

INDIAN FARMERS IN 21st CENTURY: MISSION AND VISION

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I feel proud and privilege to be associated with the AGRASRI programme at Tirupati to deliver the Fifth Bharat Ratna Rajiv Gandhi Memorial Lecture for the year 2006. Equally, it is my honour to receive the Bharat Ratna Rajiv Gandhi Outstanding Leadership Award for the year 2006 in recognition of my contributions to the Agriculture and Sustainable Development. I congratulate the organiser Dr. Sundar Ram to conduct the various innovative programmes in memory of great son of India Shri Rajiv Gandhi, in a dedicate manner at Tirupati.

Shri Rajiv Gandhi understood the wisdom of Gandhiji's doctrine that *Gram Swaraj* is the pathway to *Purna Swaraj* and launched the Panchayati Raj movement. Schedule 11 of Constitution Amendment 73 entrusts Panchayats with the responsibility of managing natural resources and fostering sustainable agriculture. Representative democracy through elected members, one third of whom are women, and participatory democracy through *Gram Sabhas*, are powerful tools for ensuring a pro-nature, pro-poor, pro-women, and pro-livelihood orientation to all rural and agricultural development programmes.

The National Commission on Farmers (NCF) in its 4 reports submitted to the Union Minister for Agriculture so far, has emphasised the need for community managed food and water security systems promoted with the help and oversight of Gram Sabhas. The Gram Sabha can serve as a *Pani Panchayat* to ensure that rainwater is not only harvested, but is used in a sustainable and equitable manner. The trend now is to bypass these grassroots democratic structures, which represent the vision of Rajiv Gandhi for a peaceful and prosperous India, and to resort to depending on private trade to manage our food and water security systems. Unfortunately, this will result in an *unequal social bargain* since those who control the market place are both rich and politically powerful. The Indian enigma of the coexistence of great technological and intellectual capability on the one hand, and extreme poverty, deprivation and malnutrition on the other, will continue to persist if we do not revitalise and empower the grassroots democratic institutions.

In a country with a high prevalence of poverty and malnutrition, the Government of India should always retain a commanding position in the management of the food security system. This will call for a grain purchase policy which takes into account the changes in the cost of production, (such as a rise in diesel price) subsequent to the announcement of a Minimum Support Price (MSP). Traders will give a price above MSP when they expect that prices will shoot up with in a few months.

- Text of the **Fifth Bharat Ratna Rajiv Gandhi Memorial Lecture** delivered by **Dr. M.S. Swaminathan**, the then Chairman, National Commission on Farmers, Govt. of India, on 20th August 2006 at Hotel Bliss (Darbar Hall), Tirupati, under the aegis of Academy of Grassroots Studies and Research of India (AGRASRI), in Collaboration with Rajiv Rural Development Foundation, Tirupati (Andhra Pradesh).

As Prof. Amartya Sen has often stressed, we should not forget the lessons of the Bengal Famine of 1942-43, where millions died out of starvation not because there was no food in the market, but because the surplus food stocks were in the hands of private merchants. *Building a sustainable food security system will require attention to both the availability of sufficient stocks and who controls them.* The global wheat stocks are down this year and the political leadership of the country should decide how to ensure the food security of 1.1 billion children, women and men in an era where much of the food grain stocks will be controlled by national and international grain traders and cartels.

Launching a Second Green Revolution

The year 1968 marked the beginning of the first green revolution when Indira Gandhi released a special stamp titled “Wheat Revolution”. Green Revolution implies enhancing food production through raising productivity per units of land, water, time and labor.

The productivity pathway is the only one available to population rich but land hungry countries like ours for achieving a balance between human numbers and food production. Even early in 1968, I called for the mainstreaming of environmental concerns in agricultural research and development to avoid the adverse ecological consequences of exploitative agriculture. Later, I coined the term “*ever-green revolution*” to indicate the pathway to improving productivity in perpetuity without associated ecological or social harm. This term has now come into widespread use internationally.

Our Prime Minister, Dr Manmohan Singh has been calling for a *second green revolution*. *It will be appropriate to restrict the use of this term to enhancing the productivity, profitability and sustainability of dry land farming, i.e., raising crops solely based on rain water.* If the first green revolution benefited farmers in irrigated areas, the second should help farm families in rainfed, semi-arid areas. In both cases, the pathway used for yield enhancement should be the ever-green revolution approach.

If we are to achieve a second green revolution covering rainfed areas, *the first important requisite is opportunity for assured and remunerative marketing for dryland farm products like pulses, oilseeds, millets, vegetables, fruits, milk and meat.* Due to shortage of wheat and rice in government stocks, the Government of India plans during 2006 to purchase millets, *ragi, bajra* and *jowar* for use in the public distribution system (PDS). These “underutilised crops” are rich in micronutrients and minerals and should be referred as “nutritious cereals” and not as “coarse cereals” as is being done now. *The decision to purchase and include ragi, bajra, jowar and other millets in PDS should be a permanent one.* This will help to enhance nutrition security on the one hand, and the productivity and economic sustainability of improved dryland agriculture, on the other. There is a large untapped reservoir of dryland farming technologies and we can see a drastic rise in the productivity and production of crops in these areas if farm families are supported by credit, insurance, a fair price and assured market for their produce, as happened in the eighties when Shri Rajiv Gandhi launched a Technology Mission in Oilseeds.

