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Distribution Of Organic Infrastructure Between Organic And Inorganic Farmers In Kodagu: A Farm Level Study

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Abstract

Organic farming is a sustainable form of farming system which has been gaining popularity all over the world. The Government of India and several State Governments in the country have initiated various promotional measures to encourage the farmers to switch over from inorganic farming system to organic farming system. It requires organic resources such Vermin compost pit, biodigister, jeevambrutha drum etc for producing organic inputs. Therefore, this study was undertaken to examine the organic resources of organic and inorganic farmers at farm level and hence field survey was conducted during January-February 2018. In this study, randomly 180 sample respondents were selected which consists of 90 organic and also equal number of inorganic farmers for verifying the topic. The results of the study indicated that organic farmers are socially and economically well ahead compared to inorganic farmers and respondents having college education are following the organic farming than the respondents who are having only primary as well as secondary education. Young age farmers prefer to adopt the organic farming rather than the middle and old age farmers. Further, organic farmers have more number of organic resources like vermin pit, compost pit, biogas plant, bio digester and jeevambrutha drum than the inorganic farmers. Therefore, it is necessary to provide more financial assistance for having the organic resources which in turn contribute to promotion of organic farming.

Key words: Organic, Inorganic, Vermin, bio-digester and reckless.

Background

During 1950s dependence of Indian agriculture on off-farm inputs was very low and hence it was termed as Natural Farming System (NFS). NFS was basically primitive in nature

giving low production and income (Thakur and Sharma, 2005). In the mid 1960s, India had acute shortage of food grains and demand continued to increase due to increasing population. On the supply side possibility of increasing production by bringing more land under cultivation was limited (Dasgupta, 1977). At that movement, dependency on import of food grains from other countries was only a short time remedy; threaten to food security and even to the stability of our country in the long run. In order to face this challenge, Government of India encouraged the farming community to adopt the green revolution technology. The green revolution technology refers to the use of High Yielding Varieties (HYVs) seeds and their associated farming practices which resulted in Green Revolution. As a result of green revolution technology, India transformed food deficit nation into a food surplus nation. Meanwhile, increased use of chemicals under green revolution technology disturbed the harmony existing among soil, plant and microbial population (Ghosh 1999). More importantly, the intensity of their use in a few regions and a few crops are causes of serious concern to human health, soil, water, environment and thus to the sustainability of agriculture production in the country. However, the success story of agriculture under Inorganic farming system (IFS) has come to be regarded as one that begin and ended with Green Revolution (Rajagopalan, 1995). Therefore, to keep the natural resources afresh and to meet the national goal, organic farming using manures, legumes, crop residue, off-farm organic wastes and bio-pesticides enable the country to produce food grains sufficiently along with the conservation of resources. Moreover, organic agriculture in general is a system of crop and livestock production that promotes and enhances the health of agricultural ecosystem while providing healthy food and reflects the profound inter relationship that exists between farm biota, its production and the overall environment. In this background, the present study was undertaken to examine the organic resources of organic and inorganic farmers in Kodagu district.

2. Review of Literature

Recently, organic farming practices are gaining more importance with the use of the organic inputs, such as Vermin compost, biogas slurry, bio-digests, Jeevambrutha, compost, FYM (Farm Yard Manure) etc are critical to organic famers as well as inorganic farmers. Organic resources particularly livestock population, vermin-compost pit, compost pit, biogas plant, bio-digests, jeevambrutha drums etc are critical for production of organic inputs and also to promote the organic farming. These organic resources are very essential for the adoption of

organic farming and its better performance. Organic farmers are realized the benefits of organic farming in terms of increasing the soil fertility, soil health and environmental health. The farmers are well aware with the use of the organic inputs in organic farming. These organic inputs are playing a key role in promoting growth and providing immunity to plant system. In this context, the research articles related to the study are review here as under;

"Organic farming is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives. To the maximum extent feasible, organic farming system rely upon crop rotations, crop residues, animal manures, legumes, green manure, off farm organic wastes, mechanical cultivations, mineral bearing rocks and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients and to control insects, weeds and other pests"(USDA,1980). This is authoritative one and clearly revealed that organic agriculture is one of several approaches to sustainable agriculture and many of the techniques used (e.g. rotation of crops, double-digging, mulching, integration of crops and livestock) are practiced under various agricultural systems.

Bio-control methods like the neem based pesticides to trichoderma are available in the country. Indigenous technological product such as Panchagavya which was experimented at the University of Agricultural Science, Bangalore found to control effectively wilt disease in tomato (Prakash, 2003). Adequate soil fertility management is a basic element for a successful organic production system. A number of tools can be used for good soil fertility management. Soil fertility can be improved through the application of manure, use of green manure, use of rotational cycles in which soil-building phases are included etc (Jantien Emmens,2003).

