

RAINASTAR IRRIGATION PROJECT AND ITS IMPACT ON PADDY CULTIVATION IN CHAKRATIRTHA VILLAGE DEVELOPMENT COMMITTEE LAMJUNG DISTRICT, NEPAL

Netra Prasad Dhital

Reader, Mahendra Ratna Campus, Tahachal, T.U. Nepal

Abstract

Present paper has been focused on the changing aspects of paddy cultivation of Chakratirtha VDC, Lamjung district after the implementation of Rainastar Irrigation Project (RIP). The RIP is confined in 7 wards of the VDC, where only 3 and 4 wards are not covered. The study of changing scenario of paddy cultivation after the completion of RIP has been mainly based on the primary data. The study has found that various crops such as paddy, maize and millet were grown almost equally in the study area before the availability of irrigation facility. Due to the availability of irrigation facility, the crop production has been moved towards paddy cultivation. Paddy has become the most important crop for consumption and income. Before irrigation project only 204 ha lands was occupied for paddy production whereas after the construction of the Project it was extended to 340 ha land.

Key Words: Irrigation, paddy, crop patterns, consumption, households, availability,

INTRODUCTION

Nepal is predominantly an agrarian country. More than 70 percent of the economically active populations (15 to 59 Years) is primarily engaged in this sector. It has a significant contribution to domestic economy as 32 percent of GDP is derived from this sector (MoF, 2013). Besides this, it is the source of raw materials for agro-based industries and main source of employment especially in the rural and Tarai areas. Thus, agriculture is considered as the backbone of economy of the country, irrigation is one of the major inputs of agriculture. It plays a very important role in agricultural development. It provides an opportunity for the large quantity of agriculture production on the limited land. Irrigation is one of the major invariable components for agricultural development (The World Bank, 1996).

Nepalese government has emphasized the development of irrigation to raise the agricultural productivity from the very beginning of its planned development (NPC, 1992). But the situation has not been changed much even after 57 years of planned development efforts (Poudel and Sharma, 2012). Rain fall is unevenly distributed according to area and time. More than 80 percent of the total rainfall occurred in three months rainy season (June-August) and remaining 20 percent during the other nine months. This has hampered the growth of agricultural sector. In this context, it has been essential to emphasis on irrigation development to increase agricultural production from the limited land.

The sources for irrigation are abundant in Nepal because of the presence of perennial rivers (Sharma, 1982). The irrigation facilities are available in various forms such as canal, well, tube-well, lift and so on. Among them, the canal irrigation is a main developed irrigation system in the Tarai and in the flat land. There are some notable irrigation projects such as Chitwan Irrigation Project, the Narayani Irrigation Project, the Ramghatar-Handetar Project, the Bagmati Irrigation Project, the Kamala Irrigation Project and so on constructed by the Government of Nepal in the past decades with a purpose to fulfill the needs of agriculture production. The RIP located in Lamjung district, is one of the major Irrigation Projects which was completed in 2001. From the Project, 1150 ha of land has been irrigated in the eastern part of Lamjung district.

A few decades ago Nepal used to export food grain but now-a-days, the situation is just opposite. Although it is considered as an agrarian country at present Nepal heavily imports food grains. Different factors are responsible for the situation. The major factors are the rapid population growth, low growth rate of agricultural production and productivity of land. There is very less provision of irrigation facility. This shows that most of the productive land has still to rely on rainfall on the one hand, while on the other hand the available irrigation facility has not been properly utilized due to the lack of proper knowledge. People have not been sufficiently able to raise their crop production. They are still unknown about the multi-cropping system. As a result, they have not been sufficiently able to scale up their

socio-economic status. Considering this contextual reality regarding the agriculture sector development the present study has tried to examine the changing aspects of paddy cultivation of Chakratirtha VDC of Lamjung district after the completion of the RIP including its impacts on socio-economic condition of the people by changing trend of production and productivity of paddy after the implementation of the Irrigation Project.

METHODS AND MATERIALS

The study based on primary data. However, the relevant secondary data and information, which are scattered forms, were also collected for the study. HH Survey and field observation was used. Out of total 967 households, only 116 households were taken into survey by random sample. They represent 12 percent of the total. The information collected from primary and secondary sources, was tabulated and analyzed.

Chakratirtha VDC is located in the eastern part of Nepal Lamjung District. Geographically, it lies between 84° 07'-84°32' east and 28°05'-28°07' north. The total area of the VDC is 14.3 sq. km. Chakratirtha VDC is located in the mid hill region but it has flat 'Tar' area. The Chape River lies in the Southern part,

Sailitar and Dhamilikuwa VDC lie in the eastern and western part of the VDC. Besides this, it is bounded in north by great historical place Raginass Kot.

