
CASE STUDY

Integrated Farming System For Sustainability

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More than half of Mandya district comes under Cauvery command area and rest is semi irrigated or dry land. The major crops of the districts are paddy (90.2 ha) and sugarcane (30 ha) under irrigated situation and in semi irrigated area Ragi (84.1 ha), vegetables (7 ha) and mulberry (17 ha). Dairying is the major allied enterprise. Monocropping, indiscriminate use of water, nutrient and Plant protection chemicals, and shortage / costly labour force are the main causes for yield reduction. Further, price fluctuation lowest the net income of the farmer. Non use of improved varieties, crop rotation and judicious use of water is rarely practiced. Excessive use of water and nutrients in association with climatic factors (high temperature) leading to deteriorating soil quality (Salinization/alkalization) as well as crop quality. The soil type (Red soil), bimodal distribution of rainfall and climate are best for semi irrigated crops like Maize, ragi, pulses, vegetables, flower, plantation crops (coconut) and various of animal components. The present crop and cropping systems are mainly in accordance with water availability from the reservoir. Hence adoption of suitable varieties, plant protection measures along with changes in method of cultivation and also introduction of suitable remunerative crops is desirable. To the scarcity of agricultural manpower introduction of small and low cost farm machineries is very much necessary. Integrated Farming System is the way forward in enhancing farm income and sustaining the natural resources. The technology is highly flexible in terms of selection and adoption of crops/ enterprises best suited for the specific locality. In this regard University of Agricultural Sciences, Bangalore implemented the Integrated Farming System in the district on a project mode. The major interventions made in the district are use of improved/ hybrid varieties, resource use efficient methods of cultivation, integrated nutrient and pest management. Improved package for mulberry production and low cost technologies in silkworm rearing were demonstrated. Introduction of locally suitable animal component (Bandur sheep) and poultry birds like swarnadhara were encouraged. Addition of suitable crops like redgram in cropping system based on climatic situation/ availability of resources. Popularized small machineries with respect to major crop (Paddy drum seeder and cono weeder) of the district.

The suitable crop specific technologies for crops and enterprises were introduced. the first and foremost intervention was introduction of alternate crops and improved variety/ hybrid. In paddy the improved varieties like BR-2655, Thanu and hybrid KRH-4. In ragi, MR-6, KMR-204 and KMR-301 encouraged redgram cultivation with BRG-1 and BRG-2 varieties. In vegetable crops tomato varieties i.e arka samrat and arka rakshaka were introduced. Improved methods of cultivation specially with respect to water saving like SRI in paddy was introduced. Under INM practices nutrient applications as per recommendation based on soil test as well as application of organic manures (compost/ green manure crops), bio-fertilizers and micro nutrient mixtures (vegetable special) was incorporated. Use of non-chemical methods of pest and disease management methods like pheromone traps (wota traps and sticky traps), bio agents (Trichoderma and pseudomonas) which are eco-friendly and cost effective were encouraged. Small machineries like drum seeder in paddy and weeders (cono/ cycle weeder) under both wet and dry conditions were made popular. The seed production activity was also carried out in association with seed unit of the University. The technology was promoted by conducting frontline

demonstration, training, exposure visit and formation of commodity based association (CBA) on sericulture and coconut. With this the farmers were made accessible to quality inputs in right time and timely guidance on improved technologies as well as marketing facilities to the product.

Outcome

The Integrated Farming System technology has successfully demonstrated and being adopted in 2034 ha area under crops and animal enterprises (Poultry birds 6600 and sheeps 303) and silkworm rearing with 267300 DFL's covering 11470 farmers/ stakeholders (Table 1). To make these intervention compatible trainings (on-farm campus and off-farm campus) was planned and conducted in the campus as well as farmer's field and KVK farm. Later, the technology was demonstrated in the larger area. Other Extension activities for effective implementation and spread of the technology were also conducted (Table-2). This was completely adopted in IFSD villages after a three year intervention. Further there was a positive response with respect to crop yield after demonstration. The per cent increase in yield of field/vegetable/mulberry crops ranged from 8-18 per cent. The cocoon yield was enhanced by 15 per cent while body weight in poults and number of animals (sheep) was higher by 300 and 50 per cent respectively (Table 3). The area under farm machineries (paddy drum seeder) was 58487 ha. The redgram crop with improved varieties (BRG 1& 2) was introduced in 65.9 ha in the selected demonstration villages.

Impact

There was a increase in net income in various enterprises ranging from Rs. 1900 to 50000 after demonstration compare to benchmark year. Due to the intervention the annual farm income was increased by Rs. 1,09,862 from benchmark year (Rs.) to post demonstration year (Rs.). There was a additional income generation Rs. 32,586,508 at district level if the technology is adopted by all farmers. The area under redgram is increasing there is a need for dal making units in the district. This can be achieved by financial assistance from NABARD like institution. The vegetable processing unit specially sauce/ketchup making industries are necessary to sustain the tomato growers in time of price fall.

