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Jharkhand and Organic Agriculture

Zubair Akhtar^{1*}

¹Department of Rural Mangement, Xavier Institute of Social Service, Ranchi, Jharkhand, India.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Organic farming is not a recent origin in India. In ancient literature such as Rig-Veda, the use of animal dung as manure was highly emphasized. Approximately two-thirds of a million of the farmer populations in India are cultivating organically, but this a tiny portion of the farming community. As there are few states that have not done much development in organic farming like Jharkhand which became independent as a separate state 16 years ago. Approximately 0.08% of Jharkhand's cultivatable land is being promoted to be free from chemical fertilizers and pesticides. Out of the net cultivated area of 31 lakh hectare (ha), only 26,310 ha is the area where organic cultivation is promoted. When we compare it with the states like Sikkim and Meghalaya, which have been or will be certified organic state by 2020, we get the real picture of farmers who are lagging behind. Lack of certification, lengthy procedure and low production initially are some of the reasons because of which farmers don't opt for organic agriculture. Initiatives like Public Private Partnership, promoting animal husbandry, Contract Organic farming (COF), Participatory Guarantee System (PGS), Farmer Producer Organisation (FPO) and raising public awareness are some steps that are required to develop organic agriculture, to improve human health and to save the environment.

Keywords: Organic agriculture; participatory guarantee system (PGS); certified; contract organic farming; environment.

*Corresponding author: Email: zubiakht98@gmail.com;

1. INTRODUCTION

Organic agriculture is basically a system of production which discourages the use of synthetic fertilizers and growth regulators to the maximum and relies on basic measures like crop rotation, crop residue, animal and green manures, off-farming organic waste and many more to maintain soil productivity (physical aspects of soil), nutrient supply to plants, weeds and insect control. "It is a method of farming system which primarily aims at cultivating the land and raising crops in such a way, that the soil remains alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (bio-fertilizers) to release nutrients, to crops for increased sustainable production in an eco-friendly pollution free environment" [1,p.3]. Organic farming is not of recent origin in India. In ancient literature such as Rig-Veda, the use of animal dung as manure was emphasized Purohit & Gehlot [2]. "The principles apply to agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute food and other goods" [1,p.12] According to IFOAM organic agriculture means "any system that uses organic methods and is based on the Principles of Organic Agriculture", regardless of whether it's certified or not [3,p.2]. In India, there is a section of farmers who are farming organically, not because they opted to save the environment, but because they are using this method traditionally and such farmers are not financially stable and have no certification, yet they are producing it organically.

This article gives an overview of organic farming in India with focus on Jharkhand. It provides us with the information about the status and development of organic farming in Jharkhand. The paper also highlights the problems and constraints that farmers of Jharkhand face as they adopt or think of adopting organic farming and solutions to the problem faced by farmers.

2. ORGANIC INDIA AND JHARKHAND

Organic agriculture is being adopted by farmers all over the country for different reasons giving its growth of a three-dimensional picture. Categorically, there are three types of farmers. The first one includes those organic farmers, those who come from no/low input zones, where organic farming is a tradition owing to the

absence of the resources needed for conventional high input in intensive agriculture. The majority of farmers in this category are uncertified. The second category include farmers those who have adopted organic farming in recent times due to adverse effects of conventional farming like depletion in soil health, contamination of food with different chemicals and poor level of production. It includes both certified and uncertified farmers. In the third category, the majority of the farmers are the certified ones. They are the farmers and firms who are producing the organic crops for commercial purpose in a planned manner. Their mere motive is to earn a profit by producing organically [1,p.7]. Approximately two-thirds of a million of the farmer population in India is cultivating organically [4]. In 2015 India showed an increase in the export and domestic market of organic produce with a growth of 30 and 40 percent respectively [4,p.176]. A year back with the production of more than 70,000 MT of organic cotton lint, India has become the largest producer by having more than 50% of the production share in the world's organic cotton [1, p.11]. "With the phenomenal growth in area under organic management and growing demand for wild harvest products India has emerged as the single largest country with highest arable cultivated land under organic management" [1,p.10]. The export performance of organic food products from India is highest with cash crops like tea, coffee, spices etc and then cereal crops like paddy, wheat.

In India, there are few states that are rapidly moving towards organic farming like Sikkim which is in the direction of being 100 percent organic, then Meghalaya, which has an aim to certify 200,000 hectares of land by 2020, starting with just 40,000 hectares in 2015 [5,p.178]. And there are states like Jharkhand which have not done much development in organic farming and they need to do much in the field, starting from spreading awareness among the people through to capacity-building, training and implementation.

