



## Organic farming: assessment of the perception of practicing tribal farmers in Jharkhand

BRIJESH PANDEY<sup>1</sup>, AJEET KUMAR SINGH<sup>2\*</sup>, NIDHI SINGH<sup>3</sup>, NEHA RAJAN<sup>2</sup>, ANJANI KUMAR<sup>4</sup>,  
RAVINDRA KUMAR SINGH<sup>2</sup> and KESHAVA<sup>5</sup>

*Divyayan Krishi Vigyan Kendra, Morabadi, Ranchi, Jharkhand 834 008, India*

Received: 28 November 2020; Accepted: 18 January 2022

### ABSTRACT

Organic farming aims to produce healthy and non-toxic food for consumers using natural inputs to eliminate any substance from farming system which is harmful to human as well as soil health. Organic farming is not a new concept but a traditional farming system with modern scientific techniques. Realizing the long-term positive impact of organic farming, Government of India is also promoting the organic farming on a large scale. In line with this, three villages of Angara block of Ranchi District have been developed as fully organic villages. To assess the general, attitudinal and control belief among tribal farmers towards organic farming, a study was conducted in two Participatory Guarantee System (PGS) certified villages namely Dhurleta and Budhakocha of Ranchi district in Jharkhand state during the year 2019–20. Data for the study was collected through personal interview of the tribal farmers practicing organic farming using structured interview schedule developed for the purpose. A total of 50 farmers (25 farmers from each village) selected through systematic random sampling method formed the sample of the study. Findings of the study showed that about 76.80% farmers believed that organic farming is good while 61% of the respondents had favourable attitudinal belief towards organic farming. Majority of the population agreed that disease, pest control, marketing and complexity in certification are the major setbacks in large scale adoption of organic farming.

**Keywords:** Attitudinal Belief, Control Belief, General Belief, Organic Farming

Moder agricultural technologies have led to surface and ground water contamination, increased incidence of pests and diseases, and loss of biodiversity due to injudicious use of synthetic chemical fertilizers as well as resources. Increased production costs, dependency on climatic variables and indebtedness are other problems faced by small and marginal farmers in India. All these issues developed a strong interest of farmers, researchers and policymakers in organic farming (Eyhorn *et al.* 2007).

Organic farming usually refers to a production system that insists on active agro-ecosystem management avoiding external inputs. Organic agriculture includes both certified and non-certified food systems. It is referred as a way of sustainable farming which focuses on producing healthy products and keeping soil, water and environment safe.

India has traditionally been a country of organic agriculture (Deshmukh and Babar 2015) and presently has world's largest number of organic producers (Das *et al.* 2020), but the growth of modern, scientific and input intensive agriculture to fulfil the food demand since the era of green revolution in country, has pushed it to the wall. Organic farming has gained worldwide acceptance due to environmental, economic and social concerns (Araujo *et al.* 2008). With the increasing awareness about health, long term sustainability of the system and accumulating evidences of being equally productive, organic farming has emerged as an alternative system of farming which ensures a debt free, profitable livelihood option. Local resources based organic farming may prove economically viable intervention in resource poor tribal areas.

KVK, Ranchi developed two fully organic villages namely Dhurleta and Burhakocha through Participatory Guarantee Systems Certification. Farmers of these villages had experience of both conventional and organic farming systems. Many studies focused on conversion behavior, attitude and problems towards adaption of organic farming in India. However, little research has been carried out to assess current scenario and future prospects of organic farming and its impact on practicing farmers. Therefore, the present study was undertaken with the objective to assess the

<sup>1</sup>Krishi Vigyan Kendra, Mahoba, Uttar Pradesh; <sup>2</sup>Divyayan Krishi Vigyan Kendra, Ranchi, Jharkhand; <sup>3</sup>Institute of Oriental Philosophy, Vrindavan, Mathura, Uttar Pradesh; <sup>4</sup>ICAR-Agriculture Technology Application Research Institute Zone IV, Patna, Bihar; <sup>5</sup>Division of Agricultural Extension, ICAR Headquarters, KAB-I, Pusa, New Delhi.\*Corresponding author email:singhajeet1978@gmail.com

general, attitudinal and control belief among tribal farmers practicing organic farming.

