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Organic Agriculture

Policies, Future & Sustainability

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EDITORIAL

Organic farming is once again gaining ground in the country for several reasons. Excessive and indiscriminate use of inorganic fertilizers and pesticides has deteriorated soil badly with deficiency of macro and micronutrient. It is observed that efficiency of fertiliser is not more than 50 percent. Organic produce contains more vitamins, minerals, enzymes, trace elements and even cancer fighting antioxidants than conventionally grown food. Most importantly, the productivity of organic farming may be less in initial years, but the yields stabilise progressively equating the yields under inorganic farming by the third year.

The produce of organic farming has great export potential. Internally, also its demand is increasing though at present it may be affordable on daily basis only by the very rich. But as more and more farmers take to organic farming and there is greater availability of organic produce, it should be possible for the middle and lower middle classes to consume organic farming produce.

In this action packed issue we look into various aspects of organic agriculture, as prominent writers with expertise in this field dwell with each and every minute aspect of this sector.

We also discuss the Microfinance Regulation Bill that created quite a buzz recently. There is some good news for women agriculturists too, modern technologies not only help in reducing drudgery but also are less time consuming, read more in our features segment.

At the end we have the pleasure of interviewing Schwab Social Entrepreneur of the year, Mr Amitabha Sadangi who talks more about his treadle pump and all that's been happening at the IDEI.

We have also started an interactive column with our erstwhile readers. Mr Mukesh Gupta will answer all your queries related to the agri field. Do write in to us.

Happy reading!

A.K. Garg
Editor-in-Chief

I N S

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Organic Agriculture Development in India by Government

By **Mukesh Gupta***

The First Initiative: Steering Group

In late nineties, a Steering Group was constituted by Government of India under the Chairmanship of Dr. M.s. Swaminathan to give its recommendation for organic farming in India. This Committee gave following recommendations:

- Organic Farming can be a major thrust area for promotion in NE region and rainfed areas having low consumption of agro chemicals.
- Organic Farming should be national challenge project for mISSIon mode implementation with concurrent attention on production, processing and marketing.
- Projects should be formulated on Organic Farming to provide support to producers through technology and inputs.
- Identification of organic zones for various crops should be undertaken.
- The committee recommended the setting up of certification agencies accredited by world organizations both in public and private sector for export of organic produce.
- It is said that there is a large potential for export of organic produce and organic rice will enjoy competitive advantage.

Task Force on Organic Farming by Ministry of Agriculture, Government of India

Considering the importance of organic farming in the country as an emerging field, a Task Force on Organic Farming was set-up in May-2000, by Department of Agriculture and Cooperation under the chairmanship of Shri Kunwarji Bhai Yadav, which comprised of some Members of Parliament, senior government functionaries and Experts, which submitted its report on 29.11.2001.

The few success stories indicate the benefits of organic farming but there is no awareness among people in general about the benefits of organic farming as there is no state or central government support

The Task Force observed that organic farming is being practised by thousands of farmers and institutions in the country though mostly in an unorganized way. By this time, the Task Force could not get much evidence of government initiatives in this field.

The few success stories indicate the benefits of organic farming but there is no awareness among people in general about the benefits of organic farming as there is no state or central government support. No market have been developed in the country for sale and promotion of organic produce and huge subsidy is given on per tonne production of chemical fertilizers, while no subsidy or incentive is given for use of organic manures.

The Task Force highlighted the following main constraints in the promotion of organic farming in the country:

- Lack of data about the area and production of organic products and also status of export quantity and its value.
- Non-availability of any national level body/organization exclusively responsible for development of Organic agriculture in the country.
- Non-availability of prescribed standards for organic farming and non- availability of adequate number of recognized Accreditation agencies and Certification agencies (except recently notified by the Ministry of Commerce).
- Lack of integrated research on the various aspects of organic "agriculture, lack of extension/ promotion agencies for popularization of organic agriculture and lack of general consumer awareness about benefits of organically produced food.
- The Task Force prepared a complete report covering almost all aspects of organic agriculture, with substantial details on fertility and pest management issues. Some of the main recommendations of the Task Force submitted in its report were as under:
- Setting up of National level permanent board to oversee the promotion of organic farming in the country and to coordinate with all concerned central and state agencies, research agencies, including international agencies.
- Equating economic value of chemical fertilizers and organic manures in terms of their overall effect on soil productivity and financial support to the organic farmers in general for initial 2-3 years of conversion period.
- Formulation of national standards of organic farming, processing plants, animal husbandry and its harmonization with international standards and its effective regulation.
- Government support for market development for organic produce in domestic and export market.

The Working Group on Organic and Biodynamic Farming by Planning Commission, Government of India

As a prelude to Five year plan formulation exercise, this was a very important initiative. The working group was constituted of members, who could do justice to this issue, but some how the group could not meet to discuss and thus only draft papers were presented before the Steering Group that were incorporated in the final report. This Working Group had following terms of reference:

- To review the performance of various programmes of Department of Agriculture and Co-operation (DAC) and ICAR undertaken on organic and bio- dynamic farming.
- To assess the technical soundness of organic and bio-dynamic farming practices to provide balanced nutrition and their efficiency to exploit the full genetic potential of the recommended crop varieties.
- To assess the techno-economic feasibility to such practices and their potentials and limitations to increase

crop productivity and sustain food security of the country.

- To suggest measures/programmes for encouraging organic and bio-dynamic farming practices for which these are considered feasible and viable.

The group deliberated on definitions of organic farming and evaluated present activities of promotion of organic fanning by ICAR and Department of Agriculture and Cooperative. The group also identified crops that are currently cultivated under organic farming methods in the country.

- *Cereals:* wheat, paddy, jowar, bajra. maize
- *Pulses:* pigeonpea, chickpea, greengram, blackgram, chana
- *Oilseeds:* ground nut, castor, mustard, seasamum
- *Commodities:* cotton, sugarcane for sugarcandy (gur)
- *Spices:* ginger, turmeric, chillies, cumin
- *Plantation Crops:* tea, coffee, cardamom
- *Fruits:* banana, sapota, custard apple and papaya
- *Vegetables:* tomato, brinjal, cucurbits, leafy vegetables.

The group also discussed major R & D issues and suggested development strategies. In this report, this group identified areas for government support at village level in lieu of current farm subsidies. They requested to draw the attention of the Planning Commission for Government support to following items in the Xth Five Year Plan:

- Manufacture of biofertilisers
- Manufacture of bio-pesticides
- Manufacture of small-farm implements
- Market intelligence and information system
- Establish credit-linked and market-assured production units

National Programme for Organic Production (NPOP) by Department of Commerce, Ministry of Commerce & Industry, Govt. of India

In 1996, Ministry of Commerce took the initiative for development of organic agriculture in the country and a Standing-cum-Accreditation Committee was constituted. The four export organizations *viz.* APEDA, Tea Board, Coffee Board and Spices Board were asked to prepare National Standards matching international Standards.

Originally, the draft standards were prepared on the basis of EU regulation No. 2091/92, Codex Standards and guidelines by IFOAM. In March, 2000 it launched "NATIONAL PROGRAMME FOR ORGANIC PRODUCTION CONTAINING THE STANDARDS FOR THE ORGANIC PRODUCTS."

In order to implement NPOP, a National Steering Committee was constituted under the Chairmanship of the Commerce Secretary. The four organizations under the Ministry of Commerce namely APEDA, Tea Board, Coffee Board and Spices Board were declared as Accreditation Agencies.

Subsequently, a Trade Notice was issued to give effect to these regulations. The relevant contents of the Trade Notice issued on 18th June, 2001 are as. below: "Government of India through Director General of Foreign Trade, New Delhi vide their Public Notice No. 19 (RE-2001)/ 1997-2002 dated 11.06.2001 have, with effect from 1.7.2001, allowed export of organic products only if they are produced, processed or packed under a valid organic certification issued by a

certifying agency accredited by one of the Accreditation Agencies designated by the Government of India."

It is believed that Ministry of Commerce and Industry largely took this initiative in view of increasing competition in global markets. The WTO to an extent also influenced this decision. The national programme for organic production by the ministry has been developed only for exports. Somehow the critical issue of conversion period and farm produce available during conversion period has not been dealt properly. In many instances, it has not been possible to export farm produce grown during this period. Also, despite Standards formulated under NPOP for export, its applicability for local-domestic marketing has not been resolved.

National Programme by Ministry of Agriculture

With the submission of Task Force report on organic farming, Dept. of Agri. and Coop. in Ministry of Agriculture has been continuously working to evolve a national programme for promotion of organic agriculture in India during the Xth Five Year Plan. In the month of July, 2002, a letter was issued by Special Secretary, Dept. of Agri. and Coop., Ministry of Agriculture giving "Guidelines on promotion of organic farming" to all the states in the country.

Organic Agriculture Development Initiatives by Private Sector

Early Initiatives and Their Documentation

In India, it is generally said that over 30-40 percent of our agriculture can easily qualify to be organic. Despite this large volume, very little has been systematically documented on organic agriculture. For the first time in India, the Task Force constituted by Dept. of Agri. and Coop., at Government of India level undertook an exercise to collect information on organic farming in India. In response to a press releasby the ministry in 2001-2002, many institutions, NGOs and farmers gave information about their activities, presumably about organic farming as practised by them.

This Task Force compiled all the information and presented their findings both based on information provided by respondents as well as, through the visits made by the members to various locations in the country. Some of the important locations visited by the Task Force is listed below in alphabetical order:

- *AUROVILLA and ANNPURNA FARMS;* at Annpurna Farms, crops have traditionally been grown without the use of chemicals. Their main concern has been to produce food free from contamination. For the members of the Task Force, good standing vegetable crops were sufficient testimony to the good crop response to organic manures. Till the time of visit, no certification procedure was adopted by them.
- *KSHAMA FARM;* the farm developed on sand dunes in 1986 is a model site for organic farming. The entire farm of forty acres is managed under organic practices. The farm has adopted Bio-dynamic system of cultivation. The crop diversity at the farm enables judicious use of scant resources. This farm has been under organic certification and can be considered as the first model of certified organic farming in north India. According to Mr. Grewal, the owner of the farm, his average expenditure on nutrients is only Rs. 87/- per acre. Mr. Grewal was also a member of the Task Force.
- *KUTTY MENON FARM;* at Indore Sh. Kutty Menon also another member of the Task Force has been growing vegetables in kitchen garden under organic management practices. He has already grown over 100 plant species utilizing organic manures.
- *M.R. MORARKA GD.C. RURAL RESEARCH FOUNDATION;* first of all got the opportunity to make a presentation to all the members of Task Force at Kshama Farm. Subsequently, few members visited the project area at [aipur and Navalgarh. It made early beginning in 1995 under a contract with Directorate of Agriculture, Government of Rajasthan to deliver agriculture extension services. To reduce the cost of cultivation and to substitute high value chemical fertilizers, it developed Vermiculture technology. In few years time, many farmers with the use of biological fertility and pest management

practices reached organic status. The Task Force members after their visit described these techniques as farmer friendly practices.

- *M.S. SWAMINATHAN RESEARCH FOUNDATION;* has been implementing bio-village programme funded by Asian Development Bank and some other funding agencies. This programme addressed twin problems of resource based degradation and rural poverty through blending of natural resource management. Essentially, this programme was designed to be pro-nature, pro- poor and pro-women to a job led economic growth and indirectly an organic agriculture programme.

Government Stakeholders and Their Roles in Organic Promotion

Ministry of Agriculture

In India, Ministry of Agriculture at Government of India level is the apex body.

Though agriculture is a State subject, most of the new initiatives for the development of the agriculture in the country in the past have been taken by them. It is, therefore, imminent for them to once again come forward for the development of organic agriculture in the country. Following departments under the Ministry can playa role to make a difference:

- *Department of Agriculture and Cooperation* is the nodal department for Organic Agriculture. It has already initiated the process for formulating a scheme to be implemented during Xth Five Year Plan for organic agriculture. Now, the time has come to decide on setting up a National Board as a national level body of excellence that can command international acceptance and can also oversee all the developments required in this regard. Some initiatives have already been undertaken but much more is required to be done. The Department has already designated a nodal officer, but following should be done on priority:
- It can provide enabling environment for conversion into organic agriculture by encouraging industry, farmers and trading community for the production of organic inputs, organic cultivation, value addition by processing, direct marketing of organic produce etc. It is advised that all such activities are carried out by the entrepreneurs only, and for this purpose they can organize series of interactive workshops by involving all stakeholders.
- *National Horticulture Board* has been the single point nodal agency for promoting Horticulture activities in the country. In last three years, quite a few buyers of organic produce from abroad have shown more interest in horticulture produce as compared to other crops. It is therefore, very important that NHB in their regular programmes of support, can provide greater emphasis to organic conversion of horticulture activities *i.e.* both production and processing. A small field level programme has already been approved by them in 2002-2003 for Baghpat near Delhi being implemented by Morarka Foundation.
- *NBDC* being the front ranking organization for promoting the production and use of biofertilisers, can also be designated as the nodal department for organic agriculture. Their infrastructure can also be used for providing quality testing services related to organic inputs. NBDC also have many regional centres, but they are not uniformly distributed in the country. NBDC can be made to join hands with private sector to set up more centres in the country.
- *Small Farmers Agribusiness Consortium (SFAC)* has been working to support agribusiness activities in the country. Their recent initiatives to implement Agri. Clinic scheme can also provide necessary support for setting up organic clinics. SFAC should also consider to provide support for organic Agri. Clinic scheme in addition to their existing activities. SFAC is also the lead organization for promoting agriculture development in North-East region. This and potential source of organic produce in the country. A programme for introducing biological fertility management practices funded through state agencies is already being implemented by Morarka Foundation in NE region.

