

# **Original Research Article**

## **Contribution of Integrated Farming System for Livelihood Security of Tribal's in Pachamalai Hill of Tiruchirappalli District**

### **ABSTRACT**

Out of 115 million operational holdings in India, about 80 per cent of Indian farmers are marginal and small farmers. To achieve sustainable development in income and employment to fulfill the basic needs of the farmers in plains and also in hilly areas, an integrated farming system plays a vital role in India. The present study was undertaken to recognize the contribution of integrated farming system on livelihood security and sustainable development of Tribal people. Primary data was collected from the Tribal people of Pachamalai hill situated in Tiruchirappalli district of Tamil Nadu. Most of the respondents were involved in the adoption of integrated farming system, but the components are based on size of land holding, economic conditions, knowledge, experience and interest of the respondent etc. Eight different components of Integrated farming system were considered in the study. Among them agriculture with backyard poultry, livestock and piggy which are adopted by most of the respondents. Farmers responses that integrated farming system has increased the economic yield per unit area by providing income to the farmers round the year, providing food, nutritional security and increasing input usage by the result of expected output. Hence it is essential to create awareness to improve knowledge, skill and attitude regarding the adoption of more components of integrated farming system. Therefore it was concluded from the study that integrated farming system is a multidimensional farming approach, which is very effective in solving many problems of achieving farmers' livelihood security.

**Key words:** Agriculture, Integrated Farming System, Livelihood Security, Tribal People

### **INTRODUCTION**

Globally, extreme poverty continues to be a rural phenomenon. The incidence and severity of poverty especially in India are much higher in tropical and subtropical mountainous

regions, which are often poorly connected with markets and are inhabited mainly by ethnic minorities. Poverty is recognized as a significant constraint to agricultural growth in upland areas, because of poor people tend to concentrate their limited resources on low-value food crops to ensure subsistence security and the difficulties they face in mobilizing production and investment resources (Scherr, 2000) [6]. Thus, people in mountainous areas tend to be poorer and more food insecure compared to those in plain (Templeton and Scherr, 1999) [11].

About 80 per cent of Indian farmers are marginal and small farmers. To achieve sustainable development in income and employment to full fill the basic needs of the farmers in plains and also in hilly areas, an integrated faming system plays a vital role in India Manjunatha *et al.*(2014) [4]. Integrated farming is a commonly and broadly concept used to explain a more integrated approach to farming as compared to the monoculture approaches. It refers to agricultural systems that integrates both livestock and crop production. Integrated farming system has revolutionized conventional farming of livestock, aquaculture, horticulture, agro-industry and allied activities (Varughese and Mathew, 2009) [12]. It could be crop -fish integration or any other livestock-fish integration, crop fish- livestock integration or combinations of crop, livestock, fish and other enterprises. Integrated farming systems are less risky if managed efficiently, as they benefit from synergies among enterprises, diversity in produce, and environmental soundness (Behera and France, 2016) [1]. The approach aims at increasing income and employment from small-holding by integrating various farm enterprises and recycling crop residues and among products within the farm itself (Rajju Priya Soni *et al.* 2014) [5]. Farming system approach is an important solutions to face this peculiar situation as in this approach the different enterprises can be carefully undertaken and the location specific systems are developed based on available resources which will result into sustainable development (Dashora and Hari Singh, 2014) [3]. Therefore, present investigation was undertaken to study the effect of integrated farming system on the sustainable development of Tribal people in Pachamalai hill of Tiruchirappalli district.

## METHODOLOGY

A study was undertaken to assess the effect of integrated farming system on sustainable development and contribution of IFS for livelihood security of Tribal people in Pachamalai hill of Tiruchirappalli district. Through field survey and farmers meeting at farm-level, the information was collected during March, 2017. A samples of 100 farmers was selected. An interview schedule was developed to collect the data on farmers' adoption levels of integrated farming system in addition to household characteristics, farm size, production, input use, and income. The survey included also several open-ended questions to elicit farmers' perceptions regarding the systems and the broader aspects of changes in their welfare.