AREA UNDER CROP PRODUCTION

Food grain is the major crop in the study area before and after irrigation. Several types of crops such as, paddy, maize, millet, wheat are grown there,. Among these crops, paddy is the most important for production and consumption. The area of the major crops production is shown in table 1.

Table 1 shows that before the provision of irrigation facility, the total area of paddy cultivation was 204 ha (52.8%) whereas this figure has been increased to 156 ha (75.9%) in 2013. Due to the availability of Irrigation facility, the cultivation area of the crops like maize, wheat, millet, and others seems to have decreased.

Now, this diversion of the crops pattern towards paddy shows that it has become the major and most profitable crop for that locality. It also shows the net change crop production after the irrigation facility. The area under paddy cultivation has been increased by 76.4 % whereas other crops like maize, wheat, millet and others seems to have decreased by 51.4 %, 35.4%, 16.0 % and 22.7 %, respectively.

Table 1: Area of Crops Production (2001-2013)

2001AD Irrigation (ha)	Percentage	Crops	2012AD Irrigation (ha)	Percentage	Net Area Change	
					Area ha	Percentage
204	52.84	paddy	360	75.89	156	76.39
81	20.94	Maize	39	8.29	-42	-51.37
50	12.95	Wheat	32	6.81	-18	-35.38
42	10.76	Millet	35	7.30	-7	-16.00
10	2.49	Others	8	1.68	-2	-6.80
337	100	Total	474	100	87	22.7

Source: Field Survey, 2013

CROP PRODUCTION

The quantity of crop production was diversified before the operation of RIP. People have been found to produce several crops such as paddy, maize, wheat, millet etc. and they could not produce

sufficient crops. Table 2 shows the crop production before and after the construction of the project.

Table 2: Crop Production (2001-2012)

Production 2001 (Qntl)	Percentage	Crops	2012 (Qntl)	Percentage	Net Change	
					Production	Percentage
3182	55.75	Paddy	6975	75.28	3793	101.19
1500	26.28	Maize	1200	12.95	-300	-20
300	5.25	Wheat	400	4.31	100	33.33
650	11.38	Millet	600	6.47	-50	-7.69
75	1.31	Others	90	0.97	15	20
5707	100.00	Total	9265	1000.00	3558	62.34

Source: Field Survey, 2013

Table 2 shows that before the irrigation facility, total paddy production was 3182 (55.75%) quintals where as this figure have increased to 6975 (75.28%) quintals after the irrigation facility. Change in cropping pattern has given a learning position to paddy, especially due to the irrigation facility. The production of other crops like maize, wheat, millet seems to have decreased. The total crop production in the study area was 5707 quintals before the irrigation facility, whereas, this figure has increased to 9265 quintals in 2012. The table also shows the net change in the production.

AREA UNDER PADDY PRODUCTION

Irrigation has played a crucial role in increasing the production in the cultivated area. Especially,

paddy is such a crop which gives low productivity without proper irrigation. Before irrigation paddy production was dependent on the monsoon. Only a small area was irrigated by very small irrigation canals (*Kulos*).

Table 3 shows the ward-wise paddy cultivates on area before and after the irrigation facility. The total paddy cultivated area in ward 1, 2, 5, 6, 7, 8 and 9 was 28, 17, 36, 31, 16, 42 and 34 ha before the irrigation facility. This area of crop production has been changed to 47, 33, 60, 54, 32, 69 and 65 ha in 2012. The table also shows the ward-wise net change in the production area. The area under paddy cultivation has increased by 75.8 %, 97.2%, 64.5%, 69.7%, 100.9%, 63.6% and 89.3% in ward number 1, 2, 5, 6, 7, 8 and 9 respectively.

Table 3: Paddy Production Area (2001-2012)

Paddy cultivated in 2001 (ha)	Ward No.	Paddy cultivate area (2012) (ha)	Net Area Change	
			Area	Percentage
28	1	47	19	75.82
17	2	33	16	97.20
36	5	60	24	64.58
31	6	54	23	69.70
16	7	32	16	100.00
42	8	69	27	63.38
34	9	65	31	89.34
204	Total	360	156	76.39

Source: Field Survey, 2013

PADDY PRODUCTION AMONG FARMERS' GROUP

On the basis of income and land farmers are divided into three classes, small, medium and big. This classification is based on the criteria given by ADB\ Nepal. The table 4 shows the position of paddy production among different farmer groups.

