**International Journal of Multidisciplinary Research and Development**
**Online ISSN: 2349-4182, Print ISSN: 2349-5979, Impact Factor: RJIF 5.72**
**www.allsubjectjournal.com**
**Volume 3; Issue 7; July 2016; Page No. 01-05**

# Employment and organic farming in Shimoga district of Karnataka

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**Abstract**
This study examined the employment potentialities in organic and inorganic paddy farming in Shimoga district of Karnataka. Field survey has been conducted during 2010-11 for collecting data from the four taluks lies in the hilly region of the district. Data have collected regarding paddy production under organic and inorganic farming systems. The results of the study showed that the organic farming is a sustainable form of farming and alternative to inorganic farming. Organic respondents have socially and economically ahead than the inorganic respondents. Educated respondents are more conscious about food and agro ecosystem thereby farmers with higher level of knowledge adopt the resource conserving and environmental friendly organic farming. It is found that forward caste people are more inclination towards the organic farming and backward caste people are still sticking to inorganic farming system. The mean value of organic respondents land holding is considerably higher than that of inorganic respondents land holding. Finally, it also reveals the fact that the organic farming is more labour intensive method compared to the inorganic farming system.

**Keywords:** Organic Farming System, Inorganic Farming System, Sustainability, Eco system, and Labour intensive

## 1. Introduction
In many developing countries, agriculture continues to be the most important sector of the economy, accounting for the biggest production of employment. Hence, the development of agriculture is critically important for ensuring food and nutritional security for the hundreds of millions of people that still live below the poverty line, for raising rural incomes and generating employment opportunities, and for stimulating industrialization and overall economic development of the country. Given the growth rate of population, the rise in demand for food is a natural concomitant. Further, the rise in income levels and change in tastes and preferences of people have also contributed to the increased demand for diverse food products. Among them, very important one is the organically produced food and other products. Organic farming is becoming popular form of sustainable agriculture all over the world and not new to Indian farming community. It has very long history even during Vedic period our farming community practiced organic farming. Several forms of organic farming are being successfully practiced in diverse climate, particularly in rain fed, tribal, mountains and hill areas of the country (Mangala Rai, 2008) [10]. Hence, the organic farming has expanded rapidly in recent years and is seen as a sustainable alternative to inorganic agricultural system. In this context, the study has been undertaken to examine the organic versus inorganic farming practices in generating the employment opportunities with respect to paddy crop growing.

Green Revolution Technology has come at the cost of extensive environmental degradation and considerable health problems due to exposure to agro-chemicals. As IFPRI (International Food Policy Research Institute, 2002) has stated that excessive and inappropriate use of fertilizers and pesticides has polluted waterways, poisoned agricultural workers, and killed beneficial insects and other wildlife. Irrigation practices have led to salt build-up and eventually abandonment of some of the best agricultural lands. In many cases, over 90 per cent of the inorganic produce of vegetables, food grains, fruits, milk etc., produced under IFS (Inorganic Farming System) contains poisonous agro-chemicals residues harmful and unsuitable for consumption (Paroda, 2001). Obviously, the present inorganic farming system has created mismatch among availability of resources and consumption, resulted decline in water table, soil health degradation, useful birds elimination, appearance of new weed bio-types, insect-pest and disease ultimately affecting the profitability of farming offer an important option which not only improve the resource but also ensures their rational utilization .dependent upon for their survival and well-being (Gill and Sarlach (2006) [4]. Thus the organic agriculture has become one of the priorities across for sustainable agriculture development worldwide due to concerns about the negative impact of Inorganic agriculture, international trade potential and its combination to sustainable development. Apart from these broadly concerns, small organic agriculture is very relevant and appropriate for a developing country like India, due to its diverse ecological niches its fragile and offers marginal land characteristics and high labour force availability.

## 2. Review of Literature
In the field of research, review of the literature on the field related to study enables the researcher to identify the research gap, developing the analytical framework and interpretation of the findings. Some of the important studies related to this ar**e**a of the study have, therefore, been summarized under the following headings.