The country can produce as much pulses and oilseeds we need through a synergy between technology and public policy, since there is a stockpile of improved varieties of dryland crops. The new hybrid *arhar* strains (Pigeon pea) can trigger a pulses revolution. The largest section of consumers in India is the farming population. By helping farmer-consumers to have greater marketable surplus because of higher productivity, we can eliminate substantially poverty induced hunger and malnutrition in the country.

Lester Brown has recently pointed out that the world carry over stocks at the end of this crop year are projected to drop to 57 days of consumption, the shortest buffer since the 56 day low in 1972 that triggered a doubling of grain prices. *While import of wheat, pulses, sugar and oilseeds may be necessary during 2006 in order to prevent an undue rise in prices, we should avoid the danger of making this a habit.* Our food budget should be managed with home grown food, since agriculture is the backbone of our rural livelihood security system. *The proposed National Rainfed Authority can have as its sole mandate the launching of a second green revolution in dry farming areas beginning with pulses and oilseeds. The present policy, if continued in the long run, may help some traders and multinational companies to become rich, but will render millions of farm women and men in rainfed areas paupers.*

Another step that should be taken in dryfarming and tribal areas is the establishment of community managed food and water security systems. Such a system will involve the establishment by local self-help groups, grain and water banks. The grain bank could be built with local staples and could help to avoid distress sale as well as panic purchase. The Water Bank can be established by Community water harvesting. Conservation, cultivation, consumption and commerce can become an integrated food management system under the control of local communities. By promoting such decentralised community management systems, with the Gram Sabhas providing policy oversight, we can address concurrently endemic hunger caused by poverty, hidden hunger arising from the deficiency of iron, iodine, zinc and Vitamin A in the diet, and transient hunger caused by natural calamities like drought, floods, cyclones. It will also be prudent to develop such a system in the context of potential adverse changes in temperature, precipitation and sea level arising from climate change and global warming.

Increasing privatisation of our food and water security systems has important implications for the food, income and work security of small and marginal farmers and agricultural labour. The WTO agreement entered into at Marakesh in 1994 resulted in an unequal trade bargain. The growing privatisation of food and water security systems is already leading to an unequal social bargain. The poor will not be able to withstand the tragedy of distress sales and inundation of low cost foods and fruits from rich countries whose agriculture is driven by heavy inputs of subsidy, capital and technology. We will never be able to achieve the UN Millennium Development Goal in the area of hunger and poverty elimination, if we do not insulate the farmer-consumers from unfair trade and social bargains.

An *Universal Public Distribution System*, which alone can save the economically underprivileged sections of the society from chronic under-nutrition, will need annually approximately about 40 million tonnes of food grains. If we assume that about 160 million families will use PDS, and that each family gets an allocation of 20 kg per month, we will need annually about 38 million tonnes to support an Universal PDS. By enlarging the minimum support price to a wider range of food grains and purchasing them for use in PDS, we can launch both a second green revolution and a universal public distribution system. Also, through Community Grain and Water Banks, we can help to start a “Store Grains and Water Everywhere” movement. The prices of essential commodities will then remain stable and affordable to resource poor consumers. Market manipulation of prices of essential commodities can also be checked. While food grain imports will provide a breathing spell in controlling price rise and inflation, a second green revolution in dry farming areas, stimulated by assured and remunerative marketing opportunities will help to promote simultaneously food and livelihood security to millions of small and marginal farmers and landless labour.

An ever-green revolution can be achieved by a suitable mixture of the following production technologies:

- ❖ *Organic farming* involving crop-livestock integration and green manuring; organic farming precludes the use of genetically modified crop varieties, although marker assisted selection is allowed.
- ❖ *Green agriculture* based on the adoption of integrated natural resources and pest management and nutrient supply techniques as well as a shift from a cropping system to a farming system approach in technology development and dissemination. This is also referred to as eco-agricultures.
- ❖ *EM agriculture*, involving the use of efficient micro-organisms. This is similar to what is called in China as “White Agriculture” based on the extensive use of microorganisms, particularly fungi.

In this context, I would like to refer briefly to the agricultural scenario today in the country.

Situation Facing our Farmers

Farming is both a way of life and the principal means of livelihood for 65 per cent of India’s population of 110 crores. Our farm population is increasing annually by 1.84 per cent. The average farm size is becoming smaller each year and the cost-risk-return structure of farming is becoming adverse, with the result that farmers are getting increasingly indebted. Marketing infrastructure is generally poor, particularly in perishable commodities. The gap between what the primary producer of vegetables and fruits gets and what the urban consumer pays is very high.