#### MATERIALS AND METHODS

The study was conducted during 2019–20 in two purposively selected villages of Ranchi district of Jharkhand namely Dhurleta and Burhakocha which have been developed as organic villages by Divyayan KVK, Ranchi. There are 29 and 43 farm families in Dhurleta and Burhakocha villages, respectively. A total of 50 farmers (25 farmers from each village), selected through systematic random sampling method, formed the sample of the study. A structured interview schedule developed for the purpose was used to collect data from the respondents. The interview schedule included questions on (i) demographic aspects, (ii) general perception regarding organic farming, (iii) attitude towards organic practices, and (iv) controlling factors for further expansion of organic farming.

The general belief and control belief of practicing farmers regarding organic farming was calculated by giving them choice of answering 'yes/no/do not know' on the questions in relevance of respective issues. The attitudinal belief was measured by using Likert's rating scale (Likert 1932). Each respondent was asked to indicate his/her extent of agreement or disagreements against each statement along five points i.e. strongly agree, agree, neutral, disagree and strongly disagree. Based on their answers, the respondents were classified into three categories (Salawat 2013, Ghosh

*et al.* 2019) i.e. unfavorable, moderately favorable and favorable attitudinal belief. Data were further screened to avoid inadvertent inclusion of incomplete data in the study. After preliminary screening, the data were used for further statistical analysis. Data analysis and interpretation was done using frequency count and percentage.

#### RESULTS AND DISCUSSION

*Demographic characteristics:* The general demographic characteristics of study area show that majority of the heads of farm families (60%) were male, whereas considerable numbers of farm families (40%) were headed by the women who take key decisions in the family. Most of the respondents were below 40 years of age (64%), and majority of them (70%) had pre-matriculation level schooling. Majority of the farm families (76%) were small having less than 5 members. About 54% of the respondents had more than 10 years of farming experiences and 80% of the total number of respondents were completely dependent on agriculture and allied activities for their livelihood with 92% of the respondents as marginal farmers.

*General belief towards organic farming:* Farmer's response to open-ended questions on general belief was very low, may be due to difficulties in framing the appropriate answers. Hence, farmers were given options to answer 'yes/no/do not know' on issues related to occupational choice, continuity, production, marketing and health benefits in organic farming (Table 1).

Table 1 General and control belief of farmers towards organic farming

Factor	Statement	Yes		No		Don't know	
		F	f%	F	f%	F	f%
General belief	Is organic farming only available option to you?	1	2	49	98	0	0
	Do you wish to continue organic farming for long time?	41	82	0	0	9	18
	Organic farming keeps soil healthy and maintains environmental integrity	45	90	1	2	4	8
	Low cost of critical inputs	50	100	0	0	0	0
	Low yield in organic farming	15	30	29	58	6	12
	Organic farming needs more labour	22	44	26	52	2	4
	Farmers have higher prices for organic produce	30	60	19	38	1	2
	Organic farmers have secure market for their product	38	76	10	20	2	4
	Organic produce are of better quality	36	72	8	16	6	12
Control belief	Health of organic farmers is better than that of conventional farmers	40	80	0	0	10	20
	Land availability is sufficient for livelihood only through organic farming	7	14	38	76	5	10
	Organic manures are equally effective for growing crops	26	52	13	26	11	22
	Organic disease and pest control methods are as effective as chemicals	0	0	46	92	4	8
	Accurate and timely information available regarding organic farming	23	46	21	42	6	12
	Presence of organized market for organic products nearby	0	0	46	92	4	8
	Do you get premium price for all organic products?	3	6	45	90	2	4
	Separate minimum support price for organic produce is required	39	78	0	0	11	22
	Efficient transport facility is available for organic produce	9	18	28	56	13	26
Proper storage facility is available for organic produce	0	0	40	80	10	20	
Certification process is easy to opt	5	10	43	86	7	14	

As depicted in Table 1, almost all the respondents (98%) had adopted organic farming as their own choice and not as compulsion and 82% practicing organic farmers are willing to continue it. Majority of farmers (90%) were of the view that organic farming-maintained soil health and environmental integrity. They believed organic farming practices helped in improving soil health of their field and did not have any adverse effect on farm, environment and their health which is in line with the conclusions of Das *et al.* (2020). Among the production related issues, all respondents agreed that organic farming involved low cost of critical inputs particularly through replacement of chemical fertilizers and pesticides, 58% of them believed that yield did not reduce in this system and 52% of them were of the opinion that it was not labour intensive.

