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Potentials and Problems of Agricultural Development in Dhading District

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Abstract

The cereal crops, cash crops and pulses are mainly grown in Dhading district owing to variations in topography and climate. Cereal crops are most dominant crops in the district in terms of area under cultivation and production. Cereal crops account for 93 percent of the cultivated land and 78 percent of the total crop production. In this context, this paper tried to analyze potentials and problems of agriculture development in Dhading District. To the end, the study purposively selected six settlements from total 216 settlements located around Thopal Khola drainage basin of central Dhading. Three factors (i.e. distance from the district headquarter, different forms of transportation which affect in different ways on the agricultural transformation and terrain, such as river valley and ridge area providing different base to agricultural development) were taken into consideration while selecting those settlements. Primary data were collected from 132 farm households, ranging from 20 households from small villages to 24 households from large villages. The study found that farmers were well aware about their concern with return against the investment from agricultural crops, which are yet determined more by natural factors than infrasturcture and facilities. Therefore, the agricultural development policies and programmers require mitigating adverse impacts of natural factors by providing and strengthening the facilities and services such as irrigation, road access, service centres, supply of agricultural inputs, market demand links, etc, ensuring their long term impacts.

Key words: Agriculture development, Dhading, farmer, land holding, problems,perisable and high value products.

The Background

Dhading district (27°40' to 28°17' North Latitude and 84°35' to 85°17' East Longitude) lies in the central hilly region of Nepal. This district covers an area of 1925 km^2, making up 20 percent of the total area of Bagmati zone. This district has total population of 336,250 with population density of 175 persons per square kilometre (CBS, 2011).Agriculture is the predominant activity in Dhading district. Nearly 90 percent of the economically active population is engaged in agriculture, or agriculture related activities. In Dhading district, cultivated land constitutes 35,300 hactares of land, accounting for 24 percent of the total land, and of these, wetland (Khet) contains 37 percent and the remaining 63 percent fall under dry land (Bari). The landownership pattern of the farmland is that 91 percent of the total farmland is owned

by land owner and six percent of the farmers are tenant holders and 3 percent of the farmers have rented out some pieces of land to others (Pathak, 1992).The distribution of farmland among the landholding farmers is much skewed. The fact is that small farmers with farmland one hactare and below accounts for 68 percent of the total landholding farmers. 30 percent of the total farmers own more than one hactare of farmland. Two percent of the households fall under landless class (DDP, 1990). A wide variety of crops are grown in this district owing to variations in topography and climate. Crops grown in this district are broadly divided into three groups. These include cereal crops, cash crops and pulses. Cereal crops are most dominant crops in the district in terms of area under cultivation and production. Cereal crops account for 93 percent of the cultivated land and 78 percent of the total crop production. Cereal crops are followed by cash crops and pulses respectively (DADO, 2005)

Statement of the Problems

There is a great variation in altitude in Dhading district ranging from 300m above sea level at Jogimara in South West Dhading to 7100 mat Pabil Himal in the northern Dhading yielding varied topographic features including tars, flat land and gently sloping land, river valleys, basin etc. It is estimated that there is 48,136 hactares of land which is cultivable in this district. At present, 35,300 hactores (73%) of land is under cultivation. There is possibility of increasing cultivated land in this district (DADO, 2005).Although this district has been gifted with permanent sources of water, their utilization for irrigation is quite negligible (APROSC, 1978). The lowland basins and tars of Trishuli, Budhigandaki, Ankhu, Thopal etc. Possess very fertile soil. However, the larger parts of these basins and tars are deprived of irrigation facility. The data available from irrigation Office Dhading shows that nearly 43 percent of the land is irrigated. Among them, only one fourth parts has irrigation facility all the year round. If assured irrigation is made available high value and high yield providing crops such as vegetables, paddy etc. can be grown three times a year in the valleys, basins, tars, low-lying terrace land of this district. Similarly, agricultural intensity and productivity can be increased. There is found a great differences in agricultural productivity between irrigated and unirrigated land (DADO, 2004/05).

Agricultural potentiality of an area is highly guided by accessibility and marketing facility. Accessible area has many opportunities to expand agricultural activities on a commercial basis. Modernisation and commercialisation of agriculture can be done if any place has easy access to market centre. This district has more access to not only local market centres but also to cities of Kathmandu valley, Pokhara, Narayangadh and other cities of terai region of Nepal. Prithvi Rajmarga and Tribhuvan Rajpath are two major highways which run through southern and South eastern part of this district. These two major highways connect several market centres within district and many other cities of Nepal including cities of Kathmandu vally (Pathak, 2010).

Research Objectives

- To explore the Potentiality of agricultural development in the district.
- To identify the problems of agricultural development in the district.

