The Economic Journal of Nepal, Vol. 25, No. 4 October-December, 2002 (Issue No. 100) © CEDECON-TU

Off-Seasonal Vegetables Production by Drip Irrigation System in Palpa District

*Ram Bahadur Kala**

Abstract

Off-seasonal vegetable production plays a major role to improve living standard of local people as well as economic position of the country. In Palpa district, farmers have practiced off-seasonal vegetable production by drip irrigation system because of high water scarcity. They are practicing vegetable farming by drip method in a smaller size of land for consumption both for household level and marketing of surplus vegetables in urban areas for additional income. In the district, 860 household farmers of 31 VDCs and single Municipality have been practicing off-seasonal vegetable farming under 215 ropani of land by drip irrigation method in dry season. To reduce the cost of vegetables, it is needed to increase the cultivated area and Agro-vet center in rural areas of Palpa district. Moreover, group marketing concept and road access is needed to solve marketing problem and alternative water resources should be taken for more off-seasonal vegetable production.

1. Introduction

The term 'vegetable' is usually used to designate the tender edible shoots, leaves, fruits and roots of plants that are eaten whole or in part, raw or cooked, as a supplement to starchy foods and meats (William,1991). Vegetable production is called olericulture. Olericulture covers the cultivation of all of the vegetables and also such crops as melons and rhubarb, which are customarily grown in vegetable gardens. Because most vegetables are cultivated outdoors, most vegetable growers work in field vegetable production. However, in some areas of the country vegetables are grown in greenhouses (Rice, 1980). Most vegetables are served with the entree or main dish of a meal but some are used for desert and for salads. The culinary herbs are usually included among the vegetables. All the plants are herbaceous (Work, 1997).

* Mr. Kala is Assistant Lecturer at Department of Geography, Tribhuvan Multiple Campus, Tansen, Palpa.

Human population growth is the result of increase in food production (Brown, 1972). The population of the world is increasing rapidly with annual growth rate of 1.4 per cent (UNFPA, 1997). So, population growth, in tern, generated pressure on vegetable production. The use of vegetable as food supplement has increased greatly during the past few decades. Farmers are cultivating vegetables on the basis of primitive techniques. But, now, to supply the vegetable needs man has brought more and more land under cultivation and that has been used in modern techniques. Vegetable production plays a major role to improve economic position of the country. Farmer and others can easily improve their balance diet and their living standard by growing more vegetables.

In Nepal, there is a great possibility of growing a large number of vegetable crops because of the availability of a wide range of agro-climatic and topographical conditions. This diverse agro-ecological zones favour the successful cultivation of different vegetables in Nepal. In the hilly region, production of off-season vegetable has a great scope because of micro climatic variation. These vegetables can be marketed in urban areas, Terai and also exported to India. Now a days, very specific technology are introduced to produce vegetables in off-season in all the climatic zones. There is high demand of vegetables in urban areas and consumption habit of the rural people is also increasing day by day. As a result, fresh vegetable production is increasing rapidly every year.

The drip irrigation has assumed considerable importance in recent years in view of the greater need for economy in water. In drip method, water is distributed by a network of tubing to each plant directly, near the root system daily or on alternate days based on the exact water requirement of crops. Because, the water is delivered through a network of pipes, near the root system in the form of droplets, the water losses during conveyance and seepage, evaporation etc. are not considerable. Besides, the water is not applied to the unwanted areas like inter spaces between the row and plants. Thus drip irrigation system affords greater saving in water. The other advantage of drip irrigation system includes, saving labour and time, increased yields, better quality of production, less weed growth, increased fertilizer efficiency, possibility of fertilizer and pesticide application through irrigation water, reduce incidence of foliar pests.

Drip irrigation method can be applied for vegetable production on the off-season where water scarcity is high. In Palpa district, farmer and others have practiced off-seasonal vegetable production by drip irrigation method with the technical support of International Development Enterprises (IDE), Nepal. Specially, IDE, Nepal has supported for two sectors i.e., training and marketing. These are visit and tours, capacity building, production technology, plant protection, resource person development, output and input marketing and so on. However, the present article attempts to analyze the off-seasonal vegetable production by drip irrigation system in Palpa district.

