



ORGANIC CULTURE IN BHUTAN: A MICRO-LEVEL OBSERVATION OF RICE CULTIVATORS IN BHUTANESE VILLAGES OF DOUPSHARI GEWOG OF PARO

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ABSTRACT

Bhutan is the pioneer country, in incorporating the concept of sustainable development in the economic development policy of the country. As a national policy for sustainable agriculture in Bhutan, all the agriculture produce in Bhutan is going to be organic by 2020. This paper tries to see the present state, problems and prospects of organic culture in Bhutan by taking the case of rice farmers in villages of Douphari Gewog in Paro. We conduct a survey of 87 households using structured questionnaire to see present state, problems and prospects of organic culture. We use logistic regression to analyze the impact of adoption of organic culture on income and farm size.

KEYWORDS: Organic culture, problems of organic culture, Bhutan, sustainable agriculture.

INTRODUCTION

Organic farming is a holistic production management system based on basic principle of minimizing the use of external inputs like synthetic fertilizers and pesticides to ensure sustainability of agriculture. Organic agriculture finds reference only in one place under the chapter “Sustainable Agriculture”. The history and traditional knowledge of agriculture, particularly of remote communities, relating to organic farming, preservation and processing of food for nutritional and medicinal purposes is one of the oldest in the world. Concerted efforts are being made to pool, distill and evaluate traditional practices, knowledge and wisdom and to harness them for sustainable agricultural growth. The Organic farming system emphasis on the use of organic matter for enhancing soil properties, minimizing food chain associated health hazards and attaining closed nutrient cycles, the key factors for sustainable agriculture (Cardelli *et al.*, 2004). According to the International Federation of Organic Agriculture Movement (Willer *et al.*, 2008) the major objectives of organic farming include: (1) production of high quality food in sufficient quantity in harmony with natural systems and cycles, (2) enhancing biological cycles within the farming system involving microorganisms, soil flora and fauna, plants and animals, (3) maintaining long-term soil fertility and genetic diversity of the production system and its surroundings including plant and wildlife, (4) promoting healthy use with proper care of water resources and all life therein, (5) creating harmonious balance between crop production and animal husbandry, and (6) minimizing all forms of pollution. Bhutan’s new agriculture development strategy is developing organic farming as a way of life and become fully organic by 2020. Some of the factor that is going to facilitate is that Bhutan is free of any significant environmental pollution due to low usage of agro-chemicals and limited industrialization and, therefore, has a competitive advantage over most other countries in the region when it comes to organic farming. Again the

current farming system in Bhutan is still practicing still indigenous practices involving use of forest litter and farmyard manure. The paper tries to find out the problems, and prospect organic culture in a Douphari Gewog of Paro.

Bhutanese Agriculture

The Bhutanese economy is dominated by Agriculture, providing livelihood to about 69% of the total population. Bhutan has a large diverse biodiversity capable of producing a large variety of agricultural products across the different agro-economical zones. Agriculture has great implication on Bhutan’s food security, rural development, economic and political satiability besides being important for tradable commodities (Tobgay, 2005). Agriculture remains a large priority for Bhutan, and the government has already committed to attain national food self sufficiency since the 12th five year plan. A majority of the farmers depend directly on off-farm livelihood sources like forest produce, while the remaining migrates to towns and cities (Gaurdian, n.d). Due to small land holding and limited availability of cultivable land, poor soil quality coupled with low productivity, low cropping intensity, labour shortage in farms, wildlife problems and shift in the production of cereals for self consumption to production of cash crops, the food production does not meet the food requirements of the country therefore the yearly imports are on the rise to fill up the gap. Bhutan imports 30% of the cereals mainly rice, 75% of edible oil and 50% of pulses to meet its domestic requirements (MoA and WFP, Bhutan, 2005). The Rice is most consumed cereal crop in Bhutan, around 43% of land is use for the cultivation of Rice and one of the popular rice cultivation in Bhutan is Paro. Although farmer cultivates the rice, we import maximum quantity of rice from other country; it’s all because of following circumstances a). High price in Labor force, b).High Price for technology, c).Organic cash crop. According to The ultimate result of above issues has push to increase in the Price of Rice in Bhutan, so when the rate of rice is high, there will be increase in import of

rice from India and other country. Maximum farmers from Paro cultivate Rice and more than half of the yields are for self-consumption that is because share market is low. Ministry of Agriculture has frame a list of Dzongkhags, through where they can collect the Rice for export. The exporters are giving more important to Red Rice than any other rice because Bhutan's Red Rice is considered more organic than rice from countries like India, US Bangladesh, Cambodia, Indonesia.

