

# INTERCROPPING

Proceedings of the  
Second Symposium on  
Intercropping in Semi-Arid Areas,  
held at Morogoro, Tanzania,  
4-7 August 1980

Editors: C.L. Keswani  
and B.J. Ndunguru

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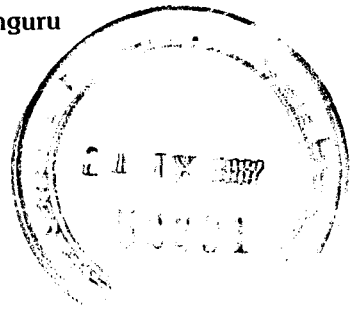
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(6) Land in the study area is not abundant. Most farmers have more than one allotment scattered in many places. Family labour is the most important source of labour.

(7) Most farmers use cash as working capital for the purchase of seed materials and for hiring labour.

(8) Uncertainties about weather, pests, and diseases and the level of prices for both food and cash crops creates risks in farm management.

(9) Most of the grain produced is not marketed but stored by farmers in their own households.

The next step is to compile an inventory of technologies and technological components available in Tanzania where the soil conditions, climatic conditions, and farmer's circumstances are comparable. Comparing these with existing systems, giving due consideration to constraints and problems, will enable the multidisciplinary research team to identify technologies and technological components for adaptive experimentation. It will also provide feedback to scientists on areas that need further investigation.

Studies carried out in the past focused on single commodities and a lot of useful information is available. There is, however, a need for a multi-disciplinary systems approach for agricultural research and development.

## Discussion

*Scott* (question): Please comment on the minimum returns that are required from a particular innovation to ensure that it will be acceptable to and adapted by the target farmer.

*Anandajayasekeram* (answer): A 30% increase in yield or a cost-benefit ratio of 2.5-4.

*De Vries* (question): Are the livestock of any importance in this area? Why have they not been mentioned?

*Anandajayasekeram* (answer): In describing the Uluguru Mountain zone, I mentioned the livestock. No cattle are kept but a few small animals, including goats, sheep, and chickens, are present.

## Farming Systems Research in Uganda: Past Performance and Future Prospects — Summary

I. Fendru

*Makerere Institute of Social Research, Makerere University, Kampala, Uganda*

Agriculture is the dominant sector of the economy and contributes approximately 90% of the gross domestic product (GDP), with cash crops making up 42% of this. Since the 1950s, however, agricultural production has declined, with a wide gap between actual and possible yields in both the crop and livestock sectors.

Agricultural research in Uganda has made commendable progress since its inception approximately 70 years ago, but there has been no serious attempt to increase farming systems research (FSR). This is basically because policymakers, planners, and researchers have, for a long time, ignored the importance of farming systems. However, the little research work that has been carried out on farming systems, especially mixed cropping, has shown the importance and soundness of this practice.

In spite of three research stations, i.e., Serere, Bukalasa, and Kabanyolo, as well as the Faculty of

Agriculture and Forestry in Uganda, there has never been any serious systems approach to agricultural research in Uganda. Each crop was viewed as a separate entity and not as part of a single farming enterprise. Very little attempt was made to integrate crop with animal production, nor was much effort made to transform a small holding into a viable economic unit.

Economic and social considerations were not taken into account in formulating and executing agricultural research policy in Uganda. Available documentary evidence indicates that research on indigenous cropping systems (ICS) has lagged far behind monocropping for various reasons.

Thus, there is a need for evolving and formulating a body of concepts, principles, techniques, and methods for indigenous farming systems that would provide a suitable background for understanding the developments that led to existing farming systems and their complexities,

similarities, and differences.

In view of these facts, a farming systems research program is being proposed. The basic aims of the program will be: (1) to develop more relevant and effective research methods and understanding of indigenous farming systems; (2) to evolve and develop improved or new technical components for alternative farming systems; and (3) to aid small farmers, who have, so far, been ignored by new technological developments in agriculture.

The farming systems research will be based in the Faculty of Agriculture and Forestry, Makerere University. The university farm at Kabanyolo, about 16 km away, will serve as the locus of the project. Cooperative farmers will be selected from within a radius of 80 km from Kabanyolo for logistical reasons. The project area will be extended to other parts of the country as and when resources permit.

The first step in the proposed FSR will be to establish the nature and magnitude of the various problems confronting small farmers. Most of the research will be conducted in farmers' fields because "on-farm" research enables farmers to be involved in formulating and testing farming system technologies under natural conditions and at many locations simultaneously. As well, it enables researchers to make recommendations that are directly relevant to local conditions, thereby allowing farmers to be grouped into recommendation domains based on the identification of similar circumstances.

The farming systems research will be multidisciplinary in approach and will consist of agronomic, soil management, pest and disease management, integrated crop and animal management, and socioeconomic studies. The ultimate goal of the research is to generate technological components that the farmer would be willing and able to adapt.

## Discussion

*Mukiibi* (comment): There was a suggestion from one of the participants that the agricultural systems in Uganda are robust enough not to require much improvement. I think this is incorrect. At the moment, there is famine in Uganda, which indicates that there is a delicate balance between production and consumption. Actual production is at least four times less than potential production, so there is a great deal of room for improving the farming systems in Uganda.

*Brain* (question): Is not the real problem in Uganda an absence of marketing and buying systems rather than farming systems per se, which were very effective in the past?

*Fendru* (answer): The farmer is faced with a whole array of problems. Our aim is to find out what farmers are doing now. There is a shift from cash crops to food crops due to the risk of not selling, which can be counteracted by their consumption.

## Mixed Cropping in Tabora Region — Summary

J. E. Mansfield

*TRIDEP, Tabora, Tanzania*

Tabora region is located in west-central Tanzania. It occupies an area of approximately 73 500 m<sup>2</sup> and is of relatively low relief, ranging from 1050 m above sea level in the northeast and northwest to 1500 m in the southeast. The climate is warm, with mean maximum temperature of around 30°C. Rainfall is markedly seasonal, occurring between November and May, the mean rainfall ranging from 1000 mm in the west to 700 mm in the northeast.

The climate is unsuitable for perennial crops; therefore, this paper dealt mainly with upland annual rain-fed crops grown within the region.

The important upland cash crops are tobacco and cotton. In addition, other commonly grown crops in the area include: rice, maize, sorghum, and millet. Legumes such as groundnuts, French beans, cowpeas, bambara nuts, green-grams, and pigeon peas are found in mixed cropping. Cassava and sweet potatoes are grown as root crops. Sunflower also finds a place in mixed crop fields. Maize is the preferred cereal staple throughout most of the region, even in the areas of low rainfall.

The important environmental factors of the region may be said to be the dominance of coarse- or medium-textured soils of low fertility. Rainfall is