A MARKET-ORIENTED APPROACH TO HORTICULTURE PRODUCTION

B.R. Kaini[1]
R.A. Werner[2]

ABSTRACT

Under a market-oriented concept, action to organize for regular urban supply and for prevention or reduction of -harvest losses are to be taken at subsequent levels, starting with production planning (farmers'decision to produce a saleble commodity). Production decision need to be bsed on market knowledge to support the decision-making process on ; what to produce; where to produce; how much the market can consume; where to sell (in which market). fro mthe point of view of institutions and functions, action to normalize the supply (and reduce losses due to over-prodcution) have to be taken at levels as: research, formal education, professional training, technical assistance, packaging and transportation, storage, processing, market information and fundamentally on planning.

REVIEW OF THE PAST EFFORTS

Many efforts were made in the past to increase production and productivity of horticultural crops. Though cultivation of indigenous horticultural crops cannot be traced back, organized research work on horticulture was started from 1940 with the testing of some exotic and indigenous fruits and vegetables in the Central Experimental Farm at Tahachal, Kathmandu. The Plant Introduction Unit at Singha Durbar established in 1952 introduced and studied many new varieties of fruits and vegetables. However, the systematic horticultural development programmes were started only after 1960 when 14 horticultural farms were established in different agro-climatic regions of the country.

The Indian bilateral assistance during 1960-1973 and the UNDP/FAO technical support during 1977-1980 contributed a sound base for horticulture development. With the help of FAO assisted Fresh Vegetable and Vegetable Seed Production Project, SDC assisted Potato Development Program, JICA assisted Horticulture Development Project and ADB loan assisted Fruit Development Project, the country progressed well in horticulture production. Besides these, various other externally funded agricultural and rural development projects, INGOs and NGOs have supported horticultural development programmes in many ways.

In order to give an initial push to horticultural development, many special programmes were launched during the past periodic plans. Horticulture areas were prioritized during the Ten Year Agricultural Development Plan (1975-85). Accordingly, priority was accorded to develop citrus orchards in the mid-hills of eastern, central and western regions, mixed fruits in the hills of central development region, apples in the

[1]B.R. Kaini, National project co-ordinator, Small Marketing INfrastructure project.
[2] R.A. Werner, project implementation manager, Small Marketing INfrastructure project.

high-hills of western and far-western development regions and dry fruits in Mustang and other Himalayan valleys. Commercial fresh vegetable production pockets were to be developed in areas having transport, market and irrigation facilities. The remote areas of Dadeldhura, Rukum, Dolpa, Mustang, and Dhankuta were prioritized for vegetable seed production. The Ten Year Plan also emphasized development of commercial horticulture along the highway vicinities. The apple sapling distribution campaign during 1969/70 in Jumla areas, the vegetable seed production programme at farmers field from 1974, the distribution of vegetable seeds and fruit saplings for development of commercial horticulture during the agriculture year of 1975, the citrus priority programme launched from the fiscal year 1984/85, the special junar development programme in Ramechhap and Sindhuli from 1982/83, the intensive vegetable development programme, the off-season vegetable production programme, the subsidy programmes for orchard and nursery establishment, and involvement of private sector in seed potato production have resulted in tremendous increase in areas, production and productivity (Table - 1).

PRESENT PRODUCTION SYSTEM

The average land holding size of Nepal is 0.96 which is very low by any standard. The holdings are fragmented to an average 4 parcels per holding. Therefore, more than 75 percent of total production is done by small farmers who do horticulture farming in less than 0.2 ha. of land. Most of the farmers produce on an individual basis and there are no strong farmers' organization. Small farmers have more contribution to vegetable production as compared to fruit production. In recent years, fresh vegetable production is concentrated near densely populated cities and in the Terai. Many well-defined vegetable production pockets have been developed.

