Status & Practices of Organic Farming – A Case Study of Organic Farming Practices in Southern Rajasthan

Abstract

This survey study mainly focuses on the issues like status and practices of organic farming, cost return structures and problem faced in cultivation. In the present age of global warming and changing climatic scenario, agriculture has to be more environmentally friendly and needful attentions to be given to innovative resource conservation technologies which are more sustainable in long run. A convenient sample of 317 organic farmers were selected through available records. For selection of farmers multistage simple random sampling technique used. The initial data were collected through a pretested questionnaire along with semi structured interviews of various experts on organic farming. The major constraints identified by the organic farmers were ranked using Garrett's ranking techniques. The respondents stated, non-availability of labour and organic certification as the most faced difficulties.

Keywords: conservation technologies, organic certification, global warming, Organic Agriculture Movements

Introduction

India is the second most populous country in the world.With the increasing population lead to dwindling land resources and putting pressure on existing availability of resources (Garg, Shivani, 2017). In the present age of global warming and changing climatic scenario, agriculture has to be more environmentally friendly and needful attentions to be given to innovative resource conservation technologies which are more sustainable in long run (Wheeler T, 2013). As on today's environment consumers are more anxiety and aware towards food safety and its quality, health issues and to meet the situation demand for organically produced products increased drastically (Rembialkowska, 2007). Because of that changing trends cultivation of organic farming gaining too much acceptance (Chopra, 2013).The International Federation of Organic Agriculture Movements (IFOAM) states that "Organic agriculture is a production system that sustains the

health of soils, ecosystems and people. Organic farming has the potential to provide benefits in terms of nutritional benefits and health safety (Lairon, 2010), environmental protection (Pimentel et al., 2005, Oquist et al., 2007), conservation of non-renewable resources, improved food quality and socio-economic benefits (Halberg, 2008).

In world scenario, nearly 50.9 million ha land is being certified as organic in 179 countries (FIBL & IFOAM, 2015). India is bestowed with lot of potential to produce all varieties of organic products due to its favorable agro-climatic conditions in several parts of the country; the inherited tradition of organic farming is an added advantage for the nation. (APEDA, 2010). At present, India ranks 9th in terms of World's Organic Agricultural land, A total of 3.56 million ha area is under the organic certification including cultivated and wild harvest area in 2018-19 (APEDA, 2019). India, produced around 1.35 million MT (2015-16) of certified organic products which includes all varieties of food products namely Oilseeds, Cereals & Millets, Sugar, Cotton, Pulses, Medicinal Plants, Tea, Fruits, Spices, Dry Fruits, Vegetables, Coffee, etc. Further, the production is not limited to the edible sector but also produces organic cotton fiber, functional food products, etc. (FIBL & IFOAM, 2015).

In Rajasthan, nearly 61% of the cultivable area comes on topography of arid and semi-arid zones, which characterized by low rainfall, poor soil fertility and low water holding capacity etc. with high temperature in summers, the incidence of insects, pests & disease is normal and State have low consumption of pesticides and fertilizers, which makes it easy to go for organic conversion without significant yield loss during conversion period. As per evaluations of the planning commission, about 15% of total cropped area can be brought under certified organic cultivation in the country. State has a potential to convert 5% of total cropped area (approx. 10 lakh hectare) very easily under certified organic in the niche areas of seed spices, medicinal and herbal plants, fruit and vegetables and arid crops (Rajasthan organic farming policy, 2017). In case of Southern Rajasthan (*Udaipur, Banswara, Dungarpur, Pratapgarh, Sirohi, Rajsamand, Chittorgarh and Bhilwara*) have decent natural resources and default natural cultivation practices and therefore propose good scope of organic production to get benefit from international organic agricultural market through backward and forward institutional and stakeholder's linkages. Forest areas of tribal dominated districts of Rajasthan have good scope of wild collection under category of non-cultivated organic agriculture.

