

# Changing Farming Systems to Realise New Opportunities in the Markets

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## 1. Introduction

The main goal of agricultural extension in India has been the transfer of new technologies from researchers to farmers. This has been done with much success. Around 1965 many people were afraid that in the next few years millions of Indians would die from hunger. That this did not happen, despite the fact that since that time the population has doubled, is caused to a large extent by the increase in crop yields through the introduction of high yielding varieties and other production technologies. However, still always a large proportion of the Indian farmers and farm labourers is poor, even to Indian standards. Therefore one can wonder whether the extension service should focus more on helping farmers to realise the new opportunities the markets offer for them by changing their farming system and how they can provide this help. An important question is: Can poor families profit from these new opportunities?

A change in farming system is desirable to be able to meet the growing demand for food. However, the new farming systems should be sustainable. This is not easy

to realise; at this moment many of the farming systems in India are not sustainable. There is a large potential to develop farming systems in such a way that the labour productivity increases. This may offer an opportunity to increase the income of farmers, but it can also create serious social problems, if there is no other employment for those who can no longer find work in agriculture.

These are the issues this chapter will discuss. Special attention will be given to the implications such changes would have for agricultural extension.

## **2. Changing Markets for Agricultural Products**

There are two main reasons why the markets for agricultural products are changing. Firstly in recent years the Indian Gross Development Product increases at a rate of more than 5% a year. As a result an urban middle class is growing which can afford to buy more expensive food as their parents were eating a generation ago. A result is that Muralidharn *et al.* (1996) predicted an increase in demand over a five year period for food grains of 10%, for oilseeds, sugarcane and vegetables of about 20% and for fruit, milk, meat, eggs and fish of around 30%. This implies that there is a large potential for farmers to increase their income by changing their farming system from mainly cereal production to these more expensive products. An advantage of these products is that they may give a fairly large income from a small acreage. In 1999 I visited a farmer with about 4 ha of land in Himachal Pradesh, who produced mainly different kinds of fruits. The university professor, who accompanied me, estimated that this farmer earns about 15 times the salary of an assistant professor. A reason that he could do this, whereas others are not as successful, was that he was clearly an efficient producer of good quality products, and that he was well able to market his products.

We see similar developments in other countries. This has been e.g., a reason why in the Netherlands the value of crop production has decreased to less than 10% of the value of agricultural production, whereas the value of

horticultural production has increased to over 40%. It have been mainly the small farmers, who profited from these new opportunities in the market (Van den Ban and Bauwens, 1988). Who are at present successful farmers with a good income depends much more on who changed his farming system to produce these more expensive products than who gets good yields by adopting new technologies. Most successful are those who produce good quality expensive products at a lower cost than their competitors.

A second important change in the markets for agricultural products is the process of *globalisation*. The international trade in agricultural products increases rapidly under influence of the decreasing transport costs and increased speed of transport and the liberalisation of markets through the rules of the World Trade Organisation. Farmers now have to compete with their colleagues all over the world. The supply of tropical fruit in European markets has increased a lot in the last decades, although not yet much of this fruit comes from India. The Netherlands exports more flowers than all other countries in the world combined, but nonetheless Thai farmers are able to sell their orchids on the market in my home town. They may use the money they earn in this way to buy dairy products from Dutch co-operatives.

This international competition is partly on the basis of price and partly on the basis of quality and guarantee of delivery in time. One cannot expect that Indian shops will continue to sell Indian products in case they can buy cheaper or better products elsewhere. They would lose their customers if they did. In industrial countries most of the agricultural products are now sold to consumers by large, often multinational, supermarket chains. Many of these products have first been processed, again not seldom through a multinational company as Nestle or Unilever. These supermarkets are very much afraid to lose customers by selling a product of low quality, e.g., a fruit which is contaminated by pesticides. Anywhere in the chain between the producer and the consumer something can go wrong, which deteriorates the quality. Therefore the company tries to control this whole chain. If you buy

