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SUCCESS STORIES

Integrated Farming Systems Practicing Farmers in Andhra Pradesh**T. Sri Chandana¹, P.L.R.J. Praveena² and B. Ravindra Reddy³**

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ABSTRACT

The present investigation was carried out in Chittoor, East Godavari and Srikakulam districts of Andhra Pradesh. The main objective of the study was to write success stories of Integrated Farming Systems practicing farmers. The existing integrated farming systems in the areas were agriculture + horticulture + dairy, agriculture + cashew + dairy + sheep and agriculture + coconut + dairy + poultry. The different dimensions of Sustainable Livelihood Security, expenditure and income of each enterprise combination are explained. The suggestions given by the farmers where necessary critical inputs should be provided to the farmers at subsidized rates, adequate training programmes, MGNREGA scheme can be linked with some of the agriculture activities so that the labour problem can be tackled to some extent, providing loans in time and provision of low interest rate loans which may help the IFS farmers to plan resource allocation well in advance.

Key words: Integrated farming system; Sustainable livelihood security.

Agriculture appears to be a non-profitable activity in this agrarian country. Crops were commonly used in farming to the tune of more than 70 per cent of the time. The Indian government has launched several mission-driven programmes with the goal of doubling farmer income by 2022 in a sustainable manner. Indian farming community was dominated by small and marginal farmers, and hence providing means to help them earn a stable income has always been a challenge for the researchers and policy makers.

The efforts of late have been to develop an integrated approach which uses optimum levels of the suitable enterprises to yield maximum possible net income (Puste *et al.*, 2013) which is stable as well. To achieve optimum production with cost effective low investment recycling of wastes and residues from one farming to other system with due environmental consideration is very much necessary. Sustainable integrated farming practice is a very good option. This is a viable option for augmenting overall farm productivity and better economic return of rural farming community (Biswas *et al.*, 2013). For any integrated farming system to be successful, proper manipulation of some of these system variables is

crucial. Synergistic interaction among the system variables will result in higher total income from the farm as a whole (Edwards *et al.*, 1988). Chauhan *et al.* (2022) reported that level of diversification of livelihood indicates alternative opportunities available with farmers and it reduces risks involved with one livelihood option and also stabilize livelihood. Farmers were taking up coping strategies for achieving livelihood security by opting other alternative and possible occupations under the existing situation along with farming with no or minimum input cost. By diversifying the farmers could offset the reduced or lost crop revenues. These small opportunities and attachment to the native villages reduce the migration of farmers to nearby towns and cities (Jyothi and Venkata Subbaiah, 2020). The benefits of IFS include resource pooling and sharing, efficient use of family labour, conservation, preservation, and utilization of farm biomass, including non-traditional feed and fodder resources, effective use of organics, regulation of soil fertility and soil health, income and employment generation for many people, and an increase in economic status through the efficient and remunerative utilization of underutilized resources.

Hence, the present study was undertaken with an objective to write success stories of Integrated Farming Systems practicing farmers.

METHODOLOGY

An *ex post facto* research design was followed to study the Sustainable Livelihood Security of Integrated Farming Systems practicing farmers through different enterprise combinations. Predominant IFS models pertaining to each of the three regions which were being followed by most of the farmers were selected based on secondary data available with Department of Agriculture. One district from each region *i.e.* Chittoor, East Godavari and Srikakulam from Rayalaseema, Coastal and North Coastal regions respectively were selected purposively for the study based on the highest number of farmers practicing the selected IFS models. Three mandals from each of the districts were selected purposively for the study based on highest number of farmers practicing the selected IFS models making a total of nine mandals. Three villages from each of the three mandals were selected by following simple random sampling procedure thus making a total of 27 villages. From each of the selected villages, seven farmers who were practicing IFS for more than five years were selected purposively thus, the sample constituted to a total of 189 farmers.

