

v. Plantation and horticulture [including bamboo]

Some of the horticulture crops that could be successfully developed and commercially exploited in Assam are

- vegetable crops- ginger, cabbage, chillies, beans,
- fruit crops – banana, citrus and pineapple,
- ornamental flowers - dendrobium, gladiolus, anthurium, tuberose, rose, chrysanthemum and gerbera, and
- medicinal and aromatic plants- patchouli, lemon grass, vetiver, geranium, etc.

As mentioned above, the farmers engaged in production of paddy, may be encouraged to take up plantation and horticulture crops. Some progressive farmers have started producing such crops like patchouli and other medicinal plants, fruit crops, etc.

Eventhough most of these crops can be commercially produced for meeting the demand for export market through further processing and value addition, these are produced by farmers without any knowledge of market requirements. In other words, the farmers continue to produce these crops without any market information as to what the market wants. Therefore, these crops are also marketed in the raw form without any value addition leading to low price realization. It is estimated that less than 2% of the fruits and vegetables are processed. For better price realization in the national and international markets, processing would be necessary. However, for this to happen, the State has to gear itself by encouraging private investments in the area of post-harvest technologies and processing of various horticulture crops. Given the traditional practices followed by small and marginal farmers in Assam, organic farming offers considerable scope as the agri-products produced in conformity with the international standards command considerable premium in the international markets.

Among the various vegetable crops, ginger offers tremendous scope for commercialization in Assam. Moreover, in order to promote agri-exports from Assam, the GoI has announced the Agri Export Zone for ginger in 8 districts [Kamrup, Nalbari, Barpeta, Darrang, Morigaon, Nagaon, Karbi Anglong and N.C.Hills] of Assam. It is significant to note that more than half the quantity of **ginger oil and oleoresins** traded in the world market is from India only and the quality of ginger produced in the State qualifies for export.

The following features of ginger in Assam strengthen the scope for ginger promotion.

- Productivity has increased by **18%** over 8 year period (1993-2001)
- Productivity reached a peak of **7280 kg per hectare** in 1998-99. Productivity under experimental conditions is 12000 kg per hectare
- The national productivity is **3391 kg per hectare** only
- The major districts are Kamrup, Barpeta, Karbi Anglong, North Cachar, Cachar, Golaghat. The highest productivity is observed in Golaghat at 9730 kg per hectare and the lowest in North Cachar hills at 4316 kg per hectare.

It is estimated that if the potential for ginger in Assam is properly exploited, the volume of business could be more than **Rs.200 crore** per annum.

In order to meet the growing demand for ginger and its products, particularly in the international markets, there is a need to educate the farmers for producing the right variety with quality ginger which may be used for further processing. Contract farming with linkages to processing units would also help in assured market for the farmers. The farmers may be encouraged to set up their own producers organisations/ associations so that they can reduce the intermediaries and get better return. The APEDA and the nodal agency in the State will need to draw specific strategies in this regard.

Similarly in the case of ornamental plants, very little organised production of flowers or other floriculture products is taking place in Assam. Assam accounts for **55 per cent of the area under horticulture covered in the NE Region**. The major crops presently cultivated are marigold, tuberose, gladiolus, orchids and rose. It is necessary to take up the activity as a commercial venture. The potential crops are **dendrobium, gladiolus, anthurium, tuberose, rose, chrysanthemum and Gerbera**. Out of the total 1350 species of orchids, as many as six hundred species are presently available in the region and several high value species can be commercially exploited. These orchids have vast potential especially from export angle.

Though the climate in Assam may be suited for cultivation of a variety of ornamental flowers, it could be undertaken only by those farmers who have specific buy back arrangements for their crops. Here, the role of contract farming will be crucial. It is also basically a demand driven and capital intensive agri-activity. This activity can be taken up by such entrepreneurs who have full information about the market and assured demand for specific types of plants / flowers, particularly in the international market. Moreover, it would also need to ensure availability of complete value chain so that the flowers would fetch the best price for the entrepreneur. With very little done for encouraging farmers in producing ornamental plants, the government could provide various facilities and incentives for private entrepreneurs to take up in suitable areas in the State.

Another area which offers scope is formulation and preparation of medicine and perfume from native herbal wealth in the State. Although a large number of medicinal and aromatic plants can be cultivated in Assam, the crops which have significant economic importance with sizeable demand in national and international markets are **patchouli, safed musli, geranium, citronella, lemon grass, vetiver, palma rosa, etc.**

NABARD has conducted a study on patchouli cultivation in two districts viz., Sonitpur and Nagoan and found considerable scope for both cultivation and also extraction of patchouli oil in these districts. However, care should be taken in cultivation of patchouli as it requires good shade, higher elevation [so that water logging is avoided], adoption of proper farm practices and good storage facility. Once its cultivation picks up on a commercial scale, other related supportive infrastructure like the units for extraction of its oils/flavours/ colours could be established with credit support from Banks. Technology for growing such plants can be availed from ICAR, RRL, Jorhat or even from private entrepreneurs of Maharashtra, Andhra Pradesh and Karnataka. An integrated approach for commercial

cultivation and processing would help increase the income of the farmers cultivating patchouli and similar other crops in Assam.

Bamboo covers **8.96 million ha** of forest area. The growing stock in the country is estimated to be 80.4 million tons, two thirds of it from North East. Bamboo development is viewed as a program for eco-restoration, economic development, employment generation and livelihood security. This multipurpose species has enormous potential, which has only been partly harnessed. The important usages are food items mainly edible shoots, building material, handicrafts, medicinal products, paper industry and new generation products such as wood substitutes, etc. In Assam the major use of bamboo is **paper manufacture** by Hindustan Paper Corporation Ltd. which functions through its units in Panchgram, Hailakandi district and Jagi Road, Morigaon. Incidentally, it may be mentioned that the Planning Commission in the *National Mission on Bamboo Technology and trade development*, suggested to raise **2 million ha** bamboo plantation in 10th plan period and has estimated fund requirement of **Rs.2608 crore**. The estimated demand is **26.69 million ton** against the supply of **13.47 million ton**. A two-pronged strategy is suggested to meet the gap i.e., proper harvesting from forest areas and fresh plantations in **6 m ha**.

Here again, NABARD has done considerable work in increasing the economic well being of the farmers. It opened dialogue with the two paper mills viz. Cachar Paper Mill and the Nagaon Paper Mill and developed specific bankable projects covering planting of bamboo in about 5000 acres with an outlay of about Rs.5 crore in 6 districts. It has used effectively the contract farming mode in bringing together the farmers, paper mills and the bankers so that the entire business chain functions smoothly. These two project would benefit about 5000-6000 farmers in these districts.

But, there is need to diversify the very use of bamboo from using it for paper manufacturing to other uses which would provide higher value addition. The technology for various diversified products of bamboo is available within the country. What is needed is a policy from the GoA for encouraging investments from the private sector in bamboo based industries. NABARD would play a catalytic role in bringing together the prospective entrepreneurs and the bankers and if need be, develop suitable projects for consideration of banks.

Two charts indicating stages leading to developing the processed food value chain and fresh produce value chain are given in Exhibits- 6 & 7.