However, there is considerable latent interest among farmers in conversion to organic farming in India. But some farmers are reluctant to convert because of the perceived high costs and risks involved. Those who have converted are earning equal incomes to their conventional counterparts, if premium markets exist for organic produce. In this scenario, little studies are available to educate the farmers on the benefits of organic farming with particular attention on cost and returns andefficiency fronts over conventional counterparts. Hence this survey study mainly focuseson the issues like status and practices of organic farming, cost return structures and problem faced in cultivation. The following objectives were formulatedto address the issues:

1) Toconductapreliminarysurveyoforganicfarminginrajasthan,developedinventoryoforganicfarmers,irrespectiveofvarietiesincrops,variationsin theirorganicfarmingtechniques.
2) Toconductcasestudiesofselectedorganicfarmersinordertomakeadetailed qualitativeanalysistounderstandtheuniquecharacteristicsoftheorganicfarm andfarmingoperations.
3) Toconductafarmincomeanalysisoftheselectedcasestudiestoassessthe economicviabilityofthefarms.

Material and Methods

Study Area

For the completion of the study four districts *Viz. Udaipur, Chittorgarh, Banswada* and *Rajasmand* were selected. In these districts a considerable number of farmers are practicing organic farming. From each district different farmers were selected who are registered organic farmers or practicing organic farming for a minimum of two years. A convenient sample of 317 organic farmers were selected through available records. For selection of farmers multistage simple random sampling technique used. The initial data were collected through a pretested questionnaire along with semi structured interviews of various experts on organic farming.

Component of Study

Thestudyhasthreemaincomponents:(i) Thesurveyofdefault or registered organicfarmersinRajasthan,(ii) The screeningofselectedorganicfarmers,and (iii)Locale-specificcasestudies.

Organicfarmersaredefinedasthosefarmerswhopracticeorganicfarmingorsimilar eco-friendlyfarmingtechniquesforaminimumoftwoyears,ordecreasinguseof chemicalfertilizersandbiocides,useoforganicfertilizersandorganicbiocidesandapplication ofresourceconservingtechnologies. For case studies selected farmers were studied. Exhaustivedataonthequalitativeandquantitativeaspectsofthe farmoperationswerecollectedusingPRAtechniques,directobservationandverification offarmrecordsinavailablecasesinorderto;recordthedifferentaspectsoforganic farmingpractices,analyzetheproblemsfacedbytheorganicfarmersandthe recommendations made by them and assess the profitability, productivity and viability oftheorganicfarms.Thesocio-economicbackgroundofthefarmersislookedatfromtwopoints–thesizeof the land holding and dependence on agriculture as a source of income. The rest is devoted tothedescriptionoforganicfarmingpracticedbythefarmers. To tabulated the constraints faced by the farmers were ranked using Garrett's ranking technique and to understand the input use pattern and status of cost, production, profit of the organic farmers under kharif and rabi crops Cost and return analysis were performed.

Results& Discussion

(i) Land holding size

A total of 118 respondents were observed during the different period of time and information were collected. Household results shows that percent area under organic farming increased over the years (Fig 1), may be due to the getting more favorable results of growing organic crops. An increasingly trend of cultivation were observed during the five years period of time. Farmers of the study area allocate the more land to the organic farming and receiving positive results.

Table1: Year wise average land holding of agriculture land under organic farming

Average land holding Year	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2019-20**	**2020-21**
Total land holding (ha.)	1.68	1.68	1.21	1.5	1.79	1.36

