

# 1 Sweetpotato in sub-Saharan Africa

## 1.1 Sweetpotato within the livelihood system

Sweetpotato (*Ipomoea batatas* (L) Lam.) is, globally, the second most economically important root crop after potato and is an important food security crop in many of the poorest regions of the world including sub-Saharan Africa. Root crops are unusually important relative to cereals in Africa. Sweetpotato has the third greatest production after cassava and yams, is amongst the most widely grown of the major roots crops in sub-Saharan Africa and covers an estimated 2.1 million hectares with an annual estimated production of 9.9 million tonnes of roots. The crop is particularly important in countries surrounding Lake Victoria, in East and Central Africa. It is a co-staple in Rwanda, Burundi, and Uganda and plays a primary role in food security in Kenya, Tanzania and D.R. Congo. Elsewhere in sub-Saharan Africa it has traditionally been grown on a small scale as a secondary food crop, and is critical for food security during periods when other foods run short or periods of prolonged drought or when other catastrophes strike. Its adaptation to marginal environments, contribution to household food security and flexibility in mixed farming systems make it an important component of strategies to help the rural poor improve their livelihoods. As it only takes a short period to reach maturity, it is able to provide food in areas with short rainy periods and prolonged drought where other crops cannot survive. In East Africa, sweetpotato is grown predominantly by women, for both home consumption and to supplement household income by sale to local markets and urban centres. Although sweetpotato is produced all year round in some locations, others have distinct production seasons that are reflected in the market prices of both rural and urban markets. In the past sweetpotato was consumed mainly in rural areas and the utilisation of sweetpotato in urban areas was very limited and often kept secret as it was considered to reflect the low-income status of the consumer. However with increasing urbanisation and health-conscious consumers, sweetpotato is becoming increasingly important in urban food systems and there has been a tremendous positive change in attitude towards the crop. In urban areas most consumers obtain sweetpotato roots from the markets although some supplement these by growing sweetpotato themselves.



Sweetpotato production in Africa is increasing rapidly (see table below). This is partly because it is a relatively hardy crop, and the erratic rainfall and impoverishments of soils throughout southern and eastern Africa are leading farmers to abandon more demanding crops such as maize and bananas/ plantains. This process has been accelerated by removal of subsidies for fertiliser, maize seed and maize grain/ meal as part of trade liberalisation policies. Serious pest and disease problems have also struck these other crops. Sweetpotato production has also increased because of its rapidly changing image amongst consumers from that of a famine food and subsistence crop to a highly marketable crop, sold for rural and urban markets, supermarkets and international export. In Uganda and Kenya, roots are being chipped, dried and milled into flour which is then incorporated into snack confectioneries and baby weaning foods. These market and other forces have resulted in the