e.g. a pineapple in a European supermarket the barcode on this fruit may provide information which producer in Brazil produced it, which variety it is, when it is planted and harvested, which fertilisers have been given, how and when which pests and diseases have been controlled, who packed it when, when and how it was transported to Europe, etc. The development of information and communication technology makes it now possible to establish such an elaborate control system. If the producer is not able or willing to co-operate in this system of chain management, the supermarket will not buy his product. This implies that the development of the market structure has a lot of impact on the possibility to sell higher value Indian products in industrial countries. The individual small farmer will not be able to participate in such a chain management system, but a local trader who has made contracts with a number of farmers or a well organised group of farmers may be able to do so. An important question is who has most power in this chain and so who will get most of the profits? Can we increase the power farmers in developing countries have?

In some European countries farmers have through their co-operatives considerable influence in the marketing chain. However, the situation in the markets for agricultural products is changing, e.g., by the growing power of multi-national supermarket companies. Several co-operatives have difficulties to adjust to these changes. In industrial countries farmers' associations used to have a large influence on the price policies of the government. As a result the prices for many agricultural products there are higher than the world market prices and surpluses of these products are produced. However, their power is decreasing rather rapidly, because the decreasing proportion of the labour force working in agriculture and the increasing specialisation among the farmers. A dairy farmer and a fruit farmer do not have many common interests. As a result I expect that the dumping of agricultural products on the world market by industrial countries will decrease and the world market prices of several agricultural products will increase.

### **3. The Process of Change in Farming System**

The change of a farming system to produce more expensive agricultural products involves a change in the total management of the farm and not only in the biological production process. Usually this kind of production will require more labour than was needed in the past and it will require labour at different times of the year. The farmer, his family-members and his workers will have to learn to work in a different way. Also the financial management of the farm becomes different. Often more knowledge and capital is needed and more risk is involved. The cash flow becomes different. An advantage of changing from crop production to dairy production is e.g., is that whereas crops are usually sold once a year, milk is sold daily and perhaps paid weekly.

Also the farmer has to develop different relationships with the outside world, e.g., with markets and with information sources. Often the development of a new farming system is most successful, when it is not done by an individual farmer, but by a group of farmers in the same area. In that area the necessary support system for the new farming system will develop. Business men will supply the inputs which are needed for this kind of farming. Traders come to this area to buy the products from the farmers, because here they can buy from different farmers a full lorry load and select the quality of product their customers require.

Competent extension and research services may develop in this area. Farmers may learn from each other how to produce the new products successfully either through informal contacts in the teahouse or through a study club. A new variety can be developed at a research institute, but this is not possible for a new farming system. This can only be developed through the experience of innovative farmers with the support of researchers and extension agents. Together they can discover what is the best way to manage these farms as a whole including labour management and financial management. The exchange of experiences among farmers can play an

important role in learning how to make this new farming system a success in a certain area. One may see that a village develops its own special farming system in which their farmers are more competent than those in competing villages.

The first farmer, who starts growing a new product, may get a very good price for this product, but if many others follow his example there can be a glut in the market and the price may drop to a very low level. This is most likely when many farmers bring perishable products, as vegetables or fruits, at the same time to the market. In such a situation it can be desirable that a group of farmers comes together to plan how they can spread their production over a longer period. This planning can also be done by a trader, who makes contracts with different farmers, who should produce how much when.

#### **4. Sustainability**

The growing demand for food makes it necessary to increase food production. This can be done either by bringing more land under cultivation or by increasing the yields per ha and per animal. Usually the land which is most suitable for agricultural production is already under cultivation. The land which can be brought under cultivation, may be land which is quite susceptible for erosion, e.g., land on a steep slope. Cultivating this land will not be sustainable. Therefore producing enough food in a sustainable way will usually require an increase in yields, but it is not easy to do this in a sustainable way. Unfortunately at present many farming systems are used, which are not sustainable. This can be because:

- (a) the ground water table is falling, because too much irrigation water is used,
- (b) the irrigation system causes salination,
- (c) some of the minerals, which are removed from the field with the harvest, are not replenished; hence soil fertility decreases,
- (d) pesticides and other agro-chemicals cause pollution,

- (e) the farming system results in soil erosion.

