

Problems and prospects of Organic Farming in Samastipur district, Bihar, India

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Received : 12-04-2017 ; Revised : 20-04-2017 ; Accepted : 23-04-2017

ABSTRACT

Crop yields in Bihar, an Indian state, have been mostly stagnant in the last decades coupled with increased input costs, has led to reduced incomes and increased debts. There is an urgent need to study options to improve the sustainability of farming systems in the state which can lead to better livelihoods of the farmers. One of the strategies to stabilize agriculture in the state is possibly organic farming which is generally said to have less dependence on external inputs. Organic agriculture is one among the broad spectrum of production methods that are supportive of the environment. This study aims at examining the prospect of organic farming in a selected village of Bihar. For selection of district, block, village purposive sampling techniques was employed for selection of respondent. Out of 135 families, 100 farmers have been randomly selected from the village Srichandpur Kothia for the study. The data using appropriate statistical tools was analysed taking the support of the package SPSS (Ver. 19). The main issue identified was regarding the problems of certification. There is no facility for farmers for organic products certification and in absence of proper certification of their products farmers are not getting actual price of their produce. Also, the increased demand of food grains for the increasing population in the coming years would depend more on enhancing productivity through utilization of family labour and farm power per unit of land rather than expansion of area under cultivation which was mainly observed in the study. It can be concluded that organic farming can be a sustainable farming practice in Bihar depending on regional conditions and the crops cultivated. Policies stimulating organic farming and certification should therefore consider the farmer's preferences for sustainable livelihoods.

Keywords : Bihar, certification, organic farming, policy, problem

Increasing consciousness about conservation of environment as well as health hazards associated with agrochemicals and consumers' preference to safe and hazard-free food are the major factors that have led to the growing interest in alternate forms of agriculture in the world. Organic agriculture is one among the broad spectrum of production methods that are supportive of the environment.

Organic production systems are based on specific standards precisely formulated for food production and aim at achieving agro ecosystems, which are socially and ecologically sustainable. It is based on minimizing the use of external inputs through use of on-farm resources efficiently compared to industrial agriculture. Thus the use of synthetic fertilizers and pesticides is avoided. Organic manuring play a pivotal role in minimizing the ill effects of intensive agriculture that has resulted in many adverse effect on natural resources *i.e.*, decline in soil health, deficiency of major and micro nutrients and stagnation in yield (Viridi *et al.*, 2006). The three inter-linked components of the sustainability triangle are boosting yield, reducing production cost and improving soil health (Singh *et al.*, 2008).

Rising energy costs have doubled the cost of many farm inputs and routine farming operations in a year in the developed countries, and both fuel and natural gas

prices are projected to increase. Across the developing and developed countries alike, farmers are deeply worried over energy-driven increases in their production costs. In order to understand and explore the intricacies of organic farming over inorganic especially in case of potato, the present study was conducted to probe deeply into the enterprise associated with the organic farming. The present paper is based on a field based study to identify and analyse the problems and prospects of organic farming of potato in some selected areas of Samastipur district of Bihar. The study aims to help key players in the private and public sector to make informed decisions on whether to undergo farming through organic means. It covers the main issues related to production and marketing in case of potato. The specific aims of the study include documentation of socio-economic characteristic of organic farmers of selected area of Samastipur district; identification of constraints in the adoption of organic farming and to suggest possible interventions. In addition to define strategy options for the development of the specific export organic sector.

The scope of the study is limited to organic farming, where the results suggest that conversion to organic farming can improve livelihoods of smallholders, while protecting natural resources. Income loss due to reduced yields in initial years of transition, however, constitutes

a major hurdle, especially for poorer farmers (Eyhorn, 2007). It is thus important to support farmers in overcoming the obstacles of the conversion period from inorganic to organic farming.