The production system in fruit is slightly different. The involvement of small farmers in fruit production is limited with kitchen gardening. As fruit crops have long gestation period and they need high initial investment cost for production, commercial orchards are established only by medium and big farmers. The proportion of area planted with fruit crops is higher in the hills and mountains than in the Terai.

Growing global trade on floriculture products has opened the avenues for its commercialization. Commercial production of flowers and ornamental plants is increasing at the periphery of urban areas like Kathmandu, Biratnagar, Pokhara, Janakpur, Birgunj, Bhairahawa and Nepalgunj. Although, the data relating to the number of flower growers and their locations are not available, more than 100 nurseries are reported as active in the floriculture trade.

Table - 1: Scenario of Horticulture Development in Nepal.

Particular	End of 5th five year plan (1979/80)	End of 6th five year plan (1984/85)	% increase over 5th five year plan	End of 7th five year plan	% increase over 6th five year plan	End of 8th five year plan	% increase over 7th five year plan
Fruits							
Area (ha)	42077	51126	21.60	63123	23.35	75100	19.05
Prod. (mt)	275000	343204	24.80	461743	34.54	610700	32.25
Vegetables							
Area (ha)	96000	138000	43.75	140500	1.80	142400	1.42
Prod (mt)	528000	743000	40.70	970200	30.51	1319700	36.08
Potato							
Area (ha)	51000	58400	14.50	59800	2.39	87000	45.00
prod (mt)	279000	409000	47.10	521425	21.40	931000	78.70
Per capita prod (kg)							
Fruits	18.33	20.56	12.60	24.27	18.04	30.50	25.66
Vegetables		45.50	20.30	50.90	11.86	66.00	29.66
	37.80	24.50	30.30	30.38	25.53	46.55	53.22
Potato	18.50	23.00	24.30	28.00	21.70	34.00	21.43

Source: FDD, VDD and PDP

Till to-date, the horticultural production programmes in Nepal are implemented generally on the basis of broad macro climatic regions. The absence of strategy to select cultivars for different seasons has resulted in price variations due to irregular supply and unsuitable cultivars for processing, horti-based industries have to depend on imported raw materials. Production pockets are scattered far from the markets and are inaccessible to road. Feeder roads are not constructed to connect production pockets with highways and the distances from production pockets to markets are relatively long. Transportation difficulty has limited the supply of produce from such production areas. The cost of production is higher due to various factors, such as small scale production, costly inputs and low productivity. The government support for technology generation and dissemination is very poor which has resulted in further setbacks to competitive production. Thus, the present system of production has created many problems on marketing. Realizing these problems, APP has considered demand driven strategy for horticulture development in Nepal.

THE NEED FOR MARKET-ORIENTED PRODUCTION

In the absence of production planning, producers are often deprived of getting reasonable returns on one side and the consumers suffer from regular supply at reasonable prices on the other hand. In fact, any price risks in the markets are either shifted to the producers by offering them low prices or to the consumers by selling them at high prices. In any marketing chain, these are the ultimate sufferers of all the weaknesses. However, the lack of production planning also affects other market functionaries in many ways. Collectors are facing the problems of collection from small and scattered production pockets. The wholesalers, who are the most privileged and

influential functionary in the market chain, are also facing the problems of irregular supply, small scale and low quality. Similarly, retailers, transporters, cold storage owners and processors are also facing many problems due to the lack of production planning.

In order to ensure fair share of the domestic markets, promote export and maintain competitiveness, production has to be market-oriented. Production planning is, therefore, an important component of the marketing system. In a market-oriented approach of production, actions start with the farmers' decision to produce a saleable commodity. Therefore, there is the need for supporting the decision making process on: what to produce, how much to produce, where to grow, when to produce, and where to sell. The objectives of production planning should be to:

1. have low cost of production;
2. get high quality of the produce (or high value of the produce); and
3. ensure high productivity per unit of land and investment.