Research Methodology

Thopal Khola drainage basin of central Dhading was selected for the present study. This basin contains 216 settlements. Among them, six settlements were chosen. Three factors were taken into consideration while choosing these settlements. They are: (a) distance from the district headquarters

(b) different forms of transportation which affect in different ways on the agricultural transformation, and (c), terrain, such as river valley and ridge area providing different base to agricultural development. By employing these factors, six settlements were selected in such a way that these selected villages could represent all the villages in the study area. Altogether 132 farm households were selected from six settlements ranging from 20 households from small villages to 24 households from large villages (see in table 1).

Table 1. ***Characteristics of Sample Settlements***

Settlements	HHs	Terrain	Elevation (m)	Distanc from District Headquarters (Km)	Road Access
Tallo Besi	23	Valley	500-600	2	Close to metalled road
Sasahatar	24	Valley	500-600	6	along metalled road
Bairani	20	Valley	500-600	10	along metalled road
Nigalpani	22	Ridge	1200-1300	14	along gravelled road
Dhamalagaun	22	Ridge	1100-1200	18	fair weather road
Bahunganu	21	Ridge	900-1000	22	Main Trail
Total	**132**				

(Field Survey, 2015).

Three types of survey were conducted for collecting data. They are: sample farmer survey, key informant survey and public service delivery survey. Similarly, inventory sheets had been designed and used to record locational attributes of each settlement selected for the present study. Secondary data were gathered from concerned offices at the district level. Besides this, documents and data published by CBS were consulted and used. Toposheets and other related maps were also used. The processing of the survey data was made by both computer and manually. The field survey data were processed through Microsoft excel computer program while the data obtained from secondary sources were processed manually.

Results: Potentiality of Agricultural Development

Agricultural potentiality of Dhading district can be assessed in terms of topography, climate, drainage, soil agricultural land, accessibility, market facility, existing infrastructural facilities relating to agricultural development such as irrigation, extension services, co-operative banks input supplying agencies. Agricultural potentiality can be explored through various actors such as farmers, senior citizens, social workers, political leaders. These persons are key information sources for exploring agricultural potentiality in the study area.

Farmers' Responses to Agricultural Development

Local farmers are important sources for an understanding of the potential of and constraints to the development of agriculture in any place. The information provided by them is very much important for the policy makers in order to identify the specific problems faced by the farmers and to address them. Information was collected from farmers by asking questions such as what changes they want to make in cropping pattern, in agricultural method, in agriculture intensity if irrigation was made

available for all their land easy transportation and incentive price for their produce were ensured (see in table 2).

Table 2. ***Expected Effects of Irrigation on Choices of Crops to be Grown***

Village	Crops				Total
	Paddy	Vegetables	Fruits	Other	
Tallo Besi	6	17	2	6	31
Sasahatar	1	20	3	5	29
Bairani	7	16	6	5	34
Nigalpani	2	14	8	4	28
Dhamalgaun	2	17	5	8	32
Bahungaun	0	18	2	8	28
Total	**18**	**102**	**26**	**36**	**182**
Percentage (%)	**9.89**	**56.04**	**14.29**	**19.78**	**100**

(Field Survey, 2015).

The farmers of the study area wanted to change the existing low value, low yield and traditional crops such as millet, upland paddy, wheat, pulses etc. by adopting high value, high yield and high return crops such as vegetables, fruits and paddy, if their water hungry land is supplied with irrigation facility. Table 2 reveals that 56 percent of the farmers in the study area wanted to grow vegetables, followed by fruits (14%), paddy (10%) and other (20%) respectively.

Cropping Intensity

There is possibility of increasing cropping intensity in the study area. At present, 46 and 43 percent of the farmers are growing three crops in a year in khet and in bari land in the same plot of land. Similarly, cropping intensity in khet land is 196 and in bariland 161 if assured irrigation made available farmers would want to grow three crops in 97 percent of their land yearly. In this way cropping intensity may reach nearly 290 percent (table 3).

Table 3. ***Cropping Intensity in Khet and in Bari land***

Village	Khet			Bari		
	Cultivated area (in ha)	Cropped area (in ha)	Cropping Intensity	Cultivated area (in ha)	Cropped area (in ha)	Cropping intensity
Tallo Besi	12.70	28.90	228	6.95	10.96	158
Sasahatar	9.52	18.44	194	13.99	16.64	119
Bairani	8.70	17.20	198	8.65	11.19	129
Nigalpani	11.81	18	152	14.91	26.05	175
Dhamalgaun	10.94	22.23	203	9.97	18.49	185
Bahungaun	12.26	24.60	201	8.91	18.44	207
Total	**65.93**	**129.46**	**196**	**63.38**	**101.8**	**161**

(Field Survey, 2015).

