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RESEARCH PAPER

Integrated farming system for strengthening rural livelihood in disadvantaged areas of Bidar district

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Abstract : In recent years, food security, livelihood security as well as natural resources conservation and protection have emerged as major issue worldwide. Developing countries are struggling to deal with these issues. So the main objective of this study was to strengthen the livelihood security through integrated farming system under NAIP-3 Bidar. Hence, research on integrated farming system (IFS) was conducted for 240 selected participants by introducing inputs such as improved variety seeds of redgram (BSMR-736), Bengalgram (JG-11), backyard poultry (Giriraja Chicks), azolla cultivation, vermicompost units, horticultural and forestry seedlings and grafts etc. The research was conducted by an ICAR sponsored project on livelihood security through resource and entrepreneurship management in Bidar district" with the team of Krishi Vigyan Kendra, Bidar, The project area included 24 selected villages of 4 clusters *viz.*, Aurad, Bhalki, Basavakalyan and Humnabad in Bidar district of Karnataka state, The different intervention components of IFS were evaluated by calculating benefit cost ratio (BCR). The results of the study indicated that among the various components intervened, production of worms for vermicompost recorded highest BCR (1:24) followed by increase in milk yield due to feeding azolla (1:14). This was followed by backyard poultry(Giriraja Chicks) (1:13.3), redgram.BSMR-736 (1:5.5), vermicompost production (1:4.57) and Bengalgram.BG-11 showed the lowest BCR. The employment generation was 215 man days per year.

Key Words : Livelihood security, Integrated farming system

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INTRODUCTION

Integrated farming system is a commonly and broadly used term to explain a more integrated approach to farming system as compared to existing monoculture approaches. Integrated farming system is seems to be the best possible solution to the continuous increase of demand for food production. Stability of income and improvement of nutrition for the small and marginal farmers with limited resources. Interacting of different agriculturally related enterprises with crop activity as base, will provide ways to recycle produces. Waste materials of one component as input through another linked component to bring improvement in soil health and reduce the cost of production of the products, which will finally raise the total income of the farm

Components of integration in a farming system are parkland systems, trees on bunds, wind breaks, horticulture system, block plantations, crops with green leaf manure species, integrated based systems (dairy, poultry apiary and fisheries).

Agriculture being an important occupation for the rural poor in Bidar district and provides employment only for two seasons. Hence, there exists problem of unemployment for the farmers especially the poor and the landless. The district has potential for dairy units. The well distributed rainfall and lateritic soils provide ample opportunity for the integrated farming system, forestry horticulture and livestock components. This would provide avenues for various livelihood options such as dairy, food processing, forest products processing and handicrafts. There is a tremendous scope for enhancing biomass production which provides raw materials and energy for agro-based micro-enterprises, such

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as vermi-composting, composting, bio-pesticide preparation etc. Bidar district is also known for higher consumption of pesticides for plant protection in pulse crops. This provides ample opportunity for the introduction of bio-pesticides which could be prepared locally by the youths. This is also encouraging provides livelihood to the poor as well as reduces the cost of production and environmental pollution, apart from creating employment. Livelihood security is the need and is very essential to prevent the farm families from migration and also being surrendered to death. In such situation ICAR is concerned about upgrading income of farm families and to sustain agricultural under this NAIP has risen as a mega project aimed to support sustainability. One of such component of NAIP was sponsored by ICAR to KVK, Bidar. The project on livelihood security through resource and entrepreneurship management in Bidar district aimed at promoting integrated farming system models for strengthening rural livelihood.

MATERIALS AND METHODS

A survey on integrated farming system was conducted by NAIP, KVK, Bidar team. The sample consisted of 240 selected beneficiaries from 24 selected villages *viz.*, Ganganbeed, Kherda, Aknapur, Ganeshpur, Sawargaon, Hokrana (Tq:Aurad), Naagur, Chandapur, Jainapur, Konngli, Jaamkhandi, Wanjarkhed, (Tq:Bhalki), Ghotala, Umaapur, Laaheshwar, Raamtirth, Chowkiwadi, Jajanmugli (Tq: Basavakalyan), Raampur, Walakhindi, Alipur, Devgiri, Polakpalli, Maddargi (Tq: Humnabad) of 4 selected clusters , NAIP-3, Bidar. The collected data were analyzed by calculating cost benefit ratio (CBR) by comparing with the farmers' practice (Table A).

The following inputs were supplied to establish IFS models for livelihood security of the farmers.

RESULTS AND DISCUSSION

The integration of redgram and Bengalgram crop with vermicomposting, Azolla cultiation and poultry resulted in higher productivity than the adoption of conventional redgram crop alone. These results are in support of the studies conducted by Ravishankar *et al.* (2007) and Jayanth *et al.* (2003). IFS which involving poultry, fishery and goatry was highly productive and profitable as reported by Channabasavanna *et al.* (2009).

