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"The Enset Culture"

**A Technical Report on Enset ventricosum
or
'False Banana'**

Summary

This report describes the historical and cultural significance of Enset ventricosum - otherwise known as the False Banana. The long and laborous tasks of growing the plant for 6-9 years and of extracting the starchy foods is contrasted against the nutritive value of the products. It is proposed that the main reason for the culture of this crop is assurance of food for consumption following drought-induced crop losses. Considering the repeated problems of poverty, malnutrition, and disease in the Wolaita area of Southern Ethiopia, in spite of good soil and usually good rainfall, alternative crop and livestock programmes should be considered in conjunction with health and education programmes.

The role of Enset in the culture of Southern Ethiopia

Early travelers to the Wolaita area of Southern Ethiopia were so impressed with the importance attached to the cultivation, harvest and preparation of enset foods that they labeled this 'the Enset culture' or 'the Enset people'. Certainly the presence of 20-40 magnificent 5-8 metre high Enset plants framing the tukul and farmyard presents an impressive picture. Four to seven thousand years ago people in Ethiopia were largely hunters and gatherers who must have learned to use the fleshy interior of Enset during the dry season. About 700 years ago, with the coming of domesticated livestock, a settled culture evolved around the use of Enset products as a major and co-staple food. Today over 4 million people in Southern and South-Western Ethiopia depend on Enset foods but it is not widely grown or consumed any other place in the world.

The elaborate process of husbandry and sequential transplanting of the 6 to 9 year crop has been incorporated into various aspects of the culture of the Wolaita people. Pillot and Gires (1) point out that the entire organization of the farmstead production system in the Wolaita area centers around the arada or Enset/coffee plantation and is a priority site for spreading manure accumulated from keeping cattle in the farmyard at night. The establishment of a new farmstead calls for a complicated process of slowly increasing the fertility of a new arada called a chouka in which manuring of annual crops (maize, potato and beans) is practiced. Following this, concentric rows of Enset are transplanted, the number depending on the size of the family and the expected needs for survival. An area in the middle is devoted to coffee which is protected from drying winds on three sides by Enset and the other by the tukul. New Enset plants come from the small nursery just

behind the house which also contains sweet potatoes for cuttings, cabbage, pepper and herbs. Land use planners suggest that a more efficient layout would be achieved if Enset plants defined the periphery of the homestead but farmers attach great importance to keeping them close to the house.

The husbandry of Enset and preparation of foods derived from the plant requires several complicated and strenuous procedures which are assigned to specific members of the family according to their age and sex. Also, Enset foods are traditionally incorporated into cultural events such as births, deaths, weddings, and rites of planting, harvesting and purification. The starting of new shoots and transplantation is initiated by the male head of household. Cultivation, manuring and digging of the fermentation pits is done by juvenile males. The harvesting time and plant selection for harvest are controlled by the head of household. The younger women in the household remove the fleshy pseudostem (stalk or base) and leaf midribs for the strenuous task of extracting the pulp. The underground fermentation vessels are arranged, periodically checked and stirred, then declared finished under the supervision of the female head of the household.

The husbandry and production of Enset

The 'corm' or juncture of root and stem of an old plant is cut into pieces and planted in the nursery, producing 50 to 200 new shoots. These are broken off and transplanted in rows using one square metre per plant for the next two years. New Enset plants are transplanted at least twice during the growth period in order to save space. After two years the plants are dug up, roots and leaves trimmed and transplanted into 2.25 metre squares for the 3rd through 5th years. The final transplanting is to 9 metre squares again disturbing the roots and reducing the leaf area to minimize wilting. They remain in the squares for the 6th year until harvest which may be in the 7th to 9th year, depending upon the needs of the family.

Throughout this time the soil is tilled for weeding and the incorporation of manure. The importance attached to the growing of Enset is seen by the clean weeding or mulching of the plantation. Intercropping the bare areas is not practiced but plantings may occur where individual plants are harvested or have died from disease or transplanting shock. Other than the nursery for starting plants, all the manure of the farm is incorporated into the Enset plantation. Soils in this area are inherently acidic, with heavy clays that retain high levels of organic matter when manured, and give good nitrogen fertility that would benefit further from liming and phosphorus.

Transplanting is usually done in the dry season due to the heavy nature of the soil which would turn into hard pieces if compacted under wet conditions. Nevertheless, considerable growing time is lost and the plants suffer wilting damage. Tigist Demake (2) reported that averaged over four different varieties, the pseudostem length was 0.7 and 1.4 metres shorter with 1 and 2 transplantings respectively as compared to direct planting of shoots. Research into the size of the hole for transplanting and the amount of root/leaf trimming was aimed at minimizing these stresses. Moist loose soil around the base and minimal leaf transpiration were found

to be advantageous to rooting establishment of transplants.

Enset ventricosum is the edible species of the separate genus of the banana family, thus named 'false banana' but the Enset fruit is not edible. Considerable variation exists within the species for growth and adaptational characters. Leaf colors vary from pale yellow-green to purple-brown, dark green leaves with purple midribs being the most common. There also is considerable adaptational differences due to altitude and moisture regime. The Institute of Agriculture Research at Areke in Wolaita has collected over 200 clones mostly named after the village where they were cultivated, and giving an indication of ecological adaptation. For instance, farmers in the Sawla area were not growing Enset until FAO introduced a clone variety well adapted to the lowlands.

Enset processing and foods

Upon harvesting the pseudostem is extracted and cut into 30 x 20 cm pieces which are called Chafina. The quality of the chafina may be affected by age and maturity of the plant as well as the quantity of the leaf midrib tissue included. This quality determines the proportion of the three derived foods Boula, Oude, and Wassá. The three usually occur in a decreasing order of quality and increasing quantity.

