



o  
p  
d  
e  
r  
l

©1993, COPYRIGHT RESERVED

ISBN 81-204-0812-0

Published by Mohan Primlani for Oxford & IBH Publishing Co. Pvt. Ltd.,  
66 Janpath, New Delhi 110 001. Composed by Laserwords, Madras.  
Processed and printed at Baba Barkha Nath Printers, 26/7 Najafgarh  
Road Industrial Area, New Delhi 110 015.

1-S3-6

## 21

**FINGER MILLET PRODUCTION AND  
UTILIZATION IN KENYA**

*B.N. Mitaru, J.T. Karugia and C. Munene*

**ABSTRACT**

Finger millet (*Eleusine coracana*) is an important subsistence cereal grown mainly in the relatively dry areas of Western and Lake Basin regions of Kenya. The cereal is traditionally used for making foods like thin porridge (Uji), stiff porridge (Ugali) and local brew (Busaa).

This paper presents the situation regarding production, processing and utilization of finger millet in Kenya. Information was obtained through a review of the existing literature supplemented by informal interviews with some farmers, agricultural extension officers, researchers, grain merchants, market traders millers.

The production figures between 1974 and 1989 showed a general decline for finger millet production in the country. Factors contributing to the decline in production include competition with other enterprises at the farm level. Marketing organization and commercial utilization of finger millet are not as developed as other cereals such as maize and wheat.

There is a potential to increase production and utilization of finger millet in Kenya. To realize this potential, research work to increase yield and food quality needs to be supported and strengthened. An efficient marketing system needs to be developed and the use of finger millet in commercial food products needs to be explored and developed.

**INTRODUCTION**

Millet has historically been grown by small holders in Kenya to meet their subsistence food requirements. Finger millet (*Eleusine coracana*) popularly

known in East Africa as 'wimbi', is predominantly cultivated in western Kenya around Lake Victoria and some parts of the Rift Valley while bull-rush millet (*Pennisetum typhoides*) is mainly grown in Eastern Kenya (Onyango, 1990).

Together with sorghum, millets were the most important food crops for Kenyans until maize was introduced. Maize has gradually replaced sorghum and millets as a source of food, as eating habits continue to change. Maize is grown mainly in the high potential areas of the country. It is also grown in the marginal areas but climatic conditions have limited the rate of expansion of its production. The frequency of maize failures is high and has been estimated at 33 per cent in Ecozone IV, 43 per cent in Ecozone V and 51 per cent in Ecozone VI (National Food Policy, 1981). Crop failures could, however, be minimized by the use of drought tolerant crops such as millets and sorghum.

With increased population pressure in the high and medium potential areas, and as people continue to migrate to the agriculturally marginal areas, agricultural production from the marginal areas is expected to become an important feature of Kenya's agriculture. The Kenyan Government has increasingly acknowledged the potential of sorghum and millets in achieving broad self-sufficiency in food and has in the past, embarked on programmes and projects aimed at bolstering the role of sorghum and millets in the national economy.

The production figures of finger millet (1974-1989) show that from 1978, both the hectareage and production have been on a general decline (Fig. 1). It can also be observed that over the years there has been a greater variation in hectareage than in production. Average millet yields have been low and ranged between 500kg/ha and 750kg/ha in the 1974-1989 period. The factors which have contributed to the decline have to be understood and addressed if production is to be increased.

To obtain an insight into the issues affecting finger millet in the country, information was gathered from the available local literature and two short field surveys carried out in western Kenya and Nairobi, respectively. During the surveys, informal interviews with farmers, extension officers, researchers, market traders, a large grain merchant, small millers and a large-scale miller were carried out. This paper reviews finger millet in Kenya and the socio-economic factors affecting its production and utilization.

#### THE TRADITIONAL ASPECT OF FINGER MILLET PRODUCTION AND UTILIZATION

As mentioned above, finger millet production in Kenya is carried out on small semi-subsistence farms. The farmers' primary goal is to meet the

