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Study the status of organic farming in Bikaner district of Rajasthan

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Abstract

The present study was undertaken for comparative analysis of organic and inorganic farming Practice in Bikaner district of Rajasthan. Bikaner district was selected purposively as it has large area under rainfed farming and mostly fertilisers and pesticides are not being used in this area. Looking to the virginity of land, state government is taking initiatives to bring much area under organic farming under Paramparagat Krishi Vikas Yojana (PKVY).

For the study 30 farmers for organic farming and 30 farmers for inorganic farming were selected from two potential villages. The study was done for two crops viz., Wheat and Bajra. The status of organic farming shows that an area of 1494 acre is actually being undertaken under PKVY scheme.

Keywords: organic farming, paramparagat krishi vikas yojana and rainfed farming

Introduction

India is the world's largest producer of milk, second largest producer of rice, wheat, sugar, fruits and vegetables, and the third largest producer of cotton, just only to mention a few. The direct contribution of the agricultural sector to national economy is reflected by its share in total GDP, its foreign exchange earnings, and its role in supplying savings and labour to other sectors. In spite of the advantages accrued to India, in terms of achieving self-sufficiency in food production and increasing livelihood choices to the rural poor, green revolution made the Indian farmers and those world over to depend mostly on chemical fertilizers and pesticides, which degraded soil fertility, and environment.

The negative consequences of higher use of chemical fertilizers and pesticides are reduction in crop productivity and deterioration in the quality of natural resources. Pretty and Ball (2001) have pointed out that the environment will be affected by the carbon emission of the agricultural system through: a) Direct use of fossil fuel in farm operations, b) Indirect use of embodied energy for producing agricultural inputs and c) Loss of soil organic matter during cultivation of soils. Cole *et al.* (1997) have observed that agriculture releases about 10-12 percent of the total greenhouse gasses emissions which is accounted for about 5.1 to 6.1 Gt CO₂. Joshi (2010) has also pointed out that intensive agriculture and excessive use of external inputs are leading to degradation of soil, water and genetic resources and negatively affecting agricultural production.

India is bestowed with lot of potential to produce all varieties of organic products due to its various agro-climatic regions. In several parts of the country, the inherited tradition of organic farming is an added advantage which resulted in making the country to stand number one in terms of number of organic farm producers and eight in terms of percentage of the of area under organic farming practice to its total area under farming. India produced around 3,96,997 MT of certified organic products, which include all varieties of food products namely basmati rice, cereals, pulses, oil seeds, tea, coffee, spices, fruits, herbal medicines, honey, processed food and their value added products. The production is not only limited to the edible sector, but also to that of organic cotton fibre, garments, cosmetics, functional food products, body care products etc.

Methodology

In the present an attempt has been made to describe different aspects of methodology followed and techniques used in carrying out the present investigation. While doing so, the methodology adopted in investigations has been taken into account.

Sampling procedure

Selection of study area

Bikaner district was selected purposively as it has large area under rainfed farming and mostly

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fertilisers and pesticides are not being used in this area. Looking to the virginity of land government is taking initiatives to bring much area under organic farming under Paramparagat Krishi Vikas Yojana (PKVY). The brief introduction about PKVY is as follows:

Paramparagat krishi vikas yojana (PKVY)

PKVY is an elaborated component of Soil Health Management (SHM) of major project National Mission of Sustainable Agriculture (NMSA). Under PKVY Organic farming is promoted through adoption of organic village by cluster approach and PGS certification.

Expected outcomes

The Scheme envisages

- Promotion of commercial organic production through certified organic farming.
- The produce will be pesticide residue free and will contribute to improve the health of consumer.
- It will raise farmer's income and create potential market for traders.
- It will motivate the farmers for natural resource mobilization for input production.

Programme implementation

- Groups of farmers would be motivated to take up organic farming under Paramparagat Krishi Vikas Yojana (PKVY).
- Fifty or more farmers will form a cluster having 50 acre land to take up the organic farming under the scheme. In this way during three years 10,000 clusters will be formed covering 5.0 lakh acre area under organic farming.
- There will be no liability on the farmers for expenditure on certification.
- Every farmer will be provided Rs. 20,000 per acre in three years for seed to harvesting of crops and to transport produce to the market.
- Organic farming will be promoted by using traditional resources and the organic products will be linked with the market.
- It will increase domestic production and certification of organic produce by involving farmers.

Components and pattern of assistance

Adoption of Participatory Guarantee System (PGS) certification through cluster approach

Mobilization of farmers / local people to form cluster in 50 acre for PGS certification

- Conducting of meetings and discussions of farmers in targeted areas to form organic farming cluster @ Rs. 200 / farmer
- Exposure visit to member of cluster to organic farming fields @ Rs. 200 / farmer
- Formation of cluster, farmer pledge to PGS and Identification of Lead Resourceful Person (LRP) from cluster
- Training of cluster members on organic farming (3 trainings @ Rs. 20000 per training)

PGS Certification and Quality control

- Training on PGS Certification in 2 days @ Rs. 200 per LRP
- Training of Trainers (20) Lead Resource Persons @ Rs. 250 /day/ cluster for 3 days.