Mudlapur *et al.* (2006) [11] compared the chemical and organic farming in selected fields of Kurthkoti village in Gadag district during 2005-06. The study indicated that yield and net income per acre obtained under organic farming was higher than the chemical farming. The organic farming is capable of solving the poverty in countryside as it generates surplus employment opportunities for the rural people in the long run. Generally, organic farming methods are labour-intensive (FAO, 1998; IFAD, 2005) [3]. The present study also found that the requirement of human labour was 21.53 per cent higher on OSF (Organic Sugarcane Farming) than ISF (Inorganic Sugarcane Farming). This implies that OSF may provide opportunity to the rural masses of gainful farm employment in their own areas. This feature of OSF may help reduce the acute problem of migration to urban areas (Kshirsagar, 2006) [8].

Sununtar Setboonsarng (2006) has examined the organic agriculture, poverty reduction and its linkages to the Millennium Development Goals (MDGs). The study revealed that organic agriculture is uniquely pro-poor and has strong potential to meet the food security and environmental sustainability. Organic agriculture improved profitability and income due to premium price and lower cost of production. Besides, it contributed to the child and maternal health by way of quality food and reduced exposure to pesticides. Organic agriculture generates more employment opportunities in rural areas and reducing rural urban migration and alleviating population pressure in urban slums.

Ondura *et al.* (2002) assessed the agronomic and socio economic viability of organic and conventional practices and their prospectus at farm level in low and high potential areas of Kenya. The study found that the current organic practices of growing maize using compost and liquid manure top dressing in low potential areas showed relatively higher performance than those of current conventional farmers' practices of combined application of manure and mineral fertilizers. However, the opposite of results obtained from high potential areas whereas conventional practices outperformed organic practices in major agro-economic indicators. Eventually, they observed that the total labour required for growing maize using organic farming practices was not significantly different from that of using conventional practices in low and high potential areas. Similarly, the main benefits according by some organic farmers in developing countries (China and India) are that they now better standard of living. Good product prices, low unemployment, dropped rural emigration and reduced health risks (from chemicals) are the results of farming organic (MAF, 2005) [9].

Narayanan (2005) [12] has reported that the country like India can unify a number of benefits from the adoption of organic farming. The price premiums for the products, conservation of natural resources in terms of improved soil fertility and water quality, preservation of soil erosion, preservation of natural and agro biodiversity are major benefits. Economic and social benefits like generation of rural employment, lower urban migrations improved household nutrition, local food security and reduced the dependency on external inputs will be large gains in the Indian condition. The protection of environment and consequent increase in the quality of human life will be other contribution of organic farming. Offermann and Nieberg (1999) evaluated and reported higher total labour use on organic arable and mixed farms and much higher labour use on horticultural units, whereas for dairy farms labour requirements were found to be comparable to conventional and concluded that overall labour use an average 10 to 20 percent higher on organic farms than on comparable conventional farm in Europe.

One of the major issues of developing countries is the problem of unemployment especially for a large sector of less skilled group. Organic farming requires over 15 percent more labor than traditional farming and therefore provides rural job opportunities (Pimental *et al.* 2005). Some of the commonly used organic farming techniques such as strip farming, non-chemical weeding, and production, collection and transportation of organic supplements all requires significant labour. The labour scarcity and cost involved therein, may constrain adoption of organic farming in developed countries and also for cash-poor farmers in developing countries. However, for countries like India, labour as well as the cost involved therein is not a constraint. Instead, organic farming can generate employment opportunity for a vast section of rural communities. In India, women constitute an important component of labour work force in agriculture. Thus, the variations in nature of works and in planting and harvesting schedules may provide more work opportunities for rural women and a more evenly distributed and stabilized employment opportunity for male agricultural labour. It makes farmers and farm labours busy throughout the year with crops such as wheat, hairy vetch cover, rice and summer crops and mechanical weed control. In conventional farming more labours are required during spring and fall, providing only part-time job opportunity (Pandey and Singh, 2012) [6].