Ministry of Science and Technology

This Ministry has been the major source of funding for research in the country. Massive infrastructure, institutions and programmes are being run by them. Many of their departments and agencies

such as Department of Biotechnology (DBT), CFTRI, NRDC etc. have carried out pioneering research works in many aspects related to agricultural technology. They can be directed to also focus on organic agriculture. DBT has already sanctioned many programmes for Vermiculture and related subjects all over the country. Recently DST has also approved a research programme for developing below ground bio diversity management practices for maintaining soil In addition to greater emphasis on research related to organic management, massive efforts are also required to compile the research reports prepared by many of its agencies in the past. From the literature search at various research organizations, we have come to know that hundreds of such reports especially related to biological fertilizers and biopesticides are available with them. But it is not possible for common farmers to access any of this information. Similarly, DBT, which has already supported many programmes for biological fertility and biopesticides development in the country can also compile the outcome of these efforts in printed or electronic form.

Ministry of Commerce and Industries

This Ministry has already undertaken the lead in developing regulations for export of organic produce from the country. The time has come to direct their promotional boards and agencies such as APEDA, Tea Board, Coffee Board, Spices Board etc. to take up promotional activities for organic management in addition to their present responsibilities as accreditation agencies. This Ministry can also promote "Special Economic Zones" for organic agriculture development both by private sector as well as state agencies. APEDA has already got a website giving names of certified organic exporters.

The ministry should also initiate efforts to finalize reciprocal acceptances of its standards with other countries. In the absence of such reciprocal acceptances, any producer-exporter is unneccessarily required to comply with two standards namely one prescribed by the mininstry and secondly, as per the importing country's req uiremen ts.

Each of its nodal agencies can also take up the responsibility for preparing

organic manangement practices applicable in our own context for the crops under their jurisdiction.

Ministry of Food Processing Industries

Being the nodal Ministry for food processing sector" must come forward to recognize organic agriculture being the most competitive advantage, this country enjoys. They should immediately organize themselves to formulate programmes and schemes for promotion of processing under organic management. The Ministry should actively encourage private sector to set up food parks exclusively for organic processing in different parts of the country, even special incentives should also be provided for this activity. Recently, the ministry has introduced a new scheme *"Grant under Backward Linkages Scheme of the Minsitry of Food Processing Industries"* in which ontract farming has been made the basis for the grant of benefits under this scheme. Organic agriculture should be given the highest priority, even if only primary processing such cleaning, grading and packing is carried out as processing activity. The contract farming for organic agriculture will find ready acceptance by our farmers.

The Ministry can also promote "Special Economic Zones" for organic agriculture development both by private sector as well as state agencies. APEDA has already got a website giving names of certified organic exporters

State Departments of Agriculture

Agriculture being state subject, all activities for agriculture development has been carried out by State Departments of Agriculture. After independence Indian agriculture has passed through many phases. The famines and severe food shortages in sixties, forced policy makers in the country to create massive agricultural research, education and extension infrastructure.

The State Departments of Agriculture through their extension services ushered in green revolution during seventies and eighties making the country not only self- sufficient but also generated surpluses for exports. The same Departments are today in the state of

stagnation, as far as second green revolution also termed as Ever Green Revolution is concerned.

Today large number of farmers are concerned with the falling income in agriculture. The ever increasing cost of production and practically stagnant prices of farm produce has severly eroded the farm income. Both research institutions as well as extension agencies have not been able to offer any solution to this problem. Organic agriculture in these circumstances is being offered as one option available to us. Since under organic management, most of the inputs would be produced at the farm itself, the cash expenditure on buying expensive inputs from the market will get eleminated. The other important component of organic anagement that is diversity of crops and integrated approach to agriculture is also expected to generate new and diversified revenue generating opportunities. The premiums associated with organic produce will also help increase farm level incomes.

Despite over ten years of organic agriculture development in the world, not many State Departments of Agriculture have as yet introduced any meaningful organic agriculture development programme except for Madhya Prdesh, Rajashtan and Uttaranchal. It has only been in the month of September-October 2003 that Punjab Agro Industry Coorporation has invited offers for contract farming under organic management.

The three states known to have taken up new initiatives in last two years, Madhya Pradesh State Department of Agriculture has lauched a massive programme covering their entire state. In all the development blocks of Madhya Pradesh, 313 villages have been identified and declared organic by the State Government. Series of awareness activities including procedures for registration and certification of organic produce have been introduced.

The State Government has also mobilised all its agencies to coordinate their efforts, in not only promoting the production of organic food but also its exports. Today, Madhya Pradesh has already become a model of organic agriculture development in the country. In Uttaranchal, the State Department of Agriculture made the beginning with a programme to introduce organic fertility mangement practices. Since most of the farming operations in the state of the Uttaranchal that is out of 1.2 million hectares is in Tarai and Himalayan foot hills, it is largely already under organic management. A database of farm produce from this region is already being prepared. Today a large range of products especially lesser known varieties of cereals and pulses are already being offered as organic produce by them. In Rajasthan, State Department of Agriculture under took a small initiative to introduce organic farming in five villages of Ganganagar district in the year 2001. Subsequently, from the year 2001-2002 State Department of Agriculture has been carrying out demonstration activities for introducing organic practices in the state. Morarka Foundation being a joint collaborator with State Department of Agriculture providing extensive services introduced a massive programme of organic agriculture development wayback in the year 2000 itself. In the month of August 2003, State Department of Agriculture had also declared hundred villages as organic villages.

Recently, *i.e.* in the month of September 2003, a joint initiative has been launched by District Administration, Udaipur and Morarka Foundation. In this initiative, the complete Kotda block comprising of 1,80,000 hectare total land area with 20,000 hectare land under cultivation and the rest being forest area, all the activities such as farm produce, animal product and even forest produce is being brought under certified organic production.

**The writer is Executive Director, Morarka Organic. The story is an excerpt from his book - Development of Organic Agriculture in India.*

The Future of Organic Agriculture in India

Mr Mukesh Gupta, Executive Director of the Morarka Foundation and President of the International Competence Centre for Organic Agriculture, answers a few of our queries regarding the future of organic agriculture in India.

Q Organic agriculture and effect on bio-diversity?

The organic Agriculture essentially helps conserve natural resources and protect the bio diversity:

1. The organic standards require on farm recycling of Bio Waste.
2. Keeping of animals on farm is an essential pre requisite.
3. Over the years the organic carbon of soils goes up, like carbon sequestration.
4. It encourages indigenous crop varieties.
5. It requires cultivation of multiple crops on the farm.

Q Where do you see organic agriculture heading in the next 5 years?

In five years the conversion from chemical to organic should go up by at least 10 times. There should be at least 10 Million Consumers who would have organic food on regular basis.

Q What is the current scenario of India's organic exports?

The organic began to develop with export focus. Over the years some specific commodities like Tea, Coffee, Spices, Basmati Rice, Cotton, Honey etc found greater acceptance in international markets. While they are still being exported, new products are getting added every year. In future I can see many companies exporting value added and processed food products that too in their own brands.

Q To which parts of the continent does India export most of its organic produces?

It all began from Europe; subsequently US become the major importer. But in future Middle East, South East and Australia may become major importers too.

Q Where does India stand according to current rankings vis a vis total land under organic cultivation.

It has already gone up to about 10 Million hectare certified land.

Q Challenges that we face?
The challenges are:

1. Availability of organic food on retail shelf.
2. Awareness creation about the certification and its credibility
3. Processing capacities for value added food items.
4. Support to farmers for adoption of organic methods of cultivation
5. Incentivisation of organic farmers, as being done for chemical and high input farming.

Q How to overcome such challenges?

1. Get more retail chains to offer reasonable terms of trade to organic companies.
2. Government should run campaign for awareness, as it does for ISI, Agmark etc.
3. Technology development by Govt Research organizations for processing and quality management.
4. Introduction of IT Enabled Extension & Technology Transfer to the farmers.
5. Subsidies on Organic inputs.

Q According to the latest news India has set a target of exporting organic food worth $1 billion in the next five years with its produce receiving wide acceptance in many mature markets of the US and Europe. Your thoughts?

Off course yes, this is possible. Even if government allows the unhindered export of all organic commodities, this can be easily achieved. But Government keeps restricting the export of many food items from time to time. This affects building the long term business plans for exports.

Q Under the 11th Five Year Plan (2007-2012), the country targeted the development of five million hectares of cultivable land into certified organic farmland by promoting a scheme to compensate farmers for the lower yield of such crops. Your assessment?

Some how all such targets are made may be to get media coverage. Subsequently no action is taken by the Government. Even the plan and scheme made for this plan period has not yet been approved, that too even after almost three years. Some how these targets are not announced in Parliament, becoming mandatory for the Ministry to achieve it.

Despite this attitude, one Million Hectare has been achieved. I think if not the full target, at least 3-4 Million will happen.

Article compiled by Deebashree Mohanty

Conventional Farming to Organic Agriculture

The big switch - Problems that came with this transition

By **Kasturi Das***

Even as the sustainability of the chemical intensive agricultural practices promoted by the Green Revolution in India is increasingly being called into questions, organic agriculture seems to be emerging as an alternative farming model. This is evident from the recent trend among an increasing number of farmers in the Green Revolution belts of the country to voluntarily switch over to organic agriculture from the 'hybrid seeds-agrochemicals and irrigation' based conventional farming technologies. There are even indications that t this hitherto neglected form of agriculture is gradually being able to catch the imagination of the powers that be. Notwithstanding the fact that there is a large segment of farming community in India who have been using natural farming methods that could be termed as 'de-facto' organic, organic agriculture, in the modern sense, is a rather new concept in this country. The initial trigger was generated predominantly by two types of players:

(a) Those who embraced organic agriculture essentially out of their ideological or philosophical underpinning; and

(b) those who adopted the organic route predominantly to tap the lucrative export opportunities overseas.

More recently, however, there is an observed tendency among a section of the farming community to switch over to organic management techniques out of compulsion rather than by choice. The

origin of this tendency may be traced back to the chemical intensive agricultural practices largely triggered by the Green Revolution. Notwithstanding its commendable success in bringing about the much-needed increase in agricultural productivity in India during the initial decades, it seems that the aftermath of this chemical-intensive technology has not only left India with severe environmental hazards, but has also put the long-run sustainability of Indian agriculture and the survival of the farming community itself into a rhetoric question!

The input-intensive conventional farming methods have often forced farmers to get into the muddle of huge debts in order to carry out the costs of cultivation. As long as the yields were impressive, the debts didn't seem to matter much. Things started worsening as soon as the long run unsustainability of the chemical-intensive model began showing up. The indiscriminate application of chemical fertilizers depleted the organic contents and plant nutrients of the soil to such an extent that the soil productivity started declining. The farmers, as a result, were forced to apply ever-increasing doses of fertilizers to maintain the crop yields. While this often required them to increase their burden of debt, crop yields failed to show much improvement owing to the massive deterioration in the soil fertility. To make the situation worse, pest problems mounted over time requiring application of chemical pesticides, which further escalated the debt burden of the farmers.

There was no respite for the hapless farmer. The poor water use efficiency of chemical-intensive agriculture had already generated an ever-increasing demand for irrigation water. While on the one hand, the excessive irrigation requirement caused several environmental hazards (such as, declining water table, pollution of groundwater due to leaching of chemicals, etc.); it often required some farmers to get into further debt to cover irrigation expenses.

It was this humiliation along with growing indebtedness following repeated crop failures, that thousands of farmers in the Green Revolution belts had been forced to commit suicide. But numerous others, having realized the unsustainable nature of Green Revolution

type agriculture, have started taking recourse to organic agriculture. Many of them perceive organic farming as the only panacea that can take them out of this burgeoning crisis by way of improving soil fertility and overall health of the agro-ecosystem, thereby making their farming sustainable over the longer run. The promise of a better environment and improved health conditions ingrained in the concept of organic agriculture also acted as an added incentive for these farmers, who had come across several perilous health hazards over the years, owing to the indiscriminate application of chemical pesticides under the conventional farming systems.

Given that organic agriculture requires less financial input and places more reliance on the available natural and human resources, there was nothing denying its potential to become a viable alternative for the debt-ridden, resource-poor farmers of the Green Revolution belts of the country. In fact a switch-over to organic farming can go a long way in improving the economic well-being of these impoverished cultivators if they can take advantage of the rapidly growing global markets for organic products which offer handsome premiums.

This brings us to the question – is the switchover from conventional to organic agriculture an easy proposition?

Sadly, the answer is in the negative. While the obstacles were numerous, the first and foremost among them would definitely be the financial and economic costs involved in the process of this 'conversion'.

The legalities of organic agriculture are codified in a number of formal standards that define the regimes that producers (or processors) need to work within in order to claim organic status. These organic standards, besides stipulating the prohibition of use of certain inputs (such as, synthetic fertilizers and pesticides), also demands strict adherence to a range of practices by the farm to maintain its sustainable productive capacity. In order to enter the lucrative markets for organic

It was this humiliation along with growing indebtedness following repeated crop failures, that thousands of farmers in the Green Revolution belts had been forced to commit suicide

produce, it is not only necessary for farms to abide by these stipulated norms and regulations but they also require a certification from an internationally recognized authority on the authenticity of their produce, before it can be labelled 'organic'. There are more than 100 different organic standards and certification systems in place. All of them require that a farm undergoing a switchover from conventional to organic management should go through a transition period, generally called the 'conversion period'. This is basically an interim phase when all the requirements of organic standards are to be followed before the resulting product may be considered as organic. Thus the conversion period is the time span between the start of the organic management and the certification of crops or animal husbandry as organic.

