

POVERTY REDUCTION THROUGH HORTICULTURE DEVELOPMENT BY GENERATING INCOME FOR THE POOR

G. K. Shrestha¹ and G. P. Shrestha²

ABSTRACT

Horticultural crops are high value crops. The climatic diversities and different ecological zones in Nepal give ample scope for growing various fruits, vegetables, ornamental plants and spices. Growing horticultural crop means increasing per unit land income of Nepalese farmers. Many of the horticultural occupations generate a substantial income, which could help to alleviate rural as well as urban poverty in this country. Some specific horticultural activities that generate income are briefly discussed. Presented here are also a few successful cases of farmers in generating incomes from horticultural enterprises. The income generated through this sector can directly or indirectly contribute to the HMG's poverty alleviation campaign. To address the poverty reduction issues through income generation from horticultural entrepreneurship, some conclusions and recommendation have been drawn.

INTRODUCTION

Poverty is an unacceptable human condition, mainly related to economic backwardness of the people. It is neither immutable nor heritable but the developmental activities can alleviate poverty. Various organizations such as ADB and UNDP have defined poverty in different ways. A person is poor, when a his living standard is below a specified level (poverty line). National Living Standard Survey (1996) conducted by Nepal Rastra Bank estimated 42% population in Nepal below the poverty line; of this, 24.9% is the poor and 17.1%, ultra-poor. To alleviate the poverty, HMG has made policies, programs, and activities in several periodic plans in the past. But, degree of poverty has been increasing and more concentrated in rural areas (Table 1).

Table 1. Trends in incidence of poverty percentage by rural-urban residence, Nepal

Source	Year	Rural	Urban	Nepal
NPC	1977	37.2	17.0	36.2
MPHBS (NRB)	1985	43.2	19.2	42.5
WB/UNDP	1989	42.0	15.0	40.0
CBS	1996	47.0	18.0	45.0

Source: Nepal Human Development Report, 1998, p.128.

Poverty alleviation has been one of major objectives of development efforts since Seventh Plan (1985/86-1989/90) in Nepal. For this, economic growth must be accelerated along with the generation and expansion of employment opportunities. The government introduced economic reforms in early nineties to accelerate economic growth both in non-agricultural and agricultural sectors. Compared to non-agricultural sectors (trade, transport, industries, etc.) the growth in the

¹ Professor of Horticulture, Institute of Agriculture and Animal Science, Rampur, Nepal

² Senior Fruit Development Officer, Fruit Development Directorate, Kirtipur, Kathmandu, Nepal

agricultural sector was insignificant and impact on rural poverty was minimal. Succeeding periodic plans have also focused poverty reduction in rural communities as their main objectives emphasizing promotion of agriculture and agro-enterprises.

Agricultural Perspective Plan (APP) has long-term vision of promoting horticultural activities in suitable locations in the mountains of Nepal. This has created high thrusts in many organizations including INGOs, NGOs, CBOs and Private sectors. That such activities would improve economic status of rural people and help to alleviate urban poverty as well. Developments of fruit, nursery, vegetable seed and off-season vegetable enterprises, organic farming and marketing promotion are some examples of income generating priority activities in horticulture.

The objectives of this paper are to focus poverty status in Nepal, to brief the role of horticulture in income generation, and to integrate income generation activities with poverty reduction in this country.

POVERTY STATUS IN NEPAL

Vast majority of world's poor live in Asia, particularly in rural areas. This is true in Nepal also. Most of the Asian countries have over 20% of their population below poverty line (Table 2). Rural poverty remains the most important development challenge in these countries, several aspects related to characteristics, causes, and remedies of poverty need a great deal of research efforts. The available data on percent of population below the poverty line show that Indonesia and Pakistan have poor people less than 12%. This indicates that they are better off than China, India, Nepal, and Philippines. The percent of poverty may defer with the poverty indicators being used for evaluation.

Table 2. Poverty incidence in some Asian countries

Country	Year	Poverty, %
China	1995	22.2
India	1992	52.5
Indonesia	1995	11.8
Nepal	1995	50.3
Pakistan	1991	11.6
Philippines	1991	28.6

Source: Todaro, Economic Development, 2000.

