UNIVERSITY OF AGRICULTURAL SCIENCES RAICHUR – 584 104

Success Stories of
Rashtriya Krishi Vikasa Yojana Projects
Implemented by
University of Agricultural Sciences, Raichur

Submitted to

The Commissioner for Agriculture
Commissionerate of Agriculture
Sheshadri Road, Bangalore – 560 001

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18th May, 2019

SUCCESS STORY-II
Integrated Farming System Module for Livelihood Security

1. **Title -** Integrated Farming System Module for Livelihood Security

2. Category- "Integrated Farming System"

3. Challenge -

Today, concerns regarding environmental safety and sustainability of land productivity are increasing among scientists, administrators and environmentalists. It is doubted whether the strategy adopted during the green revolution era could be continued any longer under the challenging conditions of this new century. Already, a section of people in the world is questioning the propriety of conventional agriculture, and a few of them are advocating alternative practices that are perceived to lay foundation for sustained production. On these lines, systems like alternative agriculture, natural farming, organic farming etc. were proposed at various conventions. However, the scientists harping on the success of green revolution continue to doubt whether such a system can really be functional, productive and meet the growing demands for agricultural products in this e-age. These emphasize the need to develop new strategy of living with the nature and nurturing it for sustainable production.

Gap existing that required that specific intervention?

1. Reversing sick soil to healthy soil through low cost approaches in existing penury.
2. Introduction of exotic breeds of goat suitable for stall feeding These gaps exist for other livestock also.
3. Standardization of methodologies/approaches for generating gainful rural self employment through improved agricultural technological interventions. Low cost organic farming practices

What is at stake for a person, community or other group of people?

The proposed districts of Hyderabad Karnataka Region Raichur, Ballari, Koppal, Yadgir, Gulburga and Bidar in Karnataka, India were selected based on their disadvantageous position in the state not only for agriculture but also for poor standard of living for the poor due to limited livelihood opportunities. Lack of crop diversification, poor breeds of animals/birds, farm mechanization, mono-cropping, poor seed replacement rate, terminal water stress and poor marketing infrastructure facilities etc. are some important area to be covered in this project.

4. Initiative-

The major components of the project taken up include:

a) Intensification and diversification of agricultural activity through integrated farming system approach comprising varietals improvement, seed replacement, farm-based enterprises for self employment etc.
b) Livestock improvement, increasing per unit profitability and integration.

c) Soil health improvement by promoting organic production system, IPM, mass composting, encouraging use of homemade bio-pesticides, bio-fertilizers etc.
d) Human resource development for sustenance of the proposed activities.

Components of farming system

I. FARM HOUSE, KITCHEN GARDEN AND SUBSIDIARY ENTERPRISES – dairy, sheep & goat, poultry, vermicompost, farm ponds

II. MINI ORCHARD AND FLOWER CROPS

III & IV. CROPPING ACTIVITIES – field crops, fodder and green manure

V. VEGETABLE CROPS

Methodology

The project is implemented in the following research stations of UAS, Raichur

i) MARS, Raichur
ii) ARS, Gangavati
iii) ARS, Malnoor
iv) ARS, Siruguppa
v) ARS, Hagari
vi) ARS, Kawadimatti
vii) ARS, Gulbarga
viii) ARS, Bidar
ix) ARS, Raddiwadgi
x) ARS, Bheemarayana gudi

Note: An integrated farming system model on one hectare area each under dry land and irrigated ecosystems is laid out in each of the above research stations.

IFS MODEL FOR IRRIGATED ECO SYSTEM (1ha) RAICHUR

Teak planting all along the borders. Bunds between the segments are planted with drumstick, curry leaf and fodder grasses like NB-21, Guinea grass & stylo.