The transition also required that the chemical residues left in the soil by the hitherto practiced conventional agricultural techniques be neutralized. This conversion process also demanded a significant change in the attitude of the farmer. This was a crucial step because the approach to farming problems in an organic system is essentially different from its conventional counterpart. While the latter handles a farming problem in a piecemeal manner with a linear 'input-output' approach, the former relies on a holistic or 'systems' view in order to work with and alongside natural processes.

Moreover, the transition period was the intermediate phase when attempts were being made to rebuild the soil ecosystems that had been destroyed by the conventional agriculture over the years, to make it suitable for organic management. During this phase of soil rebuilding the converting farmer was compelled to take recourse to several organic management techniques, such as, planting of legumes and green manures, use of crop residues, mulches, application of animal manures, composts and other organic wastes, carbon-based organic fertilizers etc. These techniques are aimed at creating an optimal soil condition for an enhanced biological activity in the soil so that plants get fed through the soil ecosystem and not through synthetic fertilizers added to the soil. This process of soil rebuilding should be long enough to improve soil fertility significantly and to re-establish the balance of the ecosystem. The total time estimates to achieve the conversion depended primarily on the pre-existing ecological condition of the soil, which in turn was determined by the past land use. Hence, the length of the conversion period may vary from one case to another. Although the rules of most certifying organizations require a conversion period of at least three years, the certifier has the discretion to extend the conversion period depending on the ecological conditions of the farm undergoing conversion.

The conversion period was not just time taking and detail oriented but it involved a lot of direct and indirect costs in the whole process of conversion.

At the initial stages of conversion, yields may be lower.

New investments may be needed in farm machinery, fencing, storage space etc. Additional costs may also be associated with organic fertility building measures, such as, reseeding grassland, establishing green manure, legumes and so on. Since such organic techniques are generally more labour intensive so labour costs are also likely to be higher compared to the pre-conversion period.

Information and knowledge gathering was expensive as well, due to the costs of literature, training courses, advisory services etc. Furthermore, farmers had to incur high costs in getting inspections (at least once a year) and ultimately certification done by an established certification agency.

To sum up, notwithstanding the significant potential that India has got in exploiting the organic model, the path to traverse is fraught with numerous challenges. An appropriate policy framework seems to be the need of the hour!

Apart from these financial problems, the process of conversion was also hindered due to other transaction costs including, among others, the following:

i. Lack of access to relevant knowledge and information;

ii. Dearth of training facilities and the non-existence of an adequate extension system;

iii. Enormous amount of mandatory documentation involved in the process of inspection and certification, which is too cumbersome to maintain for those small farmers, who do not have adequate formal education;

iv. Difficulties in obtaining reliable information on domestic and international market (say, on suppliers, prices and qualities); more so because the marketing and information services available in the country predominantly relate to conventional products;

v. Lack of demand in the domestic markets;

vi. Constraints on access to international markets;

vii. Institutional barriers, such as, scarcity of professional institutions capable of assisting the farmers throughout production, post-production and marketing processes;

viii. Inadequate availability of different organic inputs, such as organic seeds, bio-fertilizers, bio pesticides etc.

**The writer is an economist presently working with the Research and Information system for Developing Countries (RIS), a think tank of the Ministry of External Affairs (MEA), Government of India*

A Farming Model to Sustain India

By **Devinder Sharma***

As we enter 2010, the script for a futuristic agriculture, which brings back the smile on the face of farmers, without leaving any scar on the environment, is being rewritten.

What began as a small initiative some six years back in a non-descript village in Khamam district, has now spread to over 20 lakh acres in 21 districts of Andhra Pradesh. I remember when I first talked about the miracle brought about in village Pannukula in Andhra Pradesh, many thought I was simply trying to romanticise agriculture. How farming can be done without the use of chemical pesticides, I was repeatedly asked.

Pannukula dug out a lonely furrow, but eventually blazed a trail. In the next four years, more than 318,000 farmers in 21 out of the 23 districts of Andhra Pradesh have discarded the intensive chemical farming systems, and shifted to a more sustainable, economically viable and ecologically friendly agriculture. A silent revolution is in the offing. In *Kharif* 2009 (the monsoon season), some 14 lakh acres was covered with what is now known as Community Managed Sustainable Agriculture (CMSA).

As I write this, the area had expanded from 14 lakh acres in 2009 to 20 lakh acres in 21 districts in 2010. Six lakh acres increase in a farming system that does not use chemical pesticides, and is also phasing out chemical fertiliser, that too in matter of few months, is a record of sorts. And all this has happened without any push from the government agencies and the private sector. I see no reason why this environmentally safe, and a farmer-friendly system of sustainable agriculture, cannot cover 200 lakh acres across the country in another ten years or so if the government gets serious.

At a time when 40 percent of the farmers have in a latest NSSO survey expressed the desire to quit farming, and at a time when thousands of farmers have taken

the fatal route to escape the humiliation that comes from the continuing apathy and neglect, and also at a time when the foodgrain pockets of the country – comprising Punjab, Haryana, western Uttar Pradesh, and parts of Tamil Nadu and Andhra Pradesh – suffer from second-generation environmental impacts following the collapse of the green revolution, Andhra Pradesh is showing the way forward. The new emerging model of agriculture sustained with low-external inputs application is what should now receive adequate investment support.

Despite the government making tall claims to bring in an additional 10 million hectares under assured irrigation in the last budget, the fact remains that water crisis in the existing areas is becoming severe with each passing crop season. Water mining resulting from an intensive cropping system – wheat followed by rice and more so by encouraging the water-guzzling sugarcane– has already taken a heavy toll in the irrigated belt. In Uttar Pradesh, for instance, the Central Ground Water board has identified 22 overexploited and critical blocks in the state, of which 19 blocks are located in western UP. Similarly, out of the 53 semi-critical blocks identified, 28 are located in western UP. Water table has already plummeted to a level that agriculture is becoming an unviable proposition. On top of it, the misplaced thrust on contract farming will increase the pressure on ground water by another 50 percent in the years to come. Western Uttar Pradesh is therefore destined to turn into a desert by the year 2015.

Pesticides are Not Necessary

It took three decades for the International Rice Research Institute (IRRI) to realise the gravest mistake of Green Revolution – pesticides are unnecessary. But by the time the mistake was realised, pesticides had polluted the environment, poisoned the fertile soils, contaminated the ground water and taken a heavy human toll.

Not far from where IRRI is located, rice farmers in Central Luzon province in the Philippines, had gradually got disenchanted with the indiscriminate use of pesticides. From a peak insecticide use in the mid-1980s, it is now at an historic low. Contrary to what agricultural scientists and the chemical industry had maintained all these years, the decline in insecticides use has been accompanied by an increase in productivity from an average of 2.75 tonnes to 3.25 tonnes per hectare in 2002. It also resulted in savings on an average of up to 1,000 pesos per hectare for these farmers.

Equally significant is the scientific courage with which IRRI's former director general, Dr Ronald Cantrell had accepted the reality: "It shows that the mistakes of the Green Revolution – where too much emphasis was sometimes put on the use of chemicals for pest control – have clearly been recognized and corrected, " adding, " because of their toxicity, insecticides really should be used by farmers as a last resort, and we are very pleased to see that farmers have realized this for many years, especially here in the Philippines." His colleagues at IRRI were equally critical of the extent and use of pesticides. Says Gary John, an ecologist: "The simple fact is that, in the rest of Asia, most insecticide use on rice is a waste of the farmers' time and money."

The Philippines is not the only country where farmers have proved the scientists wrong. In Vietnam, almost 2 million rice growers in the Mekong Delta have been persuaded to cut back on using harmful and unnecessary farm chemicals. The campaign – which was a joint effort of a team of Philippine and Vietnamese scientists – has sharply reduced pesticide misuse, and won the collaborative effort the US$25,000 Saint Andrews' Environmental Prize for 2002. The prize money is now being used to extend the campaign to another million rice farmers in the Red River Delta.

"What we hope to learn next is why the farmers of central Luzon have learned these lessons so much more quickly than farmers elsewhere," adds Dr. John. First launched in 1994 in the Mekong Delta – long one of the great rice bowls of Asia – the research and subsequent campaign marked a milestone in rice production for two reasons. IRRI says that first it clearly identified the damage caused by insecticide overuse, which kills off friendly insects and so encourages the pests they would otherwise help control, and it also developed a completely new

Despite the government making tall claims to bring in an additional 10 million hectares under assured irrigation in the last budget, the fact remains that water crisis in the existing areas is becoming severe with each passing crop season

way of communicating important information to farmers.

Crop diversification from staple food to horticultural crops, vegetables and cash crops will further destroy the soil fertility leaving the lands gasping for breath. It has been estimated that the crops which are being promoted by the agri-business companies will on an average require 15 to 20 times more application of chemical inputs and will need to pump out at least ten times more water than what is being applied now by farmers. Bringing in additional areas under irrigation therefore becomes meaningless if the existing irrigated lands are over-exploited and turned barren.

What the farmers need desperately is an assured mechanism to enhance profitability from agriculture. This cannot be ensured by making farmers subservient to the private trade. It has to be based on an innovative system that is farmer-centric. For the farmers, the need of the hour is to increase farm incomes, enhance crop insurance and multiply public investments. This is possible provided the government lays out a roadmap that is based on the underlying parameters of sustainability and equity. There is an immediate need to provide direct income support to farmers, extend procurement to regions which have remained outside its gambit, and at the same time extend the reach of procurement to crops which are important for country's food security and nutritional needs.

Cropping pattern therefore needs to encourage multiple cropping with thrust on nutritional crops like pulses and legumes, and linked in an integrated manner with animal husbandry. At the same time no technology or programme that limits sustainability by further destroying the natural resource base should be allowed at any cost. Future farm investments and credits should be tuned to the principle of sustainability.

Ten years from now, in 2020, when we try to look back, I am sure Indian agriculture can be transformed into a healthy and vibrant system where farmer suicides have been relegated to history, where distress and despondency has been replaced by the lost pride in farming, and where agriculture becomes sustainable in the long run and does not add on to climate change.

In Andhra Pradesh, farmers are using mixture of scientific proven technologies, indigenous knowledge and traditional wisdom. Farmers are replacing chemical fertilisers and pesticides with microbial formulations, intensive use of composting techniques, vermi-composting, and apply bio-fertilisers, and use bio-extracts for controlling pests. There is a dire need to extend this holistic model to other parts of the country.

What the farmers need desperately is an assured mechanism to enhance profitability from agriculture. This cannot be ensured by making farmers subservient to the private trade. It has to be based on an innovative system that is farmer-centric

It therefore brought in a complete shift from conventional agriculture and offered secure and stable livelihoods. The crop yields have remained the same, the pest attack has drastically reduced, and the soil is returning back to its natural fertility levels. As soil fertility improves over the years, crop yields have started going up still further. More importantly, farmer's expenditure on health problems emanating from pesticides application has also gone down by 40 percent on an average.

There is more money now in the hands of the farmers. The cost of cultivation per acre has also come down by 33 percent. Take the case of cotton, a CMSA farmer saves more than Rs 12,500 per hectare in a year on account of no application of pesticides alone. With his crop productivity remaining stable, cotton farmers have got a new lease of life. The environment too has become healthier and safe.

What began as an experiment to evolve a farming system without the application of chemical pesticides is now also phasing out the use of chemical fertilisers by relying on a mixture of scientific proven technologies, indigenous knowledge and traditional wisdom. Normally, 56 percent of the cost of cotton cultivation is primarily on account of pesticides. And don't forget, elsewhere in the State and for that matter in the country, 70 percent of the farmers who are committing suicide are engaged in cotton cultivation.

No farmer has committed suicide in the areas where non-pesticides management system of farming is being followed.

More money in the hands of farmers means less debt. I haven't seen any other village in the country in past three decades of my work in agriculture, which has been able to recover its entire mortgaged land from the money lenders in just three years of adopting non-pesticides management. This happened in village Ramachandrapuram in Khamam district where all 75 farmers have even paid back the outstanding rate of interest.

Studies in five districts show that out of the 467 families that had mortgaged their land, at least 386 have recovered it in two years time.

This is a roadmap for the future of Indian agriculture, and for that global agriculture. It not only provides a sustainable path, with a very low carbon footprint, and has tremendous potential to remove poverty and hunger. It has been conclusively demonstrated that household food security has improved with a 40 percent drop in the purchase of food from the market. The crop yields have gone up, and farmers are now able to cultivate two crops in a year. This is the *Zero Hunger* model that I normally talk about which needs to be adopted under the proposed National Food Security Act.

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Issue of Responsible Lending – AP Perspective

MFI sector buzz – 2010

According to the Editor of Microfinance insights (in a summit concluded recently) "This year has clearly been a roller-coaster for the microfinance industry especially in India where on the one hand we saw record investments, a stock market debut, emergence of new players and mainstream interest, and on the other, surfacing of problems around governance and transparency, widespread criticism of MFI motives by representatives from the government, media and public and an unequivocal demand from all sides to balance social impact and profitability."

In the light of the above said statement we will deal with the Progress of Microfinance and its role in providing socio economic security.

The Microfinance summit 2010

The theme of the conference resonates this thought and is appropriately titled - Mission of Microfinance: Time to Reflect and Reaffirm. A range of participants from the industry, academics, regulators and others will talk about strengthening governance, responsible lending, improving customer appraisal and regula-tion by the industry and from outside. This year's conference will also look beyond microfinance at other means that can help with economic empowerment of the poor. The industry will also look at ways to align with others in the financial sector to embrace the poor.

(Source: http://www.microfinanceindia.org/)

Trends that we noticed in the Microfinance sector 2010:

According to N Srinivasan, Author State of the Sector Report, "One big trend that we saw was that the SHG movement is slowing down significantly and MFIs have overtaken them on disbursements" Does this mean that the initiatives taken by policy makers are paying off? Is the microfinance sector growing? Mr Srinivasan relies that "There has been no significant movement on that so far. This may be due to the fact that our data was col-lected before March 2010 and there have been several exciting develop-ments post that. Hence we expect more action this year. By March 2011, the RBI has said that villages with a population of 2,000 or more will be covered by banks or BCs."

The ordinance and the situation in Andha Pradesh

Much has been happening in Andhra Pradesh following an ordinance introduced by the state government. After having witnessed a set of alleged farmer suicides osten-sibly because of over indebted-ness and multiple lending, the government had introduced an ordinance saying MFIs had to be registered with a revenue authority. Those lending to Self Help Groups (SHGs) linked to the government could not give secured loans, had to display interest rates and could not lend to such SHGs if they had a bank loan already, unless approved by the revenue authority. Any failure to comply could bring a penalty or a two year prison term for top management.

(Source - http:// www.microfinanceindia.org/)

The ordinance failed to appease the people of the state as they felt they have only been hurt further. Policy makers in the financial industry ques-tioned the ordinance, saying, it was without any consultation with them and even before the government investigated wheth-er the suicides were related to microfinance loans or not.

This spelt doom to the MFIs as collection levels dropped dramatically in Andhra and field officers faced physical harassment from local offi-cials. While we author the article people from the government and the industry indulge in talks of how to rectify matters and reach a viable conclusion.

Even as the cause for the suicides is still being investigated, they have brought urgency to the issue of responsible lending. The State of the Sector report says that Andhra households have an average of 9.3 loans, indicating a high level of multiple lending. While the industry thought these were isolated incidents, N Srinivasan, author of the report, says the there have been issues related to multiple lending in Orissa, Karnataka and Maharashtra.

Compiled by: **Deebashree Mohanty**

Role of Microfinance in Providing Socio Economic Security

By **Gurmeet Singh***

Although micro enterprise are not a panacea for the complex problems of chronic unemployment and poverty, yet promotion of micro enterprises is a viable and effective strategy for achieving significant gains in income and assets for poor and marginalized people. SHGs are being promoted as a part of the micro finance interventions aimed at helping the poor to obtain easy financial services like savings, credit and insurance.

The main objective of the banking sector reforms was to promote a diversified, efficient and competitive financial system with the ultimate goal of improving the alocative efficiency of resources through operational flexibility, improved financial viability and institutional strengthening.

Microfinance a Concept

The term micro finance refers to the provision of financial services to lower income groups, which also include self employed people. Grameen Bank in Bangladesh introduced the concept of micro finance and now it has become a world wide movement.

The financial services provided by such type of institutions may include savings, credit, insurance, leasing, money transfer etc. provided to customers to meet their normal financial needs. Unlike normal credit, micro credit is limited with collateral substitute and credit plans services.

SHGs – The Evolution

In the case of credit delivery system, one can see a similar evolution of thought. While in the early stages, emphasis was on providing more credit it shifted to ensure that credit went to all segments of the society during the later stages.

Despite the expansion of the organized banking system into rural areas, it was found that a very large number of the poor continued to remain outside the fold of the formal banking system. Thus began the search for an alternative delivery mechanism which would meet the requirement of the poor and especially the women members of such households. It was then that the idea of organizing Self Help Groups (SHGs) started to take shape. SHG is a group of about 10-20 persons from a homogenous class who come together for addressing common problems. They collect voluntary savings on a regular basis and use the pooled resources to make small interest bearing loans to their members.

Role of the RBI

There are two major models under micro finance namely Self-Help Group-Bank Linkage (SHG-BL) and Micro Finance

SHG is a group of about 10-20 persons from a homogenous class who come together for addressing common problems. They collect voluntary savings on a regular basis and use the pooled resources to make small interest bearing loans to their members

Institution (MFIs). The SHG Banking linkage programme was initiated in 1992 which tried to facilitate the flow of bank credits to SHGs. In 1991-92, a pilot-project for linking about 500 SHGs with banks was launched by NABARD in consultation with the RBI. In 1994, the RBI constituted a working group of NGOs and SHGs. On the recommendation of the group, the Reserve Bank advised that the banks financing of SHGs would be reckoned as part of their lending to weaker sections and such lending should be reviewed by banks and also at the state level Bankers Committee at regular intervals. As a follow up of the recommendations of the NABARD working group, the RBI took a series of measures in April 1996 to give a trust to micro finance based lending.

The participation in SHG and the access obtained to savings and credit can play a transformational role for women, socially and economically

Role of Self Help Groups:

- A SHG working on the principle of solidarity helps the poor to come together to pool their savings and access credit facilities. In the process, a SHG helps the poor especially women, to establish their credit worthiness.
- Its potential to empower the women members. The participation in SHG and the access obtained to savings and credit can play a transformational role for women, socially and economically.
- SHGs also make it possible for women to leverage the savings for accounting credit.
- Because of the successful implication of SHGs, dependence on money lenders has reduced significantly. A study on SHGs reported a decline in the share of money lenders loan from 66 to 15 percent for the members.
- Through credit obtained from SHGs, the member has made efforts both to protect their families from various vulnerabilities as well as build their economic base to escape poverty.

Formal financial institutions in the country have been playing a leading role in the micro finance program. They have joined hands proactively with informal delivery channels to give micro finance sector the necessary momentum. During the current year too, micro finance has registered an impressive expansion at the grass root level.

The overall progress under micro finance is given in Table-1

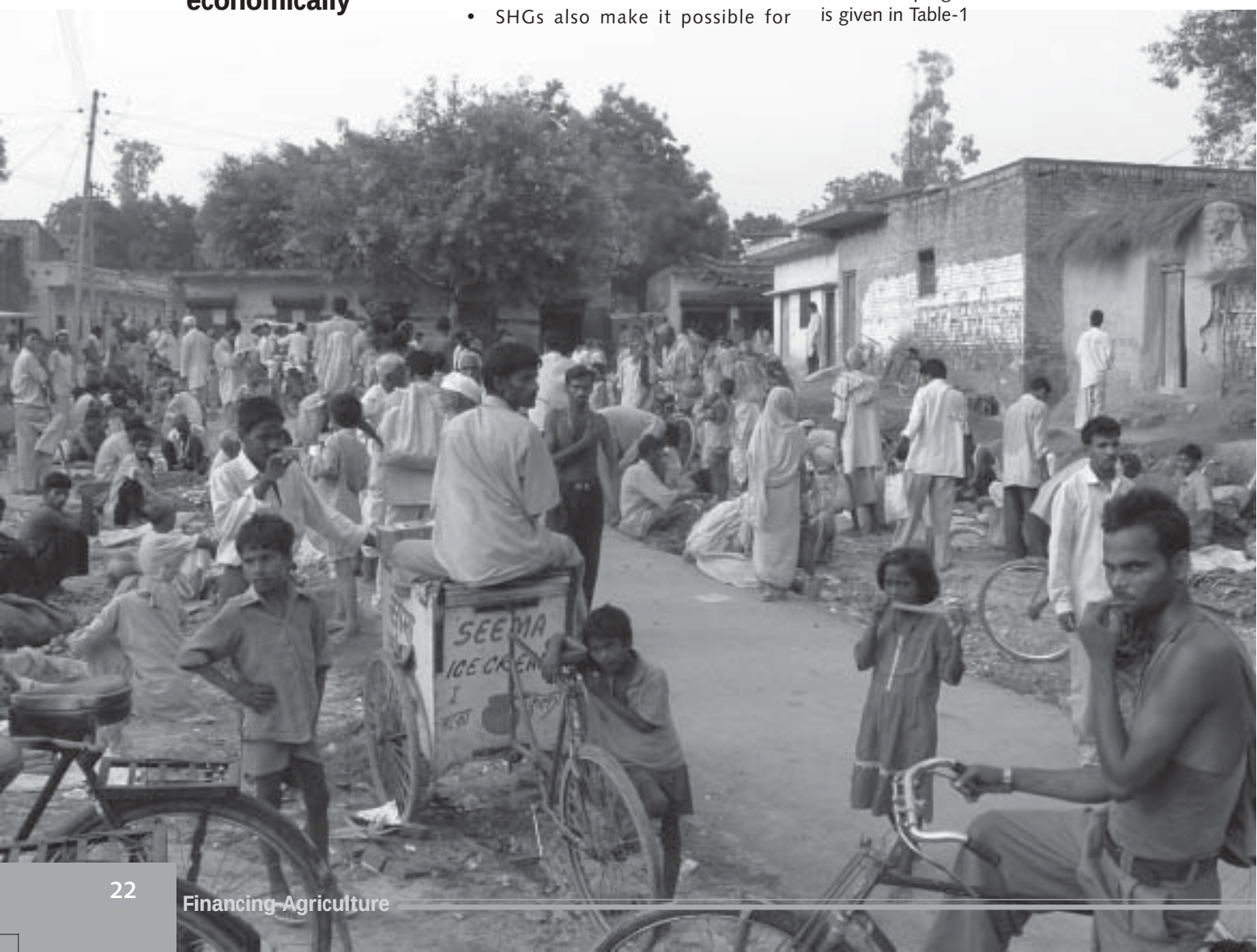

Table 1: Progress of the Micro-Finance Programme (AS on 31 March 2008)

(Rs. crore)

Particulars	Self-Help Groups*				Micro-Finance	
	2007		2008		Institutions#	
	No.	Amount	No.	Amount	No.	Amount
Loans disbursed	11,05,749 (1,88,962)	6,570.39 (1,411.02)	12,27,770 (2,46,649)	8,849.26 (1,857.74)	518	1,970.15
Loans outstanding	28,94,505 (6,87,212)	12,366.49 (3,273.03)	36,25,941 (9,16,978)	16,999.90 (4,816.87)	1,109	2,748.84
Savings Accounts with banks	41,60,584 (9,56,317)	3,512.71 (757.50)	50,09,794 (12,03,070)	3,785.39 (809.51)	– –	– –

Source: *NABARD*

* *Figures in parentheses indicate the share of SHGs covered under SGSY. @ Provisional data excluding SGSY groups.*

\# *Actual number of MFIs provided with bank loans would lower as several MFIs have availed loans from more than one bank*

$ *Including repeat loans of Rs. 1,685.60 crore to 1,88,883 existing SHGs..*

Challenges to Self Help Groups

The phenomenal expansion of the programme in the last 4 to 5 years, has thrown many challenges:

1. System for monitoring of SHGs

The general reports on the progress of SHGs show statistics of growth and spread of SHGs without questioning the process and internal health of SHGs. There is a need to pay considerable attention to this aspect for developing healthy and sustainable groups. For this purpose there is need to establish a separate SHG Monitoring Cell in every State. The cell should have direct links with district and block level monitoring systems. The cell should collect both quantitative and qualitative information.

2. Capacity building of SHG members

It is time that the govt. focus on capacity building of SHG members as many of the SHGs are maturing and the business level of the groups is increasing. A network of capacity building institutions should be set up to strengthen and develop SHGs to undertake the various functions, into which they are expanding, and to nurture and mentor them during the process. A Task Force could be set up to review the existing capacity building programmes for SHG members and suggest innovative approaches in addressing the capacity building needs.

3. Uneven distribution of SHGs

The spread of the SHG-Bank linkage programme in different regions have been uneven on account of various factors like pro-active role of State Government, presence of well performing NGO's, Socio cultural factors etc. In March 2001, 71 percent of the linked SHG, were from southern region consisting of Andhra Pradesh, Karnataka, Kerala and Tamil Naidu. The share of southern region has come down progressively over the years but it is still at 44 percent. Many States such as Uttar Pradesh and Bihar with high incidence of poverty have shown poor performance under the programme.

4. SHGs as self managed units

It has been observed that groups, in case there is withdrawal of promoting institutions, tend to slip in their performance. The solution lies in nurturing of group up to a point where it becomes self managed and independent of promoting institutions. This implies setting up of proper accounts keeping and auditing, credit management, etc.

There are also other examples of trained Para accountants cum facilitators paid by the groups who successfully keep the records and the accounts of the groups. It is recommended that such practices may be studied, documented and replicated in other regions through identification and training of groupbased accountants cum facilitators. This would help in providing stability and continuity to groups essential for sustained micro finance lending in future.

5. Regional Imbalances

This underlines the need for expanding the SHG network in the States, where the banking penetration ratio is very low. It is recommended that based on the Census 2001 data, 100 districts having the highest percentage of the deprived rural households, can be selected and special strategies need to be designed for increasing the number of SHGs in the identified districts.

The southern region currently constitutes about 54 percent of the credit linked SHGs in the country. The share of southern region has come down from 71 percent in March 2001 to 54 percent in March 2006 as shown in table number 4.

Table 4: Regional Spread of Credit linked SHGs

Region	2000-01		2005-06	
	SHGs credit linked to banks	percent to total	SHGs credit linked to banks	percent to total
Northern	9012	3.4	133057	5.9
North Eastern	477	0.2	62517	2.8
Eastern	22252	8.4	394351	17.6
Central	28851	10.9	267915	12.0
Western	15543	5.9	166254	7.4
Southern	187690	71.2	1214431	54.3
Total	**2,63,825**	**100.00**	**22,38,525**	**100**

Source: *NABARD*

6. SHG lending and agriculture

The SHGs have been quite active in disbursing small doses of credit but their foray into agriculture per se is somewhat limited. They have excelled in providing micro credit for activities allied to agriculture sector but the loans made for crop cultivation and land based activities are comparatively less. In line with the Budget announcements for the year 200607, a separate line of credit for financing Farm Production and Investment activities through matured SHGs has been introduced by NABARD in addition to existing refinance facility available to banks.

7. Livelihood promotion among members of SHGs

There is a need to evolve a methodology for promoting micro enterprises among SHG members that can be replicated on a large scale. With this view, NABARD is implementing a pilot project in nine districts spread over nine States with a view to evolving a replicable methodology. The lessons from these interventions need to be documented and disseminated.

8. Restrictive Policies of Formal Agencies

The second major constraint faced by SHGs is the continued restrictive loan policies of the commercial banks. The commercial banks take a long time to clearly recognize and internalize the concept. The SHG model is primarily a savings based model but the commercial banks have been following largely 1:4 savings -credit ratio prescribed more as a norm for lending. Even the loan terms are uniformly prescribed. SHGs have lower savings ability find the lending ratio highly restrictive. As a result, many SHGs are unable to access credit adequately. This is forcing SHG members to restrict loan size/period and even distribute loan amount equally.

Concerns Related to Women

Microcredit through SelfHelp Groups SHGs) has proved to be a strategic tool for organizing rural women in groups and promoting savings and thrift habits to gain access to institutional credit for their socio-economic development and empowerment. There is a need to focus on concerns of women under the SHG programme and in credit lending.

The following measures are recommended in this context:

- An integrated approach is required for meeting overall credit needs of a poor family in terms of backward linkages with technology and forward linkages with processing and marketing organizations.
- Credit needs to be provided for diversified activities including incomegenerating livelihood activities, production, housing consumption loans and against sudden calamities.
- The delivery system has to be proactive and should respond to the financial needs of the farmers.
- Simplify the process of giving loans, i.e. reduce the number of questions to important, nonrepetitive ones.
- Provide gender sensitization training to bank staff so that they are sensitized to the needs of rural clients, especially women.

Impact of The Economic Crisis on Microfinance

Microfinance is widely seen as an important intervention for fighting poverty. The current crisis has not only underscored the vital role of finance in economic growth and development, but has also seriously affected microfinance institutions (MFIs) in many developing countries. One reason is that private investors are withdrawing their funding, which forces MFIs to scale down their lending. This in turn, can have adverse effects on poverty because the client base of MFIs is dominated by the poor, including consumers, the self-employed and smallholder farmers in rural areas.

Microfinance institutions in more integrated economies particularly Central Asia, Europe and Latin America-report the largest impact from the crises. On the other hand, India-focused microfinance funds supported by foreign investors, which experienced delays in receiving funds in 2008 as investors were concerned about the impact of the financial crises, can now expect robust fund flows in 2009. However, the global industry survey on the impact of the crises on MFIs and clients also indicated that the microfinance sector is showing great resilience, in particular where it is built on domestic funding sources. Thus, despite the increased links of MFIs with domestic and international financial markets that have created some problems during the crises, the microfinance sector as a whole has built sound foundations. Looking ahead, there is a need to explore the links between financial services and government social safety-net programmes by delivering grant payments into bank accounts, there by linking social protection and financial inclusion.

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'Her Enlightenment will Change the Face of Rural India'

Development and financial issues centered on the women farmers

By **Deebashree Mohanty***

Although in reality women perform agricultural duties on a regular basis, agricultural occupations are regarded as male occupations and development strategies continue to target them. Women's restriction to the subsistence sector and the definition of what they do as part of household chores are disincentives to the choice of the agricultural sector for employment.

Often men project a pragmatic approach to the gender division of labour in agriculture. The argument has been that women play dominant roles in agriculture because their duties are light and that men usually take on the heavy duties....disregarding the fact that women are now performing a wide range of tasks and are breaking down this myth of the pragmatic male.

Research efforts at the ICAR (FULL FORM) institutes have relived the farm women of the drudgery involved in the vocation by providing time and labour saving tools. Special vocational trainings for women are also being conducted, to impart skills related to the agri field.

The belief is that women farmers have carved a niche for themselves calling for all developmental and financial issues to be centred on them.

How have they reached here? What kid of support did they have from the Government/NGOs and other institutions?

The role of National Research Center for Women in Agriculture

Presently there are more than 16 ongoing research projects in the areas of gender study on agriculture and a host of other issues that have carefully been researched and addressed.

Women Related Issues and How They Were Handled?

A) Occupational Hazard -

According to the report of National Institute of Occupational Health, ICMR (Indian Council of Medical Research women workers in India predominantly located in the informal sector of the economy face extremely exploitative conditions of work, which generally lead to a number of health problems. Through in-depth research, NRCWA reached out to those concerned with the status and condition of farm women and called for immediate action.

Glaring statistics of Occupational health hazards faced by farm women in almost all parts of the country with special reference to the Eastern part while carrying out farm and household activities can be seen in the table below.

Types of health hazards faced by farm women

Activities	Health hazards reported
Farm activities	
Transplanting	50%
Harvesting	26.5%
Post harvest activities	
Threshing	50%
Drying	33%
Parboiling	67%
Livestock management	
Shed cleaning	47%
Fodder collection	23%
Milching	27.5%

Strategies for improvement of health conditions:

- Development of appropriate cost effective & location specific technology suitable to women's body stature & ergonomics.
- The development and standardization of tools in terms of comfort, quality and efficiency by keeping in view of ergonomics of women.
- Functional literacy programmes like training and education of farm women in use of tools, implements and machinery may be emphasized
- Improvement of health & nutrition through various schemes. Combating malnutrition in vulnerable groups through health policies and programmes.
- Up gradation of traditional skills is needed.
- Women should be freed from wage and sex discrimination, exploitation.
- Self-help groups can also be formed cooperative sectors for more coordination in terms of functional operation.

Role of Advanced Technologies in Increasing Efficiency

The identification and evaluation of improved modern technologies in the farm sector which would not only help in reducing the drudgery of women farmers but also has a positive impact on their over all efficiency. Some case studies have been observed below (SOURCE: ICAR)

Case Studies 1

During paddy parboiling using improved technology (paddy par boiling unit) the heart Beat rate and energy expenditure were significantly reduced and the out put also ncreased from 35 kg per batch to 75kg per batch. The time duration of carrying out this activity also reduced from 2 days to 6 hours.

Case Study 2

Comparison of heart rate responses in three types of dibbling methods for maize i.e. traditional method, with Naveen dibbler and with rotary dibbler – The parameters used for comparison were heart rate (for evaluation of work load), increase in heart rate in beats/ m2 of area dibbled and output in m2/hr. The output with rotary dibbler was found highest i.e. about 9- times greater than traditional method and Naveen dibbler. The heart rate data showed no significant difference in the dibbling with traditional method and with Naveen dibbler. But the women workers liked the Naveen dibbler as the workers carried out the dibbling in standing posture and discomfort due to the bending was avoided. In rotary dibbler though the output was 9-times higher, the mean working heart rate was 141.7 beats/min (ÄHR 49.7 beats/ min) thus necessitating the subject to have frequent rest pauses.

Role of Advanced Technologies in Reducing Drudgery

The Indian farming employs 225 million work force to cover 140 million hectares of total cultivated land. In spite of rapid farm mechanization (e.g., 149 million farm machinery), the vast resource-poor family farming has primary dependence on traditional methods (e.g., 520 million hand tools and 37 million animal-drawn implements are in operation). The work drudgery, the traumatic accidents and injuries are the major concerns to examine options for ergonomics

Interventions that reduce the work of women both at home and in the wetland agriculture have been developed and promoted in some areas

intervention and betterment of work in crop production activities.

Efforts to Reduce Drudgery

Interventions that reduce the work of women both at home and in the wetland agriculture have been developed and promoted in some areas.

- These include paddy threshers, winnowers, harvesting tools, parboiling units, maize shellers.
- Measures should be taken to ensure benefits of all these to agrarian women. Capacity building in this area should be a priority for staff training.
- Availability of potable water through pipelines and availability of energy for fuel purposes through biogas technology, improved technologies for drawing water and shift from traditional chulhas, access to pucca housing with drainage and sewage facilities etc. could reduce drudgery in the household activities that will ultimately result in increased farm productivity of women.
- Improved technologies in the domain of household activities should be made available through appropriate policy measures.
- Training programmes, based on needs identified by and for women, should be organised at the doorstep of agrarian women.

Case Study 1 – Source ICAR

Design refinement in sitting type groundnut decorticator for women workers for better ergonomic performance—These refinements included increase in handle length from 32 to 37 cm, increase in sitting stool height from 20 to 30 cm and change in wooden base design for easy packing and transport. The output of improved prototype was 30 kg/hr. The women workers liked the equipment as the work could be done in sitting posture and the force required for its operation was less than the standing type decorticator. This equipment has been taken up for prototype production and 55 units were fabricated and sent to various places for demonstration and use.

The role of Self Help Groups – Women

Twenty-six training programmes on various income generating activities were conducted by the KVK for 599 SHG members. Many of the SHGs were linked to the financial institutions and other government agencies (SC/ST development corporation, Zilla Panchayat etc.) for financial assistance. The total revolving fund of the groups was Rs 66.38 lakh. The income generating activities taken up by the SHGs included home made products, backery products, small business, tailoring/embroidery, goat/ buffalo rearing and vermicomposting.

Innovative marketing outlets for SHGs (Saturday and Sunday Bazars) were also organized. The KVK initiated the concept of Saturday Bazar in Gadag town to

Financial Linkages under Different Projects

Particulars	Zilla Panchayat	Backward Community Development Corporation	Pragatimitra (NGO)	Rural Banks	Total
No of SHGs	10	128	30	174	342
Total saving (Rs in lakh)	2.70	1.29	4.73	26.51	35.23
Bank loan (Rs in lakh)	14.03	7.20	4.51	5.45	31.19
Total revolving fund (Rs in lakh) 66.42					

encourage the SHG members by providing suitable market outlet. The farmers and farmwomen belonging to SHG groups only were allowed to sell the goods in Saturday bazaar. The products in the market included fresh fruits, vegetables, pickles, crisp rotis of jowar, and bajra. On an average 50 SHG members participated in the bazaar every week and the weekly transaction of the bazaar varied from Rs 15,000-20,000. Based on the consumer demand another market, Sunday Bazaar was started by the KVK at another place. Currently the KVK is performing role of a facilitator to ensure smooth running of the markets.

She cooked rice, dal with gongura and boiled eggs within 45 minutes. She felt very happy by using the technology as it saved time and fuel

The concept of sunday bazaar and other such concepts were a huge success and lead to over all empowerment of women.

With the help of the SHGs, women started to develop interest in financial aids and methods of farming. They started taking active interest in all that was happening around them. This stimulation acted as a vicious circle.

The banking sector in turn started recognising their contribution and

A Success Story

Technology Intervention of Steam Cooker:

Varalakshmi (42 yrs) and her husband Krisna (45 yrs) live in the village Laxmareddyguda, Shankarpally Mandal, R.R District of Andhra Pradesh. They belonged to a middle-income family. Krisna is a farm labourer and varalakshmi is a tailor. Some times she also goes to field as farm labourer. She is a member of the Self-Help Group named Bhulakshmi. She actively participates in community service and also encourages other members of her group. Technology Intervention: Varalakshmi attended the training programme on fuel saving technology (Steam Cooker) conducted by All India Coordinated Research Project team on 16 May 2006. She was impressed by the Steam Cooker demonstration and got motivated to use it in her home. She borrowed the Steam Cooker from the AICRP Centre and used it for two days. She cooked rice, dal with gongura and boiled eggs within 45 minutes. She felt very happy by using the technology as it saved time and fuel. She repeated the cooking in steam cooker in the next day and prepared rice, dal and potato curry in the same time. Previously she used to spend 2kg wood and some agricultural waste as fuel for cooking, but after the use of steam cooker only half of the fuel was consumed. This made her quite happy. Another advantage she experienced was that continuous stirring and constant attention is not required in cooking the food in a steam cooker. Further, after adopting this technology she need not to strain the water from the rice as she used to do previously, thus minimizing the nutrient loss. Varalakshmi and her family members were happy to adopt the steam cooker as it saved time, energy and money.

made financial services available in all forms and easily available to women.

Suddenly, India was witness to an upsurgence in the success stories of independent women. Out of the most notable ones, two most interesting stories have been depicted in the box below.

Point to be noted, however, is that these sucess stroeis were made to happen not only with making tools and other essentials available to the women agriculturists, but the role played by organisations such as the DRWA cannot be ignored.

From training programmes to in depth research, DRWA was intrumental in guding and motivating the women farmers in all sectors of the society.

In the first case study women agriculturists get aquainted with modern farm techniques and other equipments such as the steam cooker, which reduces drudgerry and saves a lot of their time.

In the second case, a group of women farmers get together and build an enterprise on their own.

Slowly but steadily they manage to rasie loans and garner other financial aids which help them to grown their small scale business to a large one with benefits coming in a plenty.

Today this group of women are not only selling domesticated sqaushes but are also expanding their business to pack spices of various kinds and genres to sell them in markets around the country.

From a gross profit of Rs 740 to a massive net profit of Rs 50000, the business seems to be growing manifold and their success story is much talked about.

**The writer is the Editor of Financing Agriculture*

Agro Processing

Sangram Vikram Self Helf Group of the village Konjar comprises of 14 members. Amita Pradhan and Surekha Dash are the president and Secretary of the group respectively. The group was formed as a part of the study of NRCWA, Bhubaneswar and it opened Bank Account in SBI, Pipili branch in September 2002. The monthly deposit of the group is Rs. 280/- @ Rs. 20/- per member. Group members took a land area 0.2 ha on leased basis for three years @ Rs. 650/- per year. In November 2002 they grew vegetables like tomato, cauliflower, green leafy vegetales, bean and patato. Their total expenditure for this enterprise was Rs. 320/- . After two months they sold the produce in the market and earned a gross profit of Rs. 1278/- with a net profit of Rs. 958/- . However, after skill development training on value addition of fruit and vegetable, this group got motivated to start enterprise on processing of fruits and vegetables. They prepared lime and orange squash with an investment of Rs. 1120/- and sold it in the local market @ Rs. 55/- per bottle. The gross profit from this enterprise was Rs. 2070/- with a net profit of Rs. 950/ -. This group was also trained for agro-processing through skill development trainings. After that they started making different types of Badi with a total expenditure of Rs. 280/- . They sold the prepared products in the Bhbneswar city market and Exhibitions organized by Orissa Rural Marketing Society at Cuttack, @ Rs.60/- per kg. They earned a gross profit of Rs. 740/- with a net profit of Rs. 460/-. Thus, in a year's time their net profit from the enterprises was Rs. 2368/-. This inspired the group to continue with the efforts to earn money. Amita Pradhan, President of the group being a very energetic and having leadership qualities, tried to create Marketing Avenue for their produce. In the process, she came into contact with a renowned company like Hindustan Lever Limited. The company was very happy with the quality of the product developed by Sangram Vikram SHG. The company placed an order of 40 lime squash bottles @ Rs. 60/- . Encouraged by the success, the group obtained a loan of Rs. 50000 from the SBI, Pipili for expanding the enterprise / business. The group prepared 2000 lime squash bottles, 50 bottles of tomato puree and also ventured in preparation of different types of spices. Especially Haldi Powder. They are selling spices in poly pack in local market. The products were sold in an exhibition organized by State Govt. to promote SHGs. Thus, the group earned a net profit of Rs. 28000/- after repaying the Bank loan. With this success, Group members have developed self-confidence and a quality of self-reliance. All the members feel that group is their power, depends upon collective ideas and actions. This has helped them to improve their status within the family and outside. Now the members say that they can educate their children and have better food for their children and family.

Source: *Directorate of research on women in agriculture*

Biotechnology in Agriculture

Biotechnology is expected to increase the productivity of crops and bring in more revenues to India's agricultural industry.

By **D Muthamizh Vendan Murugavel***

Biotechnology provides powerful tools for the sustainable development of agriculture, fisheries and forestry, as well as the food industry. When appropriately integrated with other technologies for the production of food, agricultural products and services, biotechnology can be of significant assistance in meeting the needs of an expanding and increasingly urbanized population in the present millennium. Modern biotechnology today includes the tools of genetic engineering. There is a wide array of "biotechnologies" with different techniques and applications. The Convention on Biological Diversity (CBD) defines biotechnology as: "Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use"

Benefits of Agricultural Biotechnology

The application of biotechnology in agriculture has resulted in benefits to farmers, producers, and consumers.

1. Biotechnology has helped to make both insect pest control and weed management safer and easier while safeguarding crops against disease. For example, genetically engineered insect-resistant cotton has allowed for a significant reduction in the use of persistent, synthetic pesticides that may contaminate groundwater and the environment. In terms of improved weed control, herbicide-tolerant soybeans, cotton, and corn enable the use of reduced-risk herbicides that break down more quickly in soil and are non-toxic to wildlife and humans. Herbicide-tolerant crops are particularly compatible with no-till or reduced tillage agriculture systems that help preserve topsoil from erosion.
2. Agricultural biotechnology has been used to protect crops from devastating diseases. The papaya ring spot virus threatened to derail the Hawaiian papaya industry until papayas resistant to the disease were developed through genetic engineering. This saved the U.S. papaya industry. Research on potatoes, squash, tomatoes, and other crops continues in a similar manner to provide resistance to viral diseases that otherwise are very difficult to control.
3. Biotech crops can make farming more profitable by increasing crop quality and may in some cases increase

yields. The use of some of these crops can simplify work and improve safety for farmers. This allows farmers to spend less of their time managing their crops and more time on other profitable activities. Biotech crops may provide enhanced quality traits such as increased levels of beta-carotene in rice to aid in reducing vitamin A deficiencies and improved oil compositions in canola, soybean, and corn. Crops with the ability to grow in salty soils or better withstand drought conditions are also in the works.

4. The tools of agricultural biotechnology have been invaluable for researchers in helping to understand the basic biology of living organisms. For example, scientists recently identified the complete genetic structure of several strains of *Listeria and Campylobacter*, the bacteria often responsible for major outbreaks of food-borne illness in people. This genetic information is providing a wealth of opportunities that help researchers improve the safety of our food supply. The tools of biotechnology have "unlocked doors" and are also helping in the development of improved animal and plant varieties, both those produced by conventional means as well as those produced through genetic engineering.

Biotechnology to Help Farmers Increase Productivity

With the gradual **rise in population** and **drastic climatic changes**, the world is expected to experience **acute food shortage** in the near future. It is estimated that the world population is likely to increase by 30 percent to touch 9.1 billion by 2050, which will lead to a huge **demand-supply gap**. The condition is bound to be even more critical in developing countries like India, where nearly **21 percent** of the total population is suffering from malnutrition.

Anticipating a rough road ahead, a handful of cultivators in India have begun to adopt latest technologies like biotechnology in the agricultural sector. Experts believe biotechnology that includes Genetically Modified (GM) seeds, bio-fertilisers and bio-pesticides, will aid in higher production of crops as compared to using conventional cultivation techniques. Therefore, it is also expected to help cultivators earn higher revenues. Unfortunately, most cultivators in India are still unaware of this concept. As a result, due to lack of knowledge regarding biotechnology,

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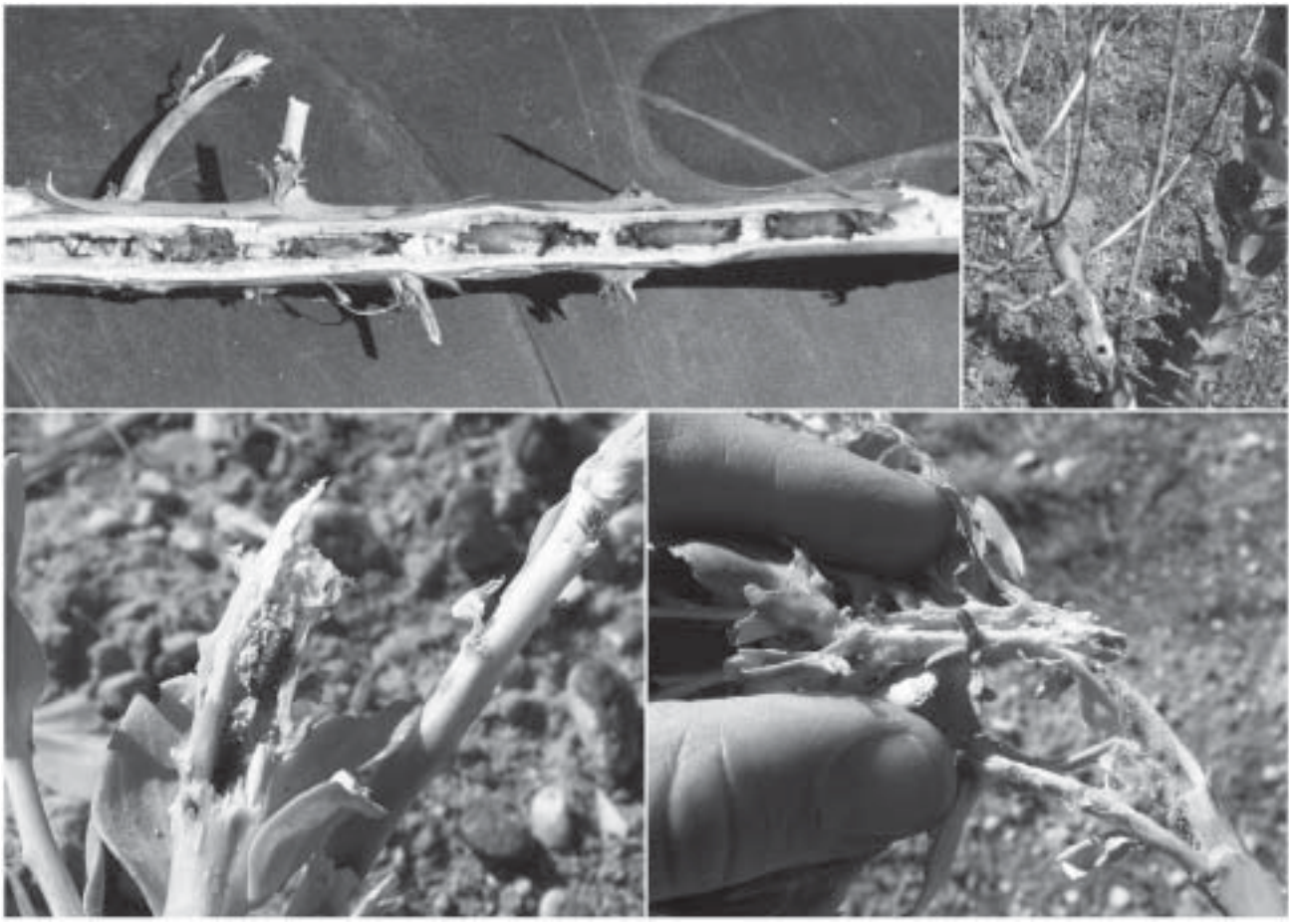


many cultivators in the country have failed to meet consumer demand from time-to-time.

Currently, the Indian **Government** has undertaken the initiative of promoting biotechnology among Indian cultivators and those involved in the agricultural sector. The government is also offering a premium to farmers for producing organic crops in the country. The Government has further assured that crops that are cultivated using biotechnology-based techniques would be sold at moderate prices to suit the consumers' budget. With the introduction of various biotechnology-based tools and techniques, crops would be made resistant towards harsh conditions like **drought**. Farmers can utilise bio-fertilisers and bio-pesticides, which will help them to protect their crops from pest attacks. Experts in the agricultural industry believe that the cost of bio-fertilisers and bio-pesticides are lower than that of nitrogenous fertilisers. Nutritionists are also of the opinion that crops that are cultivated using biotechnology would be of a much higher quality. This would not only retain the **nutritional value** of the food grains, but will also facilitate in maintaining their natural **flavour** and **colour.**

Risks Associated with Biotechnology in Agriculture

Potential risks posed by certain aspects of biotechnology fall into two basic categories: the effects on human and animal health and the environmental consequences. Caution must be exercised in order to reduce the risks of transferring toxins from one life form to another, of creating new toxins or of transferring allergenic compounds from one species to another, which could result in unexpected allergic reactions. Risks to the environment include the possibility of outcrossing which could lead, for example, to the development of more aggressive weeds or wild relatives with increased resistance to diseases or environmental stresses, upsetting the ecosystem balance. Biodiversity may also be lost, as a result of the displacement of traditional cultivars by a small number of genetically modified cultivars.

Conclusion

It is indispensable for the Government and other concerned authorities to determine the potential benefits and possible risks associated with the application of modern technologies to increase plant and animal productivity and production. The responsibility for formulating policies towards these technologies also rests with the Government itself. On the whole, it can be said that by using tools and techniques in biotechnology, cultivators can help in reducing the **post-harvest losses** like food spoilage. This would in turn result in a striking increase in the crop output in India in the upcoming days.

**The writer is Assistant Professor, PG & Research, Department of Commerce, Gobi Arts & Science College, Gobi, Tamil Nadu*

Agriflation
- A Threat to Food Security

By **Gurmeet Singh***

Agriculture in India is no doubt loosing its importance day by day in national GDP. But it still accounts for 52 percent of employment and 12 percent of national exports. In India, the challenge of meeting the food requirement of an ever increasing population can only be met by practicing sustainable agriculture and protecting national resources. The rapid succession of two major crisis - the global food crisis and subsequent financial crisis - has delivered the hardest blow to world food security programmes in decades. These two crises have led to a sharp increase in the number of people suffering from chronic hunger and undernourishment in the world. That is why almost two-third of the world's 1.02 billion undernourished live in Asia and the Pacific. New estimates by the World Bank show 1.4 billion people living below the international poverty line of US$1.25 a day.

In many developing nations in Asia, food is the major household consumption. In India nearly 50 percent of family expenditure was on food. A secure food supply means that sufficient enough quality food is available to all individuals, groups and populations. Food is the first among the hierarchical needs of a human being. Therefore, food security should have the first charge on the available financial resources. Spoilage of grains through lack of investment in storage is a real reflection on our sense of priorities. A national food security act giving legal rights to food can be implemented only by attending to the safe storage of both grains and perishable commodities like fruits, vegetables and milts.

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food performance for an active and healthy life. To achieve food security, all components mentioned below should be present in adequacy.

- Availability
- Stability
- Accessibility
- Utilization.

A food system is a set of dynamic interaction between and within bio-geo physical and human environment that influence both activities and outcomes all along the food chain. Food security is the outcome of food system performance at global, national and local levels. It is often directly or indirectly dependent on agricultural and forest eco-system services e.g. soil and water conservation, watershed management, combating land degradation, protection of coastal areas and mangrove and bio-diversity conservation.

Higher food prices have triggered an increase in hunger world wide. Provisional FAO estimates that the number of chronically hungry people in 2007 increased by 75 million over and above FAO's estimate of 848 million under nourished in 2003-05, with much of the increase attributed to high food price. This brought the number of under nourished world wide to 1.02 billion in 2009 of which almost 300 million alone live in India. In other words, nearly half of the worlds poor, who would not get two square meals a day, are in India.

Provisional FAO estimates that the number of chronically hungry people in 2007 increased by 75 million over and above FAO's estimate of 848 million under nourished in 2003-05, with much of the increase attributed to high food price

Table 1: Annual WPI Inflation: New vis-à-vis Old Series

(Percent)

Items	Base Year	Weight	Average 2005-06 to 2009-10	2010-11
WPI-All	2004-05	100.0	5.5	10.0
Commodities	1993-94	100.0	5.4	10.6
1. Primary Articles	2004-05	20.1	9.2	19.3
	1993-94	22.0	7.9	16.8
2. Fuel & Power	2004-5	14.9	5.9	13.5
	1993-94	14.2	4.2	13.6
3. Manufactured	2004-05	65.0	4.1	5.6
Products	1993-94	63.7	4.8	6.8
Memo items				
a. Food Articles &	2004-05	24.3	8.1	14.2
Food Products	1993-94	26.9	7.7	10.2
b. Non-Food	2004-05	55.0	3.7	5.5
Manufactured Products	1993-94	52.2	4.2	7.2

** relates to the period April-August.*

Above all, we shall prepare for meeting the challenge of climate change. Threats to agriculture, food and water security and the loss of livelihoods will be the most serious consequences of climate change. Even a one degree Celsius rise in mean temperature will affect wheat yield in the heartland of the green revolution, because of a reduction in duration, and reduced grain weight. Under climate change we have different factors to cope with unfavorable changes in temperature, unfavorable changes in precipitation, higher carbon dioxide level in the atmosphere and sea level rise.

In our country attainment of food security has been the major objective before the entire nation since independence. Given the continued and drastic price rises in staple cereals and oil crops well into the first quarter of 2008, the number of people suffering for chronic hunger is likely to have increased further.

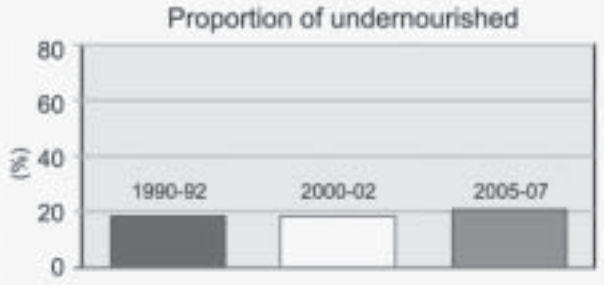
The impact of rising food price on the proportion of under nourished people is worrisome. Good progress in reducing the share of hungry people in developing world had been achieved down from almost 20 percent in 1990-92 to just above 16 percent in 2003-05. As agricultural commodity price rose sharply in 2006 and 2007 and continued to rise even further in early 2010. The FAO index of nominal food price doubled between 2002 and 2008.

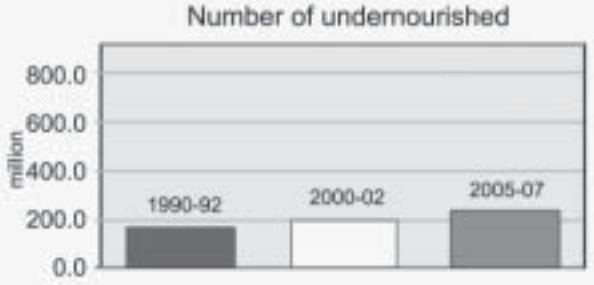
A strong political will coupled with appropriate policy intervention and application of new technology along with the labour of the Indian farmers enabled the country to achieve four fold increase in the food grain production as against three fold increase in the population growth. The ushering in of green revolution in the states of Punjab, Haryana, Western part of U. P. etc. through coverage of more areas under irrigation, increased application of fertilizers, area of high yield variety of seeds and applications of modern technology led to this revolution which enabled the country to stand on its own feet.

National Commission on Farmers (2004-06) has described the region that was not covered by this green belt as a "sleeping gaint". The large untapped production reservoir of this region should be tapped through an appropriate blend of technology, services, input and output rising policies and above all, farmers enthusiasm.

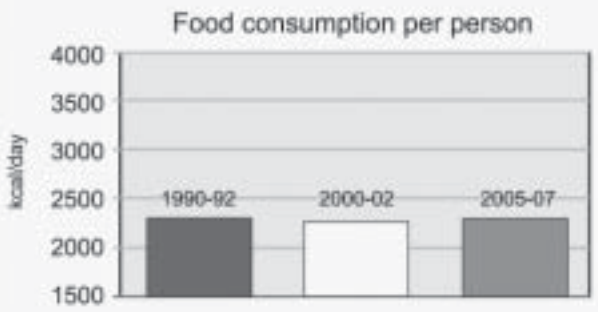
Although we attained a self sufficiency in the food front, affordable and accessibility to the food still remains a

India had a high level of undernourishment in 2005-07, the latest period available; 21 percent of the total population was undernourished. The number of undernourished increased from 1990-92, benchmark period of the WFS and MDG, to 2005-07 while the proportion of undernourished decreased from 1990-92 to 2000-02 but increased from 2000-02 to 2005-07

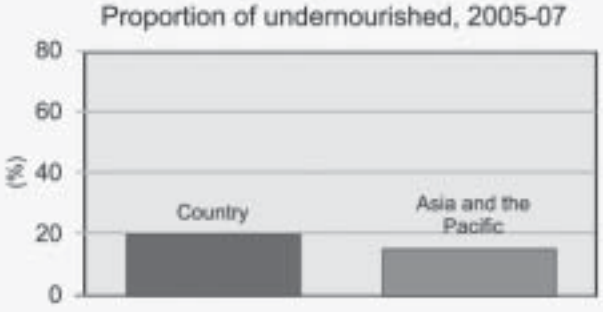




Food consumption increased in 2005-07, covering the decrease in 2000-02.



The prevalence of undernourishment in India was higher than in Asia and the Pacific



Selected statistics	*1990-92*	*2000-02*	*2005-07*
1. Population (million)	*880.3*	*1060.4*	*1147.7*
2. Food consumption (kcal/person/day)	*2300*	*2280*	*2300*
3. Number of undernourished (million) - WFS indicator	*172.4*	*200.6*	*237.7*
4. Prevalence of undernourishment (%) - MDG indicator			
India	*20*	*19*	*21*
Asia and the Pacific	*20*	*16*	*16*

Source FAO

big problem. The question of food as per equity and entitlement are also issues that need to be attended to as a priority.

Ensuring availability of food implies efficient domestic production and internal trade to make enough food available for the entire population. It calls for taking appropriate preemptive measures to ensure stability during harmful seasonal and inter- annual instability of food supplies. However, despite food being abundantly available, it may not be within easy access to certain sections of society. Hence enhancing people's purchasing power to buy food where it is not produced or making it available at subsidized rate through the public distribution system and employment programs is the only solution. This provides a safety net and ensures accessibility to adequate and safe food. In India, food security needs to be understood also in terms of vulnerability of certain sections of the society who are physically and mentally pre-occupied with getting the next meal. It entails intervening sensitivity to make opportunities available to such section so that they can overcome exploration, injustice and discrimination.

A program to over come hunger and food insecurity must include among other things –

1. Measures for enhancement of economic growth
2. Expansion of employment
3. Diversification of production
4. Enhancement of medical health care
5. Management of special access of food as the part of poor people
6. Basic education and literacy
7. Strengthening democracy
8. Media focus on hunger
9. Reduction in gender based inequality.

Food security and elimination of hunger is an issue that requires a concerned national attention and effort. In ensuring food security while formulating the national perspective, the perceptions of the communities which suffer from the pains of hunger have to be examined in order to evolve strategies to mitigate the pains of hunger. Assessing Indian food security from its food production levels does not depict a comfortable situation.

The reasons for such food security lies in our lop sided policies that have suffered from several biases as a result of ignoring the diversities in the Indian agrarian community. In India, for increasing the availability of food, several steps have been taken such as the following: Rashrya Krishi Vikas Yojana with an outley of Rs. 25000 crore, National Food Security Mission with an outlay of about Rs. 6000 crore, National Horticulture Mission with an outlay of Rs. 10,363.46 crore during the 11th five year plan period. There are many other schemes dealing with different areas of productive, such as soil health care, crop protection and irrigation. In spite of these entire schemes our agriculture is still very vulnerable to the behavior of the monsoon. For example, during 2009 the wide spread drought brought down the agricultural growth rate to -0.2 percent, as against the target of 4 percent. But luckily this year's monsoon is good and it will surely compensate last year's loss and we are expecting to get bumper crop. One of the biggest achievement post independence in India is the turn around of agriculture. From 1947 on words, achieving food security for all has been a national goal. Thus to achieve a sustainable grow in agriculture we have to double the food production to feed our above one billion population.

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Glossary on Organic Farming

Organic Farming - is the form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control to maintain soil productivity and control pests on a farm. Organic farming excludes or strictly limits the use of manufactured fertilizers and pesticides, plant growth regulators such as hormones, livestock antibiotics, food additives, and genetically modified organisms

International Federation of Organic Agriculture Movements (IFOAM), - An international umbrella organization for organic farming organizations established in 1972. IFOAM defines the overarching goal of organic farming as: "Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved..."

Organic weed management - promotes weed suppression, rather than weed elimination, by enhancing crop competition and phytotoxic effects on weeds. Organic farmers integrate cultural, biological, mechanical, physical and chemical tactics to manage weeds without synthetic herbicides.

Tillage - Turning the soil between crops to incorporate crop residues and soil mendments; remove existing weed growth and prepare a seedbed for planting;

Cultivation - Disturbing the soil after seeding;

Mowing and cutting - Removing top growth of weeds;

Flame weeding and thermal weeding - Using heat to kill weeds; and

Mulching - Blocking weed emergence with organic materials, plastic films, or landscape fabric.

Biological control of pests – is a method of controlling pests (including insects, mites, weeds and plant diseases) that relies on predation, parasitism, herbivory, or other natural mechanisms. It can be an important component of integrated pest management (IPM) programs.

Biological Control is defined as the reduction of pest populations by natural enemies and typically involves an active human role. Natural enemies of insect pests, also known as biological log control agents; and include predators, parasitoids, and pathogens. Biological control agents of plant diseases are most often referred to as antagonists. Biological control agents of weeds include herbivores and plant pathogens. Predators, such as birds, lady beetles and lacewings, are mainly free-living species that consume a large number of prey during their whole lifetime. Parasitoids are species whose immature develops on paper or within a single insect host, ultimately killing the host. Most have a very narrow host range. Many species of wasps and some flies are parasitoids. Pathogens are disease-causing organisms including bacteria, fungi, and viruses. They kill or debilitate their own host and are relatively specific. There are three basic types of biological control strategies; conservation, classical biological control, and augmentation.

Pesticide - A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest. A pesticide may be a chemical substance, biological agent (such as a virus or bacterium), antimicrobial, disinfectant or device used against any pest. Pests include insects, plant pathogens, weeds, molluscs, birds, mammals, fish, nematodes (roundworms), and microbes that destroy property, spread disease or are a vector for disease or cause a nuisance. Although there are benefits to the use of pesticides, there are also drawbacks, such as potential toxicity to humans and other animals. According to the Stockholm Convention on Persistent Organic Pollutants, 10 of the 12 most dangerous and persistent organic chemicals are pesticides

Organic foods - are made in a way that complies with organic standards set by national governments and international organizations. In the United States, organic production is a system that is managed in accordance with the Organic Foods Production Act (OFPA) of 1990 and regulations in Title 7, Part 205 of the Code of Federal Regulations to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. For the vast majority of human history, agriculture can be described as organic; only during the 20th century was a large supply of new synthetic chemicals introduced to the food supply. This more recent style of production is referred to as "conventional."

Under organic production, the use of conventional non-organic pesticide (including insecticides, fungicides, and herbicides) is precluded. However, contrary to popular belief, certain sprays and other materials that meet organic standards are allowed in the production of organic food.

If livestock are involved, the livestock must be reared with regular access to pasture and without the routine use of antibiotics or hormones. In most countries; organic produce may not be genetically modified. It has been suggested that the application of nanotechnology to food and agriculture is a further technology that needs to be excluded from certified organic food. The Soil Association (UK) has been the first organic certifier to implement a nano-exclusion.

Green Revolution – refers to a series of research, development, and technology transfer initiatives, occurring between 1943 and the late 1970s, that increased industrialized agriculture production in India; however, the yield increase has also occurred world wide.

Coming up Next - Low Cost Solar Pump

Amitabha Sadangi, CEO of the International Development Enterprises, India talks about the treadle pump, the problem of subsidies and the workings of the IDEI in an exclusive with *Deebashree Mohanty*

Q. The person behind Amitabha Sadangi?

Being born in a small village in the interiors of Orissa, I was witness to wide-spread hunger and poverty. Highly priced tools and the erratic nature of monsoon made matters worse for the farming community. As a result communities fell apart - men and women migrated to different lands and/or took up odd jobs to sustain themselves. I left my home in search of employment at the age of 16 years and paid for my education by selling newspapers, working as an accountant in a small firm and sometimes even by selling beer bottles in exchange of clothes. When I could afford it I took advantage of the times and pursued a dual Post Graduate Degree in Labor and Social Welfare and in Law. The choice for both disciplines was obvious.

Due to my sharp mind and outlook I was offered a Government job by the Govt of Orissa, which I promptly refused as I wanted to give back something to the society. My first job was with Churches Auxiliary for Social Action (CASA) and thereafter OXFAM, where I toured extensively, mapping the flood and drought-prone regions of Eastern India. It was then that I developed many ideas around market-based programs for poverty alleviation.

In 1982, I joined IDE as the Deputy Director for India, when the organization launched in the country. I partnered with the then country director to launch the treadle pump program and later went on to serve as the first country director of IDE in Sri Lanka.

Q. How did he get the idea of the low cost treadle pump?

When I was with the OXFAM and touring places I took note of various modern tools and technology used by different countries. At one such conference in Bangladesh I came upon this new tool that they were using – the Treadle Pump. This, I felt could be the ideal device for farmers belonging to the Eastern and the North Eastern belt of India. I got two pumps from Bangladesh did a few modifications to suit the low cost criterion. Within two months of use, the result was catastrophe - a farmer who used this for his chilly crop, made an excess income of Rs 26,000 in less than a month's time.

Q. Was it well received?

At first it took some convincing to be done. The one thing farmers are scared of is being able to take any risk. This is partly due to their extreme poverty condition and partly due to their being unaware. To introduce the idea of this low cost pump I had to resort to making bollywood type short movie clips where the "pump" was always the hero!

Q. How does this treadle pump work?

Treadle pump is one the easiest tool to handle and operate. It is basically a human-powered irrigation device that is placed on top of a well. Pumping is activated by stepping up and down on treadles which drive pistons, creating cylinder suction that draws groundwater to the surface.

All components of the pumps are manufactured locally, and IDEI has successfully developed a supply chain of manufacturers, distributors, retailers and installers.

Q. Benefits?

The pumps are designed to be simple for people of all ages to operate. Poor farmers can now cultivate and sell a variety of crops outside the normal growing season and bring additional land under cultivation because it can be irrigated. The increase in family income means that the cost of the pump can be paid back from the profits of one extra harvest.

The low cost of the pump ensures that the poorest of farmers can afford it and utilise it. In contrast with the conventional technologies which have a high capital cost, high tech in nature making it complicated to install and maintain. Further there is a severe lack of efficient market supply chain in rural areas to develop, manufacture, install and maintain micro irrigation systems appropriate to India's small and marginal farmers.

Q. About the Affordable Drip Irrigation Technology Intervention Program (ADITI)?

We no longer call it ADITI. It is simply Low Cost Drip Irrigation program. These kits have been designed for a range of crops and are quite suitable for small and marginal farmers of the semi arid regions in India. Also, these kits are applicable in a wide range of plot sizes varying from 20 square metres to 1000 square meters, with prices ranging from Rs.250 to Rs.4000. Divisible and available in convenient packages (in the form of kits) which the farmers can install and maintain themselves, the farmers also have the option to begin with one unit and expand it later at their convenience; Tests in all the regions have confirmed its average discharge uniformity of 85 percent.

Q. Impact of cost effective tools on women farmers?

Because these tools are easy to operate, more and more women have come out in the open. This has improved their sense of ownership, confidence, and has given them an increased ability to provide for the families nutritional needs besides the new acquired knowledge and new skills like proper crop spacing, fertilizer application, disease and control. Tribal women have shifted their roles from being wage laborers to independent farmers with keen and vigorous farming interests and increased time flexibilities

Q. Role of financial institutions?

Although NABARD has received these tools very well and has always praised us for bringing such innovative concepts to the forefront, they haven't really done much to promote these products. We are hopeful that in the coming years, NABARD will take active interest and deliver.

Q. Coming up from IDEI?

We are currently working on a low cost solar pump to be made available to small time farmers for the lowly cost of Rs 10,000. The conventional solar pump which is priced at over a Lakh of rupees is unaffordable to small time farmers. This is going to be a revolution when launched. The status – 2nd prototype is ready waiting to be tested. We will be launching it in winter next year.

AGRI NEWS

Kharif Season Gets a Boost!

According to latest data coming in from the Centre for Monitoring Indian Economy (CMIE) - farm output will grow by 10 percent to 114 million tonne in the 2010 Kharif season, against a 12 percent decline in the year ago. At the same time Rabi season is expected to report a 2 percent spike at 116.6 mt compared to a 1.7 percent drop last season.

The reason for this sudden rise is the significant good monsoon that we have witnessed this year. "Due to the significantly good monsoon (102 percent), area sown rose by seven percent during the current Kharif season, despite below normal monsoon in eastern UP, Bengal, Bihar, Jharkhand, Assam, MP, Chhattisgarh and Meghalaya," says the CMIE report on macro economy, that was released recently.

Even oilseeds production is expected to rise by 11.1 percent during the season to 18.1 percent, sugarcane to notch up by 15.6 percent to 321 mt and cotton to grow by 12.4 percent to 26.9 million as compared to 23,9 million bales in the last season.

More forecast suggests that rice production too is going to grow by 4.3 percent to 93 million tonne for the full year, while wheat is slated to grow by 1.1 percent to 81.6 percent during the reporting season. Areas under pulses grew 19 percent in the Kharif season to 124.6 lakh hectares, and the total production is expected to touch 16.1 mt or a 10.9 percent jump in the whole year, says the CMIE report.

The Rabi break-up of the major crops follows: the major Rabi crop of wheat is projected to grow by 1.1 percent to 81.5 mt against 80.7 mt last season.

Major agricultural crops are projected to grow by 7.2 percent in 2010-11 against a 6.6 percent decline last year, says the report. Major crops include foodgrain, oilseeds, cotton, sugarcane, and fruits and vegetables.

Production of non-food crops as a whole is projected to grow by 9.7 percent in the year, while that of minor crops by four percent during the whole year, concludes the agency.

Food Import Bill to Surpass The $ 1 Trillion Mark

In a statement released by The Food and Agriculture Organisation stated that the food import bill of the global community could surpass the $1 trillion mark in 2010, with prices of most commodities going up sharply compared to the state in the previous year.

The UN arm asked the world community to be prepared for harder times ahead unless production of major food crops increases significantly in 2011.

Bringing in some bad news for the poor counties, the FAO study revealed that the food import bills of the world's poorest countries are predicted to rise by 11 percent in 2010, the UN body said, adding that low-income, food-deficit countries would witness a 20 percent jump in their food import bills.

If the forecast comes and the bills do surpass the said figure then this will be considered as a new high, much higher than the peak achieved way back in 2008.

In its report, the FAO said that contrary to earlier predictions, world cereal production is now forecast to contract by 2 percent in June, in contrast to its earlier prediction of 1.2 percent expansion during the month. percent expansion during the month.

Unexpected supply shortfalls due to unfavourable weather events are responsible for the revision, the statement added.

Global cereal stocks are forecast to decline sharply and the FAO made a strong call for production to be stepped up to replenish inventories. World cereals stocks are anticipated to shrink by 7 percent according to FAO, with barley reserves plunging by 35 percent, maize by 12 percent and wheat by 10 percent.

Only rice reserves are forecast to increase by 6 percent, according to the report. Sugar was an important factor contributing to the rise in the price of the global food basket in recent months. According to the FAO, sugar prices, which recently surged to new 30-year highs, remain elevated and extremely volatile.

The price increases seen by most agricultural commodities over the past six months are the result of a combination of factors, especially unexpected supply shortfalls due to unfavourable weather events, policy responses by some exporting countries and fluctuation in currency markets, the report said.

International prices could rise even more if production does not increase significantly next year, especially of maize, soybean and wheat, it added.

AGRI NEWS

'Subsidy Process Needs to be Revisited'–

Bhupinder Singh Hooda

At the World Economic Forum's India Economic Summit held recently in the capital, Bhupinder Singh Hooda, Haryana chief minister, emphasized on direct subsidies for farmers and the nationalization of water.

According to Mr Hooda, the government is working towards that. It's just a matter of time," There are a lot of disputes between the states and the centre on water sharing and Hooda suggested that the resource be nationalized.

Farm economist Ashok Gulati said the subsidy process needs to be revisited. Currently, spending in agriculture is about 80 percent through subsidy and 20 percent through investment, and this needs to be reversed in favour of higher investments than subsidy, he said. Gulati also said growth in agriculture needs to be much more to tackle poverty in India.

Globally, it has been seen that 1 percent growth in agriculture helps reduce poverty by two to three times, and India, which has a GDP (gross domestic product) growth of 8-9 percent, but agricultural growth of around 2 percent, needs to address this issue.

The government needs to create and maintain a competitive market, and farmers should have access to technology. This will help increase production, according to him.

Demand for Horticulture Products to Increase Manifold

A study conducted by the Horticulture Society of India' on the status of horticulture in India stated that the country's demand for horticulture products is expected to grow by over 20 percent to touch 360 million tonnes in 2020-21.

It also revealed that rising income will create more demand for horticultural products, which will further push the production of such crops in India.

The horticulture sector encompasses a wide range of commodities, including fruits, vegetables, potatoes, tuber crops, ornamentals, medicinal and aromatic crops.

While, the new problems are emerging, the sector has grown tremendously in terms of increase in area, total production and introduction of new crops.

However, there is a gap in terms of skilled persons required and available for the sector. Keeping this in mind Horticulture Society of India and National Skills Foundation of India have come together to organise the 4th Indian Horticulture Congress.

Some of the major themes, which would be discussed, include climate change, biodiversity management, innovations in hi-tech horticulture, mechanisation and post harvest management.

600 Samriddhi Centres & 5 m Farmers – Target 2020

Mahindra Farm Equipment has set themselves a target of having 600 Mahindra Samriddhi centres and five million farmers under its ambit by 2020, according to a news report. The Samriddhi centres aims at helping farmers get the maximum yield from their farms. At present there are about 96 such centres across India with a favourable concentration in Chhattisgarh, Gujarat and Maharashtra. As many as 70,000 farmers are said to have been benefited via this programme.

What's next from the Mahindra's? Mr Goenka told a media person that the company plans to look at business beyond tractors in the form of selling seeds, crop-care materials and other agri-consulting through Samriddhi by making it a stand-alone business. However he was cautious to deal with timelines. According to him all these plans will take shape after about 5 years

The Mahindra Samriddhi stall was much in news after US President, Barack Obama, spend considerable amount of time understanding the workings of the Samriddhi centres in Mumbai. We are told that the President was very impressed by the work done in the Indian agricultural sector. He also interacted with a farmer, Lalit Vairagade, who had been helped by Mahindra Samriddhi to enhance his crop-quality.

On an average, farmers helped by Samriddhi have reported a 15-20 percent improvement in their yields after the first year of consulting, as per reports. Mahindra Samriddhi now operates from Mahindra tractor dealerships and helps them in bonding with farmers in rural areas.

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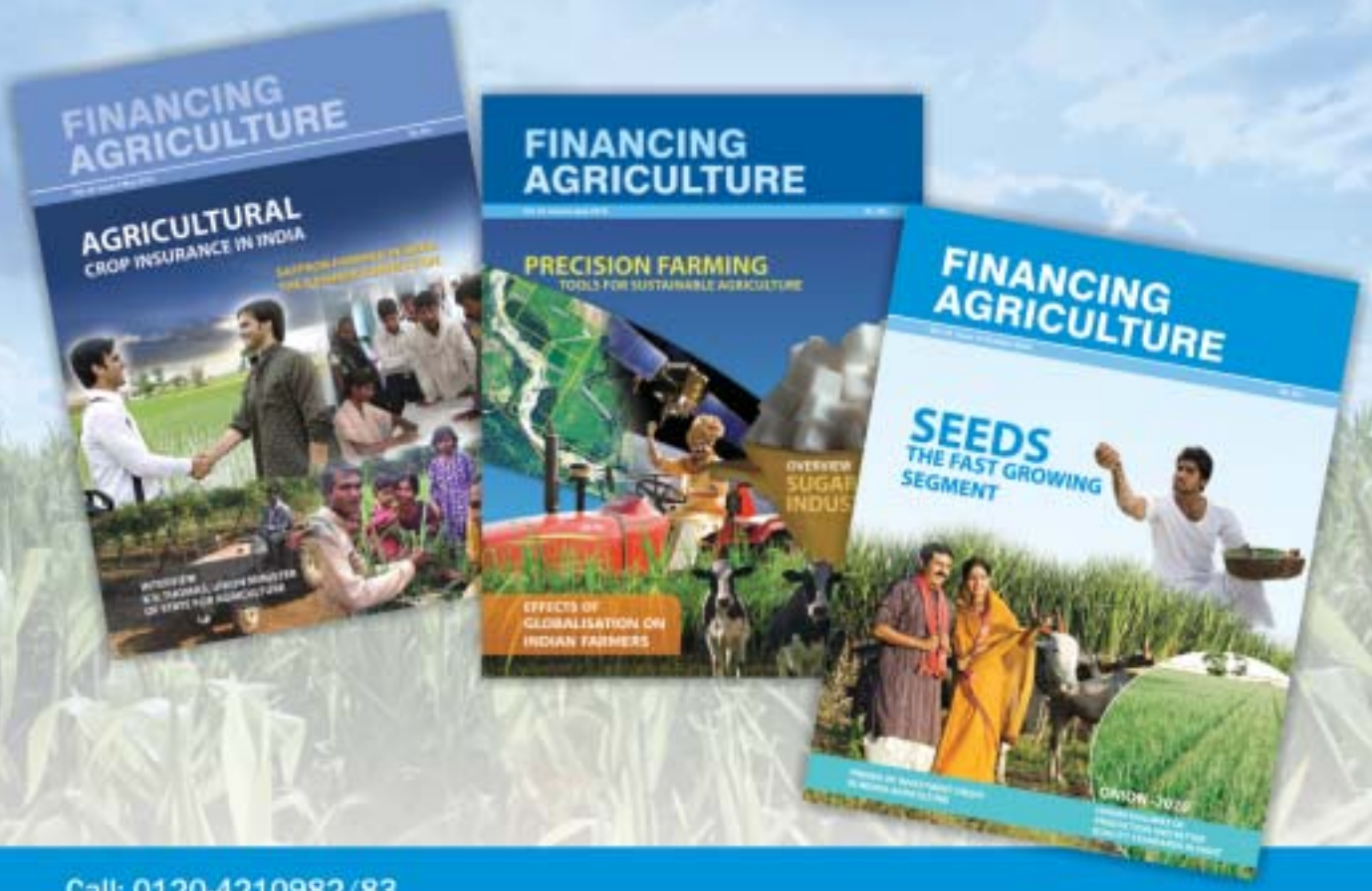

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