For the first time in Nepal, NPC carried out a study of income distribution, employment and consumption pattern in 1976. It estimated that 33% of the total population lived below the poverty line. NRB conducted a household budget survey in 1984 and reported 42% of the population living below the poverty line. The another survey, made in 1991 covering only the rural areas, indicated a wide spread of poverty that severely affected landless and small farmers. Nepal Living Standard Survey (NLSS), also indicated 42% of the people below poverty line.

The table 3 indicates that those people below the poverty line live in both the urban and rural areas. About 41 percent of the total poor are ultra-poor, also known as the hardcore poor. It is necessary to develop programs for addressing poverty alleviation of both the poor and ultra-poor living in rural as well as urban areas.

Table 3. Percent of the population under poverty line in Nepal

Area	Poor	Ultra-poor ³	Total
Urban	13.2	09.8	23
Rural	26.4	17.6	44
Nepal	24.9	17.1	42

Source: NPC. 2003. **The Tenth Plan: Poverty Reduction Strategy Paper, 2002-2007.**

In spite of developmental efforts run in the past plan periods the proportion of the country's population below the poverty line has been increasing and it is more concentrated in rural areas. So, poverty alleviation is the biggest challenge to the government. Poverty is also the root cause of many of Nepal's current problems (population growth, environmental degradation, social ill-events, etc.). Therefore, as in the 9th plan, poverty alleviation is one of the main objectives of the 10th plan. Various policies, programs, and activities are addressed to promote agriculture and non-agriculture sectors, which reduce poverty in Nepal. The major thrust in the agriculture sector would be directed at ensuring the successful implementation of APP (1995). Of the many components of agriculture, horticulture is one important sector to promote economic growth of rural as well as urban poor. Because, horticultural crops stimulate capital flow which starts from subsistence level to commercial level, to agro enterprises development, then to industrial level.

ROLE OF HORTICULTURE IN INCOME GENERATION

One of the important outputs of APP's defined achievement is an increased, yet substantial production of high value horticultural crops in the country. Prioritized horticultural commodity programs emphasized in the APP are citrus throughout the mid-hills, apple in the high hills, off-season vegetables in the hills and terai, and vegetable and flower seeds in the hills and mountains. In addition, APP also stresses on the promotion of agribusiness and marketing with an appropriate integration of horticultural crop commodities and enterprises. Therefore, horticulture can play a key role on income generation of rural as well as urban poor. Some activities that hold adequate opportunities to generate incomes are briefly mentioned.

Nursery enterprise: Both in the rural and urban areas nursery establishment has been considered important to keep surroundings environmentally better and also earn money. Production of vegetable seedlings, fruit saplings, ornamental and flowering plants plays a major role. This enterprise is good for small landholders of rural as well as urban areas. Even with a few kattha/ropanies of land, selling various types of nursery and ornamental plants can generate a substantial income.

Table 4: Income from nursery enterprises ('000 Rs.)

Nurseries	Expenditure	Gross income	Net income	Return/investment, %
Bajrabarahi	65.9	141.1	75.2	114
Jana Sewa	15.0	56.1	44.6	296

³ Those households whose permanent source of income was not sufficient to support family expenses for more than 3 months in a year.

Bajrabarahi nursery had 4 ropani with 8000 plants and Jana Sewa Phalphul Nursery, 2 ropani with 2500 plants during 2059.

Commercial orchards: Commercial production of important fruit crops such as apple, banana, citrus, jackfruit, mango, walnut, etc. require a big chunk of land. As such, it may not be feasible to include these fruit crops into income generating activities of the rural poor who have little land. But, the fact is that rural incomes can be sufficiently generated when smaller holdings of the farm families are amalgamated and appropriate production technologies are being used for production. In 1994, 180 tons of Rapti apples were exported, which was increased tremendously by 1998 to an expectation of 8000 tons. Also, a sale of 70 tons of Rolpa apples (through the Jinabang Apple Producer Association) approximated a gross income of Rs. 1.25 millions while 180 tons Rapti apples earned Rs. 3.24 millions.

Table 5. Income from average cost of production ('000 Rs.)

