

A Note on Food Grain Productivity Trend in Karjanha Village of Siraha District

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INTRODUCTION

Agriculture is the most important sector in the Nepalese economy. At present agriculture is contributing 42 percent of its national income and out of the country's total export consists 40 percent agricultural products. It is the main source of national employment and raw materials to the agro-based industries, while 81.3 percent of the total population depends on agriculture for livelihood. The population in Nepal has increased by 2.1 percent per annum and in the terai region population growth rate is 2.76 percent. There is a deficit of food grain for consumption due to the slow growth rate of food grain compared to the population growth rate.

Food grain production predominates in the cropping pattern. More than 75 percent of the cultivated land has been used for growing food grain in the terai and also in the country as a whole. But the productivity has remained low due to poor agricultural husbandry, limited technical knowledge and dearth of productive resource. The structure of Nepal's agriculture is predominately small size and small farmers are suffering from low productivity.

Lots of the hard efforts have been undertaken in the past to develop the agriculture but the growth rate of agricultural productivity has not been satisfactory. The present study attempts to evaluate the food grains productivity trend in Karjanha village of Siraha district.

OBJECTIVES OF THE STUDY

The main objective of the study is to find out the food grain productivity trend in irrigated land of the Karjanha Village in the terai region. This is an attempt to analyse the production environment of the village, land use pattern, cropping pattern trend on cultivated land and productivity trend of food grain crops, the problems faced by farmers in the village and recommend some solutions to solve the agricultural problems.

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METHODOLOGY

The study is fully based on primary data obtained from Karjanha village by asking direct question to the farmers of this village. Out of the 50 sample farmers 30 percent was taken among the farmers with own land, 50 percent was taken among the tenants and 20 percent was taken from the school teachers who are also engaged in farming in their own land.

Questionnaire was designed to collect relevant information regarding the Food Grain productivity, cropping pattern and land use pattern in the Karjanha village. Purposive random sampling was used to collect data. The main purpose to select the village for the study was that most of the land of the village is irrigated. Time series data are also generated by asking direct question about productivity to the respondents.

VILLAGE BACKGROUND

Karjanha village of Karjanha VDC of Siraha district is at about 30 km. north-west from the district head quarter, Siraha. This village is about 1 hour walk from Bastipur. Bastipur is a place on the way of east-west highway. This village has a total area of 1,333 hectares with 600 families settlement and the total population of this village is 5000. Karjanha village has been settled by Sundi, Pawan, Yadav and hill migrants. There is one high school and one police station in the village. A small market has been developed in the village to market daily necessity. A hat bazaar has also been organized twice a week at the market place. There are three rice mills and one small ice factory in the village.

The production environment is a mix of both rainfed and irrigated agriculture. The highest amount of rainfall occur in the month of Shrawan followed by Bhadra, Ashwin and Ashadha. There is no rainfall in the month of Kartik, Mansir, Paush and Chaitra. A majority of the cultivated land is irrigated by Kamala canal. Among the food-grains paddy is grown in majority of the land. The second popular Food Grain is wheat, Maize is cultivated only for home consumption.

PRODUCTIVITY TREND

The productivity trend of food grain crops and trend in land use pattern and cropping pattern on cultivated land are shown in table 1,2,3, and can be seen that the cultivated land has increased from 50 percent in F/Y 1950/51 to 75 percent in 1970/71 but the percentage is constant upto now. Barren land declined due to the growing population which turned the barren land into cultivated land gradually. About 75 percent land in the village is irrigated from Kamala canal. The land for house/roads/garden remain the same from 1951 to 1993 A.D.

Table 1
Land Use Pattern

F/Y/Land Area	Land Area		
	Cultivated in Percentage	Barren in Percentage	House/Roads/Garden in Percentage
1050/51	50.0	25.0	25
1957/58	50.0	25.0	25
1963/64	62.5	12.5	25
1967/68	62.5	12.5	25
1970/71	75.0	—	25
1978/79	75.0	—	25
1986/87	75.0	—	25
1992/93	75.0	—	25

Source : Direct Personal Interview by the Author with Rural Farmers.