The livelihoods of pastoralists and small holder farmers are threatened by the progressive loss of grazing land for their animals, limitations to mobility, inadequate or inappropriate government policies, and lack of animal health and other services. These developments are also

causing the progressive loss of the livestock breeds and species that provide rural livelihoods and lifestyle options.

The social prestige and status accorded to farmers are also low. Farmers seldom receive recognition through Padma Awards on Republic Day - an index of the low recognition given to the contributions of 650 million farm women and men not only to food and livelihood security, but also to national sovereignty. Lal Bahadur Shastri's slogan "*Jai Kisan*" is yet to be converted into public policies which recognise the pivotal role of farming communities in national well-being and security.

Policies are needed for making the sub-marginal, marginal and small farmers economically viable and environmentally sustainable. Well-defined guidelines are needed for assisting such families with assured and remunerative marketing opportunities, particularly in the case of perishable commodities and 'orphan'" crops like a wide range of millets, tubers, pulses and oilseeds.

Technology has been a major factor in the rich-poor divide until now. We should now enlist technology as an ally in the movement for gender and social equity. This will call for a pro-poor, pro-woman and pro-nature orientation to technology development and dissemination. Also, Intellectual Property Rights (IPR) policies should be such that there is social inclusion in access to technologies. This will call for a considerable stepping up of investment in public good research and an antyodaya approach to technology development and dissemination. There is no option except to produce more food and other commodities under conditions of diminishing per capita arable land and irrigation water resources. Hence, we must harness the best in frontier technologies and integrate them with traditional wisdom and thereby launch an eco-technology movement.

Research should be tailored to the need for adding economic value to the time and labour of the poor, particularly women. Also, the advantage of the National Rural Employment Guarantee Programme (NREGP) should be taken for launching a massive adult and functional literacy programme using computer-aided joyful learning techniques. The poor are poor because they have no assets, neither land nor livestock nor fishpond. They are often illiterate also. Modern technologies can help to achieve a quantum jump in imparting literacy and market-driven skills. They should therefore be harnessed for the benefit of resource poor farm and landless labour families living below the poverty line. Further, the NREGP should be used to create productive assets in rural areas, particularly in the areas of water harvesting and aquifer recharge.

Within a week after the launch of NREGP, 2.7 million applicants reportedly registered themselves for employment under this programme in 13 districts of Andhra Pradesh and a million registered in 12 districts of Maharashtra. The average wage under this programme is about Rs. 60 per day. While this will help them to get their daily bread, the programme cannot solve the challenge of pervasive poverty. Since NREGP represents employment of the last resort and caters

only to unskilled work, the extent of despair and deprivation in rural India is obvious from the demand for placement in this programme.

Addressing the nutrition, healthcare and education needs of the poor, and particularly of agricultural labour, tribal women and men and fisher families should be given top priority. Nearly 75 per cent of children in the country are under-weight due to inadequate nutrition. India has the largest number of under-weight and low birth weight children and their prevalence is almost double that of Sub-Saharan Africa. Micro-nutrient deficiencies are widespread. More than 75 per cent of preschool children suffer from iron deficiency anaemia. About 57 per cent of pre-school children have sub-clinical vitamin A deficiency. Traditional food habits in rural and tribal areas included a wide range of millets, tubers, grain legumes and leafy vegetables. *The revitalisation of nutrition-centred farming systems is an urgent task. Both dying crops and dying wisdom should be saved and harnessed for local level community managed food security systems, like Community Food Banks.*

While farm families are crying for additional investment in infrastructure and farm innovation, there has been a drop in government investment in the agriculture sector. The drop in government as well as private investment has significantly slowed down momentum in the entire rural economy. Public policies in the area of farm subsidies have led to distortions in land use and fertiliser consumption and have promoted the unsustainable exploitation of groundwater. The intensive wheat-rice rotation in the Punjab-Haryana region has led to the depletion of groundwater and to soil salinisation in some areas. Balanced fertilisation has been affected by the heavy subsidy given to urea-based fertilisers, particularly in the context of a sharp rise in the prices of all chemical fertilisers. Soil micro-nutrient deficiencies are not being addressed. *Consequently, factor productivity is going down, with a consequent adverse impact on the cost of production.*

Ours is a nation of subsistence farmers, who constitute one fourth of the global farm population. There is little or no evidence that policy is being shaped by that reality. Farming is the largest people's private sector and not a corporate domain. The immediate step Government must take is to implement the NCF recommendation for a Price Stabilisation Fund. While a multiplicity of factors is driving the farm suicides, the greatest worry of the farmer relates to the price he is likely to get for his produce at harvest time. This has proved true regardless whether the produce is cotton, onions, groundnut, sugarcane or pulses. *Assured and remunerative price for farm produce is the core issue. Farmers should be assured that there will be strong Government intervention to prevent distress sales.*

The review and overhaul of credit operations ought to be far more transparent and rigorous. The credit cycle in chronically drought prone areas like Vidharba should be 4 to 5 years. An Indian Trade Organisation (ITO) should come into existence soon as a watchdog body to safeguard farmers' interests. The ITO could be supported by a Trade Advisory Body for Small Farmers. The

objective would be to allow farmers to engage with decision makers in the formulation of appropriate policy responses to developments in agricultural markets.