2. Study Area

Palpa district is located in the north-eastern part of Lumbini Zone in Western Development Region of Nepal. The geographical location of areas lies between 83° 14' to 84° 05' east longitude

and 27° 40' to 28° 00' north latitude. The district is bounded by Gulmi, Syanjha and Tanahun in the north and from west, south and east by Arghakhanchi, Rupandehi and Nawalparasi, respectively. The altitude of this district ranges from 200 m. to 2000 m. above the mean sea level. The district has monsoon type of climate. The mean annual temperature of the district is 23° C. and the mean annual minimum and maximum temperature is 3.7° C. and 35° C., respectively. The district covers an area of 136593 hector and population of 267873 (Male 124559, Female 143314) in 2001. The growth rate of population is 1.25% and average density is 1.96 person per hector in 2001. The total household number is 50226 and average household size is 5.3 in the district (Preliminary Results of Population Census, 2001). Intensive subsistence farming is the main characteristics of the district. In the district 57172 hector land is cultivated (District profile, 2057). The study covers 31 VDC and single municipality out of 65 VDC of the Palpa district.

3. Importance of Vegetables

Vegetables are considered as one of the cheapest sources of vitamins and minerals. The human body needs carbohydrate, fat, protein, vitamins and minerals which are easily found in almost all vegetables. Growing vegetables, in the field, makes the healthy environment which provides indirect benefit on human health. Deficiency of calories, proteins, vitamins and minerals causes malnutrition, which is problem in developing countries. In other to overcome this problem, a regular consumption of fresh vegetables in optimum quantities is needed. Vegetables are considered as one of the valuable and profitable cash crops as compared to other cereal crops. Analysis of production cost of vegetable shows that the vegetables gives a higher total return. In Nepal, vegetables are found to be 5 to 10 times more profitable than cereals in normal season and even more profitable in off-season. So, local farmers can improve their economic position by growing more vegetables.

4. Number of Households, VDCs and Area covered by Drip Irrigation

In Palpa district, 860 household farmers of 31 VDCs and single municipality have been practicing vegetable farming by drip irrigation method in dry season. They have produced vegetables as a kitchen garden. So, only 215 ropani of land is cultivated for vegetable production. Number of the households and area covered by drip irrigation system in different VDCs of Palpa district is presented in table 1 as below:

The largest number of households with drip irrigation is in Chirtungdhara VDC (Table 1). There are 157 households who are producing off-seasonal vegetable production by drip irrigation method. The area covered by it becomes 39.25 ropani. Then, households of Tansen Municipality and Darlam Danda VDC also have got more cultivation in producing vegetables with the drip irrigation system. The areas that they cover are 21 and 17.75 ropani, respectively. In Khanigaun, Dobhan and Jhadewa VDC, only one household in each apply this method to have vegetable production.

Table 1. Number of Households and Area Covered by Drip Irrigation in Different VDCs of Palpa District

SN.	VDCs/ Municipality	Number of Households	Area (Ropani)	SN.	VDCs/ Municipality	Households	Area (Ropani)
1	Kaseni	24	6.00	17	Madanpokhara	25	6.25
2	Bhairabsthan	27	6.75	18	Pipal Danda	32	8.00
3	Khasauli	40	10.00	19	Timure	5	1.25
4	Deurali	39	9.75	20	Khaliban	2	0.50
5	Palung Mainadi	17	4.25	21	Rampur	34	8.50
6	Mojhung	3	0.75	22	Darchha	11	2.75
7	Rupse	30	7.50	23	Khanigaun	1	0.25
8	Tansen Municipality	84	21.00	24	Dhobhan	1	0.25
9	Chirtungdhara	157	39.25	25	Jhadewa	1	0.25
10	Nayarnamtales	41	10.25	26	Bhuwan Pokhara	2	0.50
11	Darlam Danda	71	17.75	27	Boogha Pokharathok	14	3.50
12	Pokharathok	22	5.50	28	Tanhu	17	4.25
13	Yamgha	24	6.00	29	Heklang	15	3.75
14	Chidipani	36	9.00	30	Birkot	28	7.00
15	Chappani	10	2.50	31	Siluwa	15	3.75
16	Argali	10	2.50	32	Humin	22	5.50
	Total					860	215

Source: Palpa District Office of IDE, Nepal, 2002.