METHODOLOGY

Using exploratory research design, in order to find out problems and prospect of organic cultivation in Doupshari geog of Paro. Using both secondary and primary data for answering our research problems. The Data were collected in September 2013 using a structure questionnaire in the Doupshari Geog of Paro. The sample size is 87 farmers across Doupshari Geog. The inferential statistics used is logistic regression and Chi-square. Author considers organic farming as dependent variables and 1 for those who say yes otherwise 0. We have two

independent variables income and Land use. SPSS version 10 is used to find descriptive, Logistic regression and Chi-square for the study.

RESULTS & DISCUSSIONS

The results from Table 1 has revealed that nearly two third of the respondents (63.2%) are females, thus fit the general situation found in Statistical Handbook of Bhutan 2011 page no. 55. Agriculture sector is predominantly for illiterate rural women and contribution by this sector on GDP is decreasing from 28.2% in 2001 to 19% in 2010 (Kuensel, 14 may 2014). Regarding the educational profile 45.8% of the respondents were illiterate and 24.2 % of them were studied up to primary and 30 % of them were studied up to class 8. Regarding Income, majority of the respondents (89.7%) of them are earning less than fifty thousand ngultrum. The age of the respondents was mostly seniors with a mean of 47.93 years and standard deviation of 14.16 years. Average land holding were found to around 2.061 acres which is very less than the national average of national average of 2.5.

TABLE 1: Respondent profile

Variables	Attributes	Scores (%)	Statistics
Gender	Male	36.8	
	female	63.2	
Education	illiterate	45.8	
	Primary	24.2	
	Class eight	30	
Income (Nu. K=1000)	Below 50K	89.7	
	50K-100K	8	
	100K-200K	2.3	
Age(years)	Less than 30	14.9	Mean 47.93
	30-40	22.1	Sd. 14.16
	40-50	22.8	
	50-60	23	
	60-70	11.5	
	70 and more	5.7	
Area Own (in Acres)	Less than 1	27.6	Mean 2.061
	1-5	69	S.D=1.438
	5 and more	3.4	
Actual area used in cultivation (Acres)	Less than 1		Mean=1.66609
	1-5	56.8	S.D=1.92844
	5 and more	1.2	

(Source: Survey)

Organic Culture

Bhutan has traditionally practiced organic agriculture, but the process of modernization, particularly the adoption of scientific technologies in the seventies, has led to the increased use of chemicals. Recently the farmers are encouraging to adopt for organic culture because of the importance of organic food, both from health and economic perspective. Our finding from Doupshari Gewog is that out of 87 farmers, 41.4% are practicing organic

farming for the cultivation of rice and regarding their intend to adopt organic farming, 58.6% of the respondent had express their strong desire to adopt this methods (Details please see Table 2). One important aspect of the organic farming is that income and organic farming is significantly negative related whereas size of farming area and practice of organic farming are negatively related but not significant (See table No 3,4,5,6).