Another area where the Central and State Governments can help is input costs. High quality inputs should be made available at affordable prices at the right time and place, along with credible extension advice. Today, the farmer depends on the input dealer who sells seeds, pesticides and fertilisers for technical advice. In many “Suicide Hot Spot” areas, the input dealer is also the moneylender, the scientist, agricultural expert, counselor and buyer all rolled into one.

Until such time we do not recognise the root causes of this sad chapter of our agricultural history, remedial actions will largely be cosmetic.

Livestock and Livelihood

According to the 17th Livestock Census released in January 2005, India has 57 per cent of the world’s buffalo population and 16 per cent of the cattle population. Also, we rank third in sheep wealth and second in goat population. The contribution of the livestock sector to agricultural GDP has increased from 18 per cent in 1981 to 26 per cent in 2004-05. *It is clear that livestock and livelihoods are very intimately related in our country and that crop-livestock integrated farming is the pathway for farmers’ well being.*

The ownership of livestock is much more egalitarian since resource poor farming families own a majority of cattle, buffalo, sheep and goats. The major constraints experienced by such families relate to fodder, feed and healthcare. There is an urgent need for establishing *Livestock Feed and Fodder Corporations* to assist SHGs to produce good quality animal feeds. Such a Corporation should be a facilitating body for providing seeds and planting material of improved varieties to SHGs for local level production. The productivity of our livestock is low and can be easily improved through better nutrition and healthcare. Agri-clinics operated by veterinary and farm science graduates will be very helpful to enhance the income of livestock owners through higher productivity. At the same time, crop-livestock mixed farming systems should be promoted since this will help to improve both income and household nutritional security. *It should be noted that suicides by farmers are rare in areas where there are multiple livelihood opportunities.* India’s achievement, in becoming the largest producer of milk in the world, has an important message, namely, concurrent attention to all links in the production, processing and marketing chain through cooperatives and group endeavour will lead to striking results.

The Union Finance Minister while presenting the 2006-07 budget had announced that banks are being asked to provide a separate window for SHGs as well as for joint liability groups of tenant farmers. This window will provide an opportunity for achieving a fodder and feed revolution for enhancing the health and productivity of our unique livestock wealth. Livestock insurance also needs revamping and made accessible to small livestock owners. Livestock rearing can be linked to organic farming, so that there is value addition to the produce from small farms.

Need for a Non-Farm Livelihood Initiative

China has addressed the need for creating opportunities for skilled non-farm employment through a massive Township and Village Enterprises (TVE) movement. There were 21.15 million TVEs in China at the end of 2001, employing a total of 130 million workers. Their added value of 29356 billion Yuan (3669.5 billion US \$) accounting for 31.1 percent of the national total (He Kang, 2006, *China's Township and Village Enterprises*, Foreign Language Press, Beijing).

Several programmes have been initiated by KVIC and NGOs for generating off- and non-farm employment. The SHG movement is helping women, particularly in South India to come out of the poverty trap. There is need for a counterpart to NREGP in the skilled employment sector. Initiatives like Small Farmers' Agri-business Consortium (SFAC), Agri-clinics and Agri-business Centres, Food Parks, Textile and Leather Parks, etc., which could have provided substantial additional livelihood opportunities to the rural poor are yet to take off. *It would be useful to integrate all of them into one initiative like China's TVEs and launch a Rural Non-farm Livelihood Initiative* for families without land or other productive assets. The joyful learning programme through computer aided adult/functional literacy procedures should help to accelerate the progress of eradication of illiteracy.

The Rural Non-farm Livelihood Initiative could have as its core the KVIC and restructured SFAC and bring all rural non-farm employment programmes together, in order to generate convergence and synergy among them. A Consortium approach could be adopted involving Central and State Governments, Academia, NGOs, public and private sector industry and financial institutions. The sooner we initiate a massive and market-driven rural non-farm livelihood programme, the greater will be the prospect for peace and security in rural India. Also, food security in India is best expressed in terms of million person years of jobs, rather than in million tonnes of foodgrains. Where there is work, there is money. Where there is money, there is food. There is, therefore, need for a restructuring and revamping of organisations like SFAC, KVIC, Agri-clinics and Agri-business Centres.

Public Policies for Sustainable Livelihoods

The cost-risk-return structure of farming is getting adverse, leading to increasing rural indebtedness. The following steps will help to ensure that the well-being and livelihood security of farm and rural families become the bottom line of public policies.