CROPPING PATTERN

The cropping pattern of this village has changed drastically during 1950/51 to 1991/92 period.

Table 2
Cropping Pattern

F/Y(A.D)	Cultivated Area Covered in Percentage				
	Bhadaiyadhan	Aghanidhan	Bikasedhan	Wheat	Maize
1950/51	25	50	—	—	25
1957/58	25	50	—	—	25
1963/64	25	50	—	—	25
1973/74	25	50	—	—	25
1982/83	25	50	—	—	25
1983/84	6.25	25	75	25	6.25
1989/90	6.25	12.5	87.5	25	6.25
1991/92	6.25	12.5	87.5	25	6.25

Source : Direct Personal Interview by the Author with Rural Farmers.

Cropping pattern trend in the cultivated land indicates a considerable change in the area under cultivation of different crops. The majority of the cultivated area has been used for paddy cultivation. Two crops of paddy have been cultivated upto 1983 A.D. and Bikase Dhan (early reaping paddy) was not introduced. But now a days, because of the increased demand of Food Grain, farmers have started the cultivation of Bikase Dhan. The villagers became able to increase the cropping intensity after the introduction of maturing varieties of paddy. In this village upto 1983 A.D. Aghani Dhan was not transplanted in the land, where Bhadaiya (summer paddy) and maize were planted. After the

introduction of Kamala canal in the village in 1984 A.D., the cultivation of Bikase Dhan and wheat were started, and the cultivation of Bhadaiya and maize have decreased because of much more profit in the cultivation of tobacco. After harvesting Bhadaiya and maize, farmers are transplanting Aghani Dhan, main season paddy, and from 1984 A.D., the cultivated area under Aghani Dhan decreased and the area under Bikase Dhan increased. Wheat is cultivated after harvesting paddy.

Farmers transplant Bhadaiya in Jestha and Ashadha and in Bhadra Bhadaiya Dhan is harvested. Aghani local Dhan is transplanted in Ashadh and Shrawan while it is harvested in Mansir and Paush. Bikase Dhan is transplanted in Ashadh and harvested in the last of Kartik and in the early Mansir. Wheat is sowing in Mansir and Paush while harvesting in Chaitra and Baishakh. Maize is sowing in Jesth and Ashadh while harvesting in the last of Bhadra.

PRODUCTIVITY TREND OF PADDY, WHEAT AND MAIZE

Due to Kamala canal there has been 25 percent increase in the growth of Bhadaiya and Aghani local Dhan (Table 3). Irrigation facilities started from Kamala canal from 1984 A.D. in this village. Bikase Dhan and wheat were started after the introduction of Kamala canal in the village. Because of much more profit in the cultivation of tobacco, cultivation of maize is ignored.

Table 3
Productivity Trend of Paddy, Wheat and Maize

F/Y (A.D)	Bhadaiya	Aghani Local	Bikase	Wheat	Maize
1953/654	1.2 Mt.	1.8 Mt.	—	—	0.76 Mt.
1963/64	1.2 Mt.	1.8 Mt.	—	—	0.76 Mt.
1973/74	1.2 Mt.	1.8 Mt.	—	—	0.76
1983/84	1.8 Mt.	2.4 Mt.	3.0 Mt.	0.6 Mt.	0.76 Mt.
1990/92	18 Mt.	2.4 Mt.	3.0 Mt.	0.6 Mt.	0.76 Mt.
1990/92	1.8 Mt.	3.0 Mt.	3.6 Mt.	0.72 Mt.	0.72 Mt.

Source : Direct Interview by the Author with Rural Farmers.

The trend in productivity of the Bhadaiya Dhan has been increasing since 1984 A.D., The reason being the irrigation facilities available from Kamala canal. The total production has been increasing because of high yield per unit of land.