The Government of Jharkhand formed a society known as Organic Farming Authority of Jharkhand (OFAJ) in 2012 [6]. It is for promoting organic agriculture, 12 years after getting independence as a separate state, which shows very little information available about organic farming in the state. In Jharkhand, more than 70% of the population depends on agriculture as their source of livelihood. The main crop grown here is paddy during kharif season. Several

horticultural crops like French beans, Cole crops, and tomato are grown throughout the year. OFAJ was formed to terminate the indiscriminate use of chemical fertilizers. Under its governance 13 districts under Tribal Sub Plan (TSB) namely Ranchi, Khunti, Lohardaga, Gumla, West Singhbhum, East Singhbhum, Saraikela-Kharshawan, Dumka, Simdega, Pakur and Sahebganj have been included [7].

Table 1. Export performance of organic food products from India

S.no	Organic food	Sales (tons)
1	Tea	3000
2	Coffee	550
3	Spices	700
4	Rice	2500
5	Wheat	1150
6	Pulses	300
7	Oilseeds	100
8	Fruits & vegetables	1800
9	Cashewnut	375
10	Cotton	1200
11	Herbal products	250

Source: Chandrashekar, [8,p.6]

Under OFAJ three separate missions focusing on horticultural crops:

I. State Organic Mission:

In this the total farmland area is 15,700 hectares and fund allocated is Rs 10 crore for all the 13 districts. Identified crops are mainly vegetables like Pea, Okra, French bean, and Broccoli.

II. State Spices Mission:

In this the total farmland area is 7610 hectares and fund allocated is Rs 5 crore for all the 13 districts. Identified crops are mainly vegetables like turmeric, coriander, garlic, and chilly.

III. State Medicinal Mission:

In this the total farmland area is 3000 hectares and fund allocated is Rs 2 crore for all the 13 districts. Identified crops are mainly vegetables like Kalmegh, Aloe Vera, and Shatawar.

In the present scenario where hundreds of crore of rupees are spent by different states to convert their land to organic, Government of Jharkhand allots a mere Rs 17 crore for promoting organic agriculture in 26,310 hectares of land. This is barely 0.08% of the total agricultural land of the state. Then the amount allocated in the state organic mission on an average is Rs 6,500 to spend per hectare for promoting organic farming,

which isn't much apparently. We are taking too much from the environment and giving back too little to maintain the ecology.

3. COST ANALYSIS OF ORGANIC FARMING

The cost incurred and income earned between the conventional and organic farming based upon cropping of turmeric and cotton is analysed. "The total cost of cultivation of organic and conventional turmeric per hectare was worked out to US\$ 2641.43 and US\$ 3529.13 respectively. The net income per hectare was US\$ 2727.19 and US\$ 1876.13 respectively. The cost of cultivation of organic and conventional cotton per hectare was worked out to US\$ 1306.79 and US\$ 1725.19 respectively. The net income per hectare was US\$ 1332.13 and US\$ 1032.68 respectively" [9]. This definitely shows the real potential of organic farming as it not only helps in monetary terms but also helps in regaining the soil health and environment.

4. PROBLEMS AND CONSTRAINTS AVAILABLE IN JHARKHAND

"The most important constraint felt in the progress of organic farming is the inability of the government policy making level to take a firm decision to promote organic agriculture. Unless such a clear and unambiguous direction is available in terms of both financial and technical supports, from the Centre to the Panchayath levels, mere regulation making will amount to nothing" [10,p.67]. "This immense commercialization of agriculture has also had a very negative effect on the environment. The use of pesticides has led to enormous levels of chemical buildup in our environment, in soil, water, air, in animals and even in our own bodies. Fertilizers have a short-term effect on productivity, but a longer-term negative effect on the environment where they remain for years after leaching and running off, contaminating ground water and water bodies" [8]. Secondly the only agriculture university Birsa Agriculture University needs to take few steps against the scientists who promote chemical farming and seed owned by MNCs. "The availability of quality seeds can also be increased by Public-Private Partnership (PPP) in the seed industry, which can exploit the strengths that exist in these two sectors. While the public system has competent scientific manpower and is equipped for both basic strategic and applied research, the private sector relatively lags behind the vast modern

infrastructure facilities and large manpower. However, the private sector has expertise in high tech research like the development of genetically modified varieties and seed production. The climatic conditions of Jharkhand state are ideally suited for quality seed production during winter crops and could be an ideal state for the private sector to exploit the opportunities" [11,p.13].

