Address to the members of
Indian Farmers Fertilizers Cooperative Limited
(IFFCO), New Delhi
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IFFCO PURA will lead to rural societal transformation

"Small aim is crime"

I am delighted to be with the members of Indian Farmers Fertilizers Cooperative Limited (IFFCO) and deliver the Jawaharlal Nehru Memorial IFFCO lecture. When we think of Panditji, we remember him for his unique contribution to our freedom struggle. Later, Panditji laid the foundation for building post independent India through his visionary action in education sector, particularly in the development of science and technology human resource and infrastructure and establishment of large enterprises. Panditji is an embodiment of the principle "small aim is a crime". Always, he executed big things for the country, whether it was industry, education, healthcare or cooperative.

I am happy that in the last four decades, IFFCO has steadily grown from a membership of 57 societies in 1967-1968 to 40,000 societies in 2008. The equity capital has also gone up from rupees six lakh to over 424 crore. IFFCO has a deep faith in cooperatives and has commitment towards

empowerment of the rural masses. With this commitment, I would suggest IFFCO to take up pro-active integrated measures which will enable accelerated development of rural India and bridge the rural urban divide. Thereby IFFCO will become a partner in national development.

Recently, I visited ISRO twice at Bangalore and was with the scientists and engineers from different disciplines, who made the country proud by realizing the Chandrayaan mission. While congratulating them for this wonderful feat and wishing them well in the operation of Chandrayaan in the coming months and year, I reflected on what makes organisation succeed. The vision of the organisation acts as a single point focus, promoting technology excellence and innovation which enables realization of the mission and doing the impossible. We have seen this in white revolution, we have seen in the space, in defence and in atomic energy missions. In agriculture the visionary spirit of political and technology leaders working with farmers has made us succeed in the first green revolution. Now, we have to enhance the agricultural food production by 3.4 times with constraints. Only technology in seeds, in fertilizers and in agricultural practices can help. How is it possible? A systems thinking is essential. Hence, I have chosen the topic **"*IFFCO PURA will lead to rural societal transformation*".**

First Green Revolution

As you are aware, the First Green Revolution launched by great visionaries Shri C. Subramaniam and Dr. M.S. Swaminathan in partnership with agricultural scientists and farmers liberated India from the situation of what was called "ship to mouth existence." Through an effort of historical magnitude, India attained near self-sufficiency in food. The contribution of IFFCO in providing quality fertilizer and agricultural consultancy to the farmers during this period is well known. As part of this first green revolution, the country has been able to produce over 200 million tonnes of food grains per year on an average. But there are challenges ahead.

Second green revolution

India has to now embark upon the Second Green Revolution which will enable it to further increase its productivity in the agricultural sector. By 2020 India would require to produce over 340 million tonnes in view of population growth and increased purchasing power. The increase in the production would have to surmount many impeding factors. The requirement of land for the increasing population as well as for greater afforestation and environmental preservation activities would force a situation whereby the present 170 million hectares of arable land would not be fully available. It might shrink to 100 million hectares

by 2020. In addition, there will be shortage of water due to competing demands and reduction in the agricultural work force. Our agricultural scientists and technologists in partnership with organizations like IFFCO, have to work for enhancing the average productivity per hectare from 1.1 tonnes to better than 3.4 tonnes of the available land for cultivation with less need of water. The type of technologies needed would be in the areas of development of seeds that would ensure high yield varieties even under constraints of water and land.

The second green revolution is indeed a knowledge graduation from characterization of soil to the matching of the seed with the composition of the fertilizer, water management and evolving pre-harvesting techniques for such conditions. The domain of a farmer's work would enlarge from grain production to food processing and marketing. While doing so, utmost care would have to be taken for various environmental and people related aspects leading to sustainable development. I would like to discuss about the challenges faced by the Indian agriculture.