- ❖ The scope of the Minimum Support Price (MSP) programme should be expanded to cover all crops of importance to food and income security for small farmers. Arrangements should be made to ensure MSP at the right time and at the right place, particularly in the areas coming within the scope of the National Rainfed Area Authority. *Also, advice to farmers on crop diversification should be linked to the assurance of MSP. Small farm families should not be exposed to administrative and academic experiments and gambles in the market.*

- ❖ A *Market Risk Stabilisation Fund* should be established jointly by Central and State Governments and financial institutions to protect farmers during periods of violent fluctuations in prices, as for example, in the case of perishable commodities like onion, potato, tomato, etc.
- ❖ There is also need for an *Agriculture Risk Fund* to insulate farmers from risks arising from recurrent droughts and other weather aberrations.
- ❖ The scope of Agricultural Insurance Policies should become wider and there should also be coverage for health insurance, as envisaged under the *Parivar Bima Policy* recommended by NCF in its First Report. There should also be insurance provided by Seed Companies in the case of GM crops, so that farmers who pay high prices for the seeds for such crops do not suffer in case of crop failure.
- ❖ Nutrition support to rural families affected by HIV/AIDS, tuberculosis, malaria and leprosy is needed to assist in recovery and restoration to a productive life. There is evidence to suggest that a pure drug based approach alone, is not adequate to help economically underprivileged rural women and men recover from diseases involving prolonged treatment. A basic requisite for enhancing small farm productivity is the health of the farm worker. Hence, a Food-cum-Drug based approach to healthcare should become an integral part of the National Rural Health Mission.
- ❖ An *Indian Trade Organisation (ITO)* and an *Agro-ecological Land Use Advisory Service* should be established on the lines recommended by NCF in its Third Report. The ITO should help Government to operate a Livelihood Security Box.
- ❖ Since agriculture is a State subject, every State Government should set up a *State Farmers' Commission* with an eminent farmer as Chairperson. The Membership of the Commission should include all the principal stakeholders in the farming enterprise. Such Commissions should submit an Annual Report for being placed before the respective State Legislature for discussion and decision.

The State Farmers' Commission could have the following terms of reference, with appropriate additions or modifications depending upon the situation prevailing in each State.

- ❖ To bring to the attention of the State Government emerging problems in crop and animal husbandry, fisheries and the environment in a pro-active manner, so that timely steps can be taken to avert extreme hardships to farming families.
- ❖ To recommend measures in the areas of technology development and dissemination, input supply and input-output pricing, which can help to enhance the productivity, profitability and sustainability of both the crop and livestock farming systems.
- ❖ To suggest pro-small farmer methods of conferring the power and economy of scale to farm families with small holdings, such as Cooperative Societies, SHGs, Contract Farming, Producer Companies etc.

- ❖ To suggest how Panchayati Raj institutions can help to advance the cause of agriculture and how Gram Sabhas can function as *Pani Panchayats*.
- ❖ To give inputs for the preparation of the Eleventh Plan and all subsequent plans in the areas of agriculture including livestock and fish production, on the basis of the major agro-climatic and agro-ecological regions of the State.
- ❖ To serve as a think-tank for taking the State agriculture forward in the areas of quality improvement and national and global competitiveness. In particular, the Commission could advise the Government on improving trade opportunities both within the country and outside.
- ❖ To recommend measures which can help to generate more income and employment both in on-farm and non-farm activities and enterprises and which can help to impart an income and skilled employment orientation to agricultural strategies, programmes and policies.
- ❖ To serve as the voice of Kisans in all aspects of Government Policies which will affect either positively or negatively on the well-being of rural families.

It would be better if the Commission is a compact one with not more than nine members drawn from different agro-ecological regions. The Members should be genuine farmers (including farm women) and the Chair could be a distinguished farmer – achiever. There could be an Advisory Committee to the Commission comprising of officials and scientists drawn from the Agricultural and Veterinary Universities and the relevant State Government Departments.

- ❖ Agricultural progress should be measured by the growth in the net income of farm families. Along with production growth rates, income growth rates should also be measured and published by the Economics and Statistics Directorate of the Union Ministry of Agriculture.
- ❖ Article 243 G of the 11th Schedule of the Constitution (73rd Amendment) Act, 1992 entrusts *Panchayats with responsibility for agriculture including agricultural extension*. In addition, *Panchayats* will also have to attend to:
 - ❖ Land improvement, implementation of land reforms, land consolidation and conservation
 - ❖ Minor irrigation, water management and watershed development
 - ❖ Animal husbandry, dairying and poultry
 - ❖ Fisheries
 - ❖ Social forestry and farm forestry
 - ❖ Minor forest produce
 - ❖ Small scale industries, including food processing industries.