Area under organic agri. (ha)	0.7	0.63	0.75	1	0.84	0.95

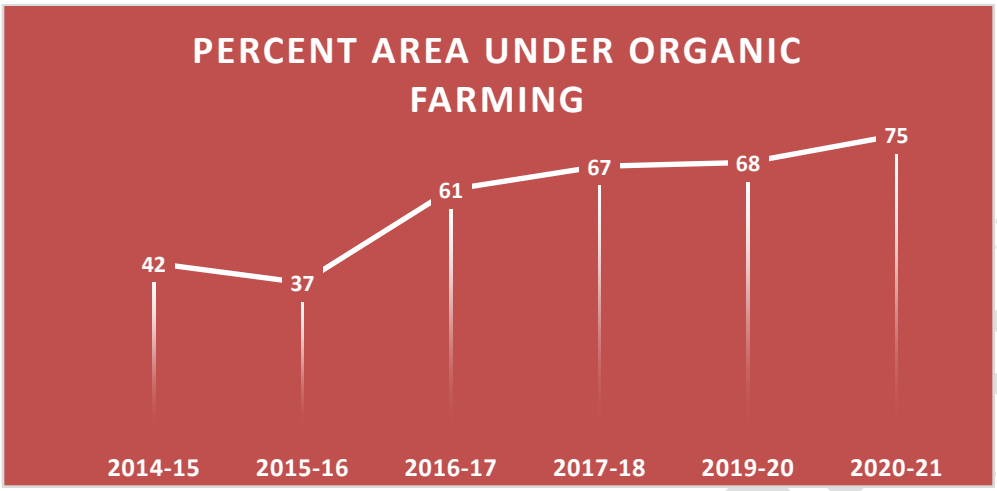

Fig 1: Percent area under organic farming

(ii) Livestock population and animals per household

Survey indicate that average number of animals are 7.68 (Approx. 8) in case of organic farmers (Table 2), which indicates positive relationship among organic grown farmers and ownership of farm animals. It was observed that out of 118 households, 53.39% households had 5 to 10 animals which indicate that economy of farmer is based on livestock & which provide a good scope for successful organic farming. Similarly, 7.63% of total households had more than 15 animals and less than 25% of total households had the animal population less than 5.0 (Table 3).

Table2: Livestock Populationwith organic farmers

Items	No. of farmers	Total no. of farm animals	Average No. of farm animals
No.	**317**	**2435**	**7.68**

Table 3:Number of animals per household

S. No.	Animals Number	Number of households	% of total animals
1	Less than 5	78	24.58
2	5 to 10	169	53.39

3	10 to 15	46	14.41
4	More than 15	24	7.63
	Total	**317**	**100.00**

(iii) Water sources to organic farmers

Majority of organic farmers depends on the seasonal rains as for crop cultivation. Major source of water are wells (41%) followed by the pond/tank (23%), borewell 14%), river (12%) and canal (10%). (Fig 2)

