The biggest challenge facing India's policy makers is the persisting high incidence of poverty. One of the reasons for the high incidence of poverty in India is its backward agriculture, whose productivity per hectare and per capita is amongst the lowest. The low per capita production is not only due to huge population, but also due to low productivity, which is only 64 percent of the world average.

The productivity potential of Indian agriculture has been amply demonstrated in Punjab, where it is nearly equal to those of developed countries. If India attains the productivity level already achieved in Punjab, the national income of India would be more than double of what it is today. Taking into consideration the vast untapped potential of Indian agriculture, the pool of unutilized scientific knowledge and the eagerness of Indian farmers respond to opportunities, neither Indian agriculture should remain backward, nor our people should remain almost the poorest in the world. Quite often, low productivity of Indian agriculture is attributed to small size of landholdings. In Japan, Korea and Taiwan the average size of holding is nearly the same as in India, but their incomes per hectare and per worker are several times more than ours.

The Decisive Factor

Among the many factors which determine productivity in agriculture, the most decisive one is the kind of "social support" which agriculturists get from the rest of the society. Social support emanates from a sense of gratitude towards agriculturists who provide the most essential requirement of mankind. This, however, is not quantifiable are therefore not comparable amongst various countries of the world. Hence a new concept, which takes into account only monetary transfers has bee developed. This is called, "Producer's Subsidy Equivalent" PSE. The can be defined, as payments received by agriculturists, in excess of what they would have received, if the Government had not intervened in free marketing of agricultural produce. PSE includes direct and indirect payments by Government and also increased payments to farmers b consumers, made inevitable by imposing ban on import of cheaper farm products from abroad. The U.S. Department of Agriculture in their publication entitled GATT & Agriculture" has reported the average PSE for 17 countries, for a period of 5 years from 1982-86. The highest PSE (plus 70 percent) was in Japan, followed by S. Korea, Mexico, E.E.C and Canada. In U.S.A. it was above 25 percent. It means that in these countries, farmers received 25 to 70 percent more than what they would have received under conditions of free trade. In four countries, viz Pakistan, Nigeria, India and Argentina, PSEs were negative. In India it was below 18 percent. It means farmers in India received 18 percent less than what they would have received, if the Government had not intervened in free trade. This has been arrived at after deducting from the total losses suffered by farmers due to Government interventions and considering the amounts spent by Government for providing to farmers input assistance and infrastructural support. It is significant that in all the countries, in which PSEs were found to be negative, productivity of agriculture was much below the average of the world. In other words, wherever farmers have been exploited, agriculture has remained backward. It is not necessary to plead for subsidy to farmers in India, comparable to what their counterparts are getting in the developed countries. But anti-farmer interventions by the Government in free marketing of farm products, must now be stopped. Unless this is done, profitability, savings and capital formation in the farm sector will remain low and potentials of Indian agriculture unutilised.
The following quotation from Economic Survey, 1994-95 is quite instructive. "Gross investment in real terms (at 1980-81 prices) in agriculture has stagnated. It was Rs. 4,636 crore in 1980-81 and Rs. 4,617 crore in 1992-93 (actual). The total gross domestic formation declined from 18 percent in 1980-81 to 9 percent in 1992-93. The decline in real capital formation in agriculture in the public sector is more perceptible, as it has come down to Rs. 1,065 crore in 1992-93 compared to Rs. 1,796 crore in 1980-81. Private sector real investment in agriculture has increased in absolute terms from Rs 2,840 crore in 1980-81 to Rs.3,552 crore in 1992-93, though its share in total gross capital formation has declined significantly during the period. This decreasing share of private investment in the total gross capital formation seems to suggest that the agricultural sector is relatively less attractive for private investment as compared to other sectors of the economy. This suggests a need to strengthen incentives for attracting more private investment into agriculture."

Small Holdings

The average size of small holdings, measuring less than two hectares, is 0.6 hectare and the annual income required to support a family above the poverty level is now estimated to be Rs. 12,000. Therefore, the crucial question is: Can a land-holding of 0.6 hectare generate an annual income of more than Rs.12,000 ? The reply to this question is both "No" and "Yes". Income from farming does not depend only on the size of the farm, but on the capital invested on it, both in monetary terms and in technological know-how. Many small farmers in developed countries are earning many times more than what most land holders of 18 acres are earning in India. No doubt, glass-house is an extreme example. But there certainly is the possibility of earning an annual income of more than Rs. 12,000 from 0.6 hectares of land, provided the farmer gives up conventional farming i.e., production of grains and takes to horticulture and animal husbandry. Fortunately, the Government does not intervene in marketing of fruits, vegetables and animal products. Hence their prices have risen to about the same level, as the prices of all commodities. While the terms of trade are against producers of grains, that is not so, in case of producers of fruits, vegetables and animal products. One can surely earn net profit of more than Rs.12,000/- annually from a holding of 0.6 hectares by producing fruits, like banana, papaya, guava, lemon, mango, litchi, grapes, and vegetables like hybrid brinjal, tomato and cabbage. Plant propagation and seed production are even more rewarding. Animal husbandry, poultry keeping, goat keeping, pisciculture and dairying are no less profitable. These enterprises can also be combined. But for success in these specialised lines of agriculture, lot more capital, expertise and infrastructural facilities are required. To enable small farmers to take specialized farming, certain systemic changes need to be made. The are briefly stated below:

Institutional Credit

Institutional credit at present is advanced either on the basis of seasonal needs of conventional farming or of the value of land owned by a farmer. In case of small farmer, the value of land is naturally less, but his credit needs will be more if he takes to animal husbandry, poultry or fishery. Similarly, his repayment period will have to be longer, if he takes to production of fruits. Therefore, institutional credit will have to tailored according to the needs of small farmers.