Krishnamurthy et al.,(2008) were examined the organic farming practitioners and their perceptions from some selected farmers perusing organic farming in Dakshina Kannada and Udupi districts of coastal Karnataka. The results indicated that the selected farmers perceived the meaning of organic farming as non-use of inorganic chemicals of any type in farm production and also it improves soil fertility and microbial activity. The main sources of

awareness on organic farming were farm magazines, news papers and meeting of organic farmers. Besides, the role of model organic farmers of neighboring districts and reading articles in print media are motivated the farmers to adopt organic farming. Further, it was also observed that organic farmers were using local variety of seeds and different organic inputs to production of organic crops. However, there were constraint faced by these organic farmers are decline in yield in initial years of organic farming, lack of exclusive market and price system for organically grown products and lack of encouragement.

Review of literature highlighted the importance of organic farming and sustainability of yield in the long run. Inputs required for organic farming are vermin compost, jeevambrutha, crop residue, press mud; farm yard manure, green manure etc can be produced at the farm level by using the resources available in the field. The production of the organic inputs depends upon the availability of organic resources such as vermin compost pit, bio gas plant, bio digester and jeevambrutha drum. In this context, this study was undertaken to examine the organic resources of organic and in organic farmers with the following objectives.

3. Objectives of the study

The present study is based on the objective of examine the socio economic conditions of organic and inorganic farmers and to study the organic infrastructure of organic and inorganic farmers at farm level in Kodagu district.

4. Methodology of the study

Data required for this study has been collected from both secondary and primary sources. The secondary data has been collected from the articles published in refereed journals, Government reports and internet sources. Kodagu district has been purposively selected for this study because the district has not only abundant organic resources but also more comparative advantage for promotion of organic farming in the state. Primary data collected from the field survey conducted during the months of January and February 2018 through pre tested schedules. In this process, total 180 sample respondents were selected randomly. After collecting the information, the sample respondents have been classified into organic and inorganic farmers. Out of 180 sample respondents, 90 are organic and remaining 90 are inorganic farmers. Organic farmers are those farmers who use only organic inputs in growing

crops and rearing livestock whereas inorganic farmers are those who are growing crops and rearing animals with or without using organic inputs along with the inorganic inputs. Thus, the study was based on both secondary and primary data and also confined to Kodagu district.

5. Results and Discussion

In this section, the results of the study were presented according to the specific objectives set in the study;

5.1. Socio Economic Conditions of Organic and Inorganic Farmers

Socio economic conditions of farmers indicate the farm management exposure of farmers in the society and also influence on the selection of different agricultural systems such as organic, inorganic, sustainable, integrated farming system etc. Age, education, caste, size of family, size of land holdings, occupational structure are important demographic feature indicate the socio economic conditions of sample respondents. The respondent is not needed the senior member of the family but the person who involved in agricultural operations. Therefore, the information related to socio economic conditions collected and summarized in the table 1.

Age is one of the important demographic features of the sample respondent which indicates the adoption of innovative methods and practices in agriculture. Average age of the organic farmers (36.5) was lower than the inorganic farmers (45.3). Therefore, the age-wise distribution of both organic and inorganic farmers collected and results are presented in the table. Organic and inorganic farmers were categorized as young (<30 years), middle age (between 31 to 58 years) and old age farmers (>58 years). Overall category includes the organic and inorganic farmers in the study area. It was observed from the table that in the overall category the majority of the farmers belonged to middle age (80) followed by young (67) and old age (33) farmers. In the disaggregate data, organic farmers category accounts highest percentage of farmers belonged to young age (50%) whereas only 24.4 percent of farmers were found to be belonged to young age in case of inorganic farmers category. It was inferred that the young age farmers are more innovative in nature and adopt the organic farming compared to inorganic farmers who still depend upon inorganic farming system.

Education encourages adoption of new methods and practices in agriculture and hence level of education of the sample respondents were classified into primary, secondary and college. It was found from the table that the majority of the organic farmers (38) were having the college education whereas only few inorganic farmers (12) were having the college education. Another interesting result was that the higher percentage of inorganic farmers (31.1%) were found to have primary education where it was only 11.1 percent in case of organic farmers. It was inferred that respondents who were having college education adopted the organic farming and farmers those who were having primary and secondary education still depend on inorganic farming. Caste is one of the important demographic features which indicate the social status of the individual. Therefore, information of caste of the respondents collected and summarized in the table 1. Number of sample respondents belonged to the Schedule Caste (SC) and Schedule Tribe (ST) was found to be lowest who adopted the organic farming and hence both groups were clubbed in this study. The majority of farmers belonged to OBC (68) were adopted the organic farming whereas only 12 and 10 farmers belonged to SC & ST and General category adopted the organic farming respectively. Similar results were visible in case of inorganic farmers.