## 3. Research Gap

The review of existing literature on the organic farming revealed that organic farming is one of the important forms of sustainable agriculture and alternative to ill effects of inorganic farming. In fact organic farming has been supported on the grounds of sustainability and environmental friendliness. Almost all the studies reported that organic farming is generating more employment opportunities than inorganic farming. However, the results of the research studies which compared the organic and inorganic farming with respect to the generating employment opportunities are mixed one. Though good number of research results reported the higher employment opportunities in organic farming system compared to inorganic farming system there is no dearth of studies which have reported higher employment in organic compared to inorganic with respect to particular crop. Thus the results are region specific and crops specific. No comprehensive study has been conducted in Shimoga district covering employment opportunities. In this context, this study has been undertaken to compare the employment generation in paddy crop growing under organic and inorganic farming practices in Shimoga district of Karnataka.

## 4. Objectives of the study

The study is based on the following objective

- To know the concept of organic and inorganic farming
- To compare the socio-economic conditions of organic and inorganic farmers

- To compare the employment potentialities between organic and inorganic paddy farming in the district

## 5. Methodology

In Karnataka, Shimoga district has been selected for this study mainly because it is one of the districts in which organic farming is widely spreading and as some part of the district is particularly in Hilly Zone and as many of the paddy farms are organic by default. Four taluks of Shimoga district (Thirtahally, Hosanagara, Sagar and Sorab) are in hilly zone where soil quality is poor and erosion rate is high. The main disadvantage of inorganic farming method in this region is the leaching of fertilizers and pesticides into the nearby water bodies during the monsoon (Balaji 2006) [1]. This kind of agro climatic condition made the organic farming more popular in the district.

Primary data were collected from the sample organic and inorganic farmers for the crop season, kharif 2010-2011 from four taluks of the district. The total 240 respondents have been selected from all the four taluks of these 120 organic and 120 inorganic paddy growing farmers have been randomly selected in the taluk. In this study, the farmers who are applying only organic or biodynamic or natural inputs in the process of paddy production are considered as organic farmers and these farmers are not using chemical or synthetic fertilizers and chemical plant protection measures. The farmers who are applying the inorganic inputs in the process of paddy production with or without the use of organic inputs are termed as inorganic farmers.

## 6. Results and Discussion

The results of the study are presented and discussed in this part.

Socio-economic features of the farm families in general and heads of the families in particular influence their farming practices in growing a crop and the level of their crop yield. Hence, socio-economic features that are relevant to crop production and adoption of organic farming decision were chosen for the analysis. The socio-economic variables considered for this purpose includes age composition, level of education, mean values of respondents land holdings, caste-wise distribution of the respondents.

Age is one of the important demographic features of the respondents which will influence on the decision making style in farming practices. The age of the respondents ranges from 22 to 82 years and thus respondents have been categorized under three groups viz young farmers (<35 years), middle aged farmers (35-60years) and old age farmers (>60years). Frequency distribution of the farmers across the different age groups is given in table -1.

**Table 1:** Age Composition of the Respondents

| Farming System | Age Group | | | |
|---|---|---|---|---|
| | Young Farmers (<35 Years) | Middle Age Farmers (35 to 60 Years) | Old Age Farmers (>60 Years) | Total |
| Organic Farmers | 16(13.4) | 91(75.8) | 13(10.8) | 120(100.0) |
| Inorganic Farmers | 24(20.0) | 78(65.0) | 18(15.0) | 120(100.0) |
| Overall | 40(16.7) | 169(70.4) | 31(12.9) | 240(100.0) |

Figures in parenthesis are percentage to total.

Distribution of the farmers across the different age groups is given separately for organic and inorganic farmers. Majority of the farmers in the overall category are belonging to the middle age followed by the young age. Middle age farmers account for the 70.4 percent of the total respondents and followed by young (16.7%) and old age farmers (12.9%) respectively. It could be inferred that the adoption of organic farming system does not depend on the age category of the respondents. The fact is that the majority of the farmers are belonging to middle age both among organic and inorganic farming systems and it was followed by the young farmers.