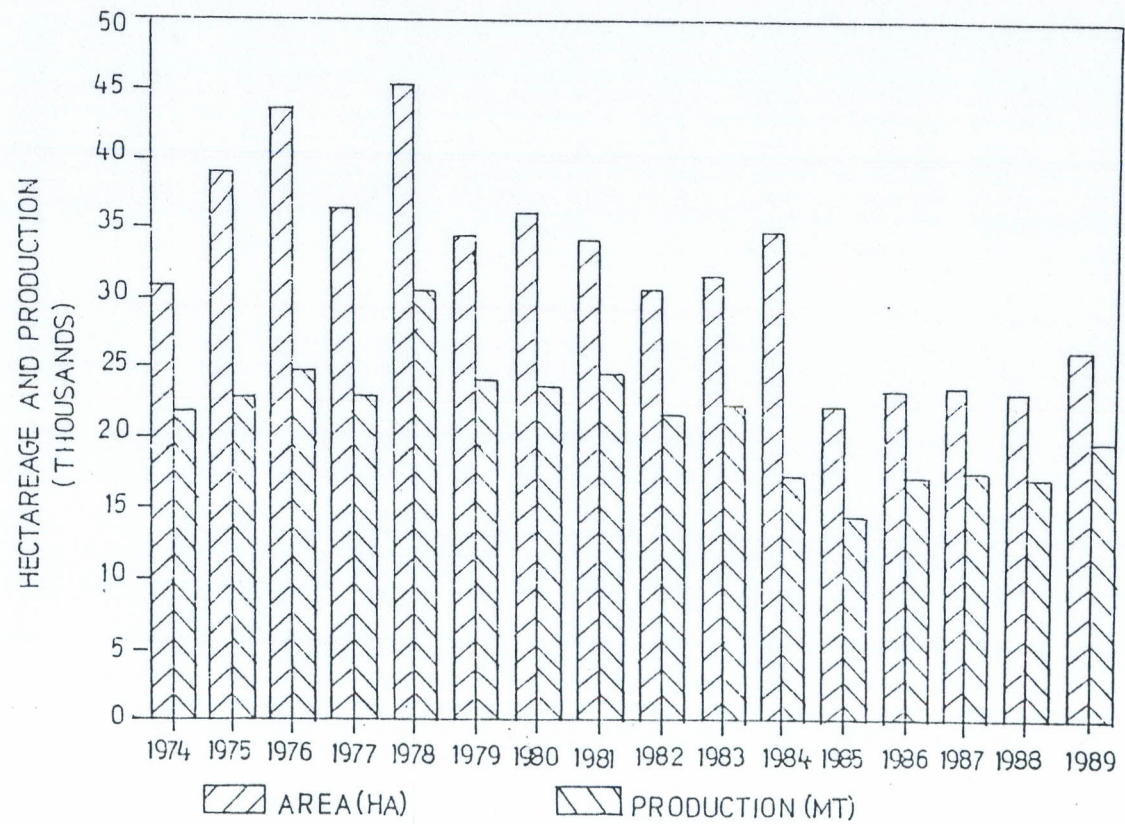


Fig. 1. Finger millet production trends

household needs and where possible generate a surplus for sale. The crop is grown on either pure or mixed stands (Mburu, 1989). It has been estimated that 56 per cent of finger millet was grown in mixed stands while 44 per cent was in pure stands (Central Bureau of Statistics, 1975). Farmers mainly grow their local types which are differentiated by colour, black and brown.

Under this system the main category of farm input is labour. Cash expenditure on farm input is small. According to Mbogoh (1982), finger millet has the greatest labour requirement as compared to other crops (Table 1). Most of the labour input is required for, weeding and land preparation. These two operations are laborious. Weeding because of the close spacing of finger millet, and land preparation because of the fine seed bed tillage required due to the small size of the finger millet seed. The high labour requirement greatly increases the comparative cost of finger millet vis-à-vis other competing crops especially maize which is considered to be the competitive crop in most finger millet growing areas. Besides, the yield per hectare for finger millet is also lower than that for competing crops such as maize. Hence, over time, finger millet has decreased in production as a result, farmers are adopting more competitive crops. However, finger millet will not be abandoned due to the traditional values associated with it.

As food, finger millet is used for preparing thin porridge (Uji) or a stiff porridge (Ugali.) Uji is mainly fed to children for breakfast. Stone grinding of finger millet grain for uji flour has to a large extent been replaced by hammer mills. However, stone grinding is still common in some rural communities. Ugali from finger millet is served during special occasions and to important visitors in the communities where the crop is traditional. In preparing Uji and Ugali the usual practice in most communities is not to use finger millet flour alone, but to mix it with maize, sorghum/or cassava flour. Finger millet is also used for making a traditional brew called **busaa**. The local brew is particularly made during important traditional ceremonies and rites. Finger millet plays a very significant traditional role, and therefore, a strong cultural attachment to this crop is demonstrated by the communities where it is grown.

#### MARKETING OF FINGER MILLET

Through the years, little of the finger millet produced in the country has been sold through the National Cereals and Produce Board (NCPB) which is the official marketing channel of most grains in Kenya. Recently, the NCPB increased the producer price of millets from Ksh. 280 to Ksh. 600 per 80 kg bag so that it is now higher than those of other grains. De-

TABLE 1  
Estimated labour input — hand cultivation

Crop	Labour input (Man-hours/ha)
Hybrid maize (1 crop)	990
Maize and beans (1 crop)	1580
Finger millet (1 crop)	1960
Sweet potato	750
Sorghum	1280

Source: Mbogoh 1982.

spite these increases, information from the field indicates that there was no noticeable increase of finger millet production. However, a significant change has been observed in the farmers' willingness to sell finger millet to the NCPB compared to the situation before the price increases. After purchasing the crop, the NCPB has very few channels through which it can dispose it (Chele, 1989).

The bulk of millets entering the monetary economy are sold in local markets where prices fluctuate considerably depending on the local demand and supply conditions. In most cases, the local market prices are usually higher than the prices offered by the NCPB.