At the moment there are about 2,25,000 *panchayats* in the country. The problems facing Indian Farmers are generally dealt with in an aggregated manner – i.e., taking into consideration the problems of over 100 million farming families as a whole. They then appear formidable. *However, if such problems are disaggregated and dealt with by Gram Sabhas and Panchayats, location-specific problems can be attended to speedily and effectively.* The extreme distress faced by

farmers in certain regions of the country can then be dealt with promptly. Therefore, it is time that the provisions of Article 243 G are implemented, both in letter and spirit. Panchayats should be involved in water conservation and management as well as in the resettlement of those who will be displaced by big dams through *Gram Sabhas* serving as *Pani Panchayats*. Also, one woman and one male member of the *panchayat* should be trained to serve as Farm Science Managers. In the areas prone to drought, floods and cyclones, one male and one female member could also be trained to serve as Climate Managers. *Panchayats* could also be the location for the Gyan Chaupals. They can then play a very important role in agricultural renewal and renaissance.

2006-07: The Year of the Farmer

To restore farmers' faith in farming, the National Commission on Farmers has recommended that the agricultural year of 2006-07 (June 1, 2006 to May 31, 2007) may be observed as the *Year of the Farmers*. The steps recommended by NCF are simple, doable and affordable. They however need a change in mindset from one which regards farmers as "beneficiaries" of small government programmes, to one which treats them as partners in development and custodians of food security and national pride. Integrated action on the following five points will help to get our agriculture back on the rails.

First, undertake soil health enhancement through integrated measures in improving soil organic matter and macro-and, micronutrient content, as well as the physics and the microbiology of the soil. Gujarat and Karnataka have already issued Soil Health Cards to farm families and other States can do likewise.

Second, promote water harvesting, conservation and efficient and equitable use by empowering Gram Sabhas to function as *Pani Panchayats*. Such Pani Panchayats should foster the establishment of community managed water banks and the recharge of the aquifer. A sustainable water security system should be put in place, particularly in rainfed areas lacking assured irrigation facility. This will be facilitated by mandatory water harvesting and greater attention to dryland farming.

Third, initiate immediately credit reforms coupled with credit and insurance literacy. The Finance Minister has announced a reduction in the interest on short term loans to 7%, but this should be regarded as the first step in a series of measures including the revitalization of the cooperative credit system. Credit support should include attending to the credit needs of farm families for agricultural, health and domestic needs in a holistic manner. Also in chronically drought prone areas, the credit repayment cycle should be extended to 4 to 5 years. Credit delivery systems should be engendered since only a small proportion of women cultivators have been issued with Kisan Credit Cards inspite of the increasing feminisation of agriculture. Adequacy and timelines of credit availability are vital for institutional credit to be meaningful to farmers.

Four, bridge the growing gap between scientific know-how and field level do how both in the production and post-harvest phases of farming through a slew of measures including the training of one woman and one male member of every Panchayat as Farm Science Managers, establishing

Farm Schools in the fields of outstanding farmer-achievers, adding a post-harvest technology and agro-processing wing in every Krishi Vigyan Kendra, and organizing nationwide Lab to Land demonstrations in the areas of agricultural diversification, food processing and value-addition.

Also knowledge connectivity as proposed under *Bharat Nirman* should be accomplished by establishing Village Knowledge Centres or *Gyan Chaupals* throughout the country. Small farmers should not be subjected to administrative and academic experiments in the area of crop diversification, without first linking the farmer with the market for the new commodities. Crop-livestock-fish integrated production systems are ideal for small farmers since this can also facilitate organic farming. Low economic risk, high factor productivity, promotion of integrated farming systems, avoidance of ecological harm and assured income must be the bottom line of all agricultural research and development strategies. Had we adopted a pro-small farmer biotechnology strategy, we will by now have Bt-cotton varieties, whose seeds farmers can keep and replant, unlike in the case of the hybrids marketed by private companies.

Scientific strategies should include attention to both on-farm and non-farm livelihoods. We should confer the power and economy of scale on families operating one ha or less through management structures like cooperatives or group farming as well as contract cultivation based on a win-win model of partnership for both the producer and the purchaser. Institutional structures like Small holders' cotton, horticulture, poultry and aquaculture estates can be promoted by stimulating the formation of Self-help Groups at the farm level. Concurrently, we should launch an integrated Rural Non-farm Livelihood Initiative by revamping and integrating numerous isolated non-farm employment and income generation agencies such as the KVIC, Small Farmers' Agri-business Consortium (SFAC), Textile, Leather and Food Parks, Agri-Clinics, and Agri-business Centres. *Unless market driven multiple livelihood opportunities are created, the pressure of population on land will grow, the indebtedness of small farmers will increase, and the agrarian distress will spread.* Poverty will persist so long assetless rural families remain illiterate and unskilled. The National Rural Employment Guarantee Programme provides a unique opportunity for imparting functional literacy using computer aided joyful learning techniques. We should use new technologies to leapfrog in the area of human development in villages. At the same time, knowledge without access to the inputs to apply that knowledge will have no meaning. Input supply systems need review and reform.