The data on general belief regarding marketing of organic produce among practicing farmers showed that it fetched higher price and had secured market (60% and 76% of the respondents, respectively), as during interview they revealed that due to high demand of fresh organic produce in the market there is no issue of selling. However, they expressed the need of a dedicated platform for the sale of their organic produce or a government banner to assure return of higher prices always. Majority of the farmers (72%) were of the opinion that organic farming produced yield of better quality than conventional farming which had positive impact on their health. They believed that consumption of organic products helped in maintaining the health of the family members too. Similar observations were reported by Panneerselvam *et al.* (2012) and Stofferahn (2009). Computation of overall general belief was done by categorizing organic farmers' responses about different issues into positive, negative and neutral categories. Computed general belief among practicing organic farmers revealed that 76.80% were having positive perception, 17%

had negative perception and only 6.20% organic farmers had neutral perception regarding organic farming.

Most of the respondents were quite satisfied with the concept of organic farming as it helped them in increasing their agricultural income. Increasing awareness about health and environmental issues associated with the intensive use of chemical inputs has led an interest in alternate forms of agriculture in the world. They believed that organic farming is a profitable source of income. Similar findings were observed by Gosh *et al.* (2019) and Rana *et al.* (2017).

*Attitudinal Belief towards Organic Farming:* Data (Table 2) depicts nine Likert's rating scale statements used to measure the attitudinal belief of the respondents towards organic farming. Majority of the respondents believed that organic farming could increase their income ratio (80%, sum of agree and strongly agree) particularly through reduction in overall production cost (92%) due to use of locally available resources. Similar findings were recorded by Assis and Ismail (2011). About 46% practicing organic farmers felt that organic farming is troublesome to the farmers because it required more attention, whereas equal number of farmers did not consider it as troublesome.

Almost all farmers were of opinion that organic farming was effective in improving fertility of soil. Majority of practicing farmers believed that bulk organic matter requirement for organic farming was manageable (70%), may be due to easy availability of required raw material from forest area in and around these villages. Around 60% of them were of opinion that disease and pest management was possible in organic farming. Significant proportion of respondents did not agree with the statement like weed can be managed easily in organic farming (52%) and certification is easily affordable (54%) as almost all farmers of the study area were resource poor small and marginal farmers paying high fee of organic certification was very difficult for them.

Table 2 Attitudinal belief of practicing organic farmers

Statement	Strongly agree		Agree		Disagree		Strongly disagree		Not sure/neutral	
	F	f%	F	f%	F	f%	F	f%	F	f%
Organic farming can increase the income of farmers	24	48	16	32	01	02	00	00	09	18
Production cost of organic farming is comparatively lower than conventional farming	34	68	12	24	00	00	00	00	04	08
Organic farming is troublesome to the farmers because it needs more attention	11	22	12	24	21	42	02	04	05	10
Organic farming is effective in increasing the fertility of soil	28	56	17	34	00	00	00	00	05	10
Bulk organic matter requirement for organic farming is manageable	27	54	08	16	05	10	08	16	02	04
Disease and Pest management is possible in organic farming	23	46	07	14	12	24	04	08	04	08
Weeds can be managed easily in organic farming	17	34	02	04	11	22	15	30	05	10
Certification is easily affordable	03	06	02	04	09	18	18	36	18	36

Overall computation of attitudinal belief was recorded by separating the response in three categories i.e. unfavorable, moderately favorable and favorable; considering the nature of question. Majority of the respondents had favorable (61%) attitude towards organic farming while 13% had moderately favorable attitude and 26% had unfavorable attitude which is similar to the findings of Gosh *et al.* (2019) and Rana *et al.* (2017).

