

CHAPTER - VI

CONCLUSION

After independence, the technological horizon of Arunachal agriculture expanded gradually: new inputs were introduced, new agricultural practices were popularized and the seeds of commercialization of agriculture were sown with the introduction of mainly cash crops. One notable feature of the agricultural expansion in Arunachal Pradesh is the gradual extension of permanent cultivation—the agricultural practice that can accommodate and even facilitate the technological improvement in production. The jhum cultivation, which suffers from rigidity due mainly to the specific agro-climatic condition nurturing its practice, has lost its predominance in the state agriculture. With the fall in the relative importance of jhum cultivation, the agricultural space supportive of the technological dynamism has expanded.

The farm mechanization in the form of power tillers and tractors which is impossible in the jhum cultivation practised on the hill slopes has been facilitated in the state by the spread of permanent cultivation. In many plain areas in the state there is now use of power tillers and even tractors to a limited extent. More extensive use of mechanized process of production in agriculture is possible only if there is change in motive for production from subsistence to profit.

The new institution of individual property rights in land both under settled and jhum cultivation has emerged in Arunachal Pradesh. The gradual breakdown of the community ownership of land has tended to concentrate the ownership of lands leading to landlessness. In the jhum economy landlessness was non-existent. The emergence of individual property rights in land has weakened the basis of

mutual insurance, which is based on communal ownership of land. The traditional risk-coping mechanism working through mutual insurance has become weak in Arunachal Pradesh. In her economic transition, a new type of labour arrangement, not existed previously has come up. This is the replacement of non-formal labour based on mutual insurance and redistributive mechanism by the wage labour. The factors which have brought this new type of wage labour are the extension of permanent cultivation, emergence of individual property rights in land, insufficiency of family labour, the occupational diversification and development of commercialization of agriculture, etc. Another form of agricultural arrangement, leasing of cultivable land either on fixed rent basis or sharing of output, has emerged in Arunachal Pradesh. Total area leased in constituted 8.20 percent of the total permanently operated area of 885.35 hectares of sample farms. Among the sample districts incidence of tenancy is found the highest in Lohit district.

In the dimensions of technological change in Arunachal agriculture, the use of new farm inputs such as wooden plough, tractors, power tillers, HYV seeds, chemical fertilizers, pesticides, etc. are mainly a post- independence phenomenon. The outcome of extension of permanent cultivation is the use of high yielding varieties, chemical fertilizer and pesticides which in the context of jhum economy of Arunachal Pradesh was almost nil. The use of high yielding varieties of paddy, vegetables, wheat, potato, oilseeds and maize has gradually been popularized among the farmers. The growth rate of area under HYV seeds during 1980-81 to 2002-2003 is registered as 11.60 percent. Like wise the growth of consumption of fertilizer during the same period is 10.12 percent while there is negative trend of consumption of pesticides at 3.51 percent.

Among all the crops, the adoption of high yielding varieties of seeds for paddy was the highest. The sample data show that the use of chemical fertilizer is not popular among the sample farmers. A negligible 6 percent of the sample farmers use chemical fertilizer. The sample farmers prefer to use manure in their crops. Conventional bio-fertiliser is used by 42 percent of the sample farmers in vegetables, while only 11.75 percent of the sample farmers use it in paddy. The awareness of soil testing among the sample farmers is completely absent. However, there is the use of pesticides to control the pest and insect attacks. The exception is the *Apatani* farmers of Ziro circle, who do not use pesticides in paddy owing to the fish cultivation.

In recent decades the plains and even some terrace fields of the state have seen the spread of the use of wooden plough. In wet-rice cultivation, wooden ploughs are extensively used. As high as 70.25 percent of the sample farmers use the wooden plough for tilling. However, in Ziro circle of Lower Subansiri district none use wooden plough for tilling. The factors for the non-use of wooden plough are found to be physiographic condition, water logging and small terraced plot. Among the sample districts, only in two districts, Lohit and West Siang, tractors and power tillers are used for tilling. The sample data show that 18.5 percent of the sample farmers use tractors whereas 8.25 percent use power tillers. The factors which have impact on the use of tractors and power tillers are the amount of ownership of plain land, the extent of commercialization of agriculture, availability of cheap labour, economic condition of the owner, etc.

The extension of permanent cultivation has made significant effect on the agricultural growth in the state. The growth of the area and production of the cash crops like spices, pulses, oilseeds, vegetables are impressive and it is higher than

that of the food grain crops. The sample data show that the productivity of paddy per hectare under settled cultivation is almost triple the per hectare production in jhum land. Low productivity of jhum land reduces the total productivity of land in the state agriculture.

There has been a significant change in cropping pattern. In Arunachal agriculture, the share of paddy to total cropped area has decreased from 58.75 percent to 49.03 percent during 1980-81 to 2002-03. The share of cash crops to the total cropped area has been increasing during the same period. The cropping intensity of the sample farms in the settled cultivation varies between 106.94 percent to 115.02 percent with 110.71 percent being the average intensity. In settled cultivation, there is mainly mono-cropping while in jhum cultivation mixed cropping is found. In permanent land having no irrigation facilities paddy is cultivated only once in a year. Paddy occupies the highest share of 55.27 percent of total gross cropped area of the sample farms. Of course, vegetables are cultivated in double or multiple cropping.

In case of irrigation infrastructure, one-fourth area of the net area sown is under irrigation during 1995-96. Three fourths of net sown area depends on monsoon, which indicates a poor irrigation infrastructure in the state agriculture in spite of its 2.77 percent growth per annum during 1970-71 to 1995-96.

Policy Implications

(1) Area specific strategy: In order to make the agricultural policies successful the physiographic condition, socio-cultural and socio-economic institutions and the resource position of the beneficiaries should be considered. Accordingly efforts

may be made to formulate an area specific technology and to develop the indigenous strategies, which would be suitable to the local environment.

(2) Organic Zone: The jhum based traditional agriculture in Arunachal Pradesh was almost free from the use of chemical farm inputs. Expansion of permanent cultivation has opened up the scope for using the various new farm inputs. There is a great scope for the region to convert into an organic crop growing area.

(3) Extension of agro-processing units: For sustainable agricultural development priority may be given for setting up agro-processing units in the state. Besides, necessary steps should be taken to create an entrepreneur friendly environment so that the private individuals come forward to establish agro-based industries. The value addition will reduce the wastage of agricultural and horticultural products which will help the farmers to get reasonable prices for their products.

(4) Appropriate farm machinery: The selection of appropriate farm machinery becomes extremely difficult in hilly areas. The farm machines, which are suitable to the plain areas, may not be appropriate in Arunachal Pradesh because of its physiographic condition. Hence, appropriate farm tools and machinery should be developed accordingly.

(5) Expansion of Co-operative Agencies: As the agriculture sector of the state is not organized and not in an advanced position, there are a large number of small and marginal farmers who have been facing financial resource crisis and the problems of marketing of their agricultural produces and farm inputs as well. The co-operative sector can mobilize the resources, undertake further processing of products, and thus add values and higher prices for these products. Keeping in view of the physiographic condition, communication and transportation bottleneck in the state, the special importance should be attached to the co-operative sector for

the expansion of co-operative credit, provision of modern farm inputs and marketing of agricultural products in rural areas.

(6) Provision of Adequate agricultural infrastructures: Emphasis will be laid on development of marketing infrastructure, storage, transportation and communication, irrigation facilities, credit facilities etc. in all the districts with a view to reducing the post harvest losses and ensuing better returns to the growers.