The number of farmers practicing IFS in each of the selected villages was listed out in consultation with Department of Agriculture. From enlisted farmers uniform sample of seven farmers practicing similar predominant IFS models were randomly selected from each of the villages. So that precise data could be collected and analysed. The data was collected through a structured comprehensive interview schedule and meaningful interpretations were drawn. Case study is an empirical inquiry that investigates a contemporary phenomenon in its natural settings. There are 4 broad steps in conducting a case study *i.e.* location, collection of data, treatment & interpretation and conclusion and documentation.

Success stories of IFS practicing farmers :

Sri D. Ayappanaidu a progressive farmer from the village Vemuru of Ramachandrapuram mandal, Chittoor district in Andhra Pradesh chose agriculture as profession after completing ITI. Sri Ayyapanaidu had been cultivating sugarcane in his 3.12 acres of land. Cultivating sugarcane year after year could not pacify the farmer as he could not realize expected

income from the crop due to increased input costs and labour scarcity. Later on, he started rearing four desi cows and could sustain the losses to some extent. He was a regular visitor to RASS KVK and actively participated in the extension programmes of the KVK. The farmer out of enthusiasm contacted the scientists of RARS, Tirupati and he was a regular participant of different farmers forums organized by RARS and KVK. Inspired by the IFS demo plots in KVK, Sri Ayappanaidu diversified his farm and adopted IFS. He started cultivating paddy and vegetables (chilli) each in 1.38 acres, mango in 1.70 acres and also maintained four desi cows in the farm and now he is a role model for many of the farmers in and around Vemuru. With ten years of experience on IFS, he was now able to earn good income by utilizing the available resources in a viable manner.

Environmental security : He had the knowledge on recycling the farm residues and cow dung. The cattle dung was composted along with the weed plants and added to crops. The urine from cows was collected through channels and let into the compost pit. He also maintains a vermicompost unit. The straw of paddy was used for fodder purpose by enriching it. By adding compost to the crops, he was able to reduce the chemical fertilizers. He also adopted some of the organic practices like addition of jeevamrutham to paddy and chilli crops. The farmer opined that addition of compost and organic manures continuously has improved the soil fertility and water holding capacity.

Component	Unit	Expenditure (Rs)	Income (Rs)
Paddy (ADT 37)	1.38 acres	35000	43000
Vegetables (Chilli)			
Mango (Totapuri)	1.74 acres	30000	90000
Livestock	4 (cows)	40000	125000

Permanent asset creation : He constructed a shed for dairy animals near his home. He had purchased a tractor and a sprayer for agricultural operations. He had renovated his house and provided good education to his children.

Food and nutritional security : The farmer was able to meet the nutritional needs of the family to the extent needed. The farmer also cultivated vegetables like bhindi, brinjal and tomato on the field bunds solely for home consumption.

Input recycling : The straw from paddy was used as fodder for the cows and the cattle dung was used as manure for the crops.

Economic security : The adoption of integrated farming system involving agriculture, horticulture component and livestock unit gave better results and income to the farmer. The farmer was able to generate good income from the IFS components.

Financial security : Due to income flow round the year from the established enterprises the farmer was financially secured. The farmer was availing crop loan from banks to carry out farm operations and dairy animals are having insurance.

Occupational security : The average employment days generated was 255 days by different enterprises he adopted.

Social security : He was member of Zero Budget Natural Farming (ZBNF) in the village. The farmer had good contacts with Subject Matter Specialists, RARS/KVK scientists, DAATTC scientists and Extension officers.

Constraints encountered by farmer : The farmer had faced some difficulties in purchase of necessary agricultural inputs due to lack of adequate financial resources. He faced the problem of marketing the chillies and mangoes in the initial stages but he established good linkage with the wholesalers for marketing chillies and mangoes to the pulp industries.

The farmers had suggested that necessary critical inputs should be provided to the farmers at subsidized rates and adequate training programmes should be conducted regarding effective recycling between enterprises which reduced the input costs for a farmer.

