

SAFE-World Project/Initiative Summary

Country: India

Project/Initiative Title: M S Swaminathan Foundation – JRD Tata Ecotechnology Centre - Integrated Intensive Farming System –

Nos. farmers: 25

Hectares: 50

Improvement types

1x	2x	3x	4x	5	6x	7	8	9
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A. Key Impacts

A1 – Productivity

	Before/Without	After/With	% change
Dryland Rice	2610 kg/ha	3460 kg/ha	32

A2 – Impacts on natural capital

?? Increased yields without using fertilizers and pesticides

?? Sesbania green manures

A5 – Key changes in farm / regional system

?? Reduced costs (9880 Rs/ha to 6422 Rs/ha) 35% reduction

?? Increased yields

D. Contact Point for Project/Initiative

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E. Project Narrative

Integrated Intensive Farming System

The Centre has been documenting the practices of farmers who have been following the principles of IIFS. It is also involved in demonstrating the concept of IIFS in a model farm at Keelamanakudi, near Chidambaram. More than 12 different activities are taking place in one acre of land and these activities are linked to each other. More than 25 farmers and land less labourers of Keelamanakudi village are working with the project staff in analysing the economic efficiency, ecological viability and social feasibility of the model. Though the project started in 1996, the activities were consolidated only during 1997. During the first year, the model tested paddy, fish, mushroom, red gram, black gram, horticultural crops like bhendi, snake gourd, banana, greens etc. Livestock such as goats, rabbits, and ducks have

been integrated as a part of the agricultural system. The project is studying the viability of the linkages between these activities in terms of an input-output model.

The economic viability is also being assessed. During 1997-98, the model showed a productivity of 1.06 tonnes per acre whereas the productivity in the village was between 1 to 1.7 tonnes. However, in terms of paddy varieties, Ponni showed a productivity of 1.4 tonnes per acre, whereas the other varieties such as CO43 and Ponmani showed a productivity of less than one tonne. Ponni shows potentials for high productivity under organic input conditions. Being a long duration variety, it is able to adapt to organic farming conditions much better than the other varieties. The paddy produced in the IIFS plot had much lower input cost (Rs. 2600 per acre during 1997 compared to Rs. 3,900-4,000 per acre of other farmers). Without using chemical fertilizers and pesticides, the paddy production was achieved solely with the help of *Sesbania rostrata* as green manure. This has been done for the first time in the village and there has been a good response among the farmers. Productivity in other crops is also being studied. Paddy and banana have been contributing to the mushroom production and the wastes of mushroom are being used as fish feed and animal feed. The economics of these activities are being worked out and the project would help to develop a model for sustainable agriculture.

Due to certain difficulties in analysis, data could not be obtained for soil status during 1997. After the harvest of paddy and black gram, data on soil was obtained from the model plot and two control plots which use chemical fertilizers and pesticides (one within 500 m radius and the other within 1 km radius). Differences in soil quality are seen clearly though it is difficult to claim that the differences are solely due to the management practices. However, the project would observe the plots for another three years after which it would be possible to give a picture of the soil dynamics due to management practices. The higher rate of organic carbon and bulk density in the IIFS plot are some of the interesting observations in this analysis. (Table 3.10).

The documentation of IIFS farmers has shown the economic viability of such practices. Mr. Ganesan at Adiannamalai village in Thiruvannamalai district has been following practices. That are similar to the concept of IIFS. The activities of this farmer were compared with his neighbouring farmer who also possesses the same amount of land with more or less similar soil type. While Mr. Ganesan was following organic farming with crop rotation and linkages, the neighbouring farmer was following conventional paddy cultivation with heavy inputs. The differences between these two farmers are given in Table 3.11.

The differences in the type of employment and differences in resource-intensity are the factors which characterise IIFS. The fact that IIFS consumes more family labour and less hired labour is an interesting issue, which requires further probing. The dependence on the family labour has been shown in many case studies including in our demonstration at Keelamanakudi. The studies have also indicated a trend in which women tend to spend more time in agriculture production and household chores/activities when compared to the women in other types of farms. Thus, a sustainable agriculture model, which focusses more on family labour and demands more time of women, needs to be studied further. During 1998-99, the project will study a these issues.

The study also showed that the IIFS farmer was able to get a productivity of nearly 5.25 tonnes of paddy per ha during 1997-98. The main field was fertilised with 3 tonnes of farmyard manure (FYM) and about 2 tonnes of green leaf manure with the leaves of *Glyricidia* sp., *Sesbania* sp. *Chloroxylon* screteria, *Dodonaea aung-ustifolia*, *Terenna asiatica*, *Erthroxylon nimogynons*, *Anozysus latifolia*, *Indigofera tinctoria*, *Holaerhena pubescens* etc. The soil turns black which indicates that the leaves are well decomposed and the field is ploughed.

The Centre is studying the science behind this fertilisation process. These green leaf manure

plants have some common characteristics such as profuse branching, production of shoots, twigs and leaves. The young leaves are generally used and they decompose quickly. They are generally not preferred by cattle and also may contain alkaloids due to which they keep off the pests and may be antifungus and antibacterial in nature. Species such as *Terenna asiatica* and *Holaerhena pubescens* have high phosphorus and potash content. During 1998-99, the various dimensions of these species as fertilisers and pest controllers will be studied. Such an attempt is an example of blending traditional wisdom with frontier science.

Taken from MSSRF – <http://www.mssrf.org/spa301.html>