The area under Aghani Dhan has been in declining trend since 1984 A.D., while its productivity is increasing because of the irrigation from Kamala canal. In the earlier years, only local varieties used to be grown. In local varieties Dudharaj, Dolan, Harinker, Jaswa, Dhusari and Basmati were in use.

Bikase Dhan was introduced since 1984 A.D. In Bikase Dhan mainly Mansuli is used. The productivity of Bikase Dhan has been increasing because of the irrigation facilities and use of chemical fertilizers. On an average the productivity of paddy is high in this village compared to Nepal as a whole.

Wheat was introduced in the village since 1984 A.D. In wheat Sonarakalayan of the Bikase variety is used. The productivity of the wheat has been increasing because of the irrigation facility and use of chemical fertilizers per hectare but still it is less than the average productivity of Nepal as a whole.

Cultivation of maize is as old as the cultivation of paddy. Local variety of maize is grown in this village. There is no significant difference in the average yield of maize. The productivity of maize in this village is also low compared to the average productivity of Nepal as a whole.

PROBLEMS FACED BY FARMERS

The farmers of the Karjanha village complained about the mismanagement of Kamala canal. They neither get water from the canal in time nor do they get chemical fertilizers and improved varieties of seed easily in time. J.T. and J.T.A. are not available in the village specially in the time of cultivation. Farmers do not get proper price for their product because of the transport problem specially in rainy season, however, the village has marketing facilities compared to other neighbouring village except in rainy season. They do not get agricultural loan from the government institution easily.

SOLUTIONS SUGGESTED BY FARMERS

Farmers of this village suggested that there should be a Sajha institution in the village to provide chemical fertilizer and improved variety of seeds. Agricultural loan should be available in cultivation time at low interest rate. Government should construct the road from Siraha to this village. J.T. and J.T.A. should live in the village to provide agricultural services to the farmers. Government should give special attention to develop agriculture of this area.

CONCLUSION

This particular village of Siraha district is highly populated. This village is economically sound because of increasing productivity trend of paddy. Seventy Five percent of the cultivated area of this village is irrigated from Kamala canal. Paddy is the main crop in this village. Productivity of paddy is increasing by 25 percent, but the situation is not the same for this district and the nation as a whole. Productivity trend in

the nation is low because only 21 percent of the total cultivable land in the country is irrigated.

SELECTED REFERENCES

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Book Review

Sowerwine, Jennifer, et al. (eds.) (1994) *From Farmer's Fields to Data Fields and Back*, International Irrigation Management Institute and Institute of Agriculture and Animal Science, Rampur, Nepal, pp.242+v, price not mentioned.

The book under review is an outcome of a week long professional workshop on Participatory Information System for Irrigation and Other Resources: A Synthesis of Participatory Information System.

The book combines the papers covering the irrigation, forestry, natural resource management, participatory rural appraisal, rapid rural appraisal, geographic information system, inventory, database, design, field research, farmer organization and local resource users. Thus the book contains a treasure of knowledge particularly in the context of limited literature available in the field of extracting information from villages and villagers through rapid rural appraisals by development professionals which has been often seen as a useful adjunct to farmer participation.

The phrase *farmer participation* has been with us now for nearly two decades. For much of this time, it has referred mostly to farmer participation in government projects. The emphasis has been on farmer participation in mobilizing local resources including labour and providing local knowledge and sometimes on farmer participation in the decision making process. In this context farmer participation in resource development projects has improved the local suitability, social accountability and quality of many development efforts. This has been most apparent in agricultural, irrigation, and forestry programmes which the book forwards with empirical evidence in developing countries, especially from India and Nepal.

The book is divided in seven chapters with eighteen papers, dealing the subject matter ranging from rapid and participatory rural appraisal, inventory technique for resource information, geographic information system (GIS) participatory rural appraisal (PRA) and other information system, and combination methods of data collection.