Challenges Facing Indian Agriculture

India's agricultural sector employs about 50% of the workforce, yet accounts for only about 17% of total GDP. Growth in agriculture has stagnated relative to other sectors:

last year the agricultural sector grew at a rate of 2.7%, relative to 11% growth in both the service and industry sector. Agricultural incomes are lower and growing slower than incomes in other sectors. The causes for such a situation are:

Increase farmer's access to markets: Lack of good extension services to farmers is a major factor inhibiting growth. In addition to the lack of the infrastructure in many rural areas, the inability of farmers to directly access markets has sustained the presence of a chain of middlemen through whom most agricultural commodities are circulated before reaching the consumers. This is where IFFCO cooperative can play an important role.

Improve agricultural productivity: In spite of the gains of the Green Revolution, Indian agriculture lags behind in terms of technology take-up and production efficiency. Lack of access to credit, poor education and lack of awareness of the benefits of new technology are the major causes of non application of technology. In addition, poor irrigation and infrastructure is also a cause for low productivity. 10% of the agricultural produce is wasted due to lack of storage and timely transport. We have to find methods through which the farmers can adopt better production and storage technology.

Improve public education: Even if agricultural productivity does increase, it is still likely to lag behind the high growth IT and service sectors. Hence, the public

education system should equip the rural children with the skills necessary to enter the IT, ITES and manufacturing sector employment market in the rural areas itself.

Promote non-farm entrepreneurship among farmers: Although India's certain rural population need skill based education, many of them are capable of operating small businesses that have higher returns than traditional agriculture. However, their ability to start such business is often hampered by lack of access to credit, capital and knowledge.

Soil upgradation

Over a period of time by continuous usage of fertilizers, pesticides and insecticides, there is deterioration in the quality of soil particularly reduction of carbon content and increase of salinity. Rejuvenation of soil characteristics is an important area for the specialists to tackle, with specific emphasis on recovery of its nutritional value. More thrust need to be given on adopting methods such as multi-cropping, rotation of crops and organic farming. Farmers in Haldwani district of Uttarakhand and Thodupuzha in Kerala has already exemplified adoption of unique organic farming techniques for increased and sustainable productivity.

Dry land agriculture

Integrated nutrient management continues to be a focal issue in dry lands as the fertilizer use is not likely to pick up

significantly unless water supply is assured. One of the reasons ascribed to low response of bio-fertilizers in dry lands is their low status of soil organic matter. Soil fertility in dry lands can be sustained only through maintenance of organic matter and achieving better fertilizer-use efficiency through integration of moisture-conservation practices along with soil-fertility management. Strategies for on-farm generation of organic fertilizers need to be evolved.

Quality of Seeds

Some of our agricultural universities and institutions have indeed core competence in quality seed development. They are fully equipped to further improve the quality of the seeds for enabling farming in areas where the soil has salinity and the environmental temperature gradient is high. This should be achieved through production of salinity tolerant and temperature tolerant seeds. In addition, seeds also have to be resistant to the stress induced by the residual effect of the pesticides and insecticides. Universities and research organizations have to lay more emphasis on developing and leading to production of the seeds including genetically modified seeds which require less water for supply to the farmers for achieving increased productivity even in critical environmental conditions. Also, future seeds design and development have to enrich the farmer and the village economy. Organizations like IFFCO have to ensure that certified quality seeds alone reach the farmers like fertilizer, so

that they are not subjected to unexpected reduced output and related losses.

Water management

Geography is very closely linked to quality of life in our vast country. Wherever there are people enduring economic hardships there is also problem of the availability of water. It costs energy and money to bring water for specialized agriculture to such dry areas. We need to develop proper agricultural technologies and water conservation methodologies that can help enhance agriculture productivity and lift the people above the poverty line. Solutions may be just beyond agriculture alone spanning to animal husbandry, poultry, agro processing and other related activities.

Our agriculture is still dependent on timely arrival and intensity of monsoon. It is high time that we have an overall water management plan for conservation of water, preparation of water shed schemes, rainwater harvesting and recharging of ground water. These measures will help prevent loss of a crop by using the harvested water for nursery development and delaying transplantation in case of late arrival of monsoon. We need a system to popularize the water management techniques in distant parts of the State.