Finally, the gap between what the rural producer gets and what the urban consumer pays must be made as narrow as possible, as has been done in the case of milk under Dr. V. Kurien's leadership. The National Horticulture Board was created for this purpose over 23 years ago, but like SFAC, it also lost its way. It can only be hoped other expensive new programmes like the Fisheries Development Board, the National Rainfed Area Authority and the National Horticultural Mission will learn from the success achieved by agencies like the National Dairy Development Board, the Indian Space Research Organisation and the Atomic Energy Commission in achieving specific goals in a time bound manner, and benefit from strong professional leadership.

There is an urgent need for a National Land Use Advisory Service, structured as a virtual organisation on a hub and spokes model, the spokes covering the major agro-climatic zones and farming systems, for providing proactive advice to farmers on land and water use through an integrated analysis of meteorological, agronomic and marketing data. There is also need for an Indian Trade Organisation whose mandate is to protect the livelihood and income security of farm and fisher families. At the same time, there should be a Risk Stabilisation Fund and a farmer-centric Minimum Support Price (MSP) and Market Intervention Scheme (MIS).

Agriculture in our country is based on the technology of production by masses. As a consequence, it is the backbone of the national livelihood security system. The Indian tragedy of extensive poverty and deprivation persisting under conditions of impressive progress in the industrial and services sectors will continue to persist so long as we refuse to place faces before figures. NCF has suggested the mainstreaming of the human dimension in all agricultural programmes and policies, the adoption by the National Development Council of a National Policy for Farmers and the establishment of a State Farmers' Commission by every State Government, in order to voice the voiceless in the formulation of farm policies including the preparation of the 11th Five Year Plan. Let the Year of the Farmer help to shape our agricultural destiny in a manner that farming once again becomes the pride of the Nation on the occasion of the 60th anniversary of our independence on 15 August 2007.

Role of Farm Graduates in Shaping our Agricultural Future

There are currently 45 Agricultural and Veterinary Universities in the country including Deemed Universities. Over 21000 Agricultural Graduates and Post Graduates are becoming available each year. Farming is become knowledge intensive and there is need for retaining Farm Graduates and Home Science Graduates in our villages in order to achieve the desired technological upgrading of farm enterprises. We need a national strategy for the knowledge and skill empowerment of farm families. At present, most of the Farm Graduates are either taking jobs in Government or Financial Institutions or in Private Sector industry. They are seldom taking to farming as a profession. This is not surprising, since as mentioned earlier over 40% of farmers would like to quit farming. There is an urgent need for increasing the productivity, profitability and sustainability of major farming systems in the country through synergy between technology and public policy.

There are several ongoing technology transfer and extension mechanisms. The latest addition is the ATMA. Krishi Vigyan Kendras, lab-to-land programmes and regular extension services also exist. In spite of these efforts, the gap between scientific know-how and field level do-how is widening. This is why, it is essential that steps are taken to attract and retain educated youth in farming. They can help to empower rural women and men with new skills and technologies including Biotechnology, Information Communication Technology and Renewable Energy Technology. They can also help to provide need-based services including appropriate and good

quality seeds and other inputs at the right time and place. Extension of knowledge and of the inputs needed to apply that knowledge at the field level will have to be concurrent.

There has to be a two-pronged strategy for attracting and retaining educated youth in farming. Farm graduates who own land should be encouraged to take to farming as a profession. *Farm schools* on the lines recommended by NCF in its First Report, could be established in the fields of such Farm graduates who are operating agricultural enterprises efficiently. Secondly, Farm Graduates who do not own land can be assisted to provide demand driven services through Agri-clinics, Agri-business centres, Food Parks, etc. There should be Capacity Building and Mentoring Centres to assist Farm Graduates to set up Agri-Clinics and Agri-Business Centres. To the extent possible, groups of 3-4 Graduates can be formed for running these enterprises. For providing Mentoring and Hand-holding Services, professors and scientists as well as NGOs could be enlisted. Arrangements should also be made for the Farm graduates to undergo apprenticeship in suitable Companies.

Government should consider the following services to Farm graduates: low interest loans, venture capital funds, allotment of wasteland for setting up Agri-clinics and Agri-business Centres and facilities for establishing *Gyan Choupals* or Village Knowledge Centres. Self Help Groups of Farm graduates including women and men could be formed to avail of the new credit facility for SHGs and for undertaking a variety of market driven enterprises such as production of organic foods, bio-fuels, bamboo cultivation, etc. Groups of Farm Graduates can also be encouraged to form Producer Companies for undertaking the production of good quality seeds, agro processing, marketing, etc. They should be trained in Contract Farming methodology which benefits both the producer and the purchaser. Government may also consider providing land in State Farms for organizing seed production, livestock breeding, etc. The production of planting material and seeds necessary for the National Horticulture Mission could be undertaken by men and women Farm graduates.