Education is a key indicator of the knowledge level of the respondents which in turn will influence on the decision making process in the adoption of farming practices. Respondents with higher level of education will be the pioneers in the adoption of innovative farming practices. Therefore, data on the education level of the respondents has been collected and the results are given in the table -2. The education level of the respondents has been mainly classified into four categories viz. illiterates, respondents with primary, secondary and college education.

Organic respondents found to be having relatively higher level of education compared to the inorganic farmers. Respondents with college level of education are considerably more among the organic farmers (42.5%) compared to the inorganic farmers (12.5%). Similar difference could be found in the secondary education also. In the uneducated and primary education category the percentage of respondents is more among inorganic farmers compared to their counterparts in the organic farmers. The education level of the respondents influences the adoption of organic farming system. Organic farming is more attractive among educated respondents than the uneducated. It is evident that the educated respondents are more conscious about food and agro ecosystem thereby farmers with higher level of knowledge adopt the resource conserving and environmental friendly organic farming.

**Table 2:** Education Level of Respondents

| Farming System | Education Level | | | | |
|---|---|---|---|---|---|
| | Illiterate | Primary | Secondary | College | Total |
| Organic Farmers | 02 (1.7) | 25 (20.8) | 42 (35.0) | 51(42.5) | 120 (100.0) |
| Inorganic Farmers | 16 (13.3) | 62 (51.7) | 27 (22.5) | 15 (12.5) | 120 (100.0) |
| Total | 18 (7.5) | 87 (36.2) | 69 (28.8) | 66 (27.5) | 240 (100.0) |

Figures in parenthesis are percentage to total.

Caste is one of the indicators of social status of an individual. It influences on decision making status of an individual. Therefore, the data has been collected from the respondents about the caste status of their family and given in table-3. The caste of the respondents has been mainly categorized into three groups SC&ST, OBC and General category. SC & ST are clubbed due to few numbers of respondents among ST category and SC category mainly comprises Adi Karnataka, Bhovi, Lambani and Others. ST comprises of only Nayaka community people. OBC it includes Lingayath, Okkaligas, Edigas, Kuruba, Bhants, Maratas mainly these community peoples and General mainly comprises of Brahmins community people. The distribution of organic and inorganic respondents across the different categories is given the table.

The general category accounts for higher in organic farmers (52.5%) whereas general category respondents accounts for 5.8 percent in inorganic respondents whereas SC&ST respondents found only in inorganic farming not in the organic farming. SC&ST accounts for 10.8 percent of total inorganic farming respondents whereas corresponding figures for organic farming is just 0.8 percent. The most important finding of this result is that higher community people more inclinational towards organic farming and backward people like SC&ST still they are practicing inorganic farming. Thus it is fact that the upper caste people are more awareness about the negative effects of high external input based and unsustainable inorganic farming hence large proportion of upper caste farmers switching over to organic farming than the lower caste farmers.

**Table 3:** Caste wise Distribution of Sample Respondents

| Respondents Group | Caste | | | |
|---|---|---|---|---|
| | SC&ST | OBC | General | Total |
| Organic Farmers | 01(0.8) | 56(46.7) | 63(52.5) | 120(100.0) |
| Inorganic Farmers | 13(10.8) | 100(83.4) | 07(5.8) | 120(100.0) |
| Total | 14(5.8) | 156(65.0) | 70(29.2) | 240(100.0) |

Figures in parenthesis are percentage to total.

In rural economy, land is one of the important socio-economic indicators. Size of land holding influences the cropping pattern, farming practices and adoption of modern technology. Data relating to the size of land holdings has been collected from the respondents. On the basis of the size of land holdings the sample respondents have been broadly categorized into small farmers (< 2 hectares) and large farmers (>2 hectare). The frequency distribution of respondents across the different land holding category is presented in the table-4

**Table 4:** The Mean Value of Respondents' Land Holdings (in Acres)

| Particulars | Organic Farmers | Inorganic Farmers |
|---|---|---|
| Dry | 4.6 | 3.2 |
| Wet | 3.6 | 2.3 |
| Total | 8.2 | 5.5 |

Mean values of land holdings

Output is a function of inputs like land, labour, capital, organization etc. Of these, labour is a primary and more deciding factor of production. The availability and utilization of labour is influencing on the optimal utilization of land and other resources belonging to the farmer. Utilization of labour in paddy production has been broadly classified into human and animal labour. The usage of human and bullock labour depends on the utilization of machineries. For example cutting and threshing of paddy could be done by different combination of men and machinery. This task could be done by more labour with little bit or no machineries. Otherwise, machineries with very few human labours could perform it. Therefore, data relating to utilization of human and bullock labour as well as machineries in paddy production has been collected from the respondents and results are consolidated in table-5.