Size of the family indicates the economic status of the family and hence information of family member collected and results are summarized in table. Size of sample respondents families were categorized as small (<4 Member), medium (between 5 to 8 members) and big family (>8). It was interesting to note that the higher percentage small families (48.9%) were adopted the organic farming compared to the similar category of inorganic farmers (56.7%). Therefore, organic farming was relatively associated with the size of the family. Occupational diversification indicates the economic and social status of the family in the society. Though the agriculture is the mainstay of the people in rural area, family members of the sample respondents depend upon the apiculture, wine preparation, snacks, rural industries, knitting and embroidery, growing and selling the anthorium etc. It was evident that the majority of respondents family members from organic and inorganic farmers dependent on agriculture and followed by the non agricultural occupation for their livelihood however, it was not mention in the study.

Table 1: Socio economic profile of Sample Respondents

Sl. No.	Particulars	Organic Farmers	Inorganic Farmers	Overall
1	Age of the Respondent	36.5	45.3	42.4
	Young Farmers	45(50.0)	22(24.4)	67(37.2)
	Middle Age Farmers	30(33.3)	50(55.6)	80(44.4)
	Old Age Farmers	15(16.7)	18(20.0)	33(18.4)
	Total	90(100.0)	90(100.0)	180(100.0)
2	Education			
	Primary Education	10(11.1)	28(31.1)	38(21.1)
	Secondary Education	42(46.7)	50(55.6)	92(51.1)
	College Education	38(42.2)	12(13.3)	50(27.8)
	Total	90(100.0)	90(100.0)	180(100.0)
3	Caste			
	SC & ST	12(13.3)	30(33.3)	42(23.3)
	OBC	68(75.6)	40(44.4)	108(60.0)
	Others	10(11.1)	20(22.3)	30(16.7)
	Total	90(100.0)	90(100.0)	180(100.0)
4	Size of Family			
	Small Family	44(48.9)	51(56.7)	95(52.8)
	Medium Family	36(40.0)	28(31.1)	64(35.6)
	Big Family	10(11.1)	11(12.2)	21(11.6)
	Total	90(100.0)	90(100.0)	180(100.0)
5	Land Holdings			
	Small Holdings	57(63.3)	42(46.7)	99(55.0)
	Medium Holdings	18(20.0)	38(42.2)	56(31.1)
	Large Holdings	15(16.7)	10(11.1)	25(13.9)
	Total	90(100.0)	90(100.0)	180(100.0)

Source: Field Survey
Note: Figures in parentheses are percentage to total

Ownership of landholdings in our country is a social prestige and great attachment in favour of the land and thus people prefer to have at least a piece of land. Landholding determines the socio economic status and prestige in the society and hence the size of landholdings of the sample respondents were categorized as small (<2 hectares), Medium (between 2 to 5 hectare) and large holdings (>5 hectares). It was evident from the table, in the overall category majority of the sample respondents were found to be held small holdings (99) compared to the medium (56) and large holdings (25). In the disaggregate data indicated that the small farmers prefer to organic farming. Hence, it could be inferred that the landholdings of the organic and inorganic farmers were very small and uneconomical in the district.

5.2. Organic Farming Infrastructure

Information about the availability organic infrastructure at farm level among the organic and inorganic respondents has been collected and the results have been consolidated in the tabular form and discussed in the following section.

Production of organic manures at the farm level reduces the dependency on the external inputs the farmers in general and organic farmers in particular. Production of organic manure at the farm level requires subordinate components like vermin-compost pit, biogas plant, bio digesters, jeevambrutha drum, compost pit etc. Information relating to the infrastructure required to produce the organic manures has been collected from the respondents and the results are consolidated in the tabular form. Table 2 depicts the results on the possession of organic infrastructure for the production of organic manures by the organic and inorganic respondents of Kodagu district.

Vermin-compost is a significant source of plant nutrients for all types of agricultural crops. It has been produced with the help of vermin's which are the master builders of the soil and production of which requires a pit. The data relating to vermicompost pit has been collected from the respondents and results are presented in the table. Considerably higher percentages of organic farmers (72.2%) are having the vermin-compost pit compared to the inorganic farmers (26.7%). Hence, it could be inferred that organic farming is more common among the farmers who are having the vermin-compost pit or it could also be inferred that organic farmers are ahead of inorganic farmers in taking initiation to have the vermin-compost pit.

