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Farming System of Small and Marginal Farmers in Rainfed Areas

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ABSTRACT

Rainfed areas account for 68 per cent of India's net cultivated land and support about 360 million people which may rise to 600 million by 2020. Even after the realization of India's full irrigation potential by 2013, it is estimated that around 50 per cent of India's net cultivable area of 142 million ha will remain rainfed. Farming under rainfed conditions is risky because of its dependence on uncertain monsoon or rainfall and other limited inputs. More over majority of our rainfed holdings are small and marginal. Further, it is very difficult for the farm families to get adequate food and income from agriculture alone for their sustenance. A whole farm approach or an integrated farming system approach would be of great relevance to the small and marginal farmers to deal with such situations. Farming system is a complex inter-related matrix of soils, plants, animals, implements, labour and capital, inter-dependent farming enterprises which are unique and reasonably stable arrangement complementary to each other. Further, the farm family manages these enterprises in response to their physical, biological and socio economic environment, household goals, preferences and resources. Farming system concept as such is not new to our farmers who have been practicing mixture of plant and animal units in farming from time immemorial by combining crops with mulch animals and/or goats, sheep etc.

Farmers involvement and problem-solving orinentation is the principal contribution that the farming systems perspective brings to agricultural research. Development of this orientation helps strengthen linkages in national research systems between commodity programmes and between disciplines for both applied and adaptive research. It can also strengthen linkages between research and extension and between research and policy analysis (Byerlee and Tripp,1988). Research and Extension systems have to come up with technological options to provide improved livelihoods for burgeoning rainfed population (Sulaiman and Suresh Pal, 1997). The present study was undertaken to understand whether the small and marginal farmers of rainfed areas practice farming systems ? What are all the components? What are the reasons for their inclusion and what could be the extension strategy to popularize the farming system approach appropriate to the small and marginal farmers of rainfed areas.

METHODOLOGY

The study was conducted in Vedasandur and Thoppampatti blocks of Dindigul district in Tamil Nadu state. A sample of 120 small and marginal farmers were selected from six villages by using proportionate random sampling technique. About twenty two personal attributes viz., age, education, family nature, house owned, occupation, farming experience, farm size, annual income, irrigation status, farm power, material possession, marketing facilities, storage facilities, social participation, extension agency contact, mass media exposure, credit behaviour, rish orientation, urban contact, scientific orientation, progressivism and economic motivation of farmers were studied employing suitable scoring procedures developed. A farming system index was worked out as a ratio of number of complementary units of farming system practised by an invidual farmer to the total number of components of farming system being practised in rainfed areas. Further, reasons for

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incorporation of components and inputs for suggesting an extension strategy for popularizing farming system approach appropriate to the small and marginal farmers of rainfed areas were identified though a pre tested interview schedule, observation and discussion with farmers. Frequency and percentage analysis were used to interpret the data collected.

RESULTS AND DISCUSSION

1. Socio-economic and psychological profile of respondents

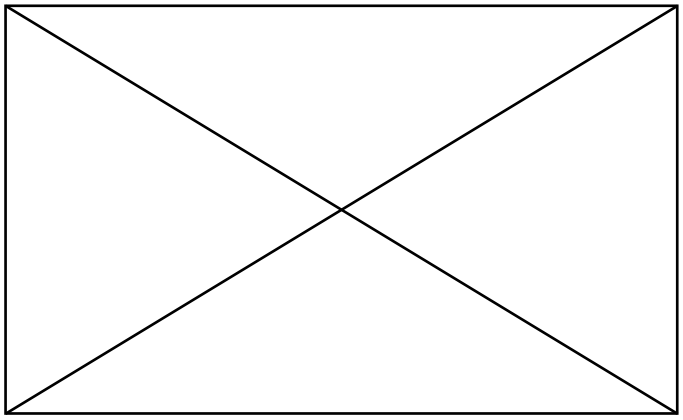
The socio-economic profile of the small and marginal farm families shown in the Table-1 indicated that around three fourth of the respondents (72%) belonged to the middle age group (35-50 years). About 40 per cent of the respondents were illiterates, 50 per cent of the respondents were primary literates and 20 per cent of them were studied up to eighth standard. Hardly one to 5 per cent were had higher education. This indicated that farming as an occupation was not preferred by the educated. Joint family system was found with 57 per cent of respondents and they lived in tiled houses (51%). Farming was the major occupation for 50 per cent of the respondents while 25 per cent of them in addition to farming worked as labour in other farms during busy agricultural seasons. Majority of the respondents (66%) had 15-35 years of farming experience since farming was their way of life. As this was confined to small and marginal farmers about 80 per cent of them possessed 2-4 acres of farm land and about 57 per cent of them had irrigation facilities for 2-3 acres. The respondents had medium to low level of farm power, annual income, social participation, material possession, extension agency contact, mass media exposure, risk bearing, scientific orientation, economic motivation, and progressivism and storage facilities. These findings indicated the backwardness of the rainfed farmers mainly due to their lack of education and inadequate income from the farming.