The arithmetic mean values of human labour utilized per hectare of paddy production is found to be more among the overall size category of organic respondents (147.7/ha) compared to the inorganic respondents (138.9/ha) category. It is bit contradictory to observe that the organic farmers, irrespective of farm size category, were found to be using relatively lesser quantity of animal labour compared to their counterparts in the inorganic category. The difference is more pronounced in the large size category. The difference between the organic and inorganic farmers of overall size category with respect to the quantity of animal labour used is significant. Precisely, opposite relationship could be found between organic and inorganic farmers with respect to the use of machine power.

**Table 5:** Labour Utilization in Paddy Production by Sample Respondents (perha)

| S. No. | Particulars | Organic Farmers | | | Inorganic Farmers | | |
|---|---|---|---|---|---|---|---|
| | | Small | Large | Overall | Small | Large | Overall |
| 1 | Human Labour (in Man Days) | 151.8 | 144.3 | 147.7 | 138.4 | 139.7 | 138.9 |
| 2 | Animal Labour (in Pairs) | 20.5 | 9.0 | 14.1 | 20.7 | 12.9 | 18.0 |
| 3 | Machine Power (in Hrs/Ha) | 9.4 | 16.2 | 13.1 | 6.4 | 12.7 | 8.6 |

Mean values of land holdings

Organic farmers are supposed to use more quantity of animal labour and lesser quantity of machine hours compared to the inorganic farmers. In reality, it is quite opposite. It is mainly because most of the organic farmers are resource rich farmers with large size of holding and endowed with machineries. Above all, the scarcity of labour is a major challenge to the

agriculture in the present context. Therefore, organic farmers are forced to resort to the mechanization knowing very well that it is against the basic principle of the organic farming. Therefore, it could be found that the organic farming practice is more labour intensive and hence generate more employment opportunities to human labour.

## 7. Findings of the Study

The two way classification of the respondents between the farming system and age groups revealed the fact that there is no significant association between age group of the respondents and the adoption of organic farming practices.

Education level of the respondents influences the adoption of organic farming system. The adoption of organic farming system is relatively more among the farmers with higher level of education. Considerably higher percentage of organic farmers are having collegiate (42.5%) and secondary education(35%) the corresponding figures for the inorganic farmers is 12.5 and 22.5 percent. Thus, Organic farming is more attractive among educated respondents than the uneducated. It is evident that the educated respondents are more conscious about food and agro ecosystem thereby farmers with higher level of knowledge adopt the resource conserving and environmental friendly organic farming.

Caste is one of the important indicators of social status of an individual. Results of this study revealed there is association between the caste of the respondent and the farming system. It is found that forward caste people are more inclination towards the organic farming and backward caste people are still sticking to inorganic farming system. The mean value of organic respondents land holding is considerably higher than that of inorganic respondents land holding and it was statistically

The arithmetic mean values of human labour is found to be more among the organic farmers of all the size category compared to their counterparts in the inorganic category. It reveals the fact that the organic farming is more labour intensive method compared to the inorganic farming. It is bit contradictory to observe that the organic farmers, irrespective of farm size category, were found to be using relatively lesser quantity of animal labour compared to their counterparts in the inorganic category. It is mainly because most of the organic farmers are resource rich farmers with large size of holding and endowed with machineries. Above all, the scarcity of labour is a major challenge to the agriculture in the present context. Therefore, organic farmers are forced to resort to the mechanization knowing very well that the mechanization is against the basic principle of organic farming.

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