MATERIALS AND METHODS

The study was conducted in the year 2013-2014 in a limited area engaged in organic farming in a village namely Srichandpur Kothia under Kothia Panchayat in the Samastipur district of Bihar, India. Entire investigation was based on the opinion expressed by the farmer themselves. Hence, the findings of the experiments can therefore be applicable only in such areas where similar type of conditions exists in respect of social, agro-economic factors and organic farming. Srichandpur Kothia village was under Kothia gram panchayat was selected purposively for study. The main reason behind the selection of Kothia village was due to on-going project on organic farming there. This village is also credited to be the first organic village of Bihar. Purposive as well as simple random techniques were adopted for the study. There are 135 families in the village Srichandpur Kothia which constitute the total population of the study. Out of 135 families, 100 farmers have been randomly selected for the study. The data using appropriate statistical tools was analysed taking the support of the package SPSS (Ver. 19).

RESULTS AND DISCUSSION

A profile provides for cross-sectional information of a situation. Socio-economic status refers to the position of an individual with reference to various indicators of social and economic condition in a rural community. The socio-economic status (SES) has four items; SES indexes are traditionally operationalized through measures characterizing parental educational levels, parental occupational prestige, and family wealth (Buchmann, 2002). The socio-economic status of selected respondent was calculated by adding the scores assigned to a category of each item.

Correlation coefficient between the dependent variables and independent variables

In the present study 25 independent variables (X₁ to X₂₅) have been correlated with six dependent variables Y₁ (yield of organic potato), Y₂ (yield of inorganic potato), Y₃ (profit of organic potato), Y₄ (profit of inorganic potato), Y₅ (input cost of organic potato), Y₆ (input cost of inorganic potato), to find out whether there are relationship between dependent and independent variables. This is presented in following tables.

In case of Y₁ (yield of organic potato), all the variables age (X₁), marital status(X₂), education (X₃),

family education status (X₄), family size (X₅), family type (X₆), house type (X₇), material possession (X₈), farm power (X₉), cropping intensity (X₁₀), farm size(X₁₁), family income(agril.)(X_{12a}), family income (non-agril.)(X_{12b}), no. of animals (X₁₃), cultural practices(X₁₄), problems of organic farming(X₁₅), certification (X₁₆), marketing (X₁₇), external agencies (X₁₈), consumer's responses(according to farmers) (X₁₉), adoption (X₂₀), attitude (X₂₁), quality (X₂₂), mass media exposure and social activity(X₂₃), training received (X₂₄) and problems in adoption (X₂₅) are found to be non-significant. This may be due to similar agricultural practices used by all farmers because the whole village is under project area and all the farmers trained by same external agency for organic farming resulting in little variation among the yield from organic farming.

Table 1: Socio-economic profile of selected respondents

Items	Category	Frequency	Percentage (%)
1 Marital status(X ₂)	Married	90	90
	Single	10	10
	Illiterate		
	Can read only	10	10
	Can read and write	2	2
	Primary	10	10
2 Education (X ₃)	Middle school	16	16
	High school	18	18
	Higher	22	22
	Secondary	11	11
	Graduate	4	4
	Post graduate	0	0
3 Family type(X ₆)	Nuclear	16	16
	Joint	84	84
	Homeless		
4 House type(X ₇)	Hut	0	0
	Kutchra (Non-concrete)	0	0
	Mixed	40	40
	Pucca (Concrete)	38	38

From table 2, it is found that the variables farm size (X₄) is having high positive significant correlation and adoption (X₂₀) is in positive significant correlation with yield of potato in inorganic farming (Y₂). It was found that farmers having higher land holding are getting more yield in case of inorganic farming because of better

cultivation technique along with less dependence on external inputs like chemical fertilizers.

The variables age (X_1), marital Status(X_2), education (X_3), family education status (X_4), family size (X_5), family type (X_6), house type (X_7), material possession (X_8), farm power (X_9), cropping intensity (X_{10}), farm size(X_{11}), family income(agril.)(X_{12a}), family income (non-agril.) (X_{12b}), no. of animals (X_{13}), cultural practices(X_{14}), problems of organic farming(X_{15}), certification (X_{16}), marketing (X_{17}), external agencies (X_{18}), consumer’s responses(according to farmers) (X_{19}), adoption (X_{20}), attitude (X_{21}), quality (X_{22}), mass media exposure and social activity(X_{23}), training received (X_{24}) and problems in adoption (X_{25}) are found to be non-significant.

