

1. Title:

Project Title: “*APPROPRIATE INTEGRATED FARMING SYSTEM MODEL FOR LIVELIHOOD SECURITY OF RESOURCE POOR FARMERS*”

Sub project Title:

“Development of site specific and appropriate crop/enterprise based models suitable for different agro-eco situations”.

2. Category: Agriculture

3. Challenge

Intensive monoculture system has lead to soil exhaustion, build up of some serious pests and diseases thereby leading to frequent crop failures in the farmer’s fields. A very high variability in rainfall has also added to the problem. Market risk is also very common. Many years, the farmers had no alternative but to sell their produce at lower prices at distress prices. The profit margin started shrinking in regular years also because of steep increase in the cost of inputs and not so encouraging market prices. A high variability is noticed in market prices, which usually record very low prices at the time of crop harvest.

All these things have lead to dissatisfaction of farmers and there is steady migration of farm youth from agriculture sector/rural areas to urban areas leading to many problems in urban areas also. Agriculture is not considered by rural youth as an assured source of income that can provide livelihood.

Under these circumstances, a ray of hope lies in Integrated Farming Systems, which involves meaningful combinations of many complementary and supplementary enterprises leading to optimal sustained use of natural resources, effective utilization of available by-products, profitable employment to all family members throughout the year, higher combined farm income generation, high degree of stability in income generation and prosperity of the farmers.

Crop production activity which is a major activity in many of the farms is subject to very high degree of variability due to natural as well as market risks. This risk can be overcome by combining dairy, sheep rearing and other enterprises which have a steady market and serve as source of good

income generation. Livestock component viz., dairy enterprise provides income on a daily/weekly basis, whereas, seasonal income is obtained through the crop components.

3 a) Why Integrated Farming systems

Adoption of Integrated Farming System leads to sustainability and stability in farm income through multiple enterprises that aim at maximum utilization of available natural resources to meet the family needs. It aims at generating a threshold level of farm income required for the farm family to maintain sustained interest in farming thus preventing migration of people from farming sector.

Integrated farming system, which is a synonym to family farming, provides an opportunity to profitably engage the available man power in the farm family to the fullest extent throughout the year leading to higher income and family satisfaction. A good IFS aims at least dependence on outside resources and efficient recycling of available farm resources.

Though IFS can be explained as a system comprised of several mutually cohesive and complementary agro based enterprises, no common model can be suitable for all the situations. IFS models have to be developed based on the agro-climatic situations, holding size, availability of resources like land, water, labour, marketing facilities, risk factors, family size, ability of the farm family members to participate in the farming activity, their knowledge/skill level etc.

b) Specific objectives.

1. Development of site specific and appropriate crop/enterprise based models suitable for different agro-ecological situations.
2. Integrating as many of the enterprises as possible from crop production, horticulture, animal husbandry, forestry, fisheries, value addition, *etc.* for soil and water conservations practices as applicable to different situations.
3. To demonstrate suitable IFS models maintained at various research stations to the farmers of the region.

c. Gap existing that required specific intervention?

Each eco situation differs from others in respect of profitability of different crops and enterprises. And it will have one or two major crops/enterprises which need to be taken as base for any IFS model. Thus, there will be a different crop/enterprise based models of IFS like rice based, areca based, coconut based, ragi based, dairy based, poultry based, etc. Within an Agro ecological situations, sizes of farm

holdings, availability of farm family members/labourers, etc. needs to be considered before planning an IFS system.

Hence, there is a need to develop and popularize Integrated Farming system at dry zone, coastal zone, hilly and transitional zone of Karnataka under RKVY Programme at College of Agriculture, Shivamogga of UAHS, Shivamogga to cater the needs of farmers of this region to produce quality crops and helps in increasing the potential of export market and even reduces the cost of production of the crops.