- Online Registration of farmer @ Rs.100 per member cluster x 50
- Soil sample collection and testing (21 samples/year/cluster) @ Rs. 190 per sample for three years
- Process documentation of conversion into organic methods, inputs used, cropping pattern followed, organic manures and fertilizer used etc., for PGS certification @ Rs.100 per member x 50
- Inspection of fields of cluster member @ Rs. 400 /inspection x 3 (3 inspections will be done per cluster per year)
- Residue analysis of samples in NABL (8 samples per year per cluster) @ Rs. 10, 000/ sample
- Certification Charges
- Administrative expenses for certification

Adoption of organic village for manure management and biological nitrogen harvesting through cluster approach

Action plan for Organic Farming for one cluster

- Conversion of land to organic @ Rs.1000/acre x 50
- Introduction of cropping system; Organic seed procurement or raising organic nursery @ Rs.500/acre/year x 50 acres
- Traditional organic Input Production units like Panchagavya, Beejamruth and Jeevamruth etc. @ Rs.1500/unit / acre x 50 acre
- Biological Nitrogen Harvest planting (Gliricidia, Sesbania, etc) @ Rs. 2000/acre x 50 acre
- Botanical extracts production units (Neem cake, Neem oil) @ Rs.1000/unit/ acre x 50 acre

Integrated manure management

- Liquid Biofertilizer consortia (Nitrogen fixing / Phosphate Solubilizing/ potassium mobilizing biofertilizer) @ Rs. 500/acre x 50
- Liquid Biopesticides (Trichoderma viridae, Pseudomonas fluorescens, Metarhizium, Beauveria bassiana, Paecilomyces, verticillium) @ Rs. 500 /acre x 50
- Neem Cake/ Neem Oil @ Rs.500/acre x 50
- Phosphate Rich Organic Manure / Zyme Granules @ Rs. 1000/acre x 50
- Vermicompost (size 7'x3'x1') @ Rs.5000/ unit x 50

Custom Hiring Centre (CHC) charges

- Agricultural implements (As per SMAM guidelines) - Power tiller, Cono weeder, Paddy thresher, Furrow opener, Sprayer, Rose can, Top Pan balance
- Walk-in tunnels for horticulture (As per guidelines of MIDH)
- Cattle shed / poultry / piggery for animal compost (As per Guidelines of Gokhul Scheme)

Packing, Labeling and Branding of organic products of cluster

1. Packing material with PGS logo + Hologram printing @ Rs. 2500 / acre x 50
2. Transportation of organic produce (Four wheeler, 1.5 tone load capacity) @Rs. 120000 max. assistance for 1 cluster
3. Organic Fairs (maximum assistance will be given @ 36330 per cluster) With PKVY running in Bikaner district since 2015-16 and next year onwards farmers will be getting certification of organic production with the help of government.

Selection of panchayat samities

This scheme was started mainly in Nokha tehsil of Bikaner district in which two *panchayat samities* viz., Nokha and Panchu were having maximum number of farmers adopting organic farming therefore, these two *panchayat samities* were selected for selecting villages.

Selection of villages

A list of all the villages falling under the selected *tehsil* was prepared and two villages having more potential for organic farming (both in *kharif* and *rabi*) were selected. The selected villages were Jasrasar and Jangloo.

Selection of farmers

A list of all the farmers practicing both the organic and inorganic farming was prepared and categorized into standard size groups viz; Small (< 2 ha), Medium (2- 4 ha) and large (> 4ha) land and total sample of 30 farmers, 15 each for organic and inorganic farming, representing different size groups from each selected village were selected randomly according to probability proportion to the number of farmers in each size group. Therefore, total 60 farmers were selected for the study

Plan of sample farmers practicing organic farming (Number)

Table 1

Village	Jasrasar		Jangloo		Total	
	Total farmer	Selected farmers	Total farmer	Selected farmers	Total	Selected
Small (< 2 ha)	59	4	60	3	119	7
Medium (2-4 ha)	135	6	100	6	225	12
Large (>4 ha)	101	5	92	6	193	11
Total	295	15	252	15	547	30

Average size of operational land holding

The average size of operational holding available with selected farmers in the study area was worked out and presented.

Average size of operational land holding on sample farmer under Different category

Table 2

Small	Medium	Large	Overall
1.75	3.45	6.76	3.99

The table shows that the overall average size of operational holding of selected farmers was 3.99 hectares. The average size of land holding on small, medium and large farmers was 1.75, 3.45 and 6.76 ha, respectively.

Selection of crop

Villages selected an falling in Nokha panchayat out of three panchayat in nokha tehsil. Among all *kharif* and *rabi* crops, one crop of each season was selected on the basis of highest area under organic crop and the same crop was selected grown under inorganic practices. The selected crop was bajra and wheat as organic farming is mainly going on with these two crops in Nokha.