**Control belief towards organic farming:** Control belief regarding organic farming refers to the limitations or barriers which hinder growers in producing organic products as well as increasing the volume of production. The experience of organic farmers pertaining to production, marketing, institutional and environmental issues was investigated by predetermined questions to assess control belief (Table 1).

Being small and marginal farmers, 76% respondents felt that land available with them was not sufficient for sustaining livelihood only through organic farming. Majority of the practicing farmers (52%) felt that organic manures were equally effective for growing crops. Organic disease and pest control methods emerged as most important barrier among production related issues as 92% farmers were of the opinion that those methods were not as effective as chemicals, which is in some way contradictory to the farmers' opinion drawn in Table 1, which is mainly due to their experience that organic solutions are only effective when used regularly as precautionary measure which increases the labour cost also while chemical compounds have ability to control diseases even in the severe case. Being the owner of small land holdings, majority of the farmers felt the need of a dedicated organized marketing channel (92%) as marketing of their produce to potential distant market is always an issue due to comparatively higher transportation charges which ultimately affects assured premium prices (90%). They showed their opinion that separate market for organic products can generate greater opportunities of high returns. These two issues were felt to be important barriers for further expansion of organic production in the area.

A significant proportion of respondents (78%) were in favour of separate minimum support price for organic produce. Unavailability of proper storage and transportation facility for organic produce also hinders organic producer to get proper return from their produce. Certification process is among most prominent barriers in certified organic production as 86% respondents felt that it was not easy to opt.

The study indicates that various factors are associated with control belief of organic farming among the small and marginal tribal farmers (Fig 1). Disease and pest control, lack of organized market and premium price for their produce are the most important limiting factors for adoption and expansion of organic farming. Complexity in third party organic certification process, high cost and time frame (3 years in most cases) are the most obvious constraints for resource poor small and marginal farmers Marsh *et al.* (2017) and Farmer *et al.* (2014). Lack of storage, land holding and transport facility are major controlling factors. Inadequate agriculture infrastructure and cold storage facility translate

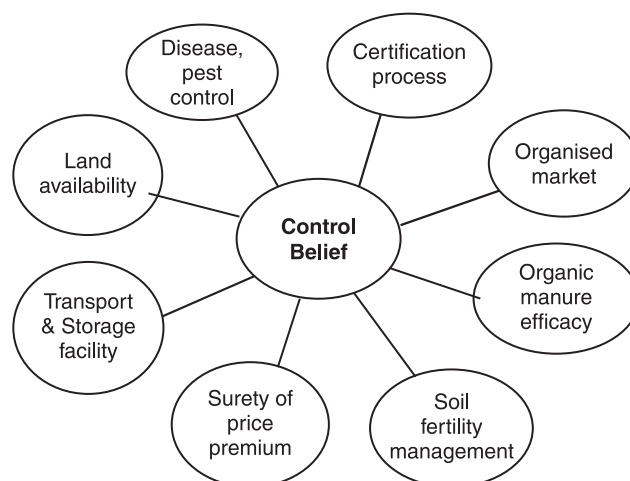


Fig 1 Factors associated with control belief of organic farming among tribal farmers.

to loss of produce due to spoilage. It also weakens produce holding capacity of farmers and forces them to sell their produce immediately after harvest irrespective of price situation in the market. Though organic farming is labour intensive, yet the price of only some produce is high due to short supply against high demand (Mukherjee *et al.* 2018). It is one of the biggest controlling factors which impede the organic farming system. Support of government policy must incentivize farmers to comply or behave in accordance with that policy. Morone *et al.* (2019) demonstrated that the policies (public food waste rule, investments and infrastructure, small scale farming) are drivers of the sustainable food consumption model.

Bhardwaj and Dhiman (2019) also concluded that, there were several major drawbacks in the growth of organic farming in India including lack of awareness, lack of good marketing policies, shortage of biomass, inadequate farming infrastructure, high input cost of farming, inappropriate marketing of organic input, inefficient agricultural policies, lack of financial support, incapability of meeting export demand, lack of quality manure, and low yield. However, our results slightly differ here on shortage of biomass, lack of quality organic manure and low yield. This was only due to rich bio-resources availability in locality, good awareness, proper training and sound institutional technical backstopping.

