Rainfed farming systems in Tamil Nadu: Resource characterization and management options to improve livelihood

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Abstract

A survey was carried out during 2008-09 to characterize aspects of the prevailing farming systems of the dry western zone of Tamil Nadu, India. Information collected from primary and secondary sources indicated that, while farming is the primary occupation of all farmers, the farm households had large number of family members with diverse employment. Only 26% of the potential labour was devoted to farming due to either full- or part-time off-farm employment. The average size of each land holding is small. About 43% of the farms are small (less than 5 ha land area), 30% of the farms are big (more than 10 ha) and 27% of the farms are intermediate (greater than 5 ha but less than 10ha). Of these, 73% of the farmers owned pasture land. Crop-livestock integration is the major feature of the dryland system in Tamil Nadu. The main farming system of the zone is a silvipasture system locally called *"Korangadu"*, which typically consists of swathes of *Cenchrus* grass between *Acacia leucophloea* (in rows 6 m wide). The chief grass is *Cenchrus setigerus*. Kangeyam cattle are a well-known draught breed from Tamil Nadu. The total Kangeyam cattle population is estimated to be 470,000. Many farmers have sheep and goats. Adequate provision of feed is essential for livestock production, and its scarcity has been one of the major limiting factors in improving productivity. Growing an improved combination of fodder grass *Cenchrus glaucus* and legume *Stylosanthes* in between *Acacia leucophloea* with sheep rearing could improve the productivity, monetary return and employment generation in rainfed areas of Tamil Nadu, India.

Key Words

Silvipasture, grazing, livelihood

Introduction

A farming-system approach aims to bridge the gap between the researcher and farmer, enabling the farmer to introduce a change in farming techniques for improved production and optimum utilization of resources. It also aims at increasing income and employment from small holdings by integrating various farm enterprises and recycling crop residues and byproducts within the farm itself. It enables researchers to undertake more relevant research. However, the problems faced by the farmers vary from region to region due to changes in both environmental parameters (climate, soil, local needs) and socio-economic factors (income levels, credit flow, market demand, price structure, input availability).

A survey is a useful tool to define the resource base of farmers and constraints. This paper describes a resource characterization of the Tirupur district, which comes within a semiarid tract of the western zone of Tamil Nadu, India. The objectives were to identify and characterize the major farming system, to understand farmers' practices being adopted, to identify technological interventions and to define major constraints limiting the efficiency of different farming systems.

Methods

To characterize the farming systems of the Tirupur district in Tamil Nadu, India, a survey was carried out during 2008-09 using a structured questionnaire. Relevant information concerning different aspects of farming systems was collected from primary (farmer) as well as secondary (district) sources. The survey sample was done by randomly selecting 5 blocks in Tirupur district, covering 10 villages from each block and 5 farmers from each village. Thus, a total of 250 farmers were selected from the district. The selected

farmers were interviewed personally and information was sought on different aspects of farming systems: family details, employment, farm enterprises practised, farm resources (land, irrigation, human, livestock, machinery etc.), input use, cost and income in different enterprises and constraints in farming. Secondary statistics were collected from the district level office on the local population, cropping pattern followed, area, production and productivity of individual crops. Farms were categorised based on resource endowments, i.e. quantifiable biophysical (e.g. land, labour and water availability) and socio-economic (e.g. education and wealth) characteristics of the farm and its family.

Results and Discussion

General features of study area

The district Tirupur occurs in the dry tract of the western zone of Tamil Nadu, India. The average annual rainfall of this area is about 575 mm, of which 210 mm is received during the South-West monsoon and 260 mm during the North-East monsoon. Information collected through primary and secondary sources indicated that farming is the primary occupation of all farmers. However, the farm households had a large number of family members and only 26% of their total labour was devoted to farming, due to either full- or part-time off-farm employment. Total rural population in the study area was 122,158, of which 61,763 were male and 60,395 were female; 41.2% of the population is of working age (aged 25 to 55 years). The district has an average literacy rate of 59%, with male literacy 71% and female literacy 47%. About 43% of the farms were small (less than 5 ha land area), 30% of the farms are big (more than 10 ha) and 27% of the farms are intermediate (greater than 5 ha but less than 10ha). Of all farmers, 73% own pasture land.