Fruits	Expenditure	Gross income	Net income	Return/investment, %
Mandarin, 15 th year (Dhankuta)	21.8	92.8	71.1	326
Pineapple, 2 nd year (Chitwan)	308.7	527.5	268.8	85
Banana, 1 st year (William Hybrid in Kailali)	127.5	270.0	142.5	112

Source: For mandarin – Economic Analysis & Statistical Division, 1996/97.

For banana: A case study of banana production in Kailali Kanchanpur, AEC, 1997.

Vegetable seed production: The commercialization of agriculture especially vegetable production helped a rapid expansion of vegetable seed industry in Nepal. This has led small farmers to producing seed than fresh vegetables, as the case is true in Rapti zone. For example, export of vegetable seed from Rapti has increased by more than 20% per year. The forward contracts for vegetable seed have been increased from 86 tons in 1994 (worth of Rs. 5 millions) to 125 tons in 1995 (worth of Rs. 8 millions). The remunerative value of vegetable seed production is also reflected in Table 6. However, the return over expenditure varies and depends also on vegetable species, its varieties, and production site.

Table 6. Income from vegetable seed production ('000 Rs. per hectare)

Vegetable	Expenses (E)	Gross income	Net return (NR)	E/NR, %
Tomato (Sarlahi)	31.4	80.1	48.7	155
Cauliflower (Kath. Local at Dhankuta)	31.9	49.8	17.9	56
Cauliflower (Snowball-16 at Rautahat)	33.4	129.2	95.8	287
Bean (Nuwakot)	42.5	67.2	24.7	58

Source: Cost of production of some agricultural crops, 2054. Economic Analysis & Statistical Division, 1996/97.

Fresh vegetable production: Among the horticultural entrepreneurships, fresh vegetable production is practiced by many small farmers and is a good provocation for income generation. Depending on the nature of vegetables and the growing season, monetary returns vary. The farmers of Thimi have experiences that the net income from broad leaf mustard ranged from Rs. 5000 to Rs. 20,000 per ropani in a season while it was a lot higher in carrots (Rs. 8000 to Rs. 40000/ropani). The report of Business Promotion and Research Center indicates there is quite a variation in net profit of vegetable species grown in this country, some of which are listed here (Table 7).

Table 7. Income from vegetable production (Rs. x 1000 per hectare)

Vegetable	Expenses (E)	Gross income	Net return (NR)	E/NR, %
Cabbage	78.2	159.4	81.2	104
Pea	101.1	254.0	153.0	151
Cucumber	68.4	260.8	152.4	281
Bitter gourd	77.6	274.0	196.4	253
Cauliflower	80.3	126.8	46.6	58
Chilli	54.6	212.5	157.9	289
Radish	79.8	280.7	200.8	252
Tomato	93.9	197.6	103.7	110

Source: BPRC, 2003 Report of Business Promotion and Research Center, Putali Sadak, Submitted to VDD/HMG/Khumaltar, Jesth 2060. The figures are an average of 7 districts.

Off-season vegetable production: Production of vegetables out of their normal season has been recent practice of many vegetable farmers to fetch high price. Objectively defined activity of most NGOs/CBOs is transfer of off-season vegetable production technologies to small, rural poor farmers through hands-on field practices. Although critical, yet timely intensive care and management practices are required, the vegetables that are produced in off-season pay a lot more to raise a rural poor economically better. But market demand must be considered adequately for easy disposal.

Table 8. Net profit ('000 Rs. per ropani) from some vegetables grown in off-season

Vegetables	Expenditure	Gross income	Net profit
Cauliflower	3	25	22
Tomato	3	20	17
Bell pepper	4	25	21
Cucumber	3	25	22
Carrot	3	15	12

Source: TN Shrestha. 2060. Off-season vegetable technology.

Spices: Large cardamom and ginger are the most important exportable spice crops of this country. Due to their assured export market and good returns, farmers are being attracted towards their commercial farming. Farmers of Illam have experience of getting income of Rs. 6,000 to Rs. 10,000 from one ropani in case of cardamom. The income from ginger is given in the table 9.

Table 9. Income/profit ('000 Rs. /ropani) from ginger in Salyan

Ginger	Expenditure	Gross income	Net profit
Fresh	112.0	170.0	58.0
Processed	163.6	235.6	72.0

(Source: MDD, 2056).

