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PROMOTION OF INTEGRATED FARMING SYSTEM FOR ENHANCING THE LIVELIHOOD OF FARMERS IN BALLARI DISTRICT OF KARNATAKA

L.N. Yogeesh*, S.M. Prashant, P. Sheik Peer and Kamble Anand Shankar
Agricultural Research Station, Hagari 583111, Ballari
University of Agricultural Sciences, Raichur, Karnataka
E-mail: yogeeshhagari@gmail.com (**Corresponding Author*)

Abstract: A case study was conducted on promotion of integrated farming system over prior to practice of integrated farming system in an area of forty hectare at Shankarabande village, Bellary district, Karnataka in two years to explore the productivity and profitability in medium black soils under Tungabhadra canal irrigated conditions. The practice of integrated farming system has recorded higher mean average net return (Rs. 3, 06,875), gross return (Rs. 3, 88,375) and benefit cost ratio (4.58) over farmers practice.
Keywords: Integrated Farming System (IFS), livestock, Organic matter, gross & net return.

Introduction

Integrated Farming System (IFS) practice is now a day's gaining importance among the farmers due to get the higher net returns in limited land. During last few decades agriculture research has focused on development of higher yielding crops varieties/hybrids, better farm implements and machinery and crop production and plant protection technologies which enabled the famers to grow more food but at the same time it over exploited the resources decreasing the productivity and profitability. Farmers of Bellary district were practicing mono-croping with low yielding varieties/Hybrids, excess application of chemical fertilizer and pesticides. The income from seasonal field crops on small and marginal farms is hardly sufficient to sustain their family of farmer. To overcome those problems appropriate farming components requiring lesser time and space ensured higher productivity of the system IFS has been advocated as tool for harmonious use of inputs and reduce the burden on farmers. IFS aims at combining a farm enterprise like field corps, Vegetable, dairy, poultry, goatry, for production profitable and sustainable agriculture. Unabated land Degradation due to nutrient mining combined by topsoil loss by water erosion and climatic change towards adverse conditions and getting good price for farm produce are the serious problems affecting the agriculture. Integrated Farming System practices interact appropriately with the environment without dislocating the ecological and social economic balance for enhancing the lively hood

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of farmers. Use of cash returning farming practices will improve the socio-economic conditions of the farmers. The potential of integration of dairy, poultry, goat rearing, vegetable production and fruit trees with dominant crops/cropping systems should be exploited to make judicious use of farm inputs and natural resources so as to provide, regular income and year round employment to small land holders. These farmers generally practice subsistence farming, where they need to produce a continuous, reliable and balanced supply of food, as well as cash for basic needs and recurrent farm expenditure. Therefore, there is need to develop suitable integrated farming system for such farmers since single crop production enterprises are subjected to high degree of risk and uncertainty because of seasonal, irregular and uncertain income and employment to the farmers. Integrated farming system with multi enterprise may pave the way for realizing increased productivity and profitability in small farms. Multi enterprise agriculture has the potential to decrease production costs by synergetic recycling of bi-products/residues of various components within the system and also to provide a regular source of income and employment. Thus, IFS is a reliable way of obtains higher productivity with substantial nutrient economy in combining with max compatibility and replenishment of organic matter by way of effective recyclers of organic residue.

Material and Methods

The integrated farming system study was carriedout in two years 2013 & 2014 in 19 farmers field over an area of 40 ha at Shankarabanda village of Ballari district of Karnataka. The IFS involves the practice of field crops, vegetables, dairy and horticulture in different combinations to recycle the residue and by products of one component to other components.

The farmers were selected based on baseline data collected on socio economic condition of the farmers, technologies and the cropping systems practiced by the different farmers. Under this study 19 farmers were selected in an total area of 40 ha. The soils of the farmers field are black alkaline in nature, low in available nitrogen, medium in phosphorous and medium to high in potassium. During the study, the farmers practicing field crops alone cotton and maize-chickpea cropping systems. Farmers were given training an importance of improved hybrids/varieties in maize, chickpea & cotton whereas the management practices for maize 150:75:40 Kg N:P:K and for cotton 120:60:60 Kg N:P:K along with the organic manure required by the crop. The farmers were given vegetables seeds, seedlings of mango, sapota, guava, pomogranite, drumstick, curry leaf, lime, coconut, jasmine and nelli seedlings were distributed to the farmers based on size of the land holding.

