

INTEGRATED FARMING SYSTEM FOR SUSTAINED PRODUCTIVITY

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ABSTRACT

Studies conducted at Agricultural Research Station, Aliyarnagar to evaluate the integrated farming system revealed that by adoption of integrated farming system with groundnut - black gram - maize/ groundnut - gingelly *ragi* with integration of other enterprises *Viz.*, dairy, fish culture, poultry and rabbit rearing resulted in higher net income, benefit cost ratio and higher employment opportunities as compared to conventional cropping system.

KEY WORDS : Integrated Farming System, Productivity

To meet the needs of the rapidly increasing population there is an evermore acute need to produce more food from limited patch of land. To mitigate the risks and uncertainties of income from conventional cropping and to reduce the time lag between investment and returns, it is essential to use farming system approach in production programme that yields regular and evenly distributed income throughout the year and is not subjected to vagaries of nature (Throve and Galgolikar, 1985) Adoption of integrated farming system resulted in better utilisation of resources, higher income and additional employment opportunities (Rangasamy *et al.*, 1992).

MATERIALS AND METHODS

An experiment was conducted during 1990-92 in the Agricultural Research Station, Aliyarnagar, Tamil Nadu. The components included were

Table 1. Treatment details of the cropping sequences followed.

Sequence 1	Groundnut - Black gram (December - March) (April - June)	- Maize (July - November)
Sequence 2	Groundnut - Gingelly (December - March) (March - May)	- <i>Ragi</i> (June - October)
Sequence 3	Groundnut - Cotton (December - March) (June - December)	Sorghum - Cotton (January - May) (June - December)

Allocation of land
Cropping - 0.395 ha
Fish pond - 0.004 ha
Dairy - Two milch cows
Poultry - 12 birds (shed placed over the pond)
Rabbit - 0.001 ha

cropping, dairy, poultry, fish culture and rabbit rearing. Two conventional cropping systems under irrigated lands were evaluated with two improved cropping systems and other enterprises. The treatments followed are furnished in Table 1. The recommended varieties and cultural practices were followed for the crops. The experiment was started in 1990 and continued for three years. After meeting the requirement of feed, fodder from the cropping component, the other ingredients *viz* mineral mixture and fishmeal were purchased and mixed with feed. The gross, net income additional employment in integrated farming system (IFS) were worked out and furnished.

RESULTS AND DISCUSSION

The expenditure and receipts from the cropping sequences are furnished in Table 2. The total expenditure incurred in conventional cropping system ranged from Rs.5,150/ha to Rs.5,440/ha and for improved cropping system, Rs.10,620/ha to Rs.12,806/ha. The extra cost involved for the third crop and cost of the maintenance of other enterprises resulted in higher expenditure in improved cropping systems. The gross return and benefit cost ratio were also higher in improved cropping system with integrated farming activities.

The employment opportunities and per day income from cropping sequences are furnished in Table 3. The improved cropping systems resulted in more of labour days as compared to conventional cropping systems. Inclusion of third crop in the sequence and adoption of IFS activities resulted in better utilisation of family labour and increased number of labour days. In general, the IFS resulted in 17.9 per cent more of labour utilisation over the conventional cropping and better utilisation of

Table 2. Expenditure and receipts from the cropping sequences.

Cropping sequence	Total expenditure (Rs)			Gross return (Rs)			Benefit cost ratio		
	1990	1991	1992	1990	1991	1992	1990	1991	1992
Groundnut - Black gram - maize + other enterprises	11265	12093	12806	45321	46621	49725	4.02	3.85	3.88
Groundnut - gingelly - ragi + other enterprises	10620	11400	11521	39331	41774	44677	3.70	3.66	3.87
Groundnut - cotton	5575	5210	5440	16022	15855	18480	2.87	3.04	3.39
Sorghum - cotton	5150	5177	5195	16525	16670	17970	3.20	2.22	3.26

Table 3. Employment opportunities and per day production from cropping sequences

Cropping sequence	1990		1991		1992		Per day Rs/ha/day		
	Mandays	Woman days	Mandays	Woman days	Mandays	Woman days	1990	1991	1992
Groundnut - Black gram - maize + other enterprises	242	1045	248	1100	238	1080	124	127	136
Groundnut - gingelly - ragi + other enterprises	224	1025	227	1050	220	1046	107	114	122
Groundnut - cotton	170	910	165	990	166	995	44	43	51
Sorghum - cotton	144	908	153	910	157	900	45	46	49
Additional labour in integrated farming system	70	126	78	125	68	115			
Equated mandays	70	113	78	113	68	104			
	183		191		172				

family labour is achieved. Higher per day income of Rs.100 and above was obtained in improved cropping system with farming system activities. Similar results were also obtained from the studies of Rangasamy *et al.*, (1992).

The adoption of IFS of groundnut black gram - maize or groundnut - gingelly-ragi with other components *viz.*, poultry, fish, dairy and rabbit rearing resulted in higher net return and benefit-cost ration over the conventional cropping

system of groundnut-cotton or sorghum-cotton. The IFS utilises the farm resources effectively and resulted in increased number of labour days over the conventional cropping systems.

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EFFECTS OF AMENDMENTS ON SOIL CHARACTERISTICS AND PLANT RESPONSES IN GROUNDNUT - BLACK GRAM CROPPING SEQUENCE

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ABSTRACT

Studies were made under red lateritic soils of Vamban for finding out the effects of soil amendments, both organic and inorganic like pressmud, rice husk, FYM, lime and gypsum on the soil physical properties and yield of groundnut. The results revealed that the yield of groundnut was significantly increased by application of lime (4 t/ha). Soil hardness was not significantly affected. However, the pH of soil was significantly increased due to application of lime (4 t/ha) and pressmud (5 t/ha). There was indications of the residual effects of amendments on the subsequent crop, blackgram.

KEY WORDS : Amendments, Soil Characteristics, Plant Responses, Groundnut, Black gram