Coffee: Coffee being a new crop to Nepal, it has established itself as an exportable commodity during its short period of development. Due to assured market of quality organic coffee, farmers of Nepal, especially from mid-hills of Western Development Region, are being involved in its commercial production. Since even a small land holders can grow coffee in their marginal lands and can earn over Rs.30,000 from one ropani of land coffee farming can contribute in poverty reduction.

Organic farming: For sustainability of soil fertility status and quality products that are free from chemical pesticides the organic agriculture has been stressed in agricultural production systems lately. Although APP does not focus programs and activities related to organic agriculture, consumers demand organically grown vegetables and other agri-products. Based on the season and type of produce available the price of organic products exceeds that of non-organic products and it ranges from 20% to over 100%. Therefore, growing of organic vegetables (and also fruits & spices) means more income generating activities in horticulture. However, there are production constraints as well as inadequate marketing channels along with lack of appropriate infrastructures for organic farming.

INTEGRATION OF INCOME GENERATION WITH POVERTY REDUCTION

Horticulture is a major provocation of Nepalese farmers for getting a higher net returns as compared to cereals. Two potential national calls today are to raise the rural economy and to meet the basic needs of urban and rural poor to alleviate poverty. Compared to cereals crops, the income of a farmer can be raised from 4 to 10 times or even more by growing horticultural species (Agricultural Practices and Crop Budget Survey of Rapti Project, 1997). This indicates that horticultural activities play a vital role to uplift rural economy thereby reducing poverty in this country. Presented here are some successful cases that help to integrate income generation with poverty reduction.

Case #1. Khushi Ram Gurung, a field technician of IAAS Horticulture Department, was interviewed regarding the success of his **nursery business** at Rampur during Paush 2060. He started with a small nursery enterprise in one and a half katha of land in 2047. The sale of fruit saplings and other nursery plants increased from 2050; as a result he expanded the nursery area from one and a half katha to four katha. On an average, the annual net income is Rs. 80,000. This earning helped him not only to raise his children, but also he could use the savings to construct his permanent house as well as to support his son's education in Kathmandu University.

Case # 2. Production of **cut flowers** (gladiolus, roses, gerbera, tuberose, chrysanthemum, marigold, etc.) is a highly paying activity to generate more income. If the production site is near to the market centers or city areas, cut flowers are disposed easily and quickly, but at a higher price. Tapashya, Mallika, and Aadhar nurseries in Bharatpur earn over 4 to 5 lakhs every year mainly from cut flowers. **Mangalpur Banana Farm** has made a net profit of Rs. 171,250.0 from 18 Katha land by growing and selling cut flowers.

Case # 3. Organic farmers of Gamcha VDC of Bhaktapur grow vegetables, spices, condiments, etc. The area under these crops ranges from 4 anas to 16 anas. The monthly average income from selling of organic produce ranges from Rs. 2400 to Rs. 5000 per ropani but depends on season, crop variety, consumer demand, etc. The poor farmers use this income for purchasing food, clothing, medicine, transport expenses as well as supporting school fee of their children.

Case # 4. Kaule VDC of Nuwakot district is most important pocket area for **strawberry production**. JAITI Nepal has introduced production technology of strawberry and helped farmers giving this technology. Ram Kumar Shrestha has 1350 strawberry plants which gives him annual income of Rs. 20 thousand when sold timely. He uses the money to buy the basic minimum needs and to cover children's school fee.

Case # 5. Banana growers have been excited for the benefit they receive from banana cultivation. Income generation through improved banana cultivation in western hills of Nepal indicated that it generated a net income of Rs. 1,78,430/ha (Joshi et al. 2004). AEC (1997) also reported Rs. 142.5 thousands net income per hectare from banana production in Kailali-Kanchanpur. Recently, the increased acreage under banana cultivation in Nawalparasi and Chitwan gives an example that denotes the potentiality of banana as a source of income generation.

Case # 6. FDD has identified 7 priority districts for growing **pineapple**, which generates a handsome amount of income. Sharada Prasad Subedi of Shivanagar – 7, Chitwan grows pineapples and earns income at the rate of Rs. 80 to 100 thousands per bigha. He is confident upon pineapple cultivation as an alternative solution to generate incomes for the rural poor.