These are the major problem found by the farmers for the growth of organic farming.

4.1 Lack of Awareness

The lack of awareness can be seen in both, the producers as well as the consumers. The consumer doesn't have much knowledge about organic farming as they don't have any information about the harm which the chemical and pesticides is causing to their health. Secondly, the price of the organic products is higher than other products hereby the consumers, especially the middle class and lower class earning families opt for the produce from chemical farming. Similar is the situation of the farmers as they are unaware about the methods and techniques of organic farming, how to make manures, compost or bio fertilizers, the moisture level required to be maintained etc. Hereby no benefit is available for the soil or for the crops [10,p.67].

4.2 Marketing Obstacles in Selling the Products

Few farmers who took the duress of cultivating organically don't get the right price for the product produced. They don't get the price which they should, more than the products cultivated conventionally. One reason is that people are unaware of certain ill-effects which are caused by the consumption of conventional farming method and hereby don't purchase the organic product in the name of extra expense. [10,p.67]. "And the focus is now more on quantity and "outer" quality (appearance) rather than intrinsic or nutritional quality, also called vitality" [8].

4.3 Inadequate Animal Husbandry

Animal husbandry of Jharkhand is inadequate, which can be considered as the major drawback, because of which people are unable to produce enough organic manure required for maintaining an organic farm. Another problem is that the farmers do not know how to manage manure, cattle waste etc. which are an important component. Therefore, they need to rely on the

market for the supply of organic inputs and this increases the price of the product.

4.4 Desi vs HYV Seeds

Desi seeds are the one which is kept or preserved by the farmers for sowing next year. It is kept in a place generally a dark shaded house free from insects and pest. Optimum temperature is maintained to keep the seeds alive. While high yielding varieties are the one which are made with F1 progeny. In 1966 Prof. M.S. Swaminathan introduced the HYV seeds to the farmer under the umbrella of green revolution, but these HYV requires heavy investment. And with the recent inclination of the farmers towards the HYV seeds have degraded the soil as well as the taste and nutritional value of the product is not available. As according to FAO a farmer can use HYV seeds to grow organically but as per the guidelines of National Center for Organic Farming (NCOF) the farmer needs to use traditional seeds for complete certification as an organic farmer. As according to the farmers of Chitarkota, Ratu Block Ranchi, Jharkhand although they sow HYV seeds but they are not at all satisfied morally, as the produce is doesn't have the nutritive value as well as the taste which the desi seed possesses. But still they opt for HYV seeds just for the sake of high production. The residue, i.e. the straw available in the field after the harvest of the crop is not given to the cattles because of the high amount of chemical in the crop so they go for burning the straw. Similar to 80% of the farmers opt for hybrid for paddy cultivation in Eastern India and when ask for the reason to several vendors at Ormanjhi block, Ranchi the prominent reason were increased yield, small agriculture land holding and as they can afford it [12].

4.5 Lack of Input Markets

The majority of the farmers in Jharkhand are small and marginal ones. They don't have the capacity to purchase the inputs required for organic farming because of three reasons:

4.5.1 No availability of inputs

several times it is the case that the farmer is there willing to shift its cultivation from inorganic to organic, but unable to do so because of the unavailability of the inputs. Secondly timely availability of the input is also an important concern which is playing an important role in dipping the back to chemical farming.

4.5.2 Higher price of the inputs

In Jharkhand majority of the farmers are marginalized one, they are unable to match the required quantity of the input required as the price of the input is high. The price of vermicompost is 100 rs per Kilogram and the farmers needs a heavy dosage of vermicompost possibly for organic farming, which acts as a drawback for the farming who are eager to adopt organic agriculture.

4.5.3 Duplication

this is also a prominent problem arising in the agricultural marketing sectors, as the farmers do purchase and use the organic input but their produce are adulterated. The reason being the input used by the farmers not being a certified or original one.

4.6 High Input Costs

In Jharkhand nowadays, the farmers rely less on livestock for the manure purpose. This is partly because due to the rate of migration and nucleation of families, there is less labour available at home, and so households are reluctant or unable to keep livestock which require grazing and other care. Besides, chemical inputs have been promoted alongside the hybrid seeds which are sold by traders and vendors. Therefore, farmer need to purchase the inputs required for organic farming like vermicompost, manures etc which is costlier than the inputs required in conventional method of farming. This is a major reason, because of which the farmers are not willing to convert their land into organic.