Segment 1: Bullock pair: 1
Cow : 2
Poultry birds : 60
Kitchen garden

Construction of farm pond (Fishery), farm house, Poultry cage, Cattle shed and Vermicompost unit as per the specification

Segment 2: Horticulture crops like Mango & Fig/Guava inter-cropped with vegetables like Bhendi, Ridge gourd and Leafy vegetables

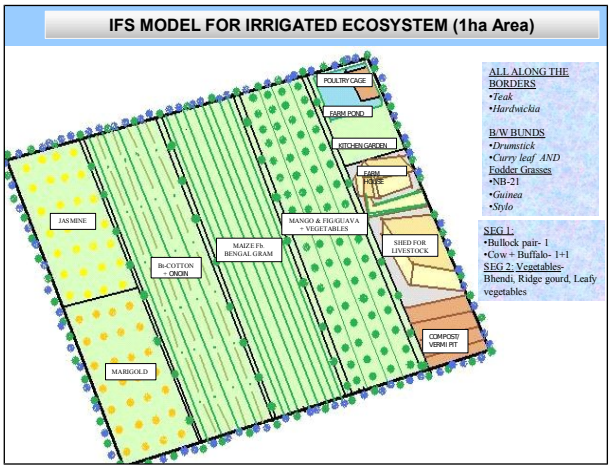
Segment 3: Maize followed by Bengal gram

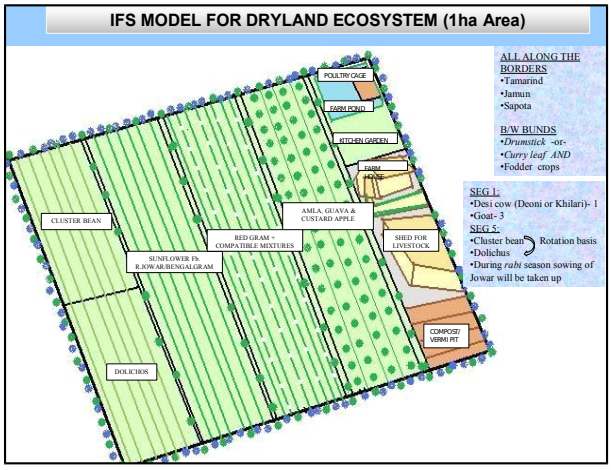
Segment 4: Bt-cotton

Segment 5: Part 1: Jasmine
Part 2: Marigold
Part 3: Watermelon

IFS MODEL FOR DRYLAND ECO SYSTEM (1ha Area), RAICHUR

All along the border-planting of Tamarind, Jamun and Sapota.
Bunds between the segments are planted with Drumstick/Curry leaf and fodder crops
Segment 1: Desi cow (Khilari) : 1
Goat : 5 +1
Kitchen garden
Construction of farm pond (Fishery), farm house, Cattle shed and Vermicompost unit as per the specification
Segment 2: Amla, Guava Custard apple & Sapota + Bengalgram
Segment 3: Red gram + compatible mixtures (Bajra, Navane, Sesamum)
Segment 4: Part 1: Sunflower
Part 2 : Jowar
Segment 5: Part 1: Cluster bean Rotation basis
Part 2 : Dolichus
During *rabi* season sowing of Safflower was taken up





For human need, the livestock provides food, fiber, skin, traction, fertilizer and fuel. Livestock also constitutes "living bank" providing flexible financial reserve in times of emergency and serve as "insurance" against crop failure for survival. In this system, animals are raised on agricultural waste. The animal power is for agricultural operation and the dung is used as manure and fuel.

5. Key result/insight/interesting fact

❖ **RESULTS/OUTCOMES**

The results of the study have indicated that integration of various enterprises on 1 ha of land holding were viable.

a) Under Irrigated ecosystem

The productivity of the farming systems was based on the quantity of marketable produce obtained during all three years. The profitability of different components of IFS in the first year was comparatively less than second year and third year. During the first year net income generated from crop component was 30,570 with a B: C ratio of 2.30 while, from allied activities it was about 46,398 with B: C ratio 2.81 respectively. In second year, benefit cost ratio is in increasing trend when compared to the first year. The net income generated during the second year from the crop component is Rs. 70319 with B:C ratio of 3.69 while, Rs. 57243 with B:C ratio is 3.02 obtained from the allied sector.