Area Specific Programme

There is no lack of techniques of production, even for dryland and small farms, which can generate more incomes and employment in villages. But these cannot be adopted by small farmers, unless the necessary services to support these enterprises in the form of backward and forward linkages are first provided. Rural India will remain poor so long as (1) new techniques of farm production are not adopted more widely, (2) adequate capital in the form of loans for adoption of new techniques is not provided and (3) efficient marketing arrangements for the produce are not made which reduce the cost of distribution. All these will have to be provided simultaneously in a package and not in a haphazard manner.
As it will not be possible to provide all the different services needed to support the different enterprises, it is advisable that farmers in every development block of the country be asked to select one cash crop or enterprise most suited to their area. After this decision has been made, every assistance - technological, financial and managerial - should be provided for that particular crop or enterprise through co-operative or panchayati effort. The NDDB has done a commendable job in providing all the facilities to milk producers of Gujarat. Similar facilities need to be provided for promotion and production of horticultural and animal husbandry products and in course of time, also for promotion of agro-processing industries and export of such products.

Model Farmer Scheme

To promote the above area-specific programme, it is necessary to promote participatory extension strategy. For this, it is suggested that at least one model small farmer be selected in each village with a population of more than 500. The model farmer should be educated up to high school and own land less than 2 hectares. His selection should be made strictly on merit. After selection, he should be trained at Government cost at a research institute for a period of time, considered necessary to train him in the use of the latest techniques of production for that crop or enterprise, which has been selected for his particular area. But mere training will not suffice, as it has been repeatedly proved that knowledge without capital is of no much help. Therefore, the model farmer should also be equipped, at Government cost, with whatever is necessary to enable him to apply the techniques of production, which he has learnt. The amount spent on equipping the model farmer with improved animal and tools of production should be realised from him in 25 yearly equal instalments, calculated at a concessional rate of interest. These model farmers, if properly trained, are likely to prove far more effective in dissemination of the new methods of intensive farming than the village level workers. Farmers learn more by seeing what their neighbours are doing than by listening to lectures. These model farmers will serve as pioneers of intensive farming as well as links between researchers and users of research. This scheme will enable about 3 lakh rural youth to earn a decent living, not at Government cost but through training and their hard work. Whatever the Government spends initially on their training and equipment, will have to be realized from them later on.

The model farmers, if trained and enabled to produce improved seeds and plants, will also effectively meet the shortages of these inputs in the country which Government agencies have so far failed to do. The model small farmers can also be trained in artificial insemination of cows and plant protection to render these services to their neighbours.

Reorientation of Agricultural Research

Agricultural research institutions should now focus their research efforts on increasing the overall productivity of marginal and small farmers. They should also pay more attention to dryland as well as low land farming. So far, efforts have been mainly directed to obtain maximum production under the most favourable conditions. It is one thing to increase productivity on large farms through optimum use of modern inputs and quite another to make small farms profitable under difficult conditions. In India, 80 percent of the cultivators operate less than two hectares of land and majority of them also do not have adequate irrigation facilities. It is towards them that the researchers should now direct their attention. Plant breeders should aim to evolve varieties which are better suited to face environmental stresses such as drought, flood, salinity and diseases. Also more attention should be given to bio-fertilization of soil and regenerative agriculture.

Mechanisation of Small Farms

It is a mistaken notion that it is neither possible nor desirable to mechanise small farms. Japan, a more densely populated country, with average land-holding no bigger than ours, has fully mechanised its agriculture with great success. Before mechanisation in Japan, it used to take 1600 to 2000 manhours to produce 4.7 tonnes of rice on one hectare of land. After
mechanisation, it takes only one third of it to produce 5.2 tonnes of rice on the same one hectare of land. Even in India, an energy survey in Punjab has revealed that human and bullock energy is several times costlier than energy produced by a diesel engine or an electric motor.

Production cost of farm products cannot be reduced except through mechanisation, which does not necessarily require the use of big machines. For small holdings, small machines are available at reasonable prices all over the world, except in India. In order to minimise the drudgery of small farmers, increase the efficiency of inputs-use and save farmers’ time for enabling them to take up income-augmenting supplementary enterprises such as dairying, goat keeping and sericulture, the use of modern time-saving farm implements of appropriate size needs to be promoted, either by duty-free import of such implements from countries like Japan and South Korea or by subsidising their purchase for small farmers. The use of small mechanised tools by small farmers who do not exploit labour, does not reduce employment, but only adds value to the working hours and that is exactly what is needed to lift them above the poverty level.

**Need for a Third Marketing Channel**

The greatest hurdles in the path of progress of farmers are the two prevailing marketing systems - one private and the other public both of which are exploiting the producers as well as the consumers. Therefore, there is need for a third marketing channel, through either revitalisation of the existing co-operatives or empowerment of the Gram Panchayats to act as co-operatives.