Collection of data

Both primary and secondary data were collected. The secondary data were collected from various sources (ADO, Bikaner, Govt. of Rajasthan and under PKVY). The primary data were collected from selected farmers through personal interview method on pre designed schedule for the year 2015-2016. The data were compiled and analyzed according to the various categories of sample farms. The collected data were analyzed by using various statistical tools to achieve of the objectives.

Analytical procedure

Objective wise analytical procedure is presented in this section.

Stats of organic farming in Bikaner district

Data were collected from Agriculture Department of Bikaner about organic farming in Bikaner district about the present status.

Result and Discussion

Status of organic farming in Bikaner district

In Bikaner district total area under rainfed agriculture is about 316356.65 ha considering 20 per cent area under purely rainfed cultivation. This area can be converted very easily in organic farming. Considering this fact state government is promoting organic farming in the district.

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Total 1494 acre of area is under PKVY scheme in Bikaner district.

Area under rainfed farming in Bikaner districts (potential for organic farming)

This section examines the Status of rainfed farming in Bikaner district of Rajasthan state. The data of area under rainfed farming in Bikaner district were collected from the concerned office for the period from 2006-07 to 2015-16.

Area under rainfed farming in Bikaner district of Rajasthan

Table 3

S.No.	Year	Area under rainfed farming (ha)	Area increase / decrease	Percentage
1	2006-07	152746.32	-	-
2	2007-08	160218.65	7472.33	4.89
3	2008-09	169796.45	9577.80	5.98
4	2009-10	178572.35	8775.90	5.17
5	2010-11	192178.93	13606.58	7.62
6	2011-12	208797.80	16618.87	8.65
7	2012-13	223646.32	14847.52	7.11
8	2013-14	245702.84	22057.52	9.86
9	2014-15	273934.24	28231.40	11.50
10	2015-16	316356.65	42422.41	15.48

Source: Directorate of Agriculture, Bikaner

The analysis shows that area under rainfed farming in Bikaner district of Rajasthan has not been widely varied from 2006-07. The area under rainfed farming was about 152746 hectare in 2006-07 which reached to 160218.65 hectare. In absolute terms the area increases 7472.33 hectare from 2006-07 to 2007-08 and in terms of percentage it increased about 5 percent over period of time. No particular trend was found in increase in area under rainfed farming till 2012-13. It was increased 5.98 percent from 2006-07 to 2008-09, but in 2009-10 the area under rainfed farming declined in absolute term from 9577.80 hectare to 8775.90 hectare and in term of percentages it decreased from 5.98 to 5.17 percent. Again it increased from 5.17 to 7.62 percent from year 2009-10 to 2010-11 and 8.65 percent in 2011-12. This shows that about 50 percent area under rainfed farming increased over period of time from 2006-07 to 2011-12. The result shows that the area under rainfed farming continuously increased from 2013-14 to 2015-16 except in the year 2012-13 increase in area declined from 16618.87 hectare, to 14847.52 hectare whereas in absolute terms and in terms of percentage it was declined from 8.65 to 7.11 percent. But from the year 2013-14 area under rainfed crop in Bikaner district continuously increased with higher percentage. The table further shows that during 10 year period i.e., from 2006-07 to 2015-16, area under rainfed farming increased about two times. The large area under rainfed farming was recorded due to Parampragat Kishi Vikash Yojna (PKVY) in the district in 2014-15 with the aim to increase the production of rainfed products.

Therefore, from the above discussion it can be revealed that rainfed farming in the Bikaner district practices with the positive response by the farmers and remarkable area increased under rainfed farming in the district over period from 2006 -07 to 2015-16.

Cropping pattern on sample farms

The land utilized under organic and inorganic crop by different categories of selected farmers in *kharif* and *rabi* seasons are presented in table 4.2. The table reveals that in *kharif* and *rabi* seasons the bajra and wheat were the major crops grown by all categories of farmers. The other crops grown by the farmers were cluster beans, moth in *kharif* season and gram, mustard and barley in *rabi* season. In *kharif* season, at overall basis, 72.94 percent area was under bajra crop, out of which 52.18 percent area was under organic farming and 20.76 percent under inorganic farming. The other crop cluster bean, moth and groundnut occupied 10.38, 6.2 and 10.30 per cent of net area sown, respectively. The area under different crop increased with increase in the size of land holding. In *rabi* season, the major crop was wheat which occupied 85.3ha area of the total available land at overall basis. In general inorganic farming was practiced for producing the wheat and other crops. Out of total available land about 64.40 per cent land was utilized under inorganic farming and 20.91 per cent under organic farming. The area utilized under gram, mustard and barley was 10.18, 3.30, and 1.10 per cent, receptivity at overall basis. The cropping intensity was worked out 183 % at overall level in the study area.

Conclusion

Looking to the virginity of land, Government of Rajasthan is taking initiatives to bring much area under organic farming under Paramparagat Kishi Vikas Yojana (PKVY). Rain fed farming during 2006-07 to 2015-16 in Bikaner district and Rajasthan state as a whole was 10.59 per cent during period. This indicates that Rajasthan state as well as Bikaner district has a great potential in using the rainfed farming for organic farming.

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