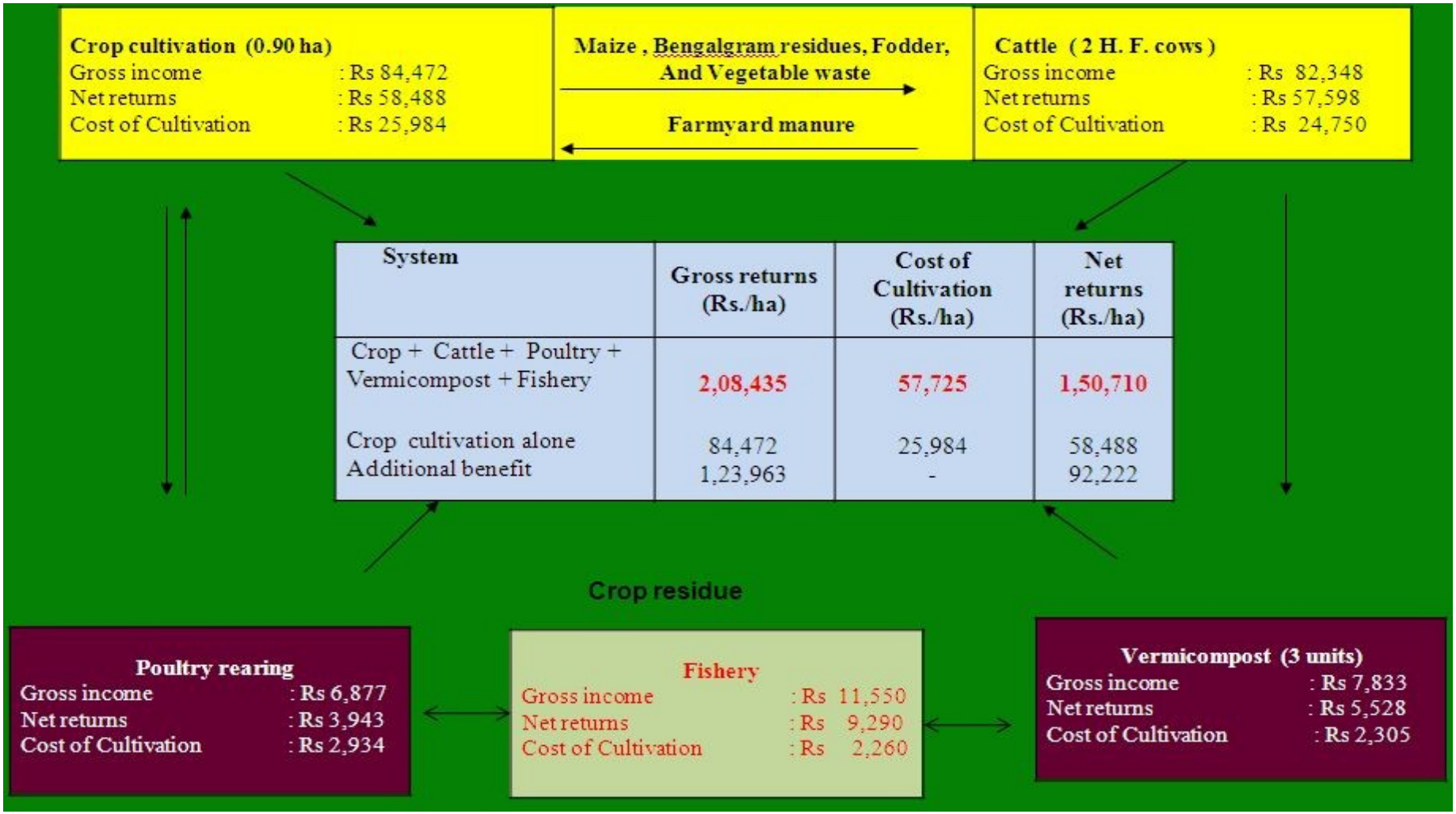
Integrated Farming System method records higher net returns and benefit cost ratio in all the three years because this method comprising the components like cropping, vegetables, vermi compost, goat rearing, poultry and cattle (bullocks, cow and calves) rearing. At the end of third successive year IFS method contributed a net return Rs. 2,27,398 with 4.63 benefit cost ratio, which gives 26.5 per cent higher net returns compared to conventional method (cotton). The net income generated during third year from the crop components is Rs. 74577 with B: C ratio of 3.64 while Rs. 152821 with B:C ratio is 5.34 obtained from the allied sector. Higher net income generated during third year compared to first and second year due to proper recycling of farm resources each other through use of vermicompost, FYM and also from yielding of horticulture components like drumstick, curryleaf, adoption of floriculture and good planning of vegetables according to good seasonal demand might be contributed to good returns. Among components studied, cotton + vegetable cultivation + diary + vermicomposting unit + fodder cultivation on bunds was more profitable and recorded average net returns of Rs. 108212 with 5.41 B: C ratio than growing of single crop cotton.