Some people believe that the solution to this problem is to decrease the use of fertilisers and other agrochemicals, but this will often result in a decrease in yields. This makes it necessary to bring more land under cultivation in order to meet the increasing demand for food. As we said this can seldom be done in a sustainable way. Probably we have to look for a solution in two different directions. Firstly increase the knowledge of the farmers on ecology and on nutrient flows. The experience with IPM is that a good understanding of the ecology of insect pests and their natural enemies makes it not seldom possible to decrease the use of pesticides without decreasing yields. It is also important that farmers understand that the use of nitrogen may increase crop yields in the short run, but decreases soil fertility in the long run, because these higher yields remove more potash, phosphate and other minerals from the soil, unless the other minerals are replenished either by fertilisers or by farmyard manure.

Secondly sustainable agriculture often requires collective decision making and government regulation, because it can be profitable for one farmer to take an action which increases his income, but decreases the average income of farmers in his area in the long run. A farmer may e.g., invest in a deep well for irrigation, which causes a decrease in the ground water table and therefore makes it for his neighbours no longer possible to use their well. The government may decrease the waste of irrigation water by charging the water user the full costs of the irrigation water. Soil erosion control measures are usually only effective if they are taken for a whole watershed and not if they are taken by an individual farmer. This implies that the stakeholders, who have an interest in the farming systems practised and the erosion control measures implemented in the whole watershed, should come together to discuss which decisions in this field are best for all of them. A problem will be that the most powerful stakeholders may try to get decisions accepted which

are in their interest without bothering what are the consequences for the less powerful people.

Another problem is that actions which are profitable for a farmer in the short run may endanger the future of his farming system, because it causes soil erosion, decreases soil fertility, lowers the ground water table, etc. It is only possible to change the behaviour of this farmer, if we understand why he farms in this way. Does he not know or realise these long-term consequences? Is there a land tenure system through which he is not sure that he will be able to farm this land in the long run? Is the choice of his farming system influenced by religious beliefs? For a very poor farmer the first priority may be to survive in the short run, even if the result is that he cannot farm on his land in the long run. What is the effect of different ways of farming on his social status in his community?

## **5. Labour Productivity and Employment in Agriculture**

There are tremendous differences in labour productivity between farmers in different countries. The World Bank (1998) recently estimated these differences by calculating for a number of countries the agricultural value added per worker. In India this estimate is nearly six times higher than in the Kyrgyz Republic, but there are nine countries where this is over 50 times higher than in India. Related to these differences in labour productivity are differences in the proportion of the labour force working in agriculture. In most industrial countries this is now between 2 and 5%, whereas in Nepal and several African countries this is over 90% (India about 65%). It has been shown clearly that with increasing average income in a country the proportion of the labour force working in agriculture will decrease (Clark, 1957). The increased labour productivity in agriculture makes it possible to produce enough food with less people. The people, who are no longer needed for food production, can help to increase the national income in other kinds of production. We have seen this quite clearly in rapidly industrialising countries like Malaysia.



There is a large potential to increase labour productivity in Indian agriculture, but if the people who are no longer needed in agriculture cannot find employment elsewhere in the economy, this can cause serious social problems. Government policies should aim at a balance between increasing labour productivity in agriculture and the employment opportunities in other occupations. It would have important social advantages if a good deal of these employment opportunities are in rural areas, perhaps allowing people to work part time in agriculture and part time in other occupations. This could prevent the development of serious problems in urban slums. Government policies to increase employment outside agriculture could play a major role in decreasing poverty among farmers and farm labourers. India has e.g., realised a much smaller proportion of the employment opportunities in tourism than Thailand and several other S.E. Asian countries.