Table 1. Key Socio-economic Profile of Small and marginal farmers in rainfed Areas N=120

Sl. No.	Attribute	% of respondents
1	Age – Middle (35-50)	72
2	Education – Illiterate & primary literate	73
3	Family – Joint family	57
4	House type - Tiled	52
5	Occupation – Farming alone	51
6	Farming experience (15-35 yrs)	66
7	Farm size (2-4 acre)	79
8	Irrigated area (2-3 acre)	57
9	Farm power – Low to medium	100
10	Material possession - Low	53
11	Market facilities - High	55
12	Storage facilities - Low	97
13	Annual income – Low to medium	92
14	Social participation - Low	78
15	Extension agency contact- Low	77
16	Mass media exposure - Low	83
17	Credit behaviour – Non-institutional	71
18	Risk orientation - Medium	87
19	Urban contact - Medium	59
20	Progressivism - High	91
21	Scientific orientation - Medium	86
22	Economic motivation-Medium	67

2. Farming systems practiced by the small and marginal farmers

The study, as shown in Fig-1, revealed that three different types of farming systems with four main components were adopted by the small and marginal farmers in rainfed areas. The main components were crops, animal husbandry, horticulture and agro forestry. Eighty five per cent of respondents practised four main components, while about 15 per cent of respondents practised three components in their farming systems. This might be due to the specific requirements of the respondents. The components are analysed further.



Agri - Agriculture A.H – Animal husbandry
Hort - Horticulture Ag.For- Agro-forestry

2.1 Crops

Table 2 indicates the crops grown and the crop combinations followed in the study area. More than one third of the respondents (38.33 %) followed Paddy + Sorghum + Groundnut + Chillies type of crop combination and another one third of the respondents (35.83 %) followed Sorghum + Groundnut +Chillies + Bajra. Paddy, Sorghum and Bajra were the important food crops and Groundnut, Chillies, Sunflower, Onion, Tobacco and Cotton were the cash crops widely grown by the respondents. Most of the respondents raised food crops mainly for consumption and for fodder. The income from cash crops was used to meet the farm and other essential expenses. Intercrops like cowpea, black gram, red gram, castor, tomato and brinjal were grown with groundnut and chillies for home consumption.

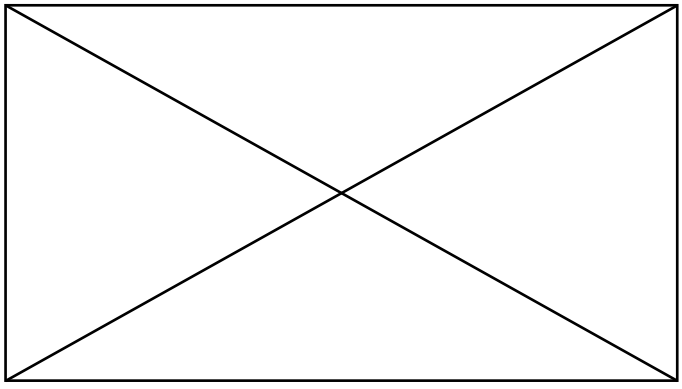
Table- 2. Agricultural Crop Combinations Practiced by the Farmers

N=120

S.No.	Crop combinations	Number	Percentage
1	Paddy + Sorghum + Groundnut +Chillies	46	38.33
2.	Sorghum + Ground nut + Chillies + Bajra	43	35.84
3.	Paddy+ Sorghum + Sunflower	12	10.00
4.	Sorghum + Ground nut + Chillies + Onion	9	7.50
5.	Paddy+ Ground nut + Tobacco	6	5.00
6.	Paddy + Sorghum + Ground nut + Cotton	4	3.33

2.2 Animal husbandry

Animal husbandry included the rearing of live stock components such as cattle, backyard poultry, sheep rearing and goatery. Live stock husbandry units practised by the respondents are indicated in the Fig - 2. Almost all the respondents (95.83 %) possessed dairy animals. Most of the respondents reared the breeds of murrah buffaloes and jersey cows.