When viewed from the local markets point of view, the observation, that demand for finger millet is low, appears to be misplaced. Market traders indicated that more finger millet could be consumed if made available at reasonable prices. Finger millet is considered an expensive grain. The local market prices in western Kenya and Nairobi averaged Ksh. 11.10 per kg, well above the NCPB's selling price of Ksh. 8.20 per kg. If the high prices that consumers are ready to pay are anything to go by, the demand for finger millet appears to be relatively higher than its supply. The NCPB, sells in units not less than one 90 kg bag. Some potential buyers of finger millet have complained of the high price and have been compelled to substitute finger millet with other cheaper cereals for industrial use. A brewing company, for instance, indicated that if finger millet was cheaper they could use more of it than they were currently doing.

Another factor that has been associated with the poor marketing of finger millet is the transportation problem. Means of transport are either lacking or too expensive for small farmers. The situation is worsened by the poor road network or inaccessible rural roads when wet. Generally the transportation problem discourages production in excess of what farmers need and what can be sold locally (Mbogoh, 1982).

Because of these problems even the co-operative societies are not involved in the marketing of finger millet in Kenya.

#### COMMERCIAL ASPECTS OF FINGER MILLET PRODUCTION AND UTILIZATION

There is potential for the increased production and utilization of finger millet in Kenya if a move is made towards commercial production. This will require the formulation of a policy on traditional cereals in relation to the main cereals in the country. Research, technology development and extension, which will improve both production and utilization, need to be strengthened.

#### ECONOMIC RETURNS AND TECHNOLOGY

At present, little data are available to facilitate determination of the level of financial returns from finger millet production. During the survey a large-scale farmer complained of the poor returns from finger millet production. He indicated that other crops and livestock enterprises give higher returns as compared to finger millet. Farmers, extension agents and researchers attribute the low returns from finger millet production to the low yields of the crop as well as the relatively low prices received for the grain in the past. The low level of technology employed in finger millet production stems partially from the general lack of incentives to farmers to enable them to invest in purchased inputs, and partially from a lack of appropriate technological recommendations at the farm level. Improved production technology has either not been developed (due to inadequate research work) or has not reached the farmers (due to poor dissemination from research stations). The finger millet production scenario is characterized by a negligible use of improved seed, fertilizers, agro-chemicals and a low level of mechanization. In addition there are no appropriate technologies for planting, weeding, harvesting and threshing (Odok, 1989). A strong breeding programme similar to that of maize is also lacking. However, there is a sorghum and millet research programme in the country and so far four varieties selected from local cultivars have been released. They are Gulu E, Ekalakala, Kisii local and Mbitini local. It is also hoped that recommendations on optimal plant population, time of planting, method of planting, weed control and fertilizer rates will be passed on to farmers following trials by researchers. Meanwhile the current low level of technology continues to produce poor yields of finger millet which in turn mean poor returns to farmer's efforts.

Agricultural inputs such as improved seed, fertilizers, pests and weed control chemicals do not reach the farmers when they need them. This has been attributed to the inadequacy of the general agricultural inputs supply

system in Kenya. For instance, Mbogoh (1982) observed that there were no improved finger millet seeds available to farmers. The recent survey revealed no evidence to suggest that the situation had changed.

#### PROCESSING AND UTILIZATION

The Adhoc Committee on Sorghum and Millet Research and Development (1982) identified the problem of processing and utilization as the most important influence on the production of millets in Kenya. The weakest link in the promotion of production and expansion of millets in Kenya is the development of industrial products or the products that are accepted by consumers. Processing of finger millet with a view to the production of commercial products has not received serious consideration. The current practice is to use hammer mills to grind finger millet and the resulting flour is unfit for baking.

Chiodo-Juve (1980) found that millets have some potential in the industrial manufacturing of bakery products, brewery products and livestock feedstuffs. However, millets share this potential with sorghum and the latter has received more attention. Nevertheless, the role of millets for food needs to be looked into and promoted to guard against food shortages in the marginal areas. To promote the utilization of finger millet research needs to be done to develop appropriate milling technology as well as more acceptable finger millet products.

#### CONCLUSIONS AND RECOMMENDATIONS

Finger millet has great potential as a food crop. To promote its production and utilization, adequate rewards to farmers must be ensured while at the same time providing consumers with high quality and affordable finger millet products.

More research work is needed in order to develop appropriate production and processing technologies. Farmers need to be provided with finger millet varieties that are high yielding, are less vulnerable to bird damage and also disease resistant especially against blast. Agronomic recommendations regarding optimal plant populations, fertilizer rates, weed control and planting methods should be developed and passed on to the farmers.

Consumers who are becoming more and more sophisticated should be provided with attractive and affordable finger millet products so as to promote its utilization. With regard to processing, more work needs to be done in order to produce millet flours that can be used for baking bread or biscuits. Development of composite flours using finger millet should be explored for industrial exploitation.