Table 2: Correlation coefficient between yield [(inorganic) (Y_2)] and independent variables

Variables	Correlation coefficient (r)
	Y_2
(X_{11}) Farm size	0.21 **
(X_{20}) Adoption	0.18*
(X_7) House type	0.22**
(X_{25}) Problems in adoption	-0.19*
(X_{14}) Cultural practices	0.20 **
(X_{20}) Adoption leadership	-0.18*
(X_7) House type	-0.18*
(X_{17}) Marketing	0.17 *

Note: *Significant at 10% level of significance

**Significant at 5% level of significance

House type (X_7) is in positive significant correlation with net profit from organic farming of potato (Y_3). The variable Problems in adoption (X_{25}) is in negative significant correlation with Net profit from inorganic farming of potato (Y_4). It was seen that farmers having problems in adoption are fetching less profit in inorganic farming because poor agricultural practices. The variable cultural practice (X_{14}) is in positive significant correlation with total input cost of organic potato (Y_5) since cultural practices and removal of weeds with proper intercultural operations play a significant role in organic farming observed in the region. The results of our current study with the use of organic mulches are also in close conformity with the earlier findings of Das *et al.* (2016) in studying the effect of organic mulches on several parameters. The variable adoption leadership (X_{20}) is in negative significant correlation with the total input cost of organic potato (Y_5) since farmers are motivated

to adopt the organic cultivation practices after observing the results of the neighbouring farm. As such, leadership of a particular farmer seldom plays a major role. In this case, farmers adopting better agricultural practices are spending less on input cost of organic farming. At the same time farmers having poor adoption behaviour are spending high on input cost of organic farming. The results are in congruence with the findings of Sharma *et al.*, 2008 which says that the awareness about crop quality and soil health increased the attention of people towards organic farming. Also, the variable house type (X_7) is in negative significant correlation with total input cost of organic potato (Y_6). This is because small farmers are also motivated to adopt organic cultivation practices irrespective of the income of the household. All the respondents received same type, amount and support from a single government agency for implementing organic farming. The effects of maximum number of independent variables, therefore, came out as non-significant giving rise to the need for further analysis.

Table 3: Mean comparison of dependent variable before and after organic farming

Variables	Mean value	t value	Significance
	(q bigha ⁻¹)		
Y_1 (organic yield of potato)	110.15	22.16	P<0.01
Y_2 (inorganic yield of potato)	88.80		
Y_3 (profit from organic potato)	230.10	25.92	P<0.01
Y_4 (profit from inorganic potato)	180.20		
Y_5 (input cost of organic potato)	215.00	28.44	P<0.01
Y_6 (input cost of inorganic potato)	235.00		

Here, results shows that shifting from inorganic to organic has resulted significant increase to both potato yield and profit at 1 per cent level of significance. At the same time input cost has reduced significantly.

Constraints in adoption of organic farming

Several constraints were identified for non-adoption of organic farming in the study area. Among these, the constraints like high cost of organic inputs, insufficient market for organic products, low yield and little price advantage for organic product are found to be the major constraints. The other constraint identified is little consumer demand for organic products, inconvenience of using organic techniques, higher production risk, and unavailability of consolidated land suitable for organic

farming. In regard to the relative importance of different constraints, it is found that socio-economic constraints is the main hurdle followed by infrastructural, technological and situational in the process of adoption of organic farming.

Organic production is more labour-intensive than conventional production. On the one hand, this increased labour cost is one factor that makes organic food more expensive. On the other hand, the increased need for labour may be seen as an “employment dividend” of organic farming, providing more jobs per acre than conventional systems. Due to lack of human resources, substitute should be developed like development of machines and tools requiring less labour.

The present investigation after thoroughly scanning the report of the result come with the conclusion that acceleration of growth in agricultural production to meet the increased demand of food grains for the increasing population depends on adequate harnessing of the organic farming potential along with options of mulching which was found to improve the biological properties of soil leading to more production. Also, the potential of organic leadership has not been fully utilized in the villages, the extension mechanism should work to develop adequate organic clubs in the villages with proper information on the potential and limitations of organic farming. The research further indicated the absence of organic products certification in the village because of which the farmers are not getting actual price of their produce.

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