b) Under dryland ecosystem

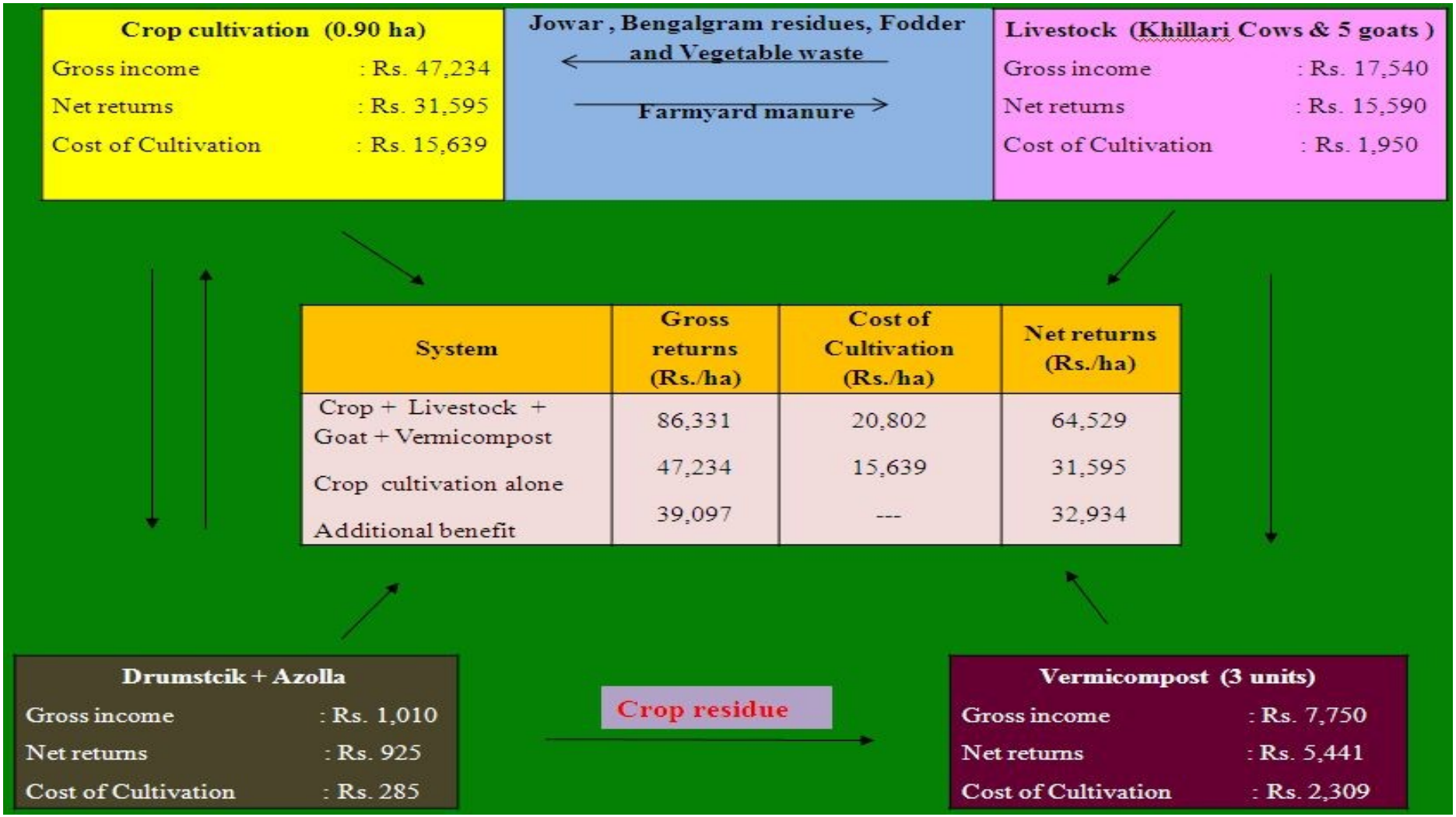
The productivity and profitability under dryland conditions was comparatively low as compared to irrigated condition. During the first year net income generated from crop component was 27613 with a B C ratio of 2.20 while, from allied activities net return was 3907 with B: C ratio of 1.95. During second and third years Benefit Cost ratio is in increasing trend when compared to the first year. The net income generated during the second and third year from the crop component was 39462 and 39206 respectively with a B: C ratio of 3.88 and 3.22. While, from allied activities it was 35025 and 56771 about with B: C ratio 7.15 and 7.92 respectively.