Cropping Method

They also wanted to change cropping method by adopting modern techniques and giving up traditional methods. 98 percent of the total farmers wanted to adopt modern techniques in growing high value and high yield crops such as vegetables, fruits, paddy etc.

Roads, Market Price and Cropping Pattern

High value and perishable crops are highly associated with easy availability of transportation and smooth movement of these products from farmers' field to market and incentive price of these products. If easy transportation systems are made available and incentive price is offered, farmers wanted to intensify and commercialize their farming activities. Table 4 reveals that 68 percent of the total respondents wanted to grow vegetables. Vegetable is followed by fruits (20%), paddy (5%) and others (7%).

Table 4. ***Number of Farmers Reporting Their Choices of Crops to be Grown***

Village	Crop				Total
	Paddy	Vegetable	Fruit	Others	
Tallo Besi	2	17	6	0	25
Sasahatar	1	11	3	7	22
Bairani	2	16	9	0	27
Nigalpani	0	16	3	2	21
Dhamalgaun	2	18	3	0	23
Bahungaun	0	14	3	0	17
Total	**7**	**92**	**27**	**9**	**135**
Percent	**5.18**	**68.15**	**20.00**	**6.67**	**100**

(Field Survey, 2015).

Major Problems Perceived by the Farmers for Agricultural Development

Irrigation: Irrigation is the basic input for increasing agricultural productivity by intensifying farming activities and bringing more cultivable land under cultivation and growing high value crops without taking much risk. But the field survey shows that lack of irrigation is one of the main reasons for not using high yield varieties of seeds and chemical fertilizer by non-adopters in the study area. As stated earlier, the farmers of the study area wanted to change existing low value and low yield providing traditional crops such as millet, upland paddy, pulses etc by adopting high value and profit providing crops such as vegetable, fruits etc if there is reliable, irrigation facility all the year round in their field.

Access to Market: High value and perishable crops are highly associated with easy availability of transportation and smooth movement of these products from farmers' field to market. Cropping pattern is changing more significantly along the road side and in areas closer to district headquarters and access to market. The field study shows that the farmers of Tallo Besi, which is closer to district headquarters, and Sasahatar and Bairani lying along road side, which has access to market, are growing vegetable, fruits, spring paddy for selling purpose. On the otherhand, the farmers of Dhamalagaun and Bahungaun

which have no access to market are still growing traditional crops such as millet, upland paddy and pulses for domestic consumption.

Agricultural Inputs: Timely and easy availability of agricultural inputs is another necessary condition to motivating farmers to using modern techniques and commercializing agricultural activities in the study area. The data gathered from field survey show that the farmers are facing several problems while adopting agricultural innovations. For example nearly 23 percent of the respondents stated that chemical fertilizer is not available on time. similarly, 19 percent of the farmers reported that chemical fertilizer is very expensive. Approximately 49 percent of the total sample farmers are not adopting high yielding varieties of seeds. The main reason for not adopting the high yielding varieties of seeds is lack of knowledge (40%), followed by lack of irrigation (18%), vulnerability to diseases (14%). Nearly 45 percent of the farmers are not using plant protection materials. The reason for not adopting the innovations are lack of knowledge (41%), lack of technical knowledge for using it properly (35%) and difficulty in identifying diseases on crop (22%).The farmers of the study area use traditional tools for ploughing and preparing their field. Modern tools have not been introduced in the study area.

Access to Credit: Credit availability is one incentive for farmer's adoption of new technology. The present researcher found that, one of the problems faced by farmers in using new technology is unavailability of credit on time and complex lending procedure. And Go-Down/ Cold Storage: Go-down/ Cold storage is also one of the important prerequisites for the development of agriculture. Lack of proper go-down/ cold storage compells farmers to sell their agricultural produce immediately after harvesting the crops at cheaper rates. There is no-go-down/ cold storage facilities in the study area.

Summary and Conclusions

The farmers of the study villages seem to be curious to replace the traditional crops such as millet, upland paddy wheat, and pusses with modern crops like vegetable, fruit and wetland spring paddy, if irrigation water is provided. Because according to them, the traditional crops have low value and low yield and therefore they prefer those modern crops due to high market value, high yield and high return. The first choice being the crops that would provide immediate return of money; about 56 percent farmers expressed to have crops like vegetables. Further, even if reliable transport systems and incentive market price were provided, vegetables have been the farmer first priority. These responses to adopt other crops appear to be comparably very low. The farmers are found well aware about their concern with return against the investment from agricultural crops, which are yet determined more by natural factors than infrasturcture and facilities. Therefore, the agricultural development policies and programmers require mitigating adverse impacts of natural factors by providing and strengthening the facilities and services such as irrigation, road access, service centres, supply of agricultural inputs, market demand links, etc, ensuring their long term impacts.

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