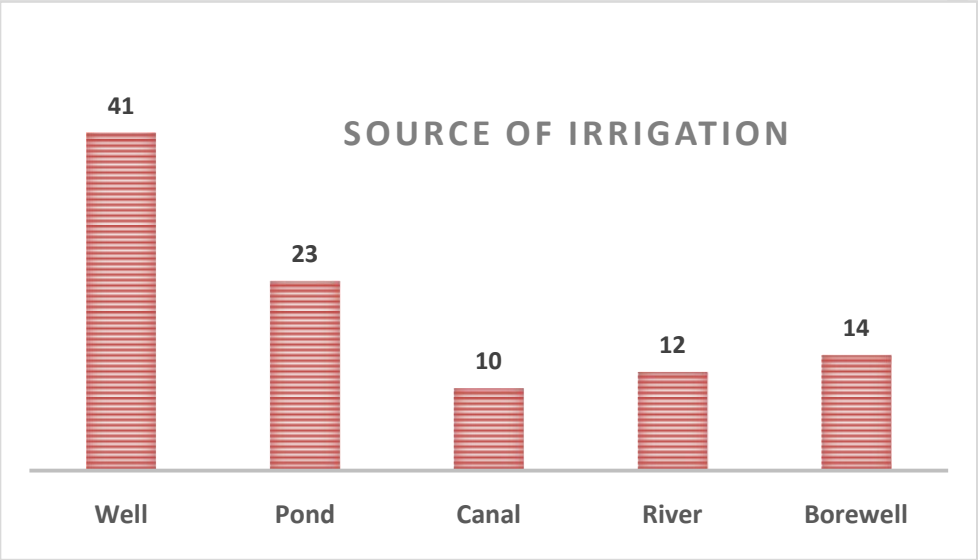

Fig 2: Source of water to organic farmer

(iv) Source & Methods of Irrigation in the cultivated lands

The majority of the small & marginal farmers used motorized irrigation followed by diesel engines.Some of the organic growers were observed to be innovative in terms of using effective indigenously developed methods of channeling, bunding, water retention and rainwater harvesting.Most of the farmers of the study area used traditional method of irrigation in the cultivated lands. As majority of organic growers used electrical motors (46%) &diesel operated pumps (28%) for irrigation. Attention needs to be given to the water conservation techniques for saving the resources.

Table4: Source of power forMethodofIrrigationinthecultivatedlands

Method	Diesel Pump	Electric motor	Traditional system	Diesel & None	Solar Electric	Wind	No inform.	Total
No. of farmers	89	146	32	22	3	0	25	317
% of Total	28	46	10	7	1	0	8	100

(v) Use of Farm machinery

Results shows that majority of farmers used traditional method of farm machineries as it is easily available in the rural areas. Uses of modern implements associated with the socio-economic status of the farmers, as large category farmers able to avail the facility of modern implements for maintaining large area.

Table5:Use of Farm machinery

Machinery	Tractor	Tiller	Harvester	Deshi Hal	Combiner	Other	Traditional	No information	Total
No. of farmers	22	8	8	30	21	14	203	11	317
% of Total	6.9	2.6	2.6	9.4	6.8	4.3	64	3.4	100

(vi) Vermicompost production by organic farmers

Organic manures in the form of vermicompost obtained from the earthworm is one way to overcome the problems of low productivity. Production of compost from organic wastes (agriculture and homestead), crop residues, plant litters, weeds and FYM are the common wastes available in the farm. Results obtained from the study show that average production of 6.29 tonnes/annum vermicompost production was achieved by small farmers categories (7.13 tones/annum) followed by marginal farmers (6.90 tones/ annum), medium farmers (6.81 tones/ annum) and large farmers (4.32 tones/annum).

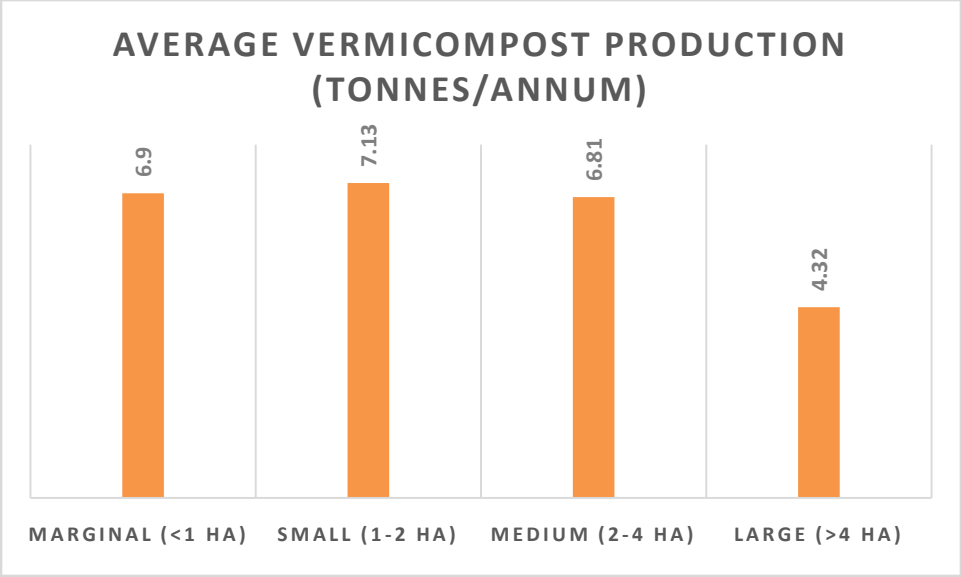

Fig 3: Average vermicompost production (Tonnes/annum)