At the individual level the farm family will wonder what consequences can be expected if they continue to try to make a living from agriculture or (also) from sources outside agriculture. They will realise that this decision has not only consequences for their income, but for their whole way of life. For instance migrating to a city will have a major impact on their relationships with their relatives and their friends and on the future of their children. If only the man migrates to a city, where he can find work, and the wife and the children continue to live in the village and run the farm this will influence the relationship within the family. In African countries this is a major cause of the AIDS epidemic. When they lived in the village, the family may have consumed 70% of the production of their farm themselves and sold 30% to pay for clothes, school fees and other necessary costs. The wage the husband receives as a labourer is usually high compared to the amount of cash money he earned on the farm, because it is supposed to cover all the costs of the family. Some men cause serious difficulties for their wife and children, because of the way they spend most of their wage for their pleasure shortly after they have received it. This kind of male migration to cities causes in many countries, including

India, a process of feminisation of agriculture in which women perform tasks and make decisions which were in the past the responsibility of man.

The question is who will be able to continue in farming and who not and who will choose to do so. Farmers, who do not increase the efficiency of their production as rapidly as their competitors, will have serious difficulties to make a living in farming, because the prices of agricultural products are influenced by the costs for which the most efficient farmers can produce. A major factor in this increase in efficiency of production is the knowledge and the capability of the farmer and the quality of the support he gets from banks, input supply and product marketing companies and extension agencies.

In Europe a major goal of many farmers is to enable their son to succeed them in order to keep the farm in the family. For many farmers in developing countries their major goal is to give their children such an education that they do not have to become a farmer. This goal is easier to realise for intelligent children than for less intelligent. The result may be that not many intelligent and well educated youngsters enter farming. Where this happens, this is a serious danger for the future of agriculture. Many farmers do not realise that the difference in income between a good farmer and a not so good farmer is often large compared to the difference in income between a low and a middle level government officer.

## **6. Who Profits of New Opportunities?**

One can argue that it will be the resource rich farmers, who will profit from the new opportunities in the market to produce higher value horticultural and animal products. This would be the large rich farmers, who earn as moneylenders and who have a powerful social and political position in the village. They can take the risk involved in changing their farming system and they have the power to influence developments in their favour.

In the past century farmers in the Netherlands have profited more from these opportunities than farmers in

most other countries, but here it have been mainly the small and poor farmers and farm labourers, who grasped these opportunities and not the resource rich farmers. I will briefly analyse why this happened in order to help readers to think whether, where and how this is also possible in India (van den Ban and Bauwens, 1988).

Small farmers were able to utilise their surplus of labour through a labour intensive horticultural or animal production. For them the additional labour costs were much lower than for large farmers, who would have to work with hired labour. Now the grandsons of these small farmers have learned to produce horticultural or animal products in an efficient way, they are able to expand their enterprise by using hired labour.

The impact on social status was another reason why small farmers switched more to the production of high value crops and animals than large farmers. A century ago in the Netherlands large arable and to a some lesser extent large dairy farmers had a high status. They looked down on small people with a vegetable garden or some poultry and pigs, who earned a bit of money from the dirty work they had to do on their farm. These small farmers could gradually expand their business without much competition from the large farmers. They saved e.g., some of the earnings of their 50 chicken and invested that to expand their poultry business gradually. Or they could earn some money from growing vegetables on a small piece of land and invest that in either buying some more land or in building a glass house which enabled that to market their produce in a period that the prices were high. Also on the sandy soil crop yields were lower and land was cheaper than on the good clays soil, but this changed when fertilisers and more animal manure became available.

The development of markets was quite important. Industrialisation of Germany and England offered Dutch farmers opportunities to sell animal products, vegetables and later flowers for good prices. An effective marketing system was developed, often by farmers co-operatives, which for a long time offered the same prices for large and

small farmers. Also the farmers co-operative banks made credit available to finance this expansion of small farms.

