybrids, or to introduce modern farming practices. There were no logistically efficient procurement models for fruits and vegetables that could be built on by the company. These apart, there were simply not enough quantities of tomato available even if the grown varieties/ hybrids were procured from the open market. The total Punjab tomato crop was 28,000 tons, available over a 25-28 day period, while PepsiCo required at least 40,000 tons of tomato to operate its factory, which had a gigantic capacity of 39 tons fresh fruit per hour.

The company required this intake over a minimum 55-day time frame, and in 1989, the season in Punjab did not last beyond 28 days. Sceptics even predicted that it would not work out. But they were proved wrong.

Innovations

PepsiCo follows a contract farming model where the grower plants the company's crops on his own land, and the company provides selected inputs like seeds/saplings, agricultural practices, and regular inspection of the crop and advisory services on crop management. The PepsiCo model of contract farming, measured in terms of new options for farmers, productivity increases, and the introduction of modern technology, has been an unparalleled success.

The company focused on developing region- and desired produce-specific research, and extensive extension services. It was thus successful in bringing about a drastic change in the Punjab farmers' production system towards its objective of ensuring supply of the right produce at the right time in required quantities to its processing plant.

Another important factor in PepsiCo's success is the strategic partnership of the company with local bodies like the Punjab Agricultural University (PAU) and Punjab Agro Industries Corporation Ltd. (PAIC). Encouraged by the sweeping success of contract farming in tomato in several districts of Punjab, PepsiCo has been successfully emulating the model in food grains (Basmati rice), spices (chillies) and oilseeds (groundnut) as well, apart from other vegetable crops like potato.

Basmati Rice

The company, which had been involved in the export of Basmati rice since 1990, was the first processor in India to invest and strengthen backward linkages for Basmati rice.

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After extensive multi-locational field trials at its 27-acre R&D farm at Jallowal near Jalandhar, PepsiCo ventured into contract farming in Basmati rice on a commercial scale. It invested in a modern processing plant at Sonepat and got involved right from the stage of selecting varieties of Basmati (based on customer preference), seed multiplication and development of a package of practices for farmers.

PepsiCo's scientists, who ensure successful transfer of technology from the trial to the commercial field levels, closely monitor the performance of the crop. At the time of harvest, the company procures the entire pre-agreed quantum of the harvested produce at the farm gates, at the pre-agreed price. The raw material so procured is transferred to PepsiCo's ISO 9002 and Hazard Analysis Critical Control Point (HACCP) certified Rice Mill located at Sonepat for processing, packing and export, ensuring that the product remains completely traceable from field to consumers.

During the 2002-03 crop year, farmers from Jalandhar, Amritsar, Hoshiarpur and Sangrur districts of Punjab, and parts of Western Uttar Pradesh were contracted for Basmati rice cultivation. Contracted farmers reaped higher yields of 2.5 tons/ hectare.

Ground Nut

PepsiCo diversified further and forayed into contract farming in groundnut with the farmers of Punjab to produce export-quality, value-added groundnut such as roasted and salted peanuts, flavoured and coated peanuts, and peanut butter. Using plastic mulch groundnut (PMG) technology sourced from China, PepsiCo took up two crops in a year – one in the kharif and the other in the rabi season. The company demonstrated yields of 3.0 and 4.0 tons per hectare on field trials for kharif and rabi crops respectively, much above the national average of 1.0 ton/ha.

Wheat

Contract farming in wheat is being practised in Madhya Pradesh by Hindustan Lever Ltd (HLL), Rallis and ICICI. Under the system, Rallis supplies agri-inputs and know-how, and ICICI finances (farm credit) the farmers. HLL, the processing company, which requires the farm produce as raw material for its food processing industry, provides the buyback arrangement for the farm output. In this arrangement, farmers benefit through the assured market for their produce in addition to timely, adequate and quality input supply including free technical know-how; HLL benefits through supply-chain efficiency; while Rallis and ICICI benefit through assured clientele for their products and services. The consortium is also planning to recruit other specialist partners including insurance, equipment and storage companies.

Cotton

Appachi Cotton Company (ACC), the ginning and trading house from Pollachi (Coimbatore district of Tamil Nadu, India) hit the headlines in May 2002 for the street play it employed to encourage farmers in the Nachipalayam village in Kinathukadavu block of Coimbatore to sow cotton seeds in their fields. The singer in the street play assured cotton farmers that unlike the past they would be backed by a model called the Integrated Cotton Cultivation (ICC) to guarantee a market-supported mechanism to sell their produce.

