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**CORAL RAG SOIL FERTILITY IMPROVEMENT
Farmers' Indigenous Knowledge and Practices.**

*Experience from Coral Rag Research Farmers Network
of Zanzibar-Tanzania*

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CORAL RAG SOIL FERTILITY IMPROVEMENT Farmers' Indigenous Knowledge and Practices.

Experience from Coral Rag Research Farmers Network

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Abstracts

Farmers in the coral rag soil of Zanzibar have been involved in farming system research since 1993. The coral rag soil covers about 60 % of the total land area on the eastern part of the Unguja island and supports about 35% of the total [population of Zanzibar. Shifting cultivation is the main system applied which is becoming unsustainable in terms of fertility improvement and cover management. Several meetings, workshops and farmers to farmer visits were made, and they, managed to learn from each other. Research farmers expressed their knowledge and experiences on farming system of which they are familiar with.

During the course of studying it was found that many indigenous knowledge exist in the coral rag areas of Zanzibar which are the result of farmers design, adoption and inheritance in overcoming fertility declining problem. Agroforestry being and answer to the constraint for all techniques are based on the themes of integration. This has been achieved through exploratory research which starts with farmer's ideas and innovation to improve and build up farming systems and practices which are sustainable for them.

This paper intend to document the seven ITKs which have been collected from the farmers Network study tours, field visits, monitoring and workshops

INTRODUCTION.

In 1994, the Zanzibar Forestry Development project (ZFDP) in collaboration with the Zanzibar Cash Crop Farming System Project (ZCCFSP), commenced on-farm agroforestry research programme in the coral rag area of Unguja island aiming at studying and developing agroforestry systems with farmers that incorporate tree, food and or cash crops. The trials were established in 1994 (Kombo *et al* 1996) ¹ Actually the trials were farmer designed and managed and they had the following objectives:

- *Observing how farmers experiment and manage different tree and crops combinations.*
- *To assess farmers preferences for planting niches and arrangement of different components.*
- * *Identify farmer's criteria and problems when evaluating species and their/species combinations.*
- * *Identify future research needs and/or extension recommendations*

This paper documents some Indigenous Technical Knowledge (ITK) that has been collected from farmers, network study tours, field visits, monitoring and workshops during the period of 1994/97

¹ Consult (Kombo *et al*, 1996) for detailed information and results of the on-farm trials.

BACKGROUND INFORMATION

Coral rag

The coral rags is the rocky area of the eastern part of the Island of Unguja constituting about 60% of the total land area and they form the potential land for agriculture and forestry. The average annual rainfall is 1200mm mostly falling in the long rains '*masika*'.

Of the total rural population of Unguja approximately 35% live in the coral rag. The distribution of population is uneven. It is higher in area with deep soil patches, close to the roads, where water is available and along the coast.

The coral rag soils are shallow with high calcium content. They are formed from weathered coral rock into pockets of fertile soils which are heavily affected by drought (Wirth *et al*, 1988). The soils become more brown and humic towards the east decreasing in depth until coral rock emerges from under the surface. Their pH value range from 6.4 - 8.0. They are fragile and susceptible to exhaustion even under a slight increase in cultivation pressure, and thus, the utilisation of the maweni (coral) soils for the production depends practically on high organic content (40%) which develop from leaf litter generated natural thicket vegetation (Borsa, 1987).

The coral soil is classified into '*maweni*' and '*Uwanda*'. The former (renzic to lithic leptosols) consists of high humic black loam found in crevices of coralline reef limestone with coral cover 50 - 80%. *Uwanda* (mollic to renzic leptosols) are shallow, less fertile, and neutral to a light alkaline with high humic reddish brown fine clay loam overlying limestone parent material. These soils are found in the corridors and areas adjacent to the deeper soils (Hettige, 1990; Harvey 1994).

The coral land is covered with Semi-deciduous to evergreen bush and the natural coastal thicket forest dominated by mkururu (*Diospyrus consolatae*) and msiliza/mdaa (*Euclea racemosa*). *Burceraceae*, *Capparidaceae*, *Ebenaceae* *Anonaceae*, *Apocynaceae* and *Caesalpinaceae* are the most common families in the area.

AGROFORESTRY IN THE CORAL LAND:

The most important agroforestry practices in coral rag soil are traditional shifting cultivation, taungya and boundary planting. Scattered trees in cropland are another important system. This is also one of the most widespread agroforestry systems. Also wood lots are important in Zanzibar (Kombo, 1996)

SHIFTING CULTIVATION IN CORAL RAGS

This is the most important farming practice in the coral rag areas. The practice simply involves slashing of the bushes and burning the debris during the dry season a few days before the rains. The farming system is locally known as "change". About 85% of land clearing in Unguja is carried out in the coral rag areas.