Quite important was that vocational agricultural schools and agricultural extension increased the competence of farmers, including small farmers, to produce good quality products at a low cost. Now about 80% of the Dutch farmers have visited a vocational agricultural school. This increase in competence was realised in co-operation with study clubs and other farmers' associations.

A result is that it is no exception that the grandson of an arable farmer who worked with 10 labourers, is now a part-time farmer and a part-time bus driver, because the farm got too small to make a living, whereas the grandson of a small farmer has invested two million dollars in animal production or in glasshouses to produce flowers or vegetables and earns well. The majority of the small farmers had to leave agriculture or often they trained all of their children for a better paying job outside agriculture, but some who were real good entrepreneurs, developed a profitable farm from which most products are exported.

There are possibilities, but also problems in repeating this development in India. A World Bank evaluation of the Operation Flood shows that the increased demand for milk in India has enabled many small and marginal farmers and landless labourers to increase their income by expanding their milk production. This also increased the employment opportunities in rural areas. In the period 1978-'93 the milk production in India increased with 114%. At the same time through an increase in the efficiency of milk production the real price of the milk decreased by 32%. This was a major advantage for the urban consumers, especially for the poor consumers, who spend a large proportion of their income on food (Candler and Kumar, 1998). Also the development of a rural banking system has decreased the power of Indian moneylenders to exploit poor villagers.

Within India there are large regional differences in the possibilities farmers have to profit from new opportunities in the markets. This is much easier in a region with a

rapid urban development and a good marketing system, e.g., the area between Pune and Mumbai, than in remote villages, e.g., at the borderline between Bihar and Madhya Pradesh.

A major problem in repeating the Dutch experience in India is probably the weak development of primary and vocational agricultural education in rural areas. As a result the level of literacy among Indian farmers and farm women is low compared with that in East Asian countries where their competitors live. The level of illiteracy among people of 15 years and above was in 1995:

	Males	Females
India	35%	62%
Indonesia	10%	22%
Philippines	5%	6%
Thailand	4%	8%
Bangladesh	51%	74%

(World Bank, 1998)

Among the rural Indian women in 1991 an illiteracy rate of 91% was reported. The number of students per primary school teacher was in 1995 in India 63, in Indonesia 23 and in the Philippines 16 (World Bank 1998). In Philippino villages I am not astonished to meet young farm women with 12 years of general education and a two years agricultural college. For a trader it is much more difficult to cheat them than to cheat illiterate Indian farmers. India has invested a lot in university education, although many university graduates cannot find a job in the field for which they are trained, but little in primary and in vocational education.

Candler and Kumar (1998) showed that milk producers were wise enough to invest a part of their increased income in a better education of their children. Also when the mother worked less outside as a farm labourer, because they could earn money by taking well care of the crossbred cow, the daughter could go to school as she had no longer to stay at home to take care of her younger siblings.

Another problem is the rather weak development of a

marketing system for agricultural products and inputs and the lack of control of farmers over this system. There are farmers' co-operatives in India, e.g., in dairying, but the government has much more to say about the management of the co-operatives and farmers much less than in the Netherlands.

Small farmers in the Netherlands could gradually expand their business, but this will be difficult in some branches of agriculture in India, where urban entrepreneurs have made major investments, e.g., in the poultry industry and in grape production. In other fields also in India small farmers are more successful than large farmers. BAIF has e.g., stimulated small farm development in India by introducing crossbred cows. It is their experience that the wife of a small farmer takes much better care of these animals than the labourers of large farmers (Rangnekar). Also small farmers in Bihar have been successful in growing vegetables for the urban markets, where these products could be sold by relatives who migrated to these cities.

## **7. Implications for Extension**

What are the implications of our analysis for extension?