The ICC programme integrated the grower, the intermediary or the coordinating agency, the lending bank, the consuming industry and the government into a formidable combination to overcome all the hurdles and stay ahead of global competition. ICCP reduced cost of cultivation, increased yield, brought higher sale value and higher return on investment.

The ICCP of Appachi in Tamil Nadu was being funded by ICICI Bank. It has had 95 percent recovery on crop loans so far. The bank sanctioned a credit limit of Rs 4 crore for 2004-05 to cover an area of 5,000 acres. A similar model has been developed and practised by the Coimbatore-based Super Spinning Mills Ltd. These companies have introduced contract farming of cotton in over 10,000 acres of land in Tamil Nadu and Karnataka. More than 3,600 farmers are members and beneficiaries of the programme.

Key Elements of PepsiCo's Success

- Core R&D team;
- Unique partnership with local agencies including a public sector enterprise;
- Execution of technology transfer through well-trained extension personnel;
- Supply of all kinds of agricultural implements free of cost to contracted farmers;
- Supply of timely and quality farm inputs on credit;
- Prompt dispatch/delivery/procurement of the mature produce from every individual contracted farmer through the system of 'Quota Slips';
- Effective communication with field executives;
- Regular and timely payment to contracted farmers through computerised receipts and transparent system; and,
- Maintenance of perfect logistics system and global marketing standards.

For giving continuous and organised support, Appachi has set up Appachi Cotton Agronomy and Rural Empowerment Foundation (ACF) as the coordinating agency in the implementation of ICCP. In simple terms the formula means that the identified farmers are supported to cultivate cotton with a buy-back arrangement. The formula operates in a well-defined manner guided by the facilitator or the Coordinating Agency (CA). The agency assists the farmers in forming self help groups (SHGs) and links all the other players like the input suppliers, the bankers and the consuming industry to the farmers.

The Appachi Formula ensures that its farmers never go short of money and material during the crucial 100 days of the crop cycle. The contract assures that the farmer gets credit, quality seeds, fertilisers, pesticides and other inputs, continuous expert advice at his doorsteps at the lowest possible rates and a unique selling option.

ACC caters to top-bracket, quality-conscious clients from the textile industry in India and abroad, and their client specific operation has won them laurels. ACC is the only private ginner in the country to have successfully entered backward and forward integration between the 'grower' (farmer) and the 'consumer' (textile units).

The core principle of the formula lies in the formation of farmers' Self-Help Groups (SHGs). Each farmer belonging to a SHG is sanctioned Rs 8000/acre as crop loan @ 12 percent p.a. interest. Disbursement of this amount is strictly need-based. Allocation and

disbursement is at the behest of the coordinating agency. Hence all requests are scrutinised, evaluated, authenticated, and only then recommended to the lending bank. All the participating farmers are asked to issue PDCs (Post Dated Cheques) for the loan they avail. Hence, the moral responsibility of fulfilling the bank's obligation squarely lies on the participating farmer.

Unique Pricing Model

The Appachi formula differs significantly from other existing contract farming models on the 'pricing' front as no prior price fixing is done in this model. As cotton is a commodity prone to price fluctuations due to domestic and international market forces, ACC did not wish to create a climate of uncertainty due to pre-fixed prices with the contracting farmers. The MoU gives the farmer the liberty to sell his commodity at the market prices prevailing during the time of negotiation. The coordinating agency has the first right to negotiate, but in the event of disagreement about price during negotiation, the farmer groups can call for a tender/auction to sell the accumulated cotton.

The MoU clearly stipulates conditions to be followed in case of open tender/ auction, and allows the coordinating agency to participate in the proceedings. The formula has built some checks and balances into the system for early identification of troublemaking farmers or willful defaulters and their elimination at an early stage to protect the interest of the Group, the bank and the coordinating agency.

Barley

Belgaum-based Ugar Sugar Works Ltd has a success story to share. It established a successful backward linkage with farmers of Northern Karnataka for supply of barley for its malt unit. Farmers surrounding Ugar Sugar in Belgaum had been cultivating sugar under intensive irrigation faced with the problem of salinity in soils. Ugar Sugar made an effective intervention and started informing the farming community about alternative crops suitable for saline soils. Of these, barley was known

Key Principles of the ACC Model

- One village, one group (SHG);
- One village, one variety/hybrid of cottonseed;
- Crop loan at 12 percent per annum on Group's guarantee;
- Door delivery of quality inputs at discounted rates;
- Cotton crop insurance;
- Synchronised sowing;
- Integrated crop management through competent Farm Service Centres;
- Contamination control measures from farm to factory;
- Assured buyback of final produce from farmers' doorsteps; and,
- The sponsor (ACC) plays the role of a perfect coordinator/facilitator between the producer and the consumer.