Case # 7. Lapsi processing enterprises are getting popularity in Kathmandu Valley due to high income from this business. The owner of Sharda Lapsi Candy Udhog of Sokhel Bhanjayang, Seti Devi VDC of Kathmandu was interviewed. He produce 10 ton lapsi candy every year. His net income is Rs.. 110 thousands per year.

Before starting this enterprise he has small tea stall in the village. With the start of **Candy business** started creating a permanent wealth i.e. being of land and selling them at higher rates; now he has established himself as a rich person of the village. And, he started tourism business as a multiplier effect of the candy business.

Case # 8. The farmers of Dhanding Besi are much more benefited from the vegetable cultivation because of easy accessibility to Kathmandu valley markets. The main **off-season vegetables** grown by the farmers of this area are zukini, cucumber, bottle gourd, bitter gourd, brinjal, french bean, snake gourd, etc. From this pocket area it is estimated that farmers produce off-season vegetables worth of Rs. 5.8 millions during the year 2054/55; Rs. 7.9 millions in 2055/56. From this pocket area farmers earn Rs. 13 millions annually from seasonal and off-season vegetable production alone.

CONCLUSION

In the context of Nepal it has been successfully demonstrated, practically proven that different horticultural enterprises can generate sizable income through a piece of land and also by value addition to the product. The income generated through this sector directly or indirectly can contribute to the HMG's poverty alleviation campaign. Realizing this fact to address the poverty reduction issues through the income generation from horticultural entrepreneurship the following conclusions and recommendation have been drawn.

- Based on ecological condition and local environments, a specific horticultural income generating activity (s) must be defined and accordingly specific guidelines be developed.
- Technically feasible, financially viable, profitable production scheme should be made available to the small and big farmers/groups/entrepreneurs.
- Diversification of the horticultural products based on the market demand should be encouraged and incorporated in the government programs.
- Private entrepreneurs should be encouraged for contract/leasehold farming of horticultural crops.
- Small farmers should be encouraged for cooperative farming specially by consolidating their small holding sizes.
- To make the horticultural commodity/product more competitive, (a) a low cost technology must be developed to minimize the cost of production and (b) post harvest technology package must be developed for quality improvement, maintenance and value addition.
- Success stories of farmers/entrepreneurs should be documented properly and disseminated through Agricultural Communications Systems to motivate and attract especially poor farmers and unemployed people.

REFERENCES

- AEC. 1997. A case study of Banana production in Kailali-Kanchanpur. AgroEnterprise Center (AEC), Teku, Kathmandu.
- APROSC and JMA. 1995. Nepal Agriculture Perspective Plan (APP). National Planning Commission, Kathmandu, Nepal.
- BPRC. 2003 2060. (Pramukh Byabashaik Tarakari Utpadan Kshetraharuko Utpadaktwa adyayan). Report of Business Promotion and Research Center (BPRC) submitted to Vegetable Development Directorate (HMG), Khumaltar.
- EASD. 2054. Cost of production of some agricultural crops. Economic Analysis and Marketing Division (EASD), Harihar Bhawan, Pulchowk.
- Joshi, K.R., T.B. Karki and J.N. Chaudhary. 2004. Income generation through improved banana cultivation in western hills of Nepal. Paper presented at the 4th National Conference on Science and Technology, Ronast, March 23-26, 2004.
- Koirala, G.P. 2003. Costs and prices of coffee: An analysis. Proc. of the interactive workshop on sustainable coffee production and marketing 2003:35-42.
- MDD. 2056. A study on ginger and cardamom marketing in Nepal. Marketing Development Division (MDD), Harihar Bhawan, Pulchowk.
- NPC.2003. The Tenth Plan: Poverty reduction strategy paper, 2002 – 2007. National Planning Commission (NPC), Kathmandu, Nepal.
- Shah, S.P. 2000. Present status and future potentiality of vegetable production and marketing systems in Dhading district. Paper presented at One Day Mini Workshop on UPAD vegetable production and marketing in Kathmandu and Pokhara valleys, Aug. 11, 2000. Organized by Green Energy Mission, Nepal with IDRC Regional Office, India.