Sri Ayappanaidu had turned out to be a successful farmer with this IFS unit and source of inspiration for fellow farmers. He believed agriculture was remunerative when we take intelligent decisions. He adds that the younger generations should continue and sustain in the agriculture profession with innovative ideas as they were energetic and skillful.

Sri, G. Ramarao an IFS farmer, hails from the village Ramajogi peta of Etcherla mandal, Srikakulam district in Andhra Pradesh. He continued farming even in the present scenario where many farmers feel that farming is not profitable any more, due to vagaries of climate, pests and diseases, stagnation of crop yields, shortage of labor and high cost of cultivation. He was not sure of continuing farming until he came in contact with the KVK scientists. He had been cultivating rice and cashew in his farm. The KVK scientists arranged a demo plot in the village on IFS and visualizing the benefits of IFS, he started rearing five jersey cows and

was practicing improved methods of cultivation. He was cultivating rice in 5 acres during *kharif* and rice fallow greengram during *rabi*. He started cultivating fodder grass as intercrop in one acre of cashew. Later on, he also started rearing sheep supplied on subsidy by KVK, Amadalavalasa and was earning an annual income of 5.02 lakhs.

Environmental security : The livestock dung and urine were collected in cattle shed and used as manure in crop production which improved in soil physical properties. The farmyard manure enriched soil fertility and reduced weeds. Manure and urine raised the pH level and accelerated the decomposition of organic matter and termite activity. Sheep penning also improved the soil status and he was able to lease the sheep for penning to other farmers during summer which was yielding additional income for the farmer.

Permanent asset creation : He constructed a shed for dairy animals and permanent structure for sheep near his home. He had one tractor, brush cutter and other small implements for agricultural operations.

Food and nutritional security : Farmer and his family members were able to meet the nutritional needs to the extent needed as they consume the products produced on their farm only. The IFS systems were combination of crop, sheep and livestock so the farmers consumed nuts, fruits and meat which provided good nutrition.

Input recycling : He recycled the farm residues, cow dung and sheep droppings as manure to the crops. He added paddy residues in the soil to enhance the organic matter content, which helped to build up soil microorganisms and increased soil fertility. He feeds the paddy straw and fodder grass to the cattle and sheep in addition to other nutrient supplements.

Economic security : The adoption of Integrated Farming System includes agriculture, cashew, dairy and sheep unit gave better results and income to the farmer. The major outcome found by Sri. Ramarao is - the Integrated farming system increased the sustainable income from various components round the year.

Financial security : Due to integration of enterprises, there was income availability round the year for the

Component	Unit	Expenditure (Rs)	Income (Rs)
Paddy (BPT 5204)	4 acres	60000	150000
Green gram (LGG 460)	4 acres	48000	72000
Cashew (BP-8)	1 acres	30000	90000
Livestock	5 (Cows)	50000	105000
	15 (Sheep)	10000	85000

farmer which made him financially secured. The farmer was availed crop loan from banks to carry out farm operations and dairy animals had livestock insurance.

Occupational security : The average 275 employment days generated by different enterprises he adopted.

Social security : He had good linkages with extension officers in Agriculture and Animal Husbandry departments. He also participated in several seminars and meetings related to farming.

Constraints encountered by farmer during farming : The farmer had faced some difficulties regarding labour availability and increasing rate of labour wages.

The farmers also felt that the MGNREGA scheme can be linked with some of the agriculture activities so that the labour problem can be tackled to some extent. He believed every farmer should follow the integrated farming as the results were complementary and supplementary which enhance the productivity of crops.

Sri, V. Venkateswara Rao, Progressive farmer of T. Kothapalli village of I. Pollavaram mandal, East Godavari district in Andhra Pradesh. He has 5 acres of land holding. He had been cultivating paddy in two acres and coconut in three acres of land which was inherited from his father. Being graduated, the farmer regularly read the farm magazines, has contact with the research and KVK scientists. He also visited many research stations during the exposure visits arranged by ATMA. Inspired by the demo plots during exposure visits, he started adopting IFS model. He purchased four desi cows and was supplied with 15 local hens by ATMA. Thus, he earned an annual income of Rs. 5.00 lakhs. His farm was visited regularly by farmers of other states and within the state also as part of exposure visits arranged by Department of Agriculture and KVK's. The farmer turned into an entrepreneur recently. He has purchased a coir extraction unit and also prepared coconut peat moss which is being sold out to nursery farmers.