Extension Gap

1. Educating farmers to proper use of fertilizers , micro-nutrients and to manage the soil
2. Awareness about cropping intensity in relation to sustainability.
3. Awareness to manage Koleroga of arecanut
4. Dissemination of information about horticulture crops
5. knowledge about animal health and milk production

d) Physical Targets

1. Selection of representative villages in different agro-ecological situations and to conduct a survey of resource base of farmers.
2. Understand the needs and priorities of the farmers through PRA in the villages.
3. Developing IFS models suitable for different situations considering the resource base of each individual farmer, covering complete village.
4. Provide critical inputs and technical guidance to help the farmer to adopt the IFS model, with a higher emphasis on multiplicity of enterprises and useful employment generation. To the extent possible diversification to high value crops like vegetables, flowers, nursery production, seed production will be given priority.
5. Farmers will be encouraged to take up value addition to their crop products and by- products, mushroom production, vermi-composting, food processing, fruit and vegetable processing, etc. They will be encouraged to stay on the farm and to have kitchen garden, back yard poultry, etc. They will be guided to have a gobar gas plant on the farm.

6. To provide technical guidance to help farmers to prepare bankable project reports for complete adoption of IFS with the help of KSDA, KMF and banks.
7. Bring out technical literature on different component technologies of IFS so as to guide the farmers in suitable adoption.
8. Conduct training programmes, field visits and exposure visits to farmers to highlight the important outcome of the demonstrations.
9. To provide critical inputs to strengthen both socio economic status farmers.

Linkages with other Institutes:

1. KrishiVignana Kendra's of concerned districts;
2. RythaSamparkaKendras of KSDA;
3. Milk producers societies of KMF

a) Out come

The outcome of the proposed programme has helped to achieve sustainable agricultural activities inturn helped in enhancement of farm income and farm productivity besides improvement in soil fertility and effective control of soil erosion among the farmers of the region.

1. This also helps to realize cost-effective and stabilized crop yields in the region
2. This may also pave the way to create awareness and adoption of suitable Integrated Farming System models.
3. There has been enhancement in soil health in the adopted villages

4. Initiative

A representative village in each districts of Davanagere, Chitradurga, Chikmagalur and Coorg district were selected for implementing RKVY project in model IFS Demonstration.

- In the selected village we wanted to cover the entire farm families including landless labourers.
- PRA was conducted in every village to understand the situation in the village and to identify the problems and priorities of the farmers.
- Educating the farmers through series of training programmes
- Started to work with individual farmers through individual IFS plan. To understand the resource base of each and every farmer of the identified village, individual IFS plan were prepared.

Schedules which can gather socio-economic information like land holding, cropping system was prepared and information was collected. Collected information was analyzed and suggested suitable models which can suits the needs and priorities of the farmer. Accordingly the inputs were provided along with technical information.

- Five to ten cases were taken up in each village for the detailed analysis and the impact studies. Success stories have been developed and reported.

Crop component, Animal component, Agro forestry and Aquaculture are being the integral part and pillars of IFS, an effort was made to strengthen each component and integration between the components.

a) Area covered: Representative village from each districts of Davanagere, Chitradurga, Chikmagalur and Coorg district were selected for implementing

b) Enterprizes covered:crop components (Maize, Arecanut, Pepper, Paddy, Ginger, Banana etc.), Livestock component (Cow, Buffalo, piggery, poultry, Rabbit rearing, Goat and sheep rearing) Mushroom cultivation and, value addition in agriculture.

Time line of Action: During the stipulated time limit of three years(2013-2016) of the study, Critical inputs were distributed, Conducted training programmes, demonstrated improved agro-techniques, establishment and maintenance of IFS models at various research stations of UAHS, Shimoga were undertaken. in addition tot the above different activities have been undertaken to achieve the major objectives at adopted village.

Physical progress of the project:

Sl. No.	Benchmark	Intervention	Critical inputs distributed to farmers	No. of beneficiaries
1.	Use of low yielding ground nut varieties during summer season	Ground nut varieties GPBD-4 and GPBD-5	Distribution of seeds of ground nut (GPBD-4 and GPBD-5)	654
2.	Sole cropping of Maize	Intercropping of red gram variety BRG-2 in maize main crop	Distribution of seeds of BRG-2 red gram variety	1026
3.	Non availability of green fodder during off	Planting of fodder grass slips of Co-3 on bunds	Rooted slips of CO-3 grass were distributed	1348