4. Production Planning

In order to achieve these objectives, we need an appropriate production planning with higher levels of production technologies, some of which may be as follows:

Commodity priority: Although, the diversified climatic conditions of Nepal allow to grow a wide varieties of crops, there is the need to set priorities of commodities which can be produce at low cost, allow adequate scale of economics and have high value in the market. Nepal has comparative advantage in the production of off-season vegetables, vegetable seeds, cut-flowers, and fruits like citrus, apples, pear, etc. All these commodities except pear and cut-flowers, are recognized as high value crops by the APP. However, commodity priorities should be changeable over time.

Ecological planning of production: The emphasis of APP is to grow (1) citrus throughout the mid-hills; (2) apples in the inner Himalayan zone; (3) Off-season vegetables in the hills as well as in the Terai; and (4) Vegetable seeds and flower seeds in the hills and mountains. This is a very general location of commodities by ecological planning and hence, it requires detailed survey of the entire country for assessing horticultural crop potential on the basis of micro-climatic conditions and the delineation of areas for the production of different crops/cultivar for different purposes. There are still many unexploited areas in Nepal with vast potential for horticulture.

Commercial"production areas" (pocket) approach: One of the recommendations of the Twenty Year Horticulture Development Plan in Nepal is to develop horticulture along the sides of the highways in the form of commercial production pockets. This is also the government policy but effective measures are not taken to implement it. Like in Himachal Pradesh of India, unless research, extension, inputs, processing, storage, and marketing are directed towards the commercial pockets of leding commodities, horticulture cannot be commercialized.

Varieties for different areas/seasons/purposes : For a market-oriented approach, we need suitable varieties for all production pockets, for all seasons and for all purposes. But in our present system of production, no such consideration has been given for the selection of cultivars. The same variety is grown in different locations for different seasons and purposes. We have limited number of varieties and these too are of low quality and low yield potentials. Growing of such varieties has resulted in short harvesting period, price fluctuations in the market, high cost of production, and bad

reputation. Therefore, a strong research base for developing suitable varieties to meet the requirements of market oriented production has become an urgent need.

Land ceiling policy for commercial horticulture development : The APP identified high value crops for the hills and mountains are citrus and apples respectively. The small farmers are not interested to grow fruit crops in commercial scale due to small land holding, long gestation period for production and high initial investment. The suggested group approach of small farmers' are not working in establishing fruit orchards at commercial scale. It means participation of medium and big farmers is essential in order to develop commercial orchards in the hills and mountains. But land ceiling imposed for hills other than Kathmandu valley is 4.9 ha. This existing land ceiling, therefore, seems to limit development of orchards to commercial scale. Therefore, either the provision of ceiling exemption for industrial and other specified purposes should be widen to cover the whole commercial production pockets instead of the individual or a new land policy to address this problem should be developed and implemented.

Off-season production technology : The hills and mountains of Nepal have comparative advantage over plain areas of Nepal and India in the production of natural off-season vegetables. The main seasonal production of these high-lands becomes off-season production in the plains. For example, the Chaubise areas of Dhankuta district and Tistung-Palung areas of Makwanpur district supply their normal season radishes to neighbouring Indian markets at off-season prices. There are many such production pockets along Mahabharat range which need to be exploited by directing research and extension services towards those pockets. The introduction of new technologies such as use of polythane mulch, polythane caps, polythane tunnels, green houses, cold frames and use of early or late varieties, make it possible to prolong harvesting seasons to both sides of the normal season. The use of onion bulb-lets to produce onion bulbs during off-season is another example of off-season production technology. The seasonal problem of horticulture can also be responded by developing other appropriate technologies, including application of growth hormones.