Mr. Venkateswara Rao is a good contriver and likes to utilize every inch of land wisely by combing the enterprises in a prudent way.

Environmental security : He added FYM and compost to the crops minimizing the chemical fertilizers. For effective control of spirally white fly and rhinoceros beetle, he adopted biological control methods and practices clean cultivation. He used biofertilizers for paddy and also prepared waste decomposer for his own use and also supplied it to other farmers.

Permanent asset creation : He constructed a shed for dairy animals. Due to non-availability of labour in his area, Mr. V. Venkateswara Rao purchased machines such as weeder and coconut climber for the smooth running of inter cultural operations and for plucking nuts from coconut trees. He also owns a tractor, brush cutter and other farm machinery and was always on the lookout for innovative and profitable methods of cultivation for increasing productivity. He purchased a power tiller recently.

Food and nutritional security : Farmer and his family members were able to meet the nutritional needs to the extent needed as they consume the products produced on their farm. The IFS model included combination of crop and livestock so the farmers consumed cereals, eggs and meat which provided good nutrition. Marketing of eggs is not a difficult task for him as the customers came to his farm for purchase. He also planted banana, papaya, chillies, tomatoes, gourds, drumstick *etc.* on the bunds to supplement his income. He utilized this additional income for his children's education and his family's healthcare. His plan for the future is to buy more animals and to set up a commercial dairy farm.

Input recycling : He recycled the farm residues, cow dung and poultry droppings as manure to the crops. Along with open grazing, he feeds paddy straw to the animals during lean periods of fodder.

Economic security : The adoption of Integrated Farming System had agriculture, plantation, livestock and poultry unit gave better results and income to the farmer. The major outcome found by Sri. V. Venkateswara Rao - the Integrated farming system increased the sustainable income from various components round the year.

Component	Unit	Expenditure (Rs)	Income (Rs)
Paddy (MC 13)	3 acre	150000	365000
Coconut	2 acre	20000	40000
Livestock	4 (cows)	60000	90000
Poultry	15 (local hens)	1125	5625

Financial security : Due to integration of enterprises, there was income availability round the year for the farmer this made him financially secured. The dairy animals had livestock insurance.

Occupational security : The average employment days generated was 295 days by different enterprises he adopted.

Social security : He was member of Farmer Producer

Organization. He attended more number of trainings conducted by KVK and DAATTCs.

Constraints encountered by farmer : Inadequate credit in time and process of lengthy loan transactions in banks were the difficulties faced by farmers.

Providing loans in time, provision of low interest rate loans which may help the IFS farmers to plan resource allocation well in advance and in an appropriate manner. His plan for the future was to expand IFS by purchasing land and inculcating the value of agriculture among youth who were quitting agriculture.

CONCLUSION

The integrated farming system attempted to bridge the gap between improved and traditional production systems, and this model had a wide-ranging impact. Recycling, conservation, and utilization of natural resources, as well as the establishment of a balanced agro-ecosystem. Because of the various farming components, the models were able to generate income on demand. The integrated farming system made efficient use of the products, byproducts, and wastes generated by the farm components. Farmers can put the concept of resource recycling into practice more efficiently if they study the interdependence and linkages of the components, the knowledge of which will aid in the development of farming systems in which waste from one enterprise is more efficiently used as input in another enterprise within the system. This system will be capable of reducing risk, creating additional employment, and preventing migration. It

was concluded that the full IFS approach is superior to traditional and partial integrated farming in terms of productivity, profitability, economics, and job creation for small and marginal farmers.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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