**Table 1. Profile characteristic of farmers**

| S.No      | Characteristics            | Frequency | S.No      | Characteristics                         | Frequency |
|-----------|----------------------------|-----------|-----------|-----------------------------------------|-----------|
| <b>1.</b> | <b>Age</b>                 |           | <b>6.</b> | <b>Communication sources</b>            |           |
|           | Young (<35)                | 19        |           | Radio                                   | 49        |
|           | Middle (35-50)             | 57        |           | Television                              | 100       |
|           | Old (>50)                  | 24        |           | News paper                              | 78        |
| <b>2.</b> | <b>Educational status</b>  |           |           | Magazine                                | 37        |
|           | Illiterate                 | 2         |           | Through farmers                         | 99        |
|           | Functionally literate      | 7         |           | Friends                                 | 95        |
|           | Primary                    | 15        |           | Relatives                               | 86        |
|           | Middle                     | 24        |           | Neighbours                              | 75        |
|           | Secondary                  | 18        |           | Village leaders                         | 86        |
|           | Higher secondary           | 25        |           | Government officials                    | 28        |
|           | Collegiate                 | 9         |           | NGOs                                    | 46        |
| <b>3.</b> | <b>Occupational status</b> |           | <b>7.</b> | <b>Different IFS components adopted</b> |           |
|           | Agriculture as primary     | 99        |           | Agriculture                             | 100       |
|           | Agriculture as secondary   | 1         |           | Backyard poultry                        | 97        |

|    |                            |    |  |                     |    |
|----|----------------------------|----|--|---------------------|----|
| 4. | Farming experience         |    |  | Goat rearing        | 57 |
|    | Low ( <5 years)            | 15 |  | Cattle rearing      | 15 |
|    | Medium (5-10 years)        | 32 |  | Piggery             | 19 |
|    | High (> 10 years)          | 63 |  | Mushroom production | -  |
| 5. | Farm size                  |    |  | Fishery             | -  |
|    | Small (< 2 ac)             | 22 |  | Rabbit rearing      | 2  |
|    | Marginal farmer (2-5 acre) | 49 |  |                     |    |
|    | Large farmer (>5 acre)     | 29 |  |                     |    |

## RESULTS AND DISCUSSION

Figures in Table 1 shows that the majority of the respondents were middle aged (35-50 years). Regarding educational status, the extremes were low viz., illiterate (2%) and collegiate (9%) and majority are with higher secondary education (25 %). Majority the respondents were agriculture based with a good farming experience of more than 10 years. Regarding communication sources, television comes first followed by fellow farmers, friends and relatives.

It is observed in the Table 1 that majority of the farmers adopted agriculture, backyard poultry, goat rearing for their sustainable lively-hood, followed by cattle rearing and piggery, involvement in fishery and mushroom production is almost nil. The reasons for the high adoption of agriculture, backyard poultry and goat rearing might be due to the fact that they are traditional farming practices very easy to adopt and maintain at minimum cost. The feed requirement for backyard poultry and goat rearing is fetched from their own fields is regarded as one of the most significant factors in adopting the backyard poultry and livestock. Marketing of eggs, milk and birds is quite convenient and easy, which also contribute to the high rates of adoption. The reason for the none adoption of fishery and mushroom production might be attributed to the lack of awareness and training. Srinika *et al.* (2017) [8] also stated that the lack

of training facilities, high market price fluctuations, lack of credit facilities and high input costs were found to be the major constraints to adoption of farming systems by small and marginal farmers. Large number of respondents reported that adoption of integrated farming system has increased the economic yield per unit area through providing money around the year, provided nutritional security, food security and increased input usage depending on the expected output. The results are in close proximity with the findings of Manjunatha *et al.*(2014) [4] and Tarai *et al.* (2016) [10]. Ramroa *et al.* (2006) [9] and Birbal sahu *et al.* (2017) [2] who reported that food security and employment generation was highly feasible under integrated farming system, which helps in reducing migration of tribal people to rural areas.