5. Vegetable Production by Drip Irrigation System

In Palpa district, due to high water scarcity, local farmers are practicing off- seasonal vegetable production by drip irrigation method. They are growing vegetables such as cauliflower, cabbage, cucumber, bottle gourd, sponge gourd and bitter gourd by drip irrigation. Out of this, tomato, rayo, radish, bean, chilly, okra, brinjal, carrot, onion etc. are also produced successfully in dry season. Vegetable are grown two times (Aug. /Sep. to Dec. / Jan, Dec./Jan. to May./Jun.) in a year by drip irrigation. They produce vegetables as a kitchen garden. This type of vegetable farming is done in a smaller size of land with the purpose of consuming vegetables within household level and surplus vegetable is marketed to urban areas and within the villages for additional income. Production of important vegetable by drip irrigation system in the district is presented in table 2.

Table 2. Production of Important Vegetables by Drip Irrigation System in Palpa District

Year	Area (Ropani)	Off-seasonal Vegetable Production in Kg.						Cost Benefit
		Cauli flower	Cabbage	Cucumber	Bottle gourd	Bitter gourd	Sponge gourd	
1998/1999	39.75	3101	4651	3485	2047	2047	6141	2.00
1999/2000	88.75	10147	15220	97406	2041	4030	7305	2.90
2000/2001	160.00	20468	30703	184217	10234	20469	36843	3.76
2001/2002	215.00	25149	37723	247078	26006	13003	26006	3.86

Source: Palpa District Office of IDE, Nepal, 2002.

Table 2 shows that the various vegetables are produced under 215 ropani of land in 2001 /2002. The area is increasing for vegetable production in each year. Cucumber and cabbage are produced in a large scale in successfully. The production of cucumber, cabbage, bottle gourd, sponge gourd, cauliflower and bitter gourd are 247078 Kg., 37723Kg., 26006 Kg., 26006 Kg., 25149 Kg. and 13003 Kg. in 2001/2002 , respectively. The cost benefit ratio of vegetable production is 3.86 in 2001/2002. Same table shows that the cost benefit ratio of vegetable production is increasing in each year in the district.

6. Conclusion

In the past, many farmers were producing vegetables in small land area on the basis of their traditional and indigenous knowledge without drip irrigation in the district. But, now a days, they are cultivating off-seasonal vegetable by drip irrigation because of high water scarcity. They have practiced vegetable farming as a kitchen garden following the same method. This type of vegetable farming is done in a smaller size of land with the purpose of consumption of vegetable within household level and surplus vegetable is marketed to urban areas and within the villages for additional income. In the district, 860 household farmers of 31 VDCs and single Municipality have been practicing off-seasonal vegetable farming under 215 ropani of land by drip irrigation method in dry season. The largest number of household is in Chirtungdhara VDC. There are 157 households who are producing off-seasonal vegetable by drip irrigation method. The area covered by it becomes 39.25 ropani. They are growing off-seasonal vegetables such as cauliflower, cabbage, cucumber, bottle gourd, bitter gourd and sponge gourd in a large scale by drip irrigation method which was produced 25149 kg., 37723 kg., 247078 kg., 26006 kg., 13003 kg. and 26006 kg. in 2001/2002, respectively. Out of this, tomato, radish, bean, chilly, okra, brinjal, carrot, onion etc. are also produced successfully. The cost benefit ratio of vegetable production is 3.86 in 2001/2002. In the district, farmers are growing vegetables on the small area of land because water resource is not sufficient for drip also. Local farmers have got marketing problem of vegetable because unit cost of local production is higher than Terain production. It is needed to increase cultivated area and Agrovet

center in rural areas of the district for more vegetable production. Moreover, alternative water resources should be taken into consideration. The place of group marketing concept and road access is of immense significance to solving marketing problem.

References

Barooah, S. (1993). *Vegetable Growing in India*. Kalyani Publishers, New Delhi.

Local Governance Program (LGP), Ministry of Local Development (MLD) (2001). *Rural Infrastructure Technical Manual*, Lalitpur.

Rice, L.W. and R.P. Rice (1980). *Practical Horticulture: A Guide to Growing Indoor and Outdoor Plants*. United States of America.

Williams, C.N. (1991). *Vegetable Production in the Tropics*. Longman Group U.K. Limited, England.

Work, Paul (1997). *Vegetable Production and Marketing*. Biotech Books, Delhi.