Red loamy soil predominates in the district, with some sandy alluvium and red sandy soil. The red loam soil type contains bunker gravel and this type is the best land for rearing livestock. The soil is rich in calcium and phosphorus. Pasture maintenance and cultivation of fodder crops are carried out in rotation.

The vast majority of farm holdings comprise mixed crop-livestock systems and farmers keep livestock depending on the crop residues available. Crops?grown are cotton, finger millet and Sorghum. During the monsoon (September - October), millet and sorghum are grown.

More than 70% of rural households possess one or two large animals or 2 to 5 small animals such as goats, sheep and poultry. Large animals are partially stall-fed and partly grazed on community land. Some farmers maintain thatched sheds for large animals (used for draught power and milk). Most small livestock holders do not have proper housing facilities for livestock. Small holders rarely apply scientific technology for breeding, feeding, health care and management. The movement of small animals, which are maintained solely on grazing land, is not controlled and they are free to mix with other animals.

The main farming system of the zone is a silvipasture system locally called *“Korangadu”*, which typically consists of swathes of *Cenchrus* grass between *Acacia leucophloea* (in 6 m wide rows). The chief grass is *Cenchrus setigerus*. It is a thick and succulent which maintains its vitality during severe drought. The grass is not destroyed by ploughing. It seeds freely and sheds seeds easily. Hence a few showers will make the pasture very green. The grass is relished by cattle. An interesting feature of the grazing areas is the wide prevalence of *Acacia leucophloea*. These trees provide shade for the livestock at midday, and during the podding season supply pods for the cattle. These pods, which are rich in protein, are collected, stored and used with concentrates.

The village pasture is divided into a number of paddocks, from 10 to 25 acres for each paddock and fenced all around with a live fence of *Commiphora berryii* (mullukiluvai), a thorny shrub which is highly drought resistant. Manure is not collected in the grazing area and the land is ploughed once in four to five years and brought under cultivation. Then the grazing area will be changed. By leaving the cattle out day and night for months in the grazing area they become hardy and can endure all kinds of weather.

Kangeyam cattle are well-known draught breed from Tamil Nadu. The total Kangeyam cattle population is estimated to be 470,000. Kangeyam bullocks were used earlier for drawing water from open wells for irrigating garden land crops. They are now used for ploughing and carting farm produce. Since the pure breed cows are low milk yielders, they are invariably crossed with Jersey to improve milk yields. A pure Kangeyam cow yields less than 2 litres of milk per day. This breed is allowed to graze in owned pasture land. Many farmers have sheep and goats. Sheep play a vital role by significantly contributing to the production of meat, fibre and skin and also to the provision of rural employment, especially in dryland areas. There are some specialized dairy farms among the smallholders, but the numbers are very few and they are mostly in the peri-urban areas. Overall, malnutrition and poor health are the two most important constraints to raising livestock productivity. Supplementation with green fodder and concentrate feed is inadequate.

Future options

Adequate provision of feed is essential to livestock production, and its scarcity has been one of the major limiting factors in improving animal productivity. Technological and management options are needed to accelerate the growth and productivity of livestock. Common grazing lands comprise an important source of grasses and there exists considerable scope to raise the production of grasses/shrubs from these lands through technological and management interventions such as reseeding with high-yielding grasses and promotion of rotational grazing practices. Growing an improved combination of fodder grass *Cenchrus glaucus* and the legume *Stylosanthes* in between *Acacia leucophloea*, along with an increased emphasis on sheep rearing, could improve the productivity, monetary return and employment generation in rainfed areas of Tamil Nadu, India.

References

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