On the basis of results of present study, it is concluded that farmers believed that organic farming based on local resources was good and profitable for small and marginal farmers particularly in tribal areas with abundant biomass. It is an alternate form of agriculture which can improve their income. But there is difference in thought and action. Practically they face various problems in which production, marketing, certification and lack of infrastructure are the major areas of concern. Hence, government should give more attention towards farmers' concerns for achieving its goal of doubling the farmers' income.

A direct linkage of producers and consumers should



be made by encouraging and supporting organic farmers to form their own farmers' producer company with subsidized institution as well as infrastructure building support from government. This will enable farmers to plan the production to fulfil the consumer demand and also meet export demand by comparative price.

## REFERENCES

- Araujo A S F, Santos V B and Monteiro R T R. 2008. Responses of soil microbial biomass and activity for practice of organic and conventional farming systems in Piauí state, Brazil. *European Journal of Soil Biology* **44**: 225–30.
- Assis K and Mohd Ismail H A. 2011. Knowledge, attitude and practices of farmers towards organic farming. *International Journal for Economics and Research* **2**(3): 1–6.
- Bhardwaj M and Dhiman M. 2019. Growth and performance of organic farming in India: what could be the future prospects? *Journal of Current Science* **20**: 1–8.
- Das S, Chatterjee A and Pal T K. 2020. Organic farming in India: a vision towards a healthy nation. *Food Quality and Safety* **4**(2): 69–76.
- Deshmukh M S and Babar N. 2015. Present status and prospects of organic farming in India. *European Academic Research* **3**(4): 4271–87.
- Eyhorn F, Ramakrishnan M and Mader P. 2007. The viability of cotton-based organic farming systems in India. *International Journal of Agricultural Sustainability* **5**: 25–38.
- Farmer J, Epstein G, Watkins S and Mincey S. 2014. Organic farming in West Virginia: a behavioral approach. *Journal of Agriculture, Food Systems, and Community Development* **4**: 155–71.
- Ghosh M K, Sohel M H, Nazmin A, Zahara F T, Nur S B and Hasan M M. 2019. Farmers attitude towards organic farming: a case study in Chapainawabganj district. *Asian Journal of Advances in Agricultural Research* **10**(2): 1–7.
- Likert R. 1932. A technique for the measurement of attitudes. *Archives of Psychology* **22**(140): 1–55.
- Marsh L, Zoumenou V, Cotton C and Hashem F. 2017. Organic farming: knowledge, practices, and views of limited resource farmers and non-farmers on the Delmarva Peninsula. *Organic Agriculture* **7**: 125–132.
- Mukherjee A, Kapoor A and Dutta S. 2018. Organic food business in India: a survey of companies. *Research in Economics and Management* **3**: 72.
- Panneerselvam P, Halberg N, Vaarst M and Hermansen J E. 2012. Indian farmers' experience with and perceptions of organic farming. *Renewable Agriculture and Food Systems* **27**(2): 157–69.
- Rana S, Hasan M H, Alam M S and Islam M S. 2017. Farmer attitude towards organic vegetable cultivation in Rangunia Upazila, Chittagong, Bangladesh. *Journal of Bioscience and Agriculture Research* **14**(01): 1151–56.
- Salawat N, Hasan S S, Khan A S, Rahman M S, Hoque M M and Moonmoon M. 2013. Study on knowledge and attitude of mushroom growers at selected upazilas of Dhaka. *Bangladesh Journal of Mushroom* **7**(1): 49–57.
- Sarker M A, Itohara Y and Hoque M. 2010. Determinants of adoption decisions: The case of organic farming in Bangladesh. *Extension Farming Systems Journal* **5**(2): 39–46.
- Stofferahn C W. 2009. Personal, farm and value orientations in conversion to organic farming. *Journal of Sustainable Agriculture* **33**: 862–84.