- (a) Farmers need assistance in a much wider field than they received in the past. They do not only need advice on the choice and the management of different production technologies, but also on:
- the choice of their farming system,
  - the process of change towards a different farming system,
  - whether or not to take a full-time or part-time job outside agriculture,
  - whether or not some or all of their children should be trained for a job outside agriculture, and if so for which job,
  - whether they or some of their family members should migrate to an urban area,
  - whether they should make investments to

increase their labour productivity and if so which investments,

- how they should buy their inputs and other means of production and market their products,
- which risks they should take (van den Ban, 1998).

(b) Extension agents are only able to provide this assistance, if they have access to a much wider range of knowledge and information than in which agricultural extension agents used to be trained. It is quite important that they are well informed about market trends, changes in government policies and changes in efficiency of production and marketing among farmers, who are competitors of farmers in their area.

(c) With the increase in demand for horticultural and animal products agricultural research should study how these products can be produced in an efficient and sustainable way. This research should focus on problems farmers are likely to face in the next decades which cannot be solved on the basis of farmers' experience. One of the causes of the success of BAIF, a large NGO, is that it has concentrated its research on these problems. A good feedback system should be developed to inform researchers on the problems farmers encounter with the production and marketing of these more expensive products. Without this information extension agents are not able to discuss with farmers whether or not it is desirable to change to a farming system which produces products of a higher value. This was done by BAIF by involving farmers in the entire research process, including diagnosing and prioritising the research problems. This research was not only done on-station, but to a large extent on-farm which also helped to improve the feedback from farmers.

(d) Extension should be given in a different way. When an extension agent advises about a change in production technology, sometimes, not always, he can be rather sure about the consequences of such a change. This is not the case with most of the

- decisions we mentioned under (a). Their consequences may depend on developments in the markets. We may predict that the demand for eggs will continue to increase, because incomes are increasing, but as a result of an economic crises incomes may decrease as we have recently seen in Indonesia and other East Asian countries. Even if the demand for eggs increases, other poultry farmers may increase the efficiency of their production so much that egg prices decrease. In addition which farming system is desirable depends also on the values of the farm family, e.g., on their willingness to take a risk or on their religious beliefs. What farmers need is not an adviser, who gives him a recommendation, but one who helps him to analyse as systematically as possible which market developments are most likely and what are the consequences for his farm and his family if markets change in a different way as expected. The extension agent becomes a facilitator, who helps the farmers to make their own decisions and to increase their competence as a decision maker and entrepreneur. In the present era of a rapidly changing environment, the country needs entrepreneurs, who see opportunities to profit from these changes. This is quite a different way of thinking as the traditional bureaucratic thinking in government agencies, including extension services.
- (e) A new farming system cannot be developed at a research station, but only in the field, because it involves not only a change in biological production, but also in labour and financial management. This requires a co-operation between innovative farmers, researchers and extension agents (van Veldhuizen, Waters-Bayers and de Zeeuw, 1997). If some farmers have developed the new farming system successfully it can spread to other farmers through the co-operation between farmers and extension agents. However, these other farmers should not copy the first successful farmers, but adjust the experience of these farmers to their own situation.



- (f) Because some farmers succeed in increasing the efficiency of their production, many other farmers will no longer be able to realise a decent way of living with their present farming system. Who will be able to continue in farming, depends to a large extent on their level of knowledge and their other capabilities as farmers. To support rural development in an area one can better try to increase this level of knowledge and competence than provide subsidies. A country or a district in which this support is weak, will have difficulties to compete in agricultural production with countries or districts with a strong knowledge support system. This will influence the employment opportunities in agriculture in this country or district. Adjustments to the increase in labour productivity in agriculture will often be painful for farm families, but not adjusting to these changes will in the long run be even more painful.
- (g) The low level of education and literacy is a serious handicap for Indian farmers in their competition with farmers in other countries. Investments in primary and vocational agricultural education is a major tool the Indian government could use to increase the competitiveness of small farmers in this country. The money which is now spent on subsidising investments by poor farm families, would give a much higher economic rate of return, if it was used for increasing their capabilities to make decisions which increase the efficiency of their production. However, this may not give the highest political rate of return as long as these farmers do not yet realise how important their knowledge and their managerial ability are for their success in farming.
- (h) With the limited resources available for agricultural extension, extension organisations should concentrate on helping farm families with decisions which are most important for their welfare in the future. Helping them with decisions on the choice of their farming system and on whether or not they will continue to try to get most of their income from

farming will often be more important than helping them with decisions on production technologies.