Table A: Integrated farming system supplied inputs (Individually) **(n=240)**

Sr. No.	Inputs	Quantity / size	Groups
1.	Mango grafts	25	24
2.	Gauva grafts	10	24
3.	Sapota	10	24
4.	Tarmarind	05	24
5.	Custurd apple	10	24
6.	Jamun	05	24
7.	Amla	05	24
8.	Lemon seedling	05	24
9.	Curry leaf	10	24
10.	Drum stick	10	24
11.	Teak stumps	87	24
12.	Coconut	05	24
13.	Rose buds	10	24
14.	Jasmine cutting	10	24
15.	Gliricidia seeds	1 kg	24
16.	Redgram BSMR-736	1 kg	24
17.	Bengal gram	25 kg	24
18.	Azolla culture	2 kg	24
19.	Azolla plastic	2 x 4	24
20.	Earth worm	2 kg	24
21.	Sickle improved	4	24
22.	Giriraj chicks	10	24
23.	Cycle weeder	1	24
24.	Sprayer	1	24

Table 1 : Productivity and profitability of different components under IFS (Traditional)

Sr. No.	Particulars	Area	Productivity (kg/ha/year)	Cost of cultivation (Rs.)	Gross	Net returns (Rs.)	C:B ratio
1.	Redgram	1.0ha	12 qt/ha	10,000	45,600	35,600	1:4.5
2.	Bengalgram	1.0 ha	10 qt/ha	8,000	25,000	17,000	1:3.1
3.	Vermicompost	-	-	-	-	-	-
4.	Worms	-	-	-	-	-	-
5.	Milk yield	1 Cow / Buffalo	504 litrs	1,000	12,100	11,100	1:12.1
6.	Poultry	-	-	-	-	-	-
	Total			19,000	82,700	63,700	

(Redgram market rate Rs. 3,800/qt. Bengalgram –Rs. 2,500/qt.)

Table 2 : Productivity and profitability of different components under IFS (Improved)

Sr. No.	Particulars	Area	Productivity (kg/ha/year)	Cost of cultivation (Rs.)	Gross	Net returns (Rs.)	C:B ratio
1.	Redgram	1.0ha	22 qt/ha	15,000	83,600	68,600	1:5.5
2.	Bengalgram	1.0 ha	15 qt/ha	10,000	37,500	27,500	1:3.7
3.	Vermicompost	12 x 4x 2	64 qt	4,200	19,200	15,000	1:4.5
4.	Worms	12 x 4 x 2	48 kg	500	12,000	11,500	1:24
5.	Milk yield (With Azola)	1 Cow / Buffalo	700 litrs	1,500	21,000	19,500	1:14
6.	Poultry	10 Giriraj	30 Nos	900	12,000	11,100	1:13
	Total			32,100	1,85,300	1,53,200	

(Redgram market rate Rs. 3,800/qt. Bengalgram –Rs. 2,500/qt.)

Results of Table 1 and 2 show that, among crops under integrated farming system redgram (22qt/ha) and Bengalgram (15qt/ha) yielded higher as compared to farmers practice (12qt/ha and 10qt/ha, respectively). Among the other components in integrated farming system, preparation of vermicompost resulted in yield of 64q/2pits/year which was earlier zero in farmers' practice. The milk yield was also increased from 504 l./year (farmers' practice) to 700 l./ year (Feeding azolla). Mentenance of backyard poultry resulted in economic gain of Rs.12,000/ year in integrated farming system and maintenance of backyard poultry was nill in farmers' practice.

These results (Table 2) also revealed that among the various components intervened, production of worms for vermicompost was recorded highest BCR (1:24) followed by increase in milk yield due to feeding azolla (1:14). This was followed by backyard poultry(Giriraja Chicks) (1:13), redgram (1:5.5), vermicompost production (1:4.5) and Bengalgram showed the lowest BCR.

Hence, the net gained profit from farmers practice was Rs.63,700/- per year/HH(Table 1) and from integrated farming system was Rs.1,53,200/- per year (Table 2). These results are in support to the studies conducted by Channabasavanna *et al.* (2009).

Thus, it can be concluded that integrated farming system with maintaining backyard poultry, production of vermicompost, azolla cultivation along with improved crop variety was productive and profitable. It can be advocated for small and marginal farmers

The basic and strategic research in integrated farming system has identified the thrust areas in resource management, value addition, energy management. These are the area in which basic and scientific knowledge is vital for agricultural development.

Conclusion :

This from this study it can be concluded that IFS with improved varities of crops involving natural resource management, backyard poultry. Azolla cultivation usage of improved agricultural implement was highly productive and profitable. Inturn this has led to better livelihood security for small and marginal farmers.

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