TABLE 2: organic farmer in Paro

Sl. No	Variable	Yes	No
1	Do you practice organic farming	41.4	58.6
2	Do you plan to adopt organic farming in future	58.6	41.4

(Source: Survey) Income and organic culture

TABLE 3: Model Summary for relation between organic farming and Income

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	114.345	.041	.056

(Source: SPSS 11)

TABLE 4: Logistic regression result for organic culture and Income

	B	S.E.	Wald	df	Sig.	Exp(B)
INCOME	-1.126	.650	3.000	1	.083	.324
Constant	1.612	.751	4.610	1	.032	5.013

(Source: SPSS 11) significant at 10% INCOME

TABLE 5: Model Summary for relation between organic farming and Land use

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	114.865	.024	.032

(Source: SPSS 11)

TABLE 6: Logistic regression result for organic culture and Land use

Step 1(a)		B	S.E.	Wald	df	Sig.	Exp(B)
	LAND_US E	-.311	.222	1.963	1	.161	.732
	Constant	.850	.433	3.852	1	.050	2.339

(Source: SPSS 11)

Problems of Organic farming

Some of the problems the farmers in Bhutan are facing include labor shortage due to migration (Sharma P.K *et al.*, 2012), lack of finance, price discrimination at auction yard, lack of proper market (FOA, 2012), lack of transportation (Soman T., 2005), lack of necessary tools, lack of technical skills and Natural calamities like landslides, floods, wild animals, drought and forest fires *etc.* (NSB, 2012). Lack of adequate labor is one of the main issue, both for organic and non-organic farmers in Bhutan. This may be due to migration of youth to urban area for exploring further avenues, education and government job. The total numbers of 36 farmers who are doing organic farming, 17 have problems of finding adequate labour, whereas only 10 farmers who are not doing organic farming have problems of finding adequate labour. The chi square test shows that the problem of availability of labour is more severe for organic farmers (see Table 7). Only 13 of 36 farmers found that price discrimination in market as problems contrary to 23 out of 51 non- organic farmers and Chi-square test is

insignificant. Finance is one of the main hurdle for organic farmer as 21 out of 36 consider as a problems on the other hand 15 non-organic consider this as a problems, chi-square test found the problems to be significant. Several literatures have express marketing for organic product as a serious issue, as certification of products is beyond the reach of small farmers. This issue has been most serious issue as 30 out of 36 have express this as the most important problems they are facing. And chi square test also found significant. Similarly, transportation of the agriculture product, produce by the farmers involve huge expenses. Some farms are not motor able, so transportation involves huge human manual labour. 29 and 24 organic and non organic farmers respectively say that transportation as problems. Natural calamities are not significant. Lack of necessary tools and technical skills are also important problems of organic farmers which chi-square test also show significant. The preparation for sale on the farm or on the market also involves more labour on organic holdings (Bell W.B., 2008).

TABLE 7. Problems of Organic farming

Sl. No	Variables	1	2	3	4	Chi -square value	Sig. level
1	Lack of labor	17	10	19	41	7.519	.006
2	Price discrimination	13	12	23	39	1.631	.202
3	Lack of finance	21	13	15	38	9.562	.002
4	Lack of market	30	30	6	21	6.135	.045
5	Lack of Transportation	29	24	7	26	10.123	.006
6	Natural calamities problems	3	11	33	39	3.592	.166
7	Lack of necessary tools	26	16	10	34	14.311	.001
8	Lack of technical skills	31	28	5	22	9.554	.008

- 1: Those who have problems and doing organic cultivation
- 2: Those who have problems and not doing organic cultivation
- 3: Those who have no problems and doing organic cultivation
- 4: Those who have no problems and not doing organic cultivation.

CONCLUSION

For several years, scientific agriculture has been increasingly subject to strict environmental and animal welfare rules. This has meant the development of scientific approaches and methodologies, such as Integrated agriculture. The organic farming sector needs to see where it stands in relation to these new developments, and to consider the production rules it applies with a view to maintaining a specific identity clearly distinguished from conventional agriculture. Comparisons between scientific and organic farming are actually not on a comparable because input into organics is small compared to the former. Organic research tends to be more diffuse, farm-base participatory, drawing on local knowledge and tradition. It also focuses on public goods, resources and tools that are not readily patentable. The findings of this paper are 36 farmers out of 87 farmers are practicing organic farming methods, and further 17 more are ready to do in future. The recent government intervention like market linkage, farm road, micro- finance by BDBL, farmer groups etc. are positive steps for development of organic culture in Bhutan.

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