The average net income and benefit cost ratio recorded from all components under dryland conditions is Rs. 64,529 and 3.96 respectively. Among components studied redgram + vegetables + goat rearing was more profitable under dryland conditions because these areas are characterized by low and unpredictable yield due to inefficient use of rain water, poor management of soil, rare use of fertilizers, non adopting high yielding varieties and improved soil conservation techniques and recorded average net returns of Rs. 54516 with 6.13 B: C ratio. The same trend is noticed with respect to the all other stations under irrigated condition. Results of these trials conducted in all different stations are summarized below.

Productivity and profitability in integrated farming system for average of three years



Productivity and profitability in integrated farming systems for average of three year (dryland condition)


Crop cultivation (0.90 ha)
Gross income : Rs. 47,234
Net returns : Rs. 31,595
Cost of Cultivation : Rs. 15,639
Jowar , Bengalgram residues, Fodder and Vegetable waste
Farmyard manure
Livestock (Khillari Cows & 5 goats)
Gross income : Rs. 17,540
Net returns : Rs. 15,590
Cost of Cultivation : Rs. 1,950
System
Gross returns (Rs./ha)
Cost of Cultivation (Rs./ha)
Net returns (Rs./ha)
Crop + Livestock + Goat + Vermicompost
86,331
20,802
64,529
Crop cultivation alone
47,234
15,639
31,595
Additional benefit
39,097

32,934
Drumstcik + Azolla
Gross income : Rs. 1,010
Net returns : Rs. 925
Cost of Cultivation : Rs. 285
Crop residue
Vermicompost (3 units)
Gross income : Rs. 7,750
Net returns : Rs. 5,441
Cost of Cultivation : Rs. 2,309

6. Impact –

❖ **EVIDENCE/EVALUATION**

Activities	Impact
Crop Intensisification, Improved Package of Practice	• Increased Income • Long term availability of food • Improvement of the economic status of the farmer
Intervention on Live stock, Goatry and poultry	• Change in occupational pattern. • Increase in availability of animal products
Improving the existing methods and structures of composting	• Positive impact on nutrient availability and reduced loss of nutrients
In dry land ecosystem, soil and moisture conservation and rain water harvesting and management	• Enhanced availability of water. • Reduced soil erosion and land degradation by in situ conservation of moisture

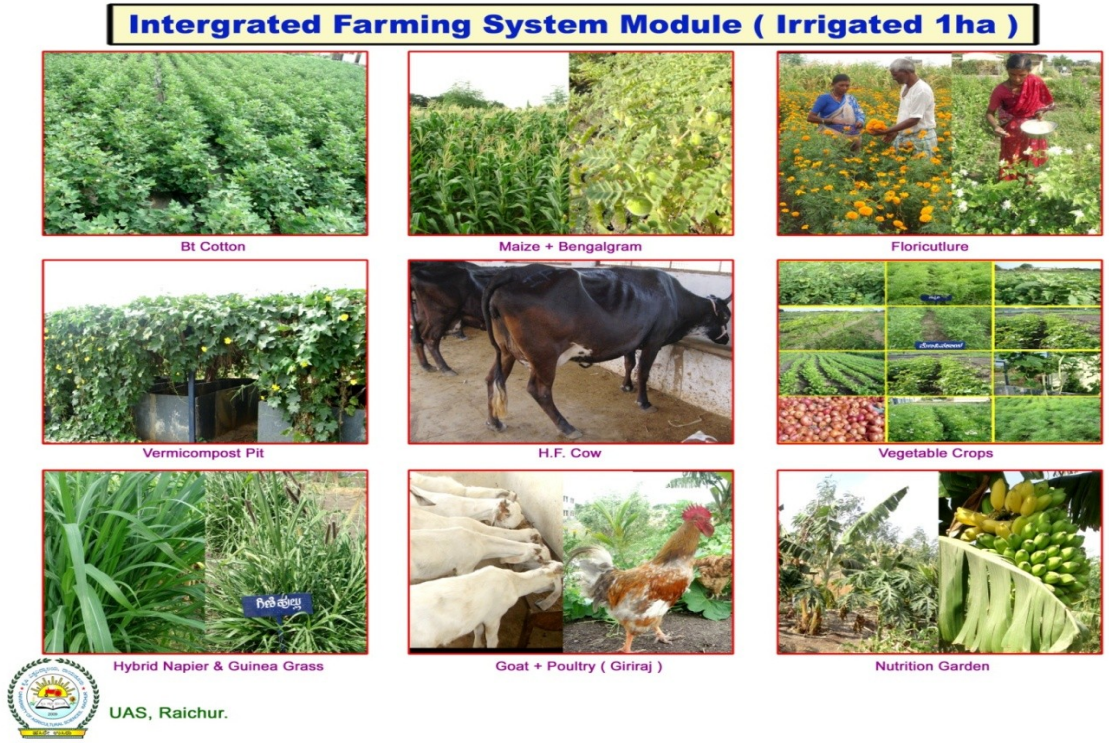
application of production input with power timing and precision.