- (i) Farm women will become a more important target group for agricultural extension, because often their husbands and their sons will find a full-time or part-time job outside agriculture. Agricultural extension will have to adjust to this process of feminisation of agriculture. In India the proportion of female extension agents is much smaller than in South-east Asia, but fortunately the number of female students in agricultural universities is increasing rapidly.
- (j) It is quite important that extension agents support not only individual decision making by their farmers, but also collective decision making on more sustainable farming systems and on possibilities to increase the power of their farmers in the whole chain from the producer to the consumer of agricultural products. This collective decision making is quite important in watershed development projects, where farmers in upper, middle and lower zone may have different and even conflicting interests. The extension organisation can bring the stakeholders, who influence the way natural resources are used in a certain area and who are effected themselves by the decisions on the use of these resources together and facilitate a process of decision making which takes into account the consequences in the long run of these decisions for all stakeholders (Roling and Jiggins, 1998). This may require a retraining of these extension agents..
- (k) If farmers become more specialised, also their extension agents have to become more specialised. A farmer, who keeps 25 backyard chicken, can quite well get advice on his poultry production from an animal husbandry officer, who deals with all kinds of animals or preferable even from a staff member of a NGO project, who gives advice on the farm as a whole. However, a farmer with 100,000 layers needs advice from a real poultry specialist. Whether this

adviser knows also about rice production is irrelevant, because this poultry farmer probably does not grow rice or grows it as a separate enterprise.

- (l) Increasingly farmers get knowledge, advice and information from a number of different sources, such as officers of different government departments, different mass media, staff members of NGOs, banks, companies selling inputs or buying products, private consultants and successful farmers. We are moving to a pluralistic extension system (Christoplos and Nitsch, 1996). This is in my opinion a desirable development, because one cannot expect that one person is able to give good advice on all decisions a farmer has to take. Some co-ordination between different extension organisations working with the same group of farmers is desirable to try to prevent that they give conflicting advice and that there are important gaps in the kinds of advice which is available to farmers. This co-ordination could be a task of the Ministry of Agriculture. However, it is not always wrong that there is also competition between the different extension organisations. This competition can give farmers some power to force the extension organisations to provide the kind and quality of advice they need.
- (m) The regional structure for selling inputs to farmers and marketing farm products and for providing credit and other banking services has a major impact on the ability of this region to compete nationally and internationally in agricultural production. Economies are changing that rapidly that the kind of marketing structure which is required also changes rapidly. Indian migrants play a major role in marketing research in the USA. They could be asked to do research which helps to improve the structure of marketing in Indian agriculture.
- (n) Differences in power among the people based on caste, gender, rural or urban residence etc., influence their ability to participate in the development process. The experience is that small farmers can profit a lot

from the possibility to increase their income through producing high value products. Realising this potential would require more investments in their education [See point (g)]. This is a serious bottleneck for agricultural and rural development in India.

- (o) A large proportion of the poor people in India are small farmers and farm labourers. Without an increase in their productivity, including their labour productivity, it will not be possible to reduce their poverty. For some of them there are opportunities to increase their productivity by changing their farming system to meet the growing demand for horticultural and animal products with a higher value than the products they grow now. This requires strengthening their access to knowledge about these products, of the system of input supply for these farmers and of the system of marketing their products. A consequence of an increase of labour productivity in agriculture is, however, that other farmers will have to look for employment opportunities outside agriculture for themselves or for all their children. Human development, e.g., through education, is crucial to enable them to find this employment (UNDP, 1999). This makes a good coordination necessary between the policies for agricultural development and the rural development policies discussed in other chapters of this book.

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