4.7 Lack of Financial Support

The farmers of the country do make Self Help Groups and others to help themselves, but the truth is that the financial input required by the farmers for the conversion of the field into organic is very high and farmers who are economically weak are unable to opt it.

4.8 Due of Nuclear Family

The new wave is there in the village of diving the family into nuclear families, hereby dividing the land holding capacity of the individuals. This leads to the less land available with the particular farmers hereby making it unviable for the farmers to cultivate organically.

4.9 Disproportionate Agriculture Land Holding

The agricultural holding of Jharkhand does show us one of the reasons why the farmers do opt to convert their field to organic. In all the social groups in Jharkhand, the small and marginal group make 84.06% of the total agricultural holding, which indirectly also shows the economic condition of the farmers. Secondly, for the conversion farmer needs to have a buffer zone, against the chemical farming area to restrict contamination which is approx. 10% of the total area. A farmer having averaged 1 ha of land can never leave 0.1 ha of its cultivating area. Therefore, they continue with the conventional farming. Finally, we can say that In Jharkhand land holding scenario can be divided into two situations. One in which the farmers have sufficient land holding where he/she can produce organically if all the other criteria gets fulfilled and second is the one who don't have sufficient land holding and are unable to sustain their life from that piece of land.

4.10 Low Yield Initially

During the initial days of organic cultivation the productivity of the land goes down drastically, and a marginal farmer is unable to bear the risk of having a low yield during the initial stage of the conversion i.e.2-3 years. And the different policies made by the state government, along with relief scheme is not available to the farmers during this period [10,p.69]. Other problems like lack of efficient schemes run by the government which promotes organic farming, lack of certification agencies and lengthy process are a few major reasons for the farmer not interested towards it.

5. SOLUTIONS TO THE PROBLEM

The solution stated below are beneficial for farmers as well as the ecology. It will give the farmers enough opportunity to grow commercially as well as organically. This will includes Contract Organic farming and Participatory Guarantee System and promoting Animal Husbandry ought to be promoted.

5.1 Public Private Partnership (PPP) for Promoting Organic Agriculture

Public Private Partnership can prove a real game changer in the Organic agriculture sector. The

Table 2. Number and area of agricultural holdings for all social groups (percentage)

Social groups	Number (in '000)	Area (in '000 ha)	Percentage of landholding
Marginal <1ha	1848	764	68.23
Small 1-2ha	429	591	15.83
Semi-medium 2-4ha	283	775	10.44
Medium 4-10ha	129	725	4.75
Large >10ha	20	311	0.75

Source: GOI Agriculture Census. [13,p.17-21]

government, private companies along with the education as well as research and development can transform the organic agriculture at multiple level. With the government financing the project/model, while the private sector has the technical expertise while the farmer will do the rest. The duty of research and development would be to create awareness among people about the benefits of organic farming and their products and the ill-effects of chemical farming. The government could also play an important role in creating an environment for the private investment through an increase in public spending, priority sector lending, Foreign Direct Investment (FDI), Tax relaxation, and Duty exemption [14].

5.2 Contract Organic Farming (COF)

It is the contract between the buyer (firm) and the farmer, where he produces the agricultural products and supplies directly to the buyer. Both of them agree on certain terms and conditions for the sale and purchase of the product. In this system the companies meet the farmer from time to time and provide them all the latest agronomic and technical help possible for producing the crops [15].

Similarly, in the contract organic farming, the farmer will be provided with all the organic amenities required by the farmers to produce organically like bio fertilizer, vermicompost, manures etc. In this type of farming there is some point that makes it a solid proof for the farmers to sustain economically and environmentally.

- i. The price is already fixed
- ii. Quality and quantity fixed
- iii. Duration of the crop is based on the demand of the company crops [15].

Hence, it will help the farmers of Jharkhand to farm organically and with the help of multinational companies it will be easier for the farmers to convert their field by coming in

contract. It will help them economically, socially as well as ecologically.