7. Lessons Learned

While the results of this study are most encouraging the trials should continue to verify the results obtained this fact. However at this time we can say that is possible to manage agricultural production system with fewer inputs, especially agrochemicals, while obtaining economically viable results. We donot have sufficient data to precisely measure impact of integrated farming system on the environment. However the fact that we can drastically reduce the inputs of chemical fertilizers, pesticides and energy in agricultural production system strongly suggests decidedly lower risk to the environment. Moreover it should emphasized the potential success of integrated farming system for a more sustainable agriculture depends largely upon skilled management by the farmer and particularly the

8. Supporting Quotes and Images-

TECHNOLOGIES DEVELOPED



IFS MODEL FOR IRRIGATED ECOSYSTEM (1ha Area)

ALL ALONG THE BORDERS
- *Teak*
- *Hardwickia*

B/W BUNDS
- *Drumstick*
- *Curry leaf AND*

Fodder Grasses
- NB-21
- *Guinea*
- *Stylo*

SEG 1:
- Bullock pair- 1
- Cow + Buffalo- 1+1

SEG 2: Vegetables- Bhendi, Ridge gourd, Leafy vegetables

Intergrated Farming System Module (Dryland 1ha)

Redgram + Navane

Dolichos + Clusterbean

Jowar, Safflower

Silo Pit

Farm Family

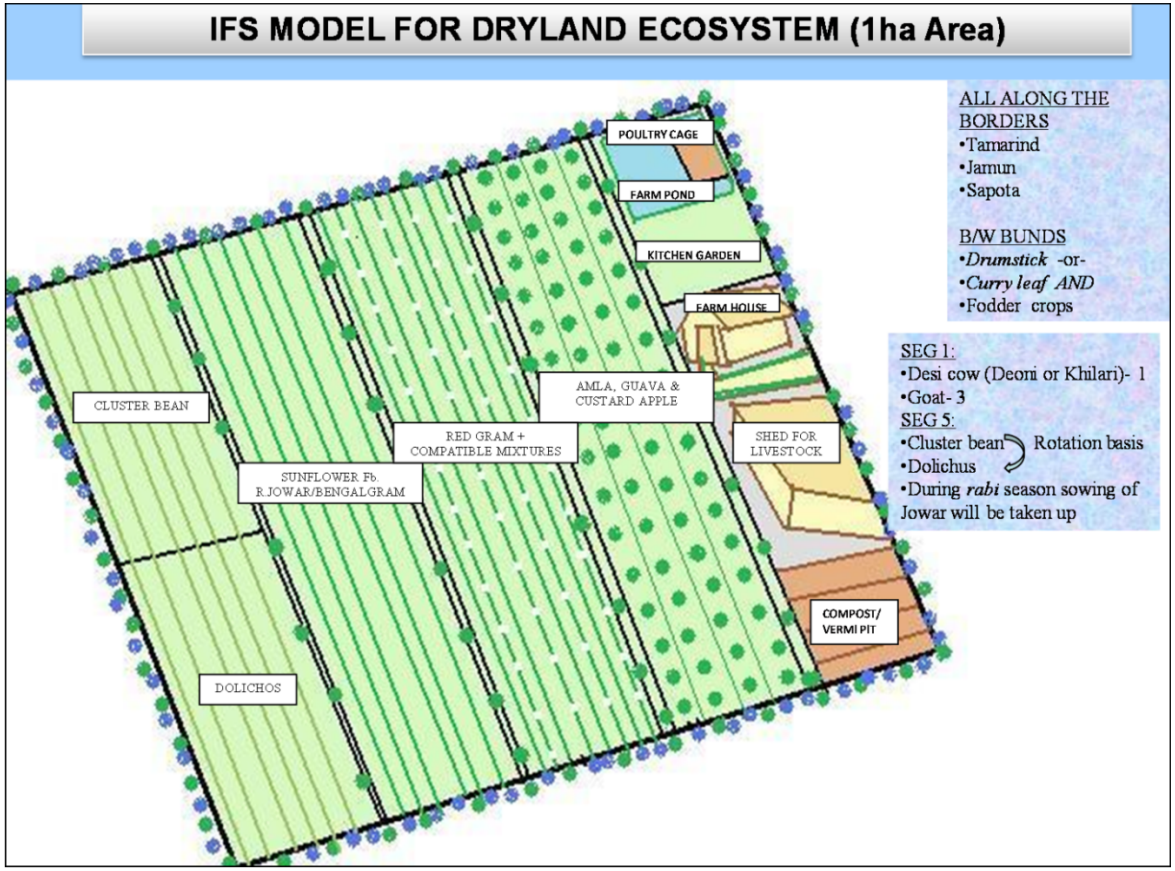
Goat, Azolla

Vegetables

Desi Cow (Khillari)

Drumstic + Curryleaf (Along with Bund)

UAS, Raichur.


IFS MODEL FOR DRYLAND ECOSYSTEM (1ha Area)
POULTRY CAGE
FARM POND
KITCHEN GARDEN
FARM HOUSE
AMLA, GUAVA & CUSTARD APPLE
CLUSTER BEAN
RED GRAM + COMPATIBLE MIXTURES
SHED FOR LIVESTOCK
SUNFLOWER Fb R JOWAR/BENGALGRAM
COMPOST/ VERMI PIT
DOLICHOS
ALL ALONG THE BORDERS
•Tamarind
•Jamun
•Sapota
B/W BUNDS
•Drumstick -or-
•Curry leaf AND
•Fodder crops
SEG 1:
•Desi cow (Deoni or Khilari)- 1
•Goat- 3
SEG 5:
•Cluster bean Rotation basis
•Dolichus
•During rabi season sowing of Jowar will be taken up

Improved Goat Breeds For Intergrated Farming System