**Table 2. Reasons for the adoption of integrated farming system in Pachamalai hill**

| S.No. | Developmental strategies              | Number of respondents (%) |        |      |
|-------|---------------------------------------|---------------------------|--------|------|
|       |                                       | Low                       | Medium | High |
| 1.    | Food security                         | -                         | 18     | 82   |
| 2.    | Nutritional security                  | 0                         | 25     | 75   |
| 3.    | Employment generation                 | 0                         | 45     | 55   |
| 4.    | Income security                       |                           |        |      |
|       | Low ( <Rs.25000 per year)             | -                         | 25     | -    |
|       | Medium (<Rs.250000-50000 per year )   | -                         | -      | 32   |
|       | High(>Rs.50000 per year )             | 43                        | -      | -    |
| 5.    | Trans-migration                       | 2                         | 15     | 83   |
| 6.    | Infrastructure development            | 11                        | 24     | 65   |
| 7.    | Education                             | -                         | 12     | 88   |
| 8.    | Reduced agricultural input cost       | 0                         | 7      | 93   |
| 9.    | Effective utilization of farm outputs | 0                         | 5      | 95   |
| 10.   | Entrepreneurship development          | 23                        | 51     | 26   |

It is observed in Table 3 that lack of information and knowledge for each practice in the adoption of new system was the main **constraint** in the adoption of technology in the field. Vekateshwar Rao *et al.* (2017) [13] stated that the technology adoption is a graded process in which a farmer has to pass through different stages like awareness, interest, evaluation, training and adoption. The next factor for non adoption of fishery and mushroom production was due to lack of skill and lack of adequate input for setting up of new production unit. The respondents also suggested that the technical guidance and local markets were very crucial for starting up the new system for this area. Singh *et al.* (2009) [7] revealed that less reliable markets and non-availability inputs are the major constraints to promote integrated farming system in this area. However, the government schemes and policies are required to harness and unleash the potential of small holder producers to build their sustainable livelihoods of tribal people. Similar views were expressed by Tarai *et al.* (2016) [10].

**Table 3. Farmers suggestions to promote integrated farming system in hilly areas**

| S.No. | Suggestions                                                    | Percent |
|-------|----------------------------------------------------------------|---------|
| 1.    | Government scheme should be increased                          | 100.00  |
| 2.    | Provide timely input subsidy                                   | 100.00  |
| 3.    | Provide financial support to farmers                           | 100.00  |
| 4.    | Arrange regular training to the famers                         | 98.00   |
| 5.    | Need exposure visit to new technology                          | 100.00  |
| 6.    | Provide critical inputs based on location specific requirement | 100.00  |
| 7.    | Provide technical know -how and follow up service              | 100.00  |
| 8.    | Model units should be established in every block               | 100.00  |
| 9.    | Establish direct marketing facility                            | 100.00  |
| 10.   | Encourage farmers club and producers commodity group           | 100.00  |

## CONCLUSION

It is evident from the study that majority of the farmers of study were middle age group with higher secondary education. They are following integrated farming system based on their traditional knowledge and information through mass media. The integrated farming system enables the agriculture production system sustainable, profitable and productive in hilly region. Further involvement in integrated farming system only could develop the confidence level and socio economic status of tribal people. Hence, it is clear that the following interventions are required for them to adopt the integrated farming system in a sustainable and profitable manner. Thus there is a need to organize training programmes, establishment of model demo unit consisting of various components along with models of integrated farming systems to encourage the farmers to involve in integrated farming system in a systematic manner. So, that the farmers become aware of the concept of integrated farming system model for adoption. Moreover, it is necessary to face the challenges posed by present economic, political and technological environment. Under this study it was observed that integrated farming system became an integral part of their life, which not only helps in livelihood security and sustainable development of tribal people, but also ensures food security.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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