Table 4 shows that small farmers produced 1.2 quintal per ha before the irrigation facility. The average paddy productions of medium farmers were found greater than the other two groups. These groups of farmers were neither poor nor rich.

They had taken part in paddy cultivation seriously and did not face any problems of labor. They have owned limited amount of land. Their per capita input of labor was higher than the big farmers. The small farmers were facing several problems including day to day livelihood. It was found that small farmer do hard labor and make their living easier. Those farmers also go to work in other's farm for extra income when they became free from their own farm. The big farmers have a good arable land, thus they do not give enough input for the production of paddy. They give land to other farmers on a share crop basis. As a result they get lesser production of their land than those of the medium farmers.

Table 4: Paddy Production among Different Farmer Groups (2001-2012)

2001		Farmer Group	2011	
Production Qntl\ha	Percent of Paddy cultivation		Production Qntl\ha	Percent of Paddy cultivation
1.2	25	Small Farmers	1.2	32
2.1	34	Medium Farmers	2.4	31
1.8	41	Big Farmers	1.9	37
	100	Total		100

Source: Field Survey, 2013

FERTILIZER

Fertilizer is the most important component. Table 5 shows the types of fertilizers used by the farmers.

Table 5: Use of Fertilizer (2001-2012)

2001	% of HHs	Types of Fertilizer	2012	% of HHs
75	64.65	Compost	60	51.72
5	4.3	Chemical	5	4.31
36	31.03	Both	51	43.96
116	100.00	Total	116	100.00

Source: Field Survey, 2013

Table 5 shows that before the availability of irrigation facility, 75 (64.65%) households have been found to use compost fertilizer whereas, after the irrigation this figure has changed to 60 (51.72%) households. In the same way 5 (4.3%) households have been found to use chemical fertilizer and 36 (31.03%) households used both before the availability of irrigation whereas, this figure has changed to 5 (4.31%), 51 (43.96%) after the availability of irrigation facility.

of equipment used before and after the availability of irrigation. Here, traditional equipment means traditional spade, hoe, etc. Where as modern equipment means, ironed plough, modern spade, hoe tractor, etc.

Table 6: Use of Equipment (2001-2013)

2001	Percent	Types of Equipment	2012	Percent
105	90.51	Traditional	100	86.20
11	9.49	Modern	16	13.79
116	100.00	Total	116	100.00

Source: Field Survey, 2013

Table 6 shows that before the availability of irrigation facility, 105 (90.51%) households have been found to use traditional equipment and 11 (9.49%) households used modern equipment. But after the irrigation facility, this figure have been changed to 100 (86.20%) and 16 (13.79%) households respectively.

PRODUCTION SUFFICIENCY

EQUIPMENT

Equipment means agriculture inputs which are on the process of production. Table 6 shows the types

RIP has a positive impact on farmers because of increased production. Table 7 shows the production sufficiency status before and after the availability of the irrigation facility.

Table 7: Production Sufficiency Status (2001-2012)

2001	% of HHs	Sufficiency Condition (in monthly)	2012	% of HHs
15	12.93	≥ 3	11	9.48
30	25.86	3-6	14	12.06
50	43.20	6-9	55	47.43
21	18.10	9-12 >	36	31.03
116	100.00	Total	116	100.00

Source: Field Survey, 2013

Table 7 shows that before the availability of irrigation facility, 15 (12.93%) households belonged to less or equal to 3 months production sufficiency class, 30 (25.86%) households 3 to 6 months production sufficiency class, 50 (43.20%) households 6 to 9 months production sufficiency class and 21 (18.10%) households 9 to 12 months production sufficiency or surplus class. This figure has changed to 11 (9.48%), 14 (12.06%), 55 (47.43%), 36 (31.03%) households after the availability of irrigation facility. This figure also shows that the availability of irrigation has significantly improved the production sufficiency status of the households in the study area.

CONCLUSION

Irrigation practice on agriculture development is not a recent phenomenon in Nepal. It has been practiced from ancient time. Traditional method of irrigation was practiced but gradually new technology has

been adopted. In the study area, socio-economic impact of the program has been observed from the change in agricultural inputs, production sufficiency status, change in income distribution etc. In the study area, various crops such as paddy maize, millet etc used to grow almost equally before the availability of irrigation facility. Due to the availability of irrigation facility, the crop production has been moved towards paddy cultivation as a staple food crop. In the same way after the irrigation project the socio-economic condition of the study area changed for the betterment. Positive change has been seen in income distribution pattern, agricultural input and production sufficiency status.

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