The slurry is the byproduct of fresh cattle dung which is used in the production of bio gas. Hence, the availability of bio-gas slurry requires the bio gas plant. The information of bio gas plants has been collected and summarized the results in the table. Relatively higher percentages of organic farmers are having the biogas plant (64.4%) compared to their counterparts in inorganic farmers category (25.6%). Therefore, the organic farming is not significantly associated with the possession of biogas plant and it is also not influencing on the adoption level of organic farming. Bio digesters are the small puddles constructed by cement and bricks in which dung, crop residue, weed and other kind of waste collected and allowed to rotten

for some time. Water will be added through water tape to convert the mixture into the liquid form. The puddle filled with the nutrient in the liquid form. The liquid nutrient will be release to the crops through the outlet. Relatively higher percentage of organic farming households (62.2%) are having bio digester facility compared to the inorganic farming households (20.0%). Hence, the organic farming is significantly associated with the bio digesters. Organic farmers are having more inclination towards possession of bio digester organic plant nutrient preparation facilities.

Table 2: The Organic Resources of Sample Respondents Households

Organic Infrastructure	Farming System	Possession Status		
		Having	Not Having	Total
Vermi compost Pit	Organic Farmers	65(72.2)	25(27.8)	90(100.0)
	Inorganic Farmers	24(26.7)	66(73.3)	90(100.0)
	Overall	89(49.4)	91(50.6)	180(100.0)
Biogas Plant	Organic Farmers	58(64.4)	32(35.6)	90(100.0)
	Inorganic Farmers	23(25.6)	67(74.4)	90(100.0)
	Overall	81(45.0)	99(55.0)	180(100.0)
Bio digester	Organic Farmers	56(62.2)	34(37.8)	90(100.0)
	Inorganic Farmers	18(20.0)	72(80.0)	90(100.0)
	Overall	74(41.1)	106(58.9)	180(100.0)
Compost Pit	Organic Farmers	68(75.6)	22(26.4)	90(100.0)
	Inorganic Farmers	38(42.2)	52(57.8)	90(100.0)
	Overall	106(58.9)	74(41.1)	180(100.0)
Jeevambrutha Drum	Organic Farmers	78(86.7)	12(13.3)	90(100.0)
	Inorganic Farmers	18(20.0)	72(80.0)	90(100.0)
	Overall	96(53.3)	84(46.7)	180(100.0)

Source: Field Survey
Note: Figures in parentheses are percentage to total

Compost pit is a pit constructed to produce the compost by way of collecting the green leaves, twigs of young plants and other agricultural waste and poured all these waste materials into a pit to rotten for few months. It is also an important source of organic manure for growing paddy and other crops. Relatively higher percentage of organic farmers (75.6%) are found to be

having compost pit compared to the inorganic farmers (42%). Jeevambrutha is another important source of plant nutrient and also used as a bio pesticides to prevent the various crop diseases. It is being used as plant nutrient as well as the plant protection measure. The respondents can prepare the jeevambrutha with help of cow urine, dung, jaggery, grain flour etc. Plastic drum is used to prepare the jeevambrutha. Majority of organic respondents (86.7%) are having the Jeevambrutha drum whereas very few inorganic respondents (20%) are having this. Hence, it could be inferred that the organic farmers are moving towards the eco friendly farming compared to inorganic farmers. Thus, the organic farmers are having more organic resources which are essential to produce the organic inputs which further reduce the use of inorganic inputs.

Conclusion

Farming system is very essential to sustain the yield in the long run and maintain the stable farm income. Inorganic farming system has made soil lifeless, unfertile and even yield under inorganic farming system was declining over the period. Reckless use of chemical fertilizers and pesticides in inorganic farming has led to contamination of food, increases diseases like blood pressure, sugar and some of the diseases spread out to crops never seen before. Recently, the health conscious people prefer to consumption of agricultural products produced under organic farming methods. Therefore, large number of farmers across the length and breadth of the country are switching over from inorganic farming system to organic farming system. Organic farming largely depend upon on- farm resources rather the off farm resources. It requires organic inputs which can be produced from the organic resources available even at the farm level. Moreover, it is the responsibility of the government to encourage the farmers to use the organic inputs for production of crops which not only reduces the dependency on external inputs but also helps the farmers to bring down the production cost of crops and livestock. Therefore, the government must provide the subsidy to farmers who undertake the production of organic inputs.

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