In the case of medical and veterinary sciences, there is a system of registration of practitioners. It would be useful to develop a system for according recognition to Farm Graduates to provide Extension and other services by recognizing them as *Registered Farm Practitioners*. It may be necessary to set up an All India Agricultural Council on the model of the Medical and Veterinary Councils to give such accreditation. This will also be an oversight mechanism to ensure the quality and credibility of the services provided by farm practitioners.

There is need for a few Centres of Excellence in Agriculture (Crop and Animal Husbandry, Fishery and Forestry) on the model of IITs and the IIMs. The Agricultural Universities Association should not only bring about curriculum reform for imparting more practical training, but also reforms in the pedagogic methodology taking into account the new opportunities opened up by ICT for promoting a learning revolution among our students. By suitably restructuring the pedagogic methodology using ICT tools, it will be possible to save time for practical work. Agricultural Universities should also organize more non-degree training programmes. All Farm

Universities should adopt the motto “*Every Student an Entrepreneur*”. Entrepreneurship and innovation must be the key goals of Universities.

Areas like the North Eastern Region and Jammu & Kashmir requires special attention from the point of view of providing Farm Graduates with opportunities for gainful self-employment. For this purpose each State should organize a Recognition and Mentoring Programme (RAMP). In the hilly areas there is a particular need for service centres for farm machinery.

The Tenth Plan has called for paradigm shift from food security at the national level to nutritional security at the individual level. There are very large numbers of Home Science Graduates who are unemployed or in-inappropriately employed. A new scheme should be formulated for organizing *Nutritional Clinics* on the model of Agri-clinics which will provide an opportunity for Home Science Graduates to ensure the success of ICDS and mid-day meal programme and to fight hidden hunger caused by the deficiency of micro-nutrients in the diet.

The facilities for practical training for Farm Graduates must be expanded. The Vidya Dairy at Anand which imparts end-to-end training as well as the Fish For All Training Centre which is being established by MSSRF at Nagapatnam are good examples of imparting skills through learning-by- doing. This move could be extended to all important commodities like lac, sericulture, ornamental fish production, etc.

Agricultural Universities should restructure their current Placement Bureaus in order to provide a special one-stop window for generating awareness of self-employment opportunities. Job Fairs can also be organized. There is considerable unmet demand in relation to the range of services needed by farm families. There is therefore considerable scope for training Farm graduates to provide demand driven services. Agricultural entrepreneurs are needed in large numbers for achieving successful farming systems diversification and value addition and for providing the right inputs at the right time and at the right place. Mobile phones have made communication easy. Farmers will be willing to pay for value added services.

There is need for a *National Alliance* for facilitating self-employment. Such an alliance can bring together all the stake-holders– Private and Public Sector Institutions, Commercial and Cooperative Banks and Farm Graduates Associations. Such a National Alliance can provide oversight for the implementation of a national strategy for the knowledge and skill empowerment of rural families and for imparting quality and trade literacy. They can also monitor progress in achieving the goal of “*every student an entrepreneur*” in our Agricultural, Veterinary and Fisheries Universities.

The process of preparation of the Eleventh Five Year Plan has started. In the Eleventh Plan, there is need for an integrated strategy of providing the services needed by farm families and for making our agriculture knowledge intensive. The strategy developed for this purpose should include providing space for self-employed Farm Graduates in undertaking enterprises and services which will help them to earn their living. At the moment, Government is running parallel

services which are mostly free and therefore opportunities for earning by Farm Graduates are very limited. Therefore, while designing the new strategy for the scientific transformation of crop and animal husbandry, fishery, agro-forestry and agri-business, there is need for integrated planning and action so that the different actors (Government, industry and Farm graduates) all have well defined spaces. There must be synergy and convergence in the different initiatives.

Conclusion

To conclude, import/ export of pulses, oilseeds and wheat may be necessary in years of shortfall or surplus. *What is important is to recognize that imports of pulses and oilseeds serve as indicators of our failure to launch a green revolution in dryfarming areas, inspite of having the technologies and resources to do so.* This is not just a matter for national pride or shame, but a human tragedy of vast dimensions where millions of children, women and men are condemned to a life of malnutrition and poverty. *Imports of crops of importance to the income security of farm families in rainfed areas implies generating more unemployment and misery in such areas.* The mindset where the term “consumers” applies only to the politically powerful urban population and ignores the 70 % of the population living in rural India, who are both farmers and consumers, will have to be destroyed if our country is to achieve “Purna Swaraj”.



Padma Vibhushan Prof. M.S. Swaminathan, the then Chairman of the National Commission on Farmers, Govt. of India, delivering the **Fifth Bharat Ratna Rajiv Gandhi Memorial Lecture** on 20 August, 2006 at Hotel Bliss (Darbar Hall), Tirupati, under the aegis of AGRASRI.