The women decort (remove much of the fibre) by fine chopping and grating the Chafina on a special wide wooden board, collecting the pulpy white juice below. When it reaches the consistency of fresh cheese it is pressed through a 30 x 50 cm conical wooden sieve to become Kintcho or Kocho which is evaporated to form a thick paste.

According to the expected time of harvest, the most respected woman in the household prepares in advance the yeast starter or fermentation infusion called Gamantho from a chopped rhizome and the family's own culture of yeast. These cultures are highly prized secrets and give varying tastes that is characteristic to the family. The starter is wrapped in Enset leaves, stirred and warmed in the sun every 5 days, and allowed to ferment 15-20 days depending upon the air temperature.

When the Kintcho is prepared, the men dig a hole about 3 metres deep and 2 metres in diameter filling the bottom metre with stones for drainage. A bamboo cylinder called a Kafitcho, 2 metres long and 1.5 metres in diameter is inserted and lined with Enset leaves. The women put in the Kintcho paste, add the yeast starter and mix or knead it well with their feet, packing it somewhat with the water coming to the top. Some leaves are put on top, a board and some heavy stones are placed over it to force the water out between the bamboos as the fermentation proceeds. Every five days, for approximately 25 days, the women uncover and stir it trying to rotate the top to the bottom as it becomes gradually floury. An oval cake is formed, dried in the sun, and aged another 20 days before being ready to eat.

According to their daily needs, several kilogrammes are cut off the cake, chopped and worked into a powder to remove remaining fibres. Before cooking, the flour is soaked several times in water or milk with the liquid and floating pulp pieces being poured off.

Food prepared from Enset include bread, ferfer (a type of flat bread or injera) and porridge which may contain meat and/or vegetables. It is even possible to prepare alcoholic or non-alcoholic drinks. The best quality Boula or Oude is made into thin crepes and rolled up. When plants of poor quality are harvested, the hardest part of the rhizome is chopped fine, mixed with yeast and fermented for three days. Called Obobie, it may be boiled with vegetables and spices but should be eaten within three days. All the above mentioned are energy food with little protein content (See next section).

Enset productivity and yields

The yield of fermented product per plant is high but must be considered on a per hectare per year basis. Taye Bezuneh (3) reported that 40 months after a single transplanting, the yield of three clones planted in 5 metre squares or 2000 plants/hectare varied from 18.5 to 29.8 kg/plant which he translates into 7,414 to 11,950 kg/ha/year on a farmer's basis of a five year growing period. This interpretation evidently assumes that the same yield measured in 40 months would be equivalent to the farmer's yield in five years of commonly practiced culture. The protein content decreases from 1.2% in the raw Kocho to 0.25% in the processed Boula while the carbohydrate content increases from 41.3% to 54.4%.

However, Pillot and Gires, comparing the usual farming practice to maize growing, give the following figures. The interior pseudostem and leaf midribs of one plant give about 130 kg of green matter which is reduced to 84 kg by hulling, 52 kg by fermentation and finally to 31 kg of edible product by refining. At 1 metre² the first 2 years, 2.225 the next 3 years and 9 metres² the last 2 years, it gives a total land use of 26.75 metres² or 374 plants per hectare. This is reduced to 275 plants by transplanting loss and Bacterial Wilt Disease so that 275 plants/ha x 31 kg/plant give 3,500 kg/ha @ 1650 calories/kg represents 14,000 kcal/ha. Maize yielding 40 quintals at 3,500 Kcal/kg will give an equivalent 14,000 kcal/ha in a 6 month growing season. Also the maize at 380 kg/ha of protein is much superior to the 25-50 kg/ha produced by the Enset crop.

Considering the manuring and the rainfall of the Enset growing area, 4,000 kgs/ha is not an unlikely yield, and so the main reason for growing Enset is likely to be food security or food reserved against other crop failures.

Enset research and needs for the future

The first National Conference on Enset was held at the Institute of Agricultural Research, 12-15 December 1994, covering many topics including research. Research activities and needs focussed on: (1) Agro-botanical investigations including collection, classification and selection of clones with superior characteristics, including bacterial wilt resistance, to standardize materials for further research. (2) Enset based farming systems research to improved production methods and fertility (Nitrogen and Phosphorus). (3) Processing and utilization techniques to improve the nutritive value of the fermentation product including mixing with teff to

make injera and selection of clones and processes to increase protein content. (4) Socio-economic research into the viability and adaptability of the Enset culture through intensification of cultivation and greater self-exploitation which is now threatening the stability of the system itself.

One person described the Wolaita area as a 'museum of domesticated plants, animals and their diseases'. The question for the future is what are the root causes of recurrent poverty, malnutrition, and disease in this land of the 'wonder plant'. With consideration to those promoting the maintenance of crop diversity, there is a need to be open-minded and realistic about the present food requirements of the Wolaita people. Can the Enset culture system be relied upon to properly feed the fast growing local population? The answer probably includes the introduction of new crops, especially co-staples and protein sources for weaned children, as well as improvements in Enset varieties, culture, and processing. The future of Wolaita is not as a museum of past practices but is present in the nurseries of tree seedlings, variety trials, new ideas and newborn farmers.

REFERENCES

(1) Pillot, Didier and Jean-Christopher Gires. 1982. Agriculture in Wolaita: First studies and programme of research. WREP-MoA.

(2) Tigist Demake. 1986. 18th National crop improvement conference. Insitute of Agricultural Research.

(3) Taye Bezuneh. 1983. Evaluation of some Enset ventricosum clones for food yield with emphasis on the effect of length of fermentation on carbohydrate and calcium content. Tropical Agriculture 61:111

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