5.3 Participatory Guarantee System (PGS)

PGS are defined as "quality assurance initiatives that are locally relevant, emphasize the participation of stakeholders, including producers and consumers and operate outside the frame of third party certification" (May, 2008, p. v). May [16,p.6-8] elaborates a few basic elements required for PGS: participatory approach and collective responsibility, transparency, trust, non-hierarchical, same goal of having higher standards in production, excluding social injustice, eco-friendly, and respect for the autonomy of local communities and cultural differences. In PGS the members of the group conduct peer review of another member of the farm, to check the organic standard of the field and the member do agree to face the consequences for any infringement. Like if a farmer is being caught using the prohibited inputs, then he/she will be fined or may be thrown out of the group [4].

The government of Jharkhand solely or collaborating with non-governmental organization can come up with a plan of forming PGS, where the farmers with small holding will form a group. PGS will work as an umbrella under which all farmers will be certified based on the review given by the group member. This will encourage the farmers in practicing the organic farming and develop collectively.

5.4 Forming Farmer Producer Organisation

"Producer Organisation is an association, a society, a cooperative, a union, a federation or even a firm that has been established to promote the interests of farmers" [17]. In this the farmers are the stakeholders in the organization and ate from either farm or non-farm activities with all legal validation and deals with the primary

producers. In the FPO the profit is shared among the producers and some share is kept as reserves. "Fund of 200 crores by the Government NABARD to be utilized for the building and promotion of 2000 Farmer Producer Organizations in two years" [18]) which meant that the Government is coming up open hand to help the FPO and to produce the product which will help them fetch good price by neglecting the mediators. Hereby helping the farmers to earn profit and to make their agriculture more than subsistence. So the farmers after forming FPO and practice organic farming could prove a real asset for their development.

5.5 Promoting Animal Husbandry

The beef ban has decreased the price of the cattle, which has affected the farmers directly as well as indirectly. The farmers after getting hit by bad harvests due to drought and unseasoned rain, can compensate their income with the allied activities of animal husbandry [19]. Therefore, some steps related to the situation should be taken by the government to promote animal husbandry. Similar is the situation with upgrading the technical aspects of the farm, as the farmers show less interest in keeping cattle, as the majority of the farm work which was earlier done by the cattle are now done by tractors and other implements saving the time for the farmers and is the new trend now. It is important for a farmer to have livestock, as not only it will produce dung which will be used for as the fertilizer, it will work as a secondary source of income for the farmers. It will also work as a money saver as the fertilizer could be used by the farmer and the cost of purchasing fertilizer will get deduced and hereby could increase the profit rate of the farmer.

Some other suggestions could be

- i. Substantial financial support to the farmers who are willing to convert their field, but are unable to because of financial problems.
- ii. Market development for organic product produced by the farmers.
- iii. Proper organization for inspection and certification.
- iv. Identification of crop for that very farm based on soil type ecological condition is necessary so as to get the best production ex soybean in Madhya Pradesh period [10, p.77].

6. CONCLUSION

The interest in organic farming is increasing among the farmers as the present conventional method of farming has degraded enough of the natural resources [20]. The awareness among the producers and the consumer is increasing but at a steady rate. Another benefit which our country can reap is that as organic farming is labour intensive mechanism and our country, where labour is abundant and cheap, we could exploit this opportunity for the betterment in organic farming. "Currently, most of the organic farmers in India are still in the transition phase and hence their costs are still high. As these farmers continue with organic farming, the production costs are expected to reduce, making India as one of the most important producers of organic food" [8]. The eagerness among the policymakers to develop new policies for promoting organic agriculture is there. But all this is available at a slower rate; we need to pace up the transforming process (Conventional to Organic) for Ecology as well as for the economy.

Farmers can enjoy several other benefits by adopting organic farming. Which could be bifurcated into three categories

- i. **Social benefits** – Organic farming does show a positive attitude towards the farming community as the earlier the farmer's son would never want to be a farmer, but with the increase in the demand for organic products there chances of decrease in village duress because of migration. Secondly, helping in food security not only quantity wise, but also quality-wise the food produced organically are of high standards.
- ii. **Ecological benefits** – Conservation of natural resources being one of the principle of organic farming, it helps in maintaining the soil fertility, prevention of soil erosion and tackles other ecological problems.
- iii. **Economic benefits** – any farmer which is cultivating this about the economic aspect of the production and if he/she will get the profit, then economically as well as ecologically than the farmer will continue to grow organically which will not only increase in livelihood opportunities but getting the farmers a better price of their products.

All in all it's a win-win situation for the farmers who opt for organic farming, they just need to bear a few difficulties during the initial stage and later on it will be an easy and successful phase for them. It will not only help the environment but also help the country as it will decrease the problem of food security and other menaces.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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