ACC caters to top-bracket, quality-conscious clients from the textile industry in India and abroad, and their client specific operation has won them laurels. ACC is the only private ginner in the country to have successfully entered backward and forward integration between the 'grower' (farmer) and the 'consumer' (textile units)

to give economic yields of good quality in saline soils. The company assured the farmers of a market for their produce if they agreed to grow barley, as well as the required technical and input support.

After intensive research and field testing of over 800 varieties of barley, the company supplied UBE425 variety of barley to its 470 contracted farmers, who mostly owned between 2-5 acres of land, were within the radius of 40 kilometres from the company's malt plant, and had resources enough to irrigate the crop at least twice during the crop cycle.

The acreage under the contract grew from 356 acres to 819 acres later. This acreage was able to satisfy only 8-10 percent of the total annual requirement of barley for the malt plant. The contract farming system helped the company to get barley with high starch, less protein (<12%) and homogeneity, at the right time, in required quantities, and the most competitive prices.

The price of barley fixed by Ugar Sugar varied from year to year depending on the market for barley and malt.

Criticism

In all the existing (currently working) models of contract farming, farmers' participation remains limited to production in the field – seeds, inputs, technology packages and technical guidance through regular supervision are usually provided by the contracting company. Critics are of the opinion that the results are very promising in early years. Farmers benefit from improved technology and higher productivity, quality and production. The contract price does not appear to matter much in the early years.

Once the farmers are confident of being able to deploy new technology, problems start cropping up. If the market price is more advantageous than the contract price, farmers renege on the contract. "The present legal systems makes it impossible to enforce the performance under contract" says Sharad Joshi, Founder of Shetkari Sanghatana, a peasants' organisation in Maharashtra.

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Sustainability

Contract farming models can sustain only if the initiative/empowerment comes from the farmers rather than the corporate. In the existing models, farmers are largely 'price takers,' while the contracting firm 'makes' the price.

Other criticisms levelled against contract farming in India include less generation of employment, labour-saving farm practices, low level of commitment of corporates over rural development, lack of transparency and communication etc. Enforceability of the agreement, and standardisation and operationalisation of contract farming agreements are the major bottlenecks plaguing contract farming ventures in India.

Study Findings

A study conducted by the Ahmedabad-based Indian Institute of Management (IIM-A) noted that contract farming in India has not benefited the farmers the way it was desired. It called for appropriate institutional arrangements; legal provisions and government intervention to protect the interests of farmers. The study 'Contract Farming for Agricultural Development' was commissioned by the Centre for Trade & Development (Centad), an initiative of Oxfam GB in India.

Ugar's Barley Contract Farming Model: Key Elements

- The company supplies genetically pure seed on credit to the contracted farmers without interest;
- The price of barley seeds supplied for sowing and the final produce that is procured by the company is the same i.e. cost of the seed is same as that of the pre-agreed price of barley. Hence, the quantity of seed supplied for sowing is recovered from the time of procurement of the produce;
- A technical person from the company visits the farmers' fields at least four times in a crop cycle, giving free technical assistance;
- The company supplies seed at the sowing points in farmers' fields, and the final produce is procured from the fields at the company's transportation cost; and,
- Under the contract, it is obligatory on part of both the contracting farmer and the company to sell and buy respectively the entire contracted quantity at the pre-agreed price. As there is no market for barley in the surrounding areas, there is no other alternative for the farmer except to sell the produce to Ugar Sugar. There had been no defaults.

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The study conducted by Sukhpal Singh of the IIM-A's Centre for Management in Agriculture noted, "Contract farming, in political economy, is one mode of capitalist penetration of agriculture for capital accumulation and exploitation of the farming sector by the agribusiness companies." It said that this new concept is the result of the recent developments in marketing, food habits, technology and agriculture in the new economic environment.