Measures to increase productivity : Average yields of fruits, vegetables and potatoes in Nepal are very low as well as unstable. For instance, the average yields of fruits, vegetables and potatoes in 1995/96 were 8.96, 9.19 and 8.47 tons per ha. respectively. The yields of these crops in developed countries are reported to be as high as 60 to 70 per ha. Considering these yields, it can be presumed that there is an ample room for increasing yields of most of the horticultural crops in Nepal. Low quality planting materials, lack of appropriate agronomic and pest management practices, poor transfer of available technology to the growers, lack of irrigation, lack of high yields varieties, unavailability or untimely availability of chemical fertilizers and farmers attitude to neglect management of orchards are the main factors responsible for low yields. No doubt, some of these problems are complex and there are no easy solutions. Only with appropriate policies, plans, programmes and commitment to implement them by public and private sectors, these problems can be obviated and high yields can be obtained. NARC should strengthen and speed up breeding and agronomic research on horticultural crops in order to improve varieties and management practices leading to high yields and quality.

Use of appropriate production technology for quality production : In market-oriented production, the quality factor has to play an important role for adding value to the produce. Actions taken during the production phase are directly related to the behaviour of produce after harvest. For example, the excessive application of nitrogen

is known to reduce storability due to increased respiration. Many kinds of fruits and vegetables do not develop the desired flavour and taste when they are harvested too early. However, when they are harvested too late, the keeping quality is poor. Early or late production using off-season production technologies can fetch high price in the markets. The use of appropriate production technologies is, therefore, critical for improving quality of the produce. The Nepalese producers are ignorant to such effects of production technologies on quality. Any measures taken in future for adoption of appropriate technologies should also consider the quality aspect of the produce.

Diversification : Diversified production is useful for (1) minimizing risk (2) increasing productivity (3) exploiting marginal lands and (4) providing various products to the markets. Many types of vegetables, turmeric and coffee can be inter-cropped in fruit orchards for increasing productivity per unit of land as well as per unit of investment. Cardamom is a cash crop which is grown in moist sloppy land where other crops cannot be grown. Ancillary horticultural activities like floriculture, bee-keeping and mushroom production are necessary to increase income of small farmers. Besides providing an additional income to the farmers, bee-keeping has also vital importance for effective pollination essential for obtaining good yields. However, diversification of production should also be based on identification of market opportunities.

Measures to encourage production : Market-oriented production demands processing industries, efficient packaging and distribution system and market infrastructures to utilize production gainfully. Most of the horticultural commodities are perishable which need special care in post-harvest handling and proper integration between producers, collection centres, and terminal markets. Feeder roads connecting production areas with highways encourage farmers to grow more by reducing transportation cost and post-harvest losses. From production point of view processing is helpful basically in three ways (1) utilization of low grade produce (2) value-addition to the products and (3) regulation of supply. Small processing units in production areas for manufacturing semi-finished products and the larger units in suitable strategic points for final processing will certainly encourage farmers to produce marketable surplus.

Intensification : When production is based on high levels of technology and inputs, it is called intensification of production. In Nepal, the areas have been prioritized for intensive horticulture development. The intensive horticulture development programmes have been implemented since 7th Five Year Plan period. But the impact of these programmes could be seen only in few production pockets. The reasons for this are:

1. Still most of the production pockets identified for intensive programme are unirrigated.
2. Market informations are not available to the farmers.
3. Technical services needed for intensive programmes could not be made available.
4. Inputs such as seeds, seedlings, fertilizers, plant protection chemicals, and horticulture tools were either unavailable or untimely available and of low quality.
5. Inadequate and ineffective training programmes.
6. Commercialization of horticulture is not possible without intensification of production. In order to make intensive programmes effective, we need to correct our past weaknesses and provide all technical services and high quality inputs in package form.

Protection of domestic production : In order to make Nepalese farmers more competitive and sustain market-oriented production, protection to domestic production is needed atleast for one five year plan period. It is because the production costs of horticultural commodities are lower in India than in Nepal due to the technological, transportation and scale advantages enjoyed by India. Protection to domestic production can be made by :

1. administering the minimum support price for led horticultural commodities based on the cost of production.
2. providing subsidy on transportation cost of horticultural products upto the market; and;
3. imposing high tax to those import commodities which are competing with the domestic production.

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