Agro-processing and waste management

The changing life-styles of the modern generation are giving rise to demand for processed food. For example, special

type of corn is required for making corn flakes and unique potato crop for making wafers. The agro-processing industry has to take into account the retention of the nutritional value and safeguarding against possible side effects of additives and preservatives. In addition the agriculture and agro-processing industry in India have to master many new standards and perceptions for cleanliness, generally described as phyto-sanitary requirements.

Now let me give two examples for soil upgradation, agricultural productivity increase, dry and waste agriculture for improving the rural economy.

Innovative Jatropha farming

During September 2008, I visited a village Courtwa Rahimabad in Allahabad district where Dr. DN Tiwari, former Member of Planning Commisison and his team and farmers have done excellent work in Jatropha cultivation, oil extraction and esterification. Under his leadership a team has worked and converted 735 hectares of waste land into Jatropha producing land leading to earning of rupees fifty thousand per hectare. Today the Jatropha plantation has been extended to 30,000 hectares. Also, the village has realized energy independence through the use of bio-fuel. The villagers do not use kerosene for cooking or petrol-diesel for running their generators and jeeps. Jatropha cultivation has also been used

as a heat shield for banana plantation during summer. In addition, the soil which was alkaline has now become neutral due to Jatropha plantation. Thus, we can see that innovative use of Jatropha has resulted in social, economic and environmental upgradation of large number of farmers in Allahabad district.

National Agro Foundation (NAF)

On 15th October, 2008 I visited Illedu village in Kancheepuram District., Tamilnadu. There, National Agro Foundation (NAF) is engaged in uplifting the quality of life of the rural citizens by providing know-how on advanced agricultural practices, characterization of soil, soil upgradation through proper systematic soil testing, matching the seed to soil, systemic approach for the pre and post harvesting methodologies and providing market connectivity. They have realized productivity increase ranging from 40% to 150% in different agriculture produces such as rice, sugarcane, vegetables and other horticulture products. In addition, they have very active self-help group systems which are empowered with diary farming, craftsmanship and making home made products and selling to the nearby cities and villages. They have also launched the literacy movement and achieved 100% sanitation in one of the villages. With the help of NABARD, they have created watersheds with the inlet and outlet channel opened for recharging the ground water. NAF enabled the

urban garment export company to get relocated into the rural area and provides value added employment to 60 women from these villages. The members of the NAF have trained the rural women who are providing cutting and stitching support to garment manufacturers in Chennai and other places for export of garments.

This activity has considerably changed economic condition of the farmers and craftsmen in the rural setting. There are many successes available across the country. We have to take a systematic approach to reap the benefits of successes by large number farmers in different parts of the nation. I am sure; IFFCO with its network of cooperatives can spread the message effectively and take further necessary action to facilitate the farmers to implement them.

Converting agricultural waste into wealth

Management of agricultural waste is another important area which can turn out to be a source for revenue generation. Farmers can realize better value from the agricultural residue by paying special attention to its usage into organic farming and making value added products out of it before disposal. Agricultural waste should be put to use by developing appropriate and cost-effective technologies such as generation of biogas, production of vermi-compost and paper for example.

So far I have presented certain dynamics of the agricultural community. You will agree with me that the development of six hundred thousand villages implies development of agricultural community namely the farmers by development of villages.

1. The villages must be connected with in themselves and with main towns and metros through by good roads and wherever needed by railway lines and bus routes. They must have other infrastructure like schools, colleges, hospitals and other amenities for the local population and the visitors. Let us call this physical connectivity.
2. In the emerging knowledge era, the native knowledge has to be preserved and enhanced with latest tools of technology, training and research. The villages have to have access to good education from best teachers wherever they are, must have the benefit of good medical treatment, must have latest information on their pursuits like agriculture, fishery, horticulture and food processing. It means, there is a need for mission and education through electronic connectivity.
3. Once the Physical and Electronic connectivity are enabled, the knowledge connectivity is enabled. That can facilitate the ability increase the productivity, the utilization of spare time, awareness of health welfare, ensuring a market for products, increasing quality

conscience, interacting with partners, getting the best equipment, increasing transparency and so in general knowledge connectivity

4. Once the three connectivities viz physical, electronic and knowledge connectivity are ensured, they facilitate earning capacity. When we Provide Urban Amenities to Rural Areas (PURA), we can lead to upliftment of rural areas, we can attract investors, we can introduce effectively useful systems like Rural BPOs, Micro Finance.