Contract farming is in India is being practiced by MNCs like Cadbury in cocoa, PepsiCo in potato, chillies and groundnut, Unilever in tomato, chicory, tea and milk, ITC in tobacco, wood trees and oilseeds, and Cargill in seeds. The domestic corporations active in this field include Ballarpur Industries, JK Papers and Wimco in eucalyptus and poplar trees, Green Agro Pack, VST Natural Products, Global Green, Intergarden India, Kempscity Agro Exports and Sterling Agro in gherkins, United Breweries in barley, Nijjer Agro in tomato, Tarai Foods in vegetables, M Todd in mint, and Namdhari Seeds in seeds. There are also many government and semi-government agencies involved in this exercise.

Reforms

Financial institutions and banks assisting contract farming have noted a general monopoly of corporates and contracts being loaded against the farmers. With an aim to mitigate the situation, the IIM study suggested formation of "new generation of cooperatives" for increasing the bargaining power of contract growers. Thus, the contractor supplies all the inputs required for cultivation, while the farmer supplies land and labour. However, the terms and nature of the contract differ according to variations in the nature of crops to be grown, agencies, farmers and technologies, and the context in which they are practised.

Conclusion

To establish an agrarian economy that ensures food security to the population, raw material for its expanding industrial base, surpluses for exports, and a fair and equitable rewarding system for the farming community, a 'commitment driven' contract farming model is required. It can be a viable alternative farming model, providing assured and reliable input service to farmers and desired farm produce to the contracting firms.

As can be seen, several Indian and multinational companies have employed the model in India and have demonstrated success. The successful cases should inspire more to emulate them for garnering mutual benefits and make Indian agriculture more productive.

AGRI NEWS

India's Monsoon to be Normal: Good News for Farmers

The Monsoon rains in South Asia are expected to be normal this year, raising hopes of lower inflation and a rebound in output of cane, soybean and rice after drought last year. According to A.K. Srivastava, Director of the Indian Meteorological Department, "Based on the prevailing global climate indicators and forecasts from global statistical and dynamic models, rainfall over South Asia is likely to be within the normal range."

The regional forecast was based on discussions with officials of the World Meteorological Organisation and representatives from Pakistan, Sri Lanka, Bangladesh, Nepal and Maldives at the three-day South Asia Climate Outlook Forum in Pune. The Indian weather office will issue a separate forecast for the country soon, based on a historical set of parameters modelled on a supercomputer.

Normal monsoon rainfall is expected to boost key summer crops such as soybean, reducing purchases by the world's top importer of edible oils, and reduce sugar imports by the world's top consumer of the sweetener.

The wakening of the El Nino weather phenomenon, which disrupts normal weather patterns, would help the monsoon, and there were chances of La Nina, the opposite and favourable phenomenon, developing.

In March, the Geneva-based World Meteorological Organisation (WMO) said El Nino peaked and will influence climate patterns up to mid-year before dying out. India's annual June-September monsoon rains which deliver 75-90 percent of total rainfall was the weakest in 37 years in 2009, ravaging rice and oilseed crops.

NAFED-BARC tie up to bolster agri production

In a bid to distribute high yielding varieties of seeds to farmers and bolster the quantity of agricultural produce, the National Agricultural Cooperative Marketing Federation of India (NAFED) has decided to enter into a partnership with Bhaba Atomic Research Centre (BARC).

NAFED is the national nodal agency for seeds. The Mumbai-based nulcear establishment, BARC has been working on high-yielding varieties of seeds under its nuclear agriculture and biotechnology division. It has developed 38 new crop varieties by combining mutation and recombination breeding. The NAFED and BARC are expected to sign a Memorandum of Understanding (MoU) soon. "We will create a bridge between the scientist and the farmer. The BARC has generated the technology and it is our turn to disseminate it," NAFED managing director, Dr C V Ananda Bose said.

Under this tie-up, BARC will be supplying the technology and breeder seeds to NAFED, which will in turn ensure multiplication of the seeds into certified seeds and facilitate distribution to farmers. Increasing appropriate dissemination of technology, like the BARC-NAFED tie-up, is the only way to increase productivity, Bose added.

Record Cotton Output in 2010-11 Predicted

India's cotton production may increase by over six percent to a record 25 million bales in the 2010-11 season, if the country receives normal monsoon this year, the US Department of Agriculture has forecast. Cotton output is pegged at 23.5 million bales (one bale equals 170 kg) in 2009-10 marketing season (August-July).

"Assuming a normal 2010 monsoon, cotton production in India's marketing year 2010-11 is forecast to increase to a record 25 million bales on expected record planting and improved yields," the USDA said in a report. The Department noted that the area under cotton is forecast to increase marginally to a record 10.3 million hectares from 10.26 million hectares provided there is "timely and well distributed monsoon at the time of planting."