Table 1: Horizontal spread of Integrated farming system technology

Particulars	No. of Stakeholders covered	Area Covered (ha)
Paddy	2224	941
Ragi	299	61
Redgram	307	65.9
Tomato	19	17.5
Mulberry cultivation	2400	949
Silkworm rearing	2673	267300 DFL's
Poultry birds	1320	6600
Sheeps	303	303
Total	11470	2034.4

Table 2: Extension activities implemented by KVK, Mandya

Sl. No.	Activity	Number	Number of farmers
1.	Training On campus	6	165
	Off campus	15	29,733
2.	Group discussion / meetings	6	13545
3.	Exposure visits	2	164
4.	Method demonstration	5	3480
5.	Farmer-Scientist interaction	2	2546

Table 3: Impact of Integrated farming system demonstration on yield of crop/ enterprises

Particulars	Average Yield(q/ha)		% increase
	Before IFSD	After IFSD	
Field crops			
Paddy	48	54	12.5
Ragi	10.25	11.15	8
Redgram	6.42	7.6	18
Vegetables			
Tomato	50	55	10
Subsidiary enterprises			
Mulberry cultivation	372	428	15
Silkworm rearing	57kg/ 100 DFL's	66kg/ 100 DFL's	15
Poultry birds	1 kg	3 kg	300
Sheeps	12-14 kg	19-20 kg	50

Table 4: Impact of Integrated farming system demonstration on economics of crop/Enterprises

Particulars	Net income (Rs./ha)		% Gained	Additional Income (Rs./ha)	Total additional income of the district (Rs./ha)
	Before IFSD	After IFSD			
Field crops				15,718	1,47,90,825
Paddy	44,000	59,718	26		
Ragi	12,500	18,552	32	6,052	3,69,175
Redgram	12,500	38,551	67	26,051	17,16,808
Vegetables					
Tomato	92,000	97,000	5	50,000	87,500
Subsidiary enterprises					
Mulberry cultivation	42,000	48,005	12	6500	56,98,800
Silkworm rearing	13,323	16,814	20	3,491	93,32,550
Poultry birds	200	300	33	100	6,60,000
Sheeps	3900	5850	33	1950	5,90,850
Total	2,20,423	2,84,790	22	1,09,862	

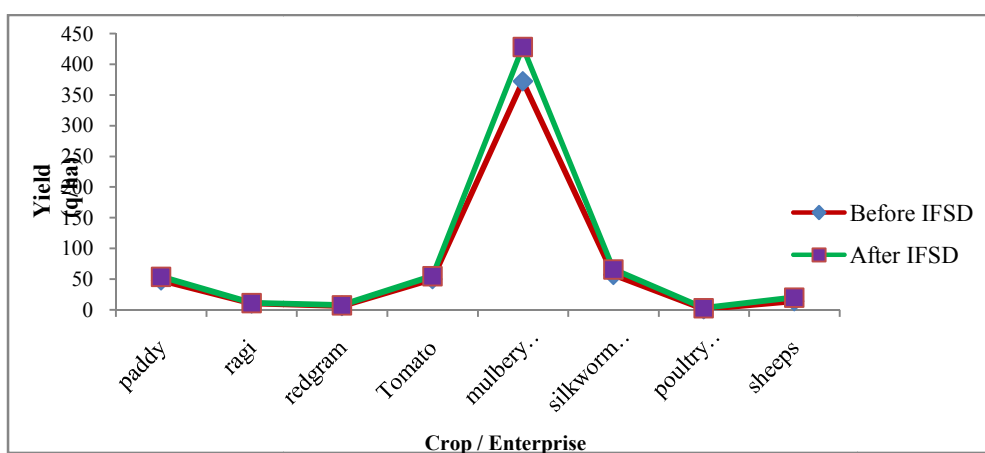


Fig 1: Impact of Integrated farming system demonstration on yield of crop/ enterprises

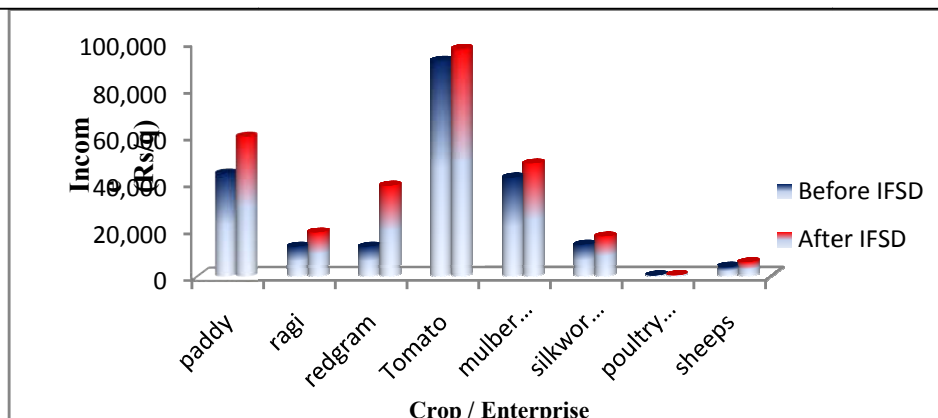


Fig 2: Impact of Integrated farming system demonstration on economics of crop/Enterprises

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