Shirohi

Barbary

Jamnapari

Shirohi Kids

Barbary Kids

Jamnapari Kids

UAS, Raichur.

Hon'ble Agricultural Minister, Government of Karnataka and Dr. Gurbachan Singh, Chairman (ASRB), New Delhi Visiting IFS Research Plots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Economic Advisory member (GOI) and Dr. B. Gangawar, Directorate, Project Directorate for Farming System Research (UP) to the IFS Research Plots

10. Checklist

No.	Question to consider	Yes	No
1	Is the story interesting to the target audience of the project/activity report?		
2	Does the story explain what new insights the project brings? What is the main lesson learned from this story? Does the story describe a key insight on what works and what doesn't and something that future project could build on	Yes	
3	Does the story describe the outcomes the project produced and the people who are benefitting? What changes–in skills, knowledge, attitude, practice, or policy–has the project brought, and who is benefitting from these changes?	Yes	
4	Does the story make a compelling point that people will remember? Does the story show how the project makes a difference to improving livelihoods and lessening poverty?	Yes	
5	Does the story provide an interesting fact that people will remember? For example, how much yields increased, how many hectares of land could become more productive from this innovation or technology?	Yes	
6	Does the story explain what kind of impact this innovation or technology could have if scaled up?	Yes	
7	Does the story show which partners contributed and how?		No
8	Does the story include quotes from Stackeholders or beneficiaries?		No
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other Programme/ project) that also feature this story?		No
10	Have I provided the contact details of people who can provide more information?		No

11. Contact person for this story (name, position, email address)

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