Thus if we take up PURA as a mission, we can make villages as prosperous knowledge accumulation centers leading to villagers as entrepreneurs. Can we make PURA as an enterprise? I would like to share with you an operational PURA located at Vallam, Thanjvur district (Tamilnadu) as an illustration.

Periyar PURA (Tamilnadu)

Periyar PURA complex pioneered by Periyar Maniammai University, Vallam, Tanjore is functioning near Vallam having a cluster of over 65 villages in Tamilnadu which involves a population of 1 lakh. This PURA complex has all the three connectivities - physical, electronic and knowledge - leading to economic connectivity. The center of activity emanates from the women engineering college that provides the electronic and

knowledge connectivity. Periyar PURA has health care centers, primary to post graduate level education and vocational training centers. This has resulted in large-scale employment generation and creation of number of entrepreneurs with the active support of 850 self-help groups. Two hundreds acres of waste land has been developed into a cultivable land with innovative water management schemes such as contour ponds and water sheds for storing and irrigating the fields. All the villagers are busy in cultivation, planting Jatropha, herbal and medicinal plants, power generation using bio-mass, food processing and above all running marketing centre. This model has emanated independent of any government initiative. The committed leadership has been provided by the Periyar University. Recently, 5 of Periyar PURA villages are connected through Wi-MAX Wireless and having minimum 4 mbps connectivity with the Periyar PURA nodal centre. It provides a sustainable economic development in that region.

One Village One Product and PURA

The members of Periyar PURA in Vallam, Thanjavur district in Tamil Nadu have created a strategic partnership with Japan External Trade Organization (JETRO) of Japan. During the last eight months people of Periyar PURA villages technologically supported by Periyar Maniammai College of

Engineering for Women have worked with experts from JETRO on various products for which core competence and raw material is available in Thanjavur district. They developed proto types for 123 products such as bed sheets, table runner, cushion cover, brass drum, curtains, bread basket etc. Interaction with JETRO specialists included comparison of Japanese product, discussion on raw material selection, technical advice on product development and final quality inspection. Based on this intensive interaction, Vallam people produced 123 products and JETRO selected 55 out of them for international market.

These 55 finalized products were displayed in an exhibition at New Delhi during February 2007 and later in Tokyo exhibition during June 2007. The feedback from each exhibition has been used for improving the product so that the customer acceptability of the product gets enhanced. The local technical consultancy support for improving the product has been provided by Periyar Maniammai College of Engineering for Women. This co-operative venture has enhanced the innovative ability of the village people and transformed them to develop and produce internationally acceptable product. After acceptance of the product in the interior lifestyle exhibition, it has been converted as a commercial business proposition for enhancing the economic activity in all the 65 villages leading to generation of value

added employment and increasing per capita income of the rural citizens in the rural cluster.

IFFCO PURA

With the networking strength created through the functioning of 40 thousand cooperatives in different parts of the country, I would suggest IFFCO to take up the leadership in planning and execution of PURA complexes in different parts of the country through the local cooperative which will substantially enhance the employment potential, earning capacity and quality of life of the rural citizens. Thus, Indian Farmer Fertilizer Cooperative Limited will get transformed into Indian Farmers Flourishing Cooperative Limited. The aim of the IFFCO PURA would be the following:

a) Enhancing the agriculture productivity of the PURA complex by 3.4 times progressively through technology, awareness and infrastructural infusion.
b) Facilitate creation of physical, electronic and knowledge connectivity in the rural complex in partnership with district authorities and local educational institutions.
c) Organising provision of energy efficient and water efficient, quality housing and infrastructure in the rural setup.
d) Progressively enhancing the literacy and world class skills among the rural youth.