	season			
4.	low milk production	Feeding of <i>Azollato</i> milking animals	<i>Azolla</i> cultivation: distribution of poly sheets to create <i>azolla</i> pits and <i>Azolla</i> culture	438
5.	Under nutrition and Non availability of fresh vegetables	Growing of kitchen gardens	Distribution of vegetable seed kits	1340
6.	Sole cropping in Areca nut	Multi-storeyed garden in areca	papaya and black pepper seedling distribution	640
7.	Lack of agro forestry components	Planting of multi-purpose trees	Distribution of Subabul seeds	765
8.	Lack of availability of adequate fodder for the animals	Cultivation of multi-cut fodder sorghum variety SSV-2	Distribution of seeds of multi cut sorghum	290
9.	Poor availability of fodder for the animals	Cultivation of fodder Bajra variety	Distribution of seeds of fodder Bajra	330

Trainings/ Demonstrations/ seminars/ Bulletins/ Leaflets prepared for the farmers:

Sl. No.	Topics covered	Numbers
1.	Training on Azolla cultivation, Mushroom cultivation, vermi composting, Dapog method of rice seedling raising etc.,	24
2.	Conducted seminar on improved agro techniques in field crops and horticultural crops	52
3.	Method demonstration of improved dapog nursery in rice cultivation	2
4.	Result demonstration of importance of kitchen gardening for nutritious and fresh vegetable production	8
5.	Leaf lets on various improved agro techniques in Agri and Horticultural crops and various IFS components like Mushroom cultivation, rabbit rearing, Apiary etc.,	20

The overall impact of adoption of modified integrated farming systems:

There was an impact which could be measured in terms of monetary benefit and also some of the indirect benefits which have a long term benefit to the system. In general, the farm families in the village are impressed about the following technologies and are willing to continue with little or no outside support in future.

1. Intercropping of red gram variety BRG-2 in maize main crop;
2. Ground nut varieties GPBD-4 and GPBD-5;
3. Planting of fodder grass slips of Co-3 on bunds;
4. Feeding of azolla to milking animals;
5. Growing of kitchen gardens;
6. Multi-storeyed garden in areca;
7. Planting of multi-purpose trees.
8. Cultivation of multi-cut fodder sorghum variety SSV-2
9. Cultivation of fodder Bajra variety



Red gram intercropping in maize in paired rows



Good yield of BRG 2



Greens in the kitchen garden, Azolla in the back ground Kitchen garden seed kit given to farmers

Infrastructural Developments:

“ESTABLISHMENT OF MODEL IFS UNIT AT COLLEGE OF AGRICULTURE, SHIMOGA”

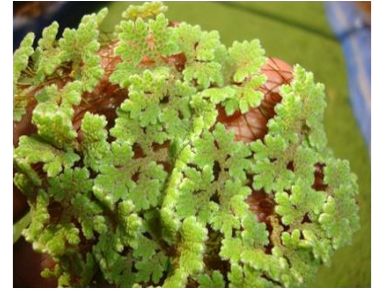
Agri-Horti-Silvi-Pastoral based IFS Demonstration was initiated on an area of 1.5 ha in Plots No. C-3 and C-4 of Agricultural College Farm, Shimoga during the year 2013. The plot was having 150 numbers of Sapota plants of five years of age on one hectare area (Plot No. C-3) and about 90 numbers of teak plants on 0.3 hectare area with some uncultivated area of 0.2 hectare area (Plot No. C-4).



Napier grass (CO-3) planted on bunds



Model farm house and cattle shed constructed at IFS unit



Establishment of Azolla unit at IFS unit



**Kitchen garden
fishpond**



Solar operated pump



Portable Syntex Biogas Plant

5. Key result/insight/interesting fact

1. Identified and developed IFS models suitable for different agro-eco situations are the key tools to adopt suitable IFS model at farmers field.

2. Integration of various enterprises like crop production, horticulture, animal husbandry, forestry, fisheries, value addition, etc has lead to raising the overall farm productivity and recycling of resources in the farm
3. Through the distribution of improved crop cultivars and imparting timely agro techniques paved a way for boosting income levels of the farmers of the project villages. Besides improving the soil health and conservation of natural resources.
4. The farm families in the village are impressed about the performance of the improved agro techniques as well as critical inputs provided and farmers are willing to continue with little or no outside support in future.
5. The purchase of vegetables from sandiesfor daily consumption has been drastically reduced since kitchen garden fulfilling the requirements.