Dairy provides milk, cash income and manure. The excess milk was sold through milk producers co-operative societies and through local merchants. More than half the proportion of the respondents (54.16 %) maintained back yard poultry. Poultry supplements the farm income and serves as nutritive source of food. More than one third of the respondents (37. 50 %) maintained goat units. Goat rearing was found to be more as compared to sheep rearing. The reason might be that farmers could adopt the practise of stall feeding to the goat and hence minimize the problem of taking animals for grazing to some extent. Goat rearing is one of the profitable ventures and the farmers income gets raised substantially. About One fifth of the respondents (21.66 %) had sheep rearing units. Sheep rearing was the main source to meet the manurial requirements of the land.

2.3 Horticulture

Horticulture includes cultivation of fruit trees and vegetables. Guava, ber, mango, sapota, lemon and banana were the fruit trees grown by the respondents. Regarding vegetables, tomato, moringa, brinjal and beans were grown by the respondents. While fruit trees were planted mainly for home consumption, vegetables were grown for sale and to some extent for home consumption.

2.4 Agro forestry

Growing of trees on the bunds and common places along with crop and animal husbandry was being practised. Coconut, palmyrah, velvelam, neem, thespesia, tamarind, karuvel and vagai were the trees grown by the farmers. The trees were planted across the irrigation channel, bunds, borders, wastelands and fallows. The benefits acquired from the trees were fruits and vegetables for home consumptions, oil, petiole, rope, fodder, manure, agricultural implements, income, fuel, timber, and live fencing.

3. Reasons for inclusion of various components of farming system

It may be observed from the Table 3 that most of the respondents practised various components of farming system to meet the consumption requirement of the family, more cash income, fodder for cattle and to meet the manurial requirements of the land. Maintaining different components provide additional employment of family members and satisfied their traditional beliefs. One fifth of the respondents stated that maintaining different components provide additional employment for family members an satisfied their traditional beliefs. One fifth of the respondents reported that due to the water scarcity and lack of labour force they practised components which need minimum labour force and water. Fuel for working, easy marketing, high cost of agricultural inputs and roofing material for house and cattle and shed were the other important reasons for inclusion of various components.

Table 3. Reasons for inclusion of various components of farming systems N=120

S.No.	Reasons	Percentage
1.	Home consumption	95.83
2.	More income	92.50
3.	Fodder	85.00
4.	Manure	82.50
5.	Employment	43.33
6.	Due to traditional values	36.66
7.	Water scarcity	17.50
8.	Lack of labour force	15.00
9.	Fuel	13.33
10.	Easy marketing	12.50
11.	High cost of agricultural inputs	10.00
12.	Roofing material	7.50

4. Extension Strategy for popularizing farming system approach appropriate to the small and marginal farmers of rainfed areas

In view of the suggestions given by the respondents and experience gained during the course of study, the following points are presented for consideration in evolving a strategy for popularising farming system approach appropriate to the small and marginal farmers of rainfed areas.

i. A farming system consisting of Crops + Live-stock + Horticulture + Agroforestry is found appropriate to the small and marginal farmers of rainfed areas.

ii. Broad Based Extension of approach may be followed so that the farmers may obtain information and training not only on agriculture but also on other allied enterprises.

iii. Educating and motivating the farmers to increase the utilization of indigenous resources rather than heavily depending on the external support.

iv. Location specific cropping pattern may be followed including production techniques such multiple cropping, inter cropping etc. with high cropping intensity.

v. Announcement of support prices for rainfed crops like Groundnut, Chillies, etc. and minimizing input cost would help the farmers to sustain farming.

CONCLUSION

The study has indicated that under rainfed conditions, it is difficult for the small and marginal farmers to get sufficient balanced food and income for their sustenance from crops alone. Hence, they ought to have other enterprises to supplement their farm income, employment and other farm/home requirements. It is essential to assess the economic viability of existing farming systems, their components and relationship between different enterprises within the system to improve the farming system efficiency. Farming system research and extension approach which focus on the farmers could be the ideal approach to develop farmer specific farm innovations and integration of systems perspective. Provision of support prises for rain fed crops, institutional credit and appropriate extension efforts may be undertaken to popularise the farming system concept among the farmers of rainfed areas to improve their farming and livelihood.

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