e) Organising research to progressively reduce the use of chemical fertilizers and enhanced used of organic fertilizers leading to better environment.

f) Creating an industrial engine in the rural sector based on the core-competence of the region to facilitate availability of supplementary non-farm employment to the rural youth and women. This could be bio-diesel or ethanol production, agro-processing, dairy and cottage industry.

g) Converting the rural waste into wealth in the form of energy.

h) Building capacity among the youth to take up agriculture, agro-food processing and non-farm product development as an enterprise in partnership with educational institution, banks and SME.

i) Assisting the government and the financial institutions such as banks in formulation of policies and procedures which will enable the Indian entrepreneurs and cooperatives to participate in setting up of rural enterprises. Time has come to convert agricultural activities into a corporate enterprise activity with the clear vision for sustainability and growth.

VISION for IFFCO:

I would suggest IFFCO to re-orient its Vision from promoting excellence in production and marketing of fertilizers

and related systems to become a partner in promoting overall rural development leading to prosperity of 600,000 villages of our country. IFFCO can constitute a Special Purpose Vehicle such as an agriculture and agro-processing special economic zone across the country making farmers as partners for execution of these PURA complexes.

Typical missions for accomplishing the reoriented vision would be:

1. Establishment of 40,000 dynamic agricultural service centres with B.Sc Agriculture graduates and deploying them to cover 100 million hectares of agriculture land in the country (1 agriculture service provider for 2,500 hectares) with the objective of enhancing the food productivity by 3.4 times in that land in partnership with the farmers.
2. Empowered agricultural service centre should be supported by a two tier system through expert teams at the district level and the national level.
3. IFFCO Rural cooperatives will be empowered to produce exportable processed foods based on the core competence of each region and non-farm products. The cooperatives can create a knowledge centers in the villages based on Village Knowledge Centre model to link the farmers directly to the agri-food exporters for marketing the products. Agricultural service centre personnel should

become resource personnel for this supply-chain management.

4. Industries located in the regions could be enlisted as strategic partners with the farmers as in the case of ITC in Andhra Pradesh and other states for cereal production, and OSWAL group in Punjab for seed cotton production, providing the knowledge inputs and as a marketing system for the farmers.

Conclusion

I am sure, IFFCO would consider expanding its horizon from fertilizer production and marketing to facilitate provision of knowledge, management and resources to the integrated development of the rural clusters in partnership with Ministry of Rural Development, local educational institutions and district authorities and the locally elected representatives. This will enable accelerated realization of integrated rural development leading to higher level of income to the farmer, better infrastructural facilities and higher contribution to the GDP of the nation by the agriculture sector. As a first step, I would suggest IFFCO to plan five PURA complexes each in Bihar, Uttar Pradesh, Orissa, Madhya Pradesh and Chattisgarh and two PURA complexes in all the other states of the country. The aim of the PURA complexes should be to ensure increasing of per capita income of the farmer by four times, promoting 100% literacy, provide quality healthcare and ensure value added farm employment to all the eligible

members of rural community supplemented with non-farm employment, wherever possible.

This will be a unique contribution of IFFCO to the national development mission which will change the overall rural scenario in the country in a time bound manner. Based on the experience of implementing these PURA complexes during the 11th plan period, IFFCO can take up commissioning of 1000 PURA complexes in the country during the subsequent plan periods. I would like to share with you an inspiring message from Maharishi Patanjali in Yoga Sutra:

"When you are inspired by some great purpose, some extraordinary project, all your thoughts break their bounds, your mind transcends limitations, your consciousness expands in every direction, you will find yourself in a new great and wonderful world. Dormant forces, faculties and talents become alive and you discover yourself to be a greater person by far than you ever dreamed yourself to be."

I am sure, this message will motivate all of you, to take up this challenge and convert Farmer Fertilizer Cooperative into an Empowered Farmer Enterprises for which you will be remembered for, by the posterity.

My greetings to all of you for success in your mission of enhancing the quality of life of our rural citizens and be a major partner in national development.

May God Bless you.