Perhaps rural change in Asia has been more rapid than the change in development concepts or approaches. Rural people are seen today more as the primary force in development and management of natural resources. Management of forest and irrigation is increasingly turned over to rural people, the emphasis is becoming more one of rights to resources, strong local institutions, direct access to information and marketing channels. Governments and NGOs are less often implementors and more often providers of support services. Local resource users

groups are increasingly federating demands on resources at the level of the resource base, such as, watershed river basin or quifer.

New information system, such as participatory rural appraisals, resource inventories, and geographic information system, have emerged to support this shift toward a more locally driven orientation toward development. Participatory rural appraisals have broadened the earlier emphasis on information extraction by outsiders, to joint planning and awareness raising for villagers and outsiders. In Nepal, resource inventories at the level of the river basin are starting to be both conducted and used by farmers for developing their own institution and development activities. It is in this set up Gerald J. Gill introduces rapid rural appraisal (RRA) , the antecedent of participatory rural appraisal (PRA) as a walk through an area with informed local persons treating local population as equal parties in the process of identifying problems and potential solution, rather than as mere data sources.

In India the past few years have witnessed a growing movement towards people's involvement in the restoration and management of natural resources. Today, several participatory projects are running, each aiming to build up rural people's capacities to be effective partners in the development and management of natural resources . Extremely useful blow by blow account of this picture is provided by James Mascaren in the book. Similarly Donald A. Messersmidt and A.C. Hammelt have concentrated on he use of RRA/PRA methods in the area of indigenous forest management system and provide an excellent example of how such techniques can quickly yield meaningful results in terms of identifying challenges and opportunities in the area in question, particularly in the realm of what are conventionally called *minor forest product* but which are frequently far from minor in Nepal in the role they play in the livelihood systems of poor rural people .

RRA, PRA and GIS techniques vary in their strength and ability to capture, spatial, cross-sectional and temporal variability of a resource base, and to interlink the biophysical and socioeconomic dimensions of the resource. Thus the inventory technique is used to generate resource information both at local and macro level which is strong in quantitative investigation. In this connection Elinor Ostron, Paul Benjamin and Ganesh Shivakoti have dealt beautifully the use of case studies and structural coding in a rational database for storage and analysis of collected and investigated of resource information with example of irrigation institutions and systems in Nepal and Wai Eung Lam. Myunagsuk Lee, Elnor Ostron, Ashutosh Shukla, Kishor Gajurel B.N. Acharya, and K. V. Raju provide analysis presenting the outcome of the same database when put to institutional analysis to evaluate the interlinkage between physical attributes, governance and performance taking the example of irrigation systems.

Geographic data stored in a computer in GIS format, have the ability to link graphic features with their associated attributes. This has been dealt scholarly by Indra Sharan Karki and Olivia Aubriot with figures, illustrating and featuring IDS link digital map with the database table describing properties, phenomena and concept of integrating information systems.

Lastly, Elinor Ostrom, Samceul Joseph and Ujjial Pradhan draw serious attention on multiple methods of data collection for understanding how farmers organized themselves, while Joseph shares his experience in use of satellite imaginary GIS and PRA technique, who is not as enthusiastic about the potentials for GIS given the costs and needed sophistication, Pradhan explores the complexities of obtaining data about water rights which are drawn on customary law that has characteristics of invisible to outsiders, negotiated locally, dynamic and adapted to deal with stress.

Book ends up with field visit reports from Kathar, Badgaon and Surtana irrigation systems in Chitwan district, Nepal, and thought provoking analysis by Douglas L. Vermillion on: Toward a more Participatory Frame Work for Information Systems in Natural Resource Development: Where do we go next? The author here correctly points that whole agriculture extension in Africa, South and South East Asia has occurred in top down manner, not permitting the incorporation of local knowledge into the development process and farmers' knowledge was discredited by development professionals and not incorporated into the development process. Lastly, he strongly favours incorporation of local knowledge in developmental programmes implementation as it is most important for resource poor farmer families who are struggling but surviving.

The book is very useful for all the development planners and policy makers and is worth reading for all.

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