6. Impact:

The short term benefits of adoption of some of the new components in existing IFS plan resulted in increased monitory benefit ranged from Rs16,000/- to Rs 29,200/- with an average of Rs 22,440/-. The long range impact which could not be measured now, is going to be much greater with many ways of direct monetary benefits as well as many indirect benefits like soil improvement, nutrition improvement, employment generation etc.

The farmers of the region are farmers are willing to continue the usage of HYV inputs and other agro techniques to enhance the farm income with little or no outside support in future.

7. Lessons Learned

1. What did you learn in this process? What was difficult or challenging?

Farmers are very much reluctant to adopt additional components in their existing farming systems models and also hesitate to use HYV and other improved agro techniques for yield maximization and soil health improvement. In order to change the mindset among the farmers to adopt different region specific models various demonstrations and training programmes have been taken up and succeeded in convincing the things.

2. How did you overcome the challenges faced?

In order to change the mindset among the farmers to adopt different region specific models various demonstrations and training programmes have been taken up and succeeded in convincing the things.

3. If you were to do it all over again, what would you do differently?

The same work can be implemented by timely supply of all the critical inputs and making the farmers more proficient in the adoption of improved techniques by inculcating more number of trainings, demonstrations and exposure visits. The need based IFS models will be established at village and in taluk level to further convenience the farmers of the region.

8. Additional information

Please provide additional relevant information, such as:

1. List of all project partners and/or donors who supported the work: RKVY

2. Links to supporting materials, such as news items, photos on Flickr and presentations on Slide Share: State department of Agriculture, Krishi Vignana Kendra's of concerned districts, Rytha Samparka Kendras of KSDA, Milk producers societies of KMF

3. Contact person for this story:

a) Name: Dr. Narayan S Mavarkar,

b) Professor (Agronomy)

c) nsmavarkar@gmail.com

4. Other information you want to add :Yes

Success Stories-Kodathalu

Sl.no.	Name of the farmer	Total annual benchmark income (Rs)	Annual family income after adoption of new IFS components (Rs)	Additional income generated / expected (Rs)
1	Manjya Naik S/O Bhojya Naik	93,400	1,21,120	27,720
2	Takra Naik S/O Chandya Naik	1,15,000	1,41,120	26,120
3	Vamadeva S/O Puttappa	4,13,700	4,45,330	31,630
4	Basavarajappa K.G. S/O Mallappa	1,12,300	1,43,750	31,450
5	Krishna Naik S/O Gemya Naik	1,03,800	1,29,840	26,040
6	Sevya Naik S/O Rama Naik	1,70,200	1,89,120	18,920
7	Ravi Naik S/O Krishna Naik	53,300	61,620	8,320
8	Eshwarappa S/O Mahadevappa	1,04,200	1,15,720	11,520
9	Surendra S/O Veerabhadrapa	1,84,400	2,22,000	37,600
10	Janya Naik S/O Hala Naik	1,48,600	1,75,460	26,860
Average Annual Family Income		1,49,890/-	1,74,508/-	24,618/-

IMPORTANT PHOTOGRAPHS RELAVENT TO IFS UNDER RKVY PROJECT

CRITICAL INPUTS DISTRIBUTION

Inputs distribution to framers in the project village



Distribution of biofertilizers



Red gram BRG - 2 distributed to Isoor village



Farmers under training at Vermicompost unit and method demonstration on compost preparation at ZAHRS, Navile, Shimoga



Introducing Azolla as cattle feed

Field visit by university officials



Exposure visits



compost preparation at ZAHRS, Navile



Farmers at IGFRI, Dharwad

FARMERS/school students VISITED IFS UNIT



Dr. N. S. Mavarkar delivering a talk on integrated farming system



Farmers at BAIF, Surashettykoppa



Hone'ble vice chancellor visit to the IFS

Developed Kitchen Garden



Establishment of Banana Orchard

Preparation Of Land For Planting Banana Suckers



After Establishment Of Banana Orchard



Multistoried cropping system