Results and Discussion

The results obtained in the farmers field practices Integrated Farming System was discussed below. The gross income obtained from the different farming systems under Integrated Farming System was Rs.365250 (Mean of 2012-13 and 2013-14). The gross returns were increased to the extent of 53.81%.The net returns obtained from the different farming system under integrated farming system was Rs.3,06,875 (Mean of 2012-13 and 2013-14). The net returns were increased to the extent of 85.98 percent. The cost of cultivation under integrated farming system was reduced to 6.85 per cent (Rs.81500, near of 2012-13 and 2013-14) when compared to before practice of integrated farming system by farmers (Rs.87500). The employment generation in the farming system under Integrated farming system was 193 days in a year. It was increased to the tune of 17.10 percent when compared to before practice of integrated farming system (160 days/year). The B:C ratio in the integrated farming system was 4.58 (Mean of 2012-13 and 2013-14). It was increased to the tune of 76.34 percent when compared to before practice of integrated farming system (2.6). The increase in the gross return, Net return and B : C ratio was represented in table 1. The increase in the Gross return, Net return and B:C ratio was due to practice of different farming systems in a year and that lead to increase the income generation to the farmers. The similar results were reported by Ortega *et al.* (2009) [1], Channabasavanna *et al.* (2009)[2], Ugwumba *et al.* (2010)[3], Singh *et al.* (2009)[4], Ravishankar *et. al.*(2007)[5], Jahan *et al.* (2011)[6] and Sachinkumar *et al.* (2012)[7].

Organic Manures from Livestock Components of IFS Method

The available quantity of organic manures obtained from the livestock components of IFS are presented in Table 2. Available organic manure on wet weight basis was 20.8 and 23.2 t/year and on dry weight basis available manure was 12.3 and 15.1 t/year. The N, P and K content in manure will be higher when compared to other wastes. The nitrogen, phosphorous and potassium content in cow dung represented in table 3.

Vermi-compost Production in IFS method

During lean period activities *viz.,* compost preparation and vermicompost production activities taken up in the IFS module to recycle the animal wastes, crop residues, grass and fodder tree wastes etc within the farm. The integrated farming system provides excellent opportunity for organic recycling, moreover, and it reduces farmer's dependency on external or market purchased inputs. It offers good scope for recycling of crop components to the animals and vice versa.

Farm family consisted farmer, his wife and two children were use to work in IFS method. During all cropping season farm family meeting their balanced food requirements from farm produce. Farm family members satisfied, as they are getting diversified produces in their own farm and it includes nutritional vegetables, cereals, pulses, oilseeds, milk, fruits and others. So the family secure in terms of nutrition and food through integrated farming system method.

Conclusion

Integrated Farming System enhances productivity, profitability and nutritional security of the farmer and sustains soil productivity through recycling of organic sources of nutrients from the enterprises involved. In this system, animals are grazed on agricultural waste and animal power is used for agricultural operation and voids are used as manure and fuel. The most notable advantage of utilizing low-cost/no-cost material at the farm level for recycling is that it will certainly reduce the production cost and ultimately improve the farm income considerably.

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Table 1: Comparative performance of prior to practice of Integrated Farming System (Prior to IFS) and after practice of Integrated Farming System

Sl no	Particulars	Prior to IFS	2013	2014	Average	Percentage (%) increased
1	Cost of cultivation (Rs.)	87500	80250	82750	81500	6.85
2	Gross income (Rs.)	252500	365250	411500	388375	53.81
3	Net income (Rs.)	165000	2855000	328750	306875	85.98
4	B:C ratio	2.6	4.55	4.62	4.58	76.34

Table 2: Quantity of organic manure produced from cow unit (t/year)

Sl No	Particulars	2013	2014
1	Wet weight	20.8	23.2
2	Dry weight	12.3	15.1

Table 3: Nutrient content different manures and urines collected from IFS (dry weight basis)

Sl no	Particulars	Nitrogen (%)	Phosphorous (%)	Potassium (%)
1	Cow dung	0.74	0.49	0.90
2	Cow urine	1.10	0.20	0.80