Cotton area in most growing states is forecast slightly higher than last year except in Gujarat and Maharashtra, where farmers may revert to traditional crops, the report said. "Planting intentions for 2010-11 cotton crop will be favourably influenced by comparatively strong cotton prices and relatively stable yields (realisation) vis-a-vis other competing crops during the marketing year 2009-10," USDA said.

Productivity is also expected to rise by six percent at 528 kg per hectare in the next season. "With the area under Bt cotton and improved varieties now reaching the peak (90 per cent of the total area), the prospect for future growth in productivity is limited as most cotton is grown under rainfed conditions and small size of land holdings," the report noted.

Although, potential for a further increase in yields exists, farmers will have to make large investments on production technologies to achieve better management of irrigation, fertilisers and micro nutrients, it added.

Women Agri Workers lagging in Skill Development

In the agriculture sector of India, women shoulder most of the burden. And the sad part is that they miss the organised and high-level training, which is the primary reason for their hapless plight. This was revealed in a survey conducted in India, by the London-based City & Guilds Centre for Skills Development (CSD), an independent research and development organisation in association with Ahmedabad-based Self Employed Women's Association (SEWA) and Kudumbashree, Kerala.

The study states that even though nearly 70 percent of agricultural activities in India are carried out by women, it is the men folk who receive more and better training. Women, on the other hand, continue to remain at the bottom of the pyramid, confined to toiling in the fields. The report further highlights the need for appropriate training for women to ensure their productivity is not lowered because of a lack of it.

The report investigates the challenges women face in rural India. These women are generally confined to being crop producers, without a say in the marketing and sales of the produce, relying upon their husbands for all financial aspects.

Despite their inclusive and vital contribution in agriculture, social and traditional norms relegate women to the role of child-bearers and homemakers. Coupled with dismal attention towards female education, women, unlike men, are devoid of the opportunities in training. Further, in agrarian economies heavily dependent on rains, women have little or no access to information on how to harness climatic changes to their benefit. Trainers from SEWA, for example, found that poor rainfall and disease had an annual impact on productivity, and women are unable to cope with the seasonal nature of agriculture.

"Gujarat has 60 percent rain-fed agriculture, which is very risky. Therefore, as an alternative, Gujarat has trained women in agro-horticulture and animal husbandry and linked this to cooperative dairies run by women," the study says.

BRIC Nations to Work on Food Security

The BRIC nations – Brazil, Russia, India and China – agreed to cooperate in ensuring global food security by providing food to the vulnerable layers of the population and jointly working towards mitigating the effect of climate change on the farm sector.

After their maiden Moscow session, BRIC farm ministers signed a joint declaration in which they have agreed to set up an experts group to oversee groups' cooperation. The joint declaration also agreed to create an information database, and develop a general strategy for ensuring access to food for the most vulnerable sections.

The BRIC experts group would also take comprehensive adaptive measures to mitigate the negative impact of climate change on food security and adaptation of agriculture to such changes. They urged the developed countries to offer technical and financial assistance on climate change to the developing countries and developing countries should actively take all measures to promote sustainable growth and make their due contribution to counter climate change.

The experts group will prepare specific proposals and report to BRIC farm ministers at their next meeting in 2011.

Addressing a joint press conference, Indian agriculture minister Sharad Pawar said, "BRIC cooperation in the field of agriculture holds considerable potential as it directly impacts nearly 40 percent of the global population living in them as well as indirectly much more." This was the first-ever meeting of the agriculture ministers of the four fastest emerging economies.

Pawar emphasised the lack of access to affordable food is the root cause of the ongoing civil wars in at least 13-14 countries and the interaction of BRIC would help to resolve the issue of food security on a global scale. He also underscored the need for the speedy completion of the Doha Round on the basis of fairness and non-discrimination.

The Joint Declaration said ensuring food security requires a well-functioning world market and trading system for food and agriculture based on the principles of fairness and non-discrimination. "In this regard, it is of paramount importance to accelerate the Doha Round of talks," the joint declaration added.

Chinese farm minister Han Changfu said that BRIC nations are already ensuring the stability and food security through their individual efforts. "The world's most populous nations – China and India – are feeding themselves and this itself is a great contribution to the global food security," Han pointed out.

Round Table Discussion on Role of Farmers Producer Organizations

Some Interactive Pictures from the Session...