(vii) Use of organic inputs by organic farmers

Input use pattern in organic farms as presented in table 6 shows that various inputs like FYM, Vermicompost, Oil cakes, neem oil, green Manures, bio- pesticides, biogas-digester liquids and Bio fertilizer were used by the organic producer. The use of the above inputs was limited in case of conventional farmers as they used more fertilizer and plant protection chemicals. Farm yard manure was used to the extent of 8.2 tons per hectare, vermicompost @ 400 tons, oil cakes @ 710 kg, green manures @ 2.3 kgs, bio pesticide @ 2.4 kgs etc. Inputs used are the average of all the respondents taken under the case study. Changes in price of vermicompost, FYM, green manures occurred as some of farmers produced it on his own farm and save the additional input cost. Overall, the input cost varies form Rs. 20000 to Rs. 30000, depending upon size of the farms, socio economic status of the grower.

Table6:Input use pattern in organic farms (per ha/year)

Sr No.	Inputs	Units	Qty	Price per unit	Value (Rs.)
1	FYM	Ton	8.2	1000	8200
2	Vermicompost	Ton	2.1	6000	12600
3	Oil cakes	Kgs	710	12	8520
4	Green Manures	Kgs	2.3	260	598

5	Bio- pesticides	Ton	2.4	55	132
6	Biogas-digester liquids	Lit	201	1	201
7	Bio fertilizer	Lit	2.5	80	200

(viii) Status of cost, production & profit to organic farmers

Status of the cost, production and profit were quantified for the season (Kharif maize and rabi wheat crop) (Table 9). I was estimated that total cost of production in kharif maize is Rs 24988 and for rabi wheat it was Rs. 31674, after considering the input cost and other managerial aspects. Final production of the products includes household consumption and marketable surplus. For quantifying the total profit, total production was taking into consideration for getting overall profit from yje organic farming.

In case of kharif maize estimated net profit was Rs. 7457 and Rs. 13946 at normal (@Rs. 15/unit) and premium price (@ Rs. 18/unit) respectively. In case of rabi wheat estimated net profit was Rs. 19683 and Rs. 27792 at normal (@Rs. 19/unit) and premium price (@ Rs. 22/unit) respectively.

Table7:Status of cost, production & profit to organic farmers

Kharif Crop: Maize

Sr No.	Items	Unit	Value
1	Production	Kg	2163
2	Household Consumption	Kg	990
3	Marketable Surplus		1173
4	Total Cost of Production	Rs.	24988
5	Total benefit @Normal Price (Rs 15/Unit)	Rs.	32445
6	Total benefit @Premium Price (Rs 18/Unit)	Rs.	38934
7	Net benefit @Normal Price (Rs 15/Unit)	Rs.	7457
8	Net benefit @ Premium Price (Rs 18/Unit)	Rs.	13946

Rabi Crop: Wheat

Sr No.	Items	Unit	Value
1	Production (Kg)	Kg	2703
2	Household Consumption (Kg)	Kg	1597
3	Marketable Surplus (Kg)		1106
4	Total Cost of Production (Rs.)	Rs.	31674
5	Total benefit @Normal Price (Rs 19/Unit)	Rs.	51357
6	Total benefit @Premium Price (Rs 22/Unit)	Rs.	59466
7	Net benefit @Normal Price (Rs 19/Unit)	Rs.	19683
8	Net benefit @ Premium Price (Rs 22/Unit)	Rs.	27792

(ix) Marketing of organic produce

Themajorproblemcitedbymanyfarmerswasthepoormarketingprospectsoforganic produce.Theyemphasizedontheneedtodevelopmarketingstrategiesaswellasgovernment andpolicylevelsupportfororganicproducemarketing.Consumerawarenessonthehigh qualityoforganicproduce,eco-labellingfortheorganicproduce,competitivepricing, developingstrategicurbanmarkets,etc.weresomeoftheothersuggestionsmadebythe farmersonthemarketingoforganicallygrownproduce. Reponses recorded during the interview from the respondents are recorded and presented in Table 8.

Table8:Marketidentityasorganicproduce

Questions	Responses of farmers (No. or %)	
	YES	NO
Proper Market arrangement for selling of the produce	75 (64%)	43 (36%)
At starting any financial help/subsidy from govt organization/Department	42 (35%)	76 (65%)
Do you have any training on Organic farming	53 (44%)	65 (56%)
Do you feel the need of improvement in market structure	88 (75%)	30 (25%)

Do you think cultivation of organic farming cheaper than conventional farming	66 (56%)	52 (44%)
Do you face constraints on selling product in market	75 (64%)	43 (36%)

(x) Constraints perceived by farmers in organic farming practice

The major constraints identified by the organic farmers were ranked using Garrett's ranking techniques. The respondentsstated, non-availability of labour and organic certification as the most faced difficulties.Further constraints experimentalwas high wage rate, high attack of pest and diseases,Low productivity of organic farming, Problem of Selling of produce (Market Constraints)or finding local market, unavailability of processor for organic produce, Limited knowledge or access to improved technologies. In addition, diseases like leaf blotch, rhizome rot, shoot borer and rhizome scale were the minor identified constraints. Hence, farmers had to spend a lot to control the attack of pest and diseases in the turmeric and cotton crops.

Again, non availability of adequate organic supplements, weak coordination to guideline, rules, regulations, certification process and input costs were appeared to be additional constraints.

Small farm holders or marginal farmers discouraged by capital driven regulation of contracting firms. A joined welfare approach required from government and private players to motivate farmers to adopt the organic practice as a weapon to meet climate change, food quality and safety, health and sustainability issues (Pandey and Singh, 2012).

Table 9 Problems faced in organic cultivation by sample farmers

S. No.	Constraints	Mean Score	Rank Priority
1	Non-availability of Labour	74.54	I
2	Organic Certification	60.02	II
3	High wage rate	58.59	III
4	High attack pest and diseases	57.04	IV
5	Organic manure unavailability	36.50	V
6	Low productivity of organic farming	28.30	VI
7	Problem of Selling of produce (Market Constraints)	23.50	VII
8	Processor unavailability	19.20	VIII
9	Limited knowledge access	18.42	IX
10	Price of the input	12.50	X

Conclusions

The findings of the study and the conclusions drawn have got certain specific implications for the policy issues.

- The results of the study on economics of production showed that the net returns per hectare received from organic farming were relatively higher or good enough as compare to conventional counterparts. For further boosting the organic production agriculture department /local organisation should take needful steps to promote organic cultivation by conducting vigorous campaigns/demonstrations to increase the interest of organic farming. Further, higher premium price and green marketing channel should be promoted by the Government for boosting organic cultivation.
- The results of the study show that an increase in quantity of farm yard manure, neem cake, vermicompost, *jeevamirtham, panchagaviya* would increase the production of organic products. Hence, the extension infrastructurehas to arrange for training programmes to popularise these inputs and also give technical guidance to organic farmers.
- The main problem faced by organic growers in production was the difficulty in getting organic certification. Hence cheap and quick certification process should be promoted by certification agencies and government should also come to the farmers rescue in this regard.
- A well organized and accessible marketing cells should be established for Exploration and development of proper market linkages. As reported in study that many farmer lost the real value of produce in absence of proper market linkage with effective and supportive guideline.
- Promotion of some of cheap and resource saving technologies like *Rishi krishi, panchagavyakrishi, zero budget farming, zero tillage farming, natural farming, biodynamics farming, nateuco farming, Jaiva Krishi*, etc. should be done.
- Incentive or financial assistance will be provided to registered 'Gaushalas'on better management, selling and utilization of the products.
- Setting up of processing, packaging, labelling units for better return and to encourage exports of the organic products.
- Interactive training programme and effective orientation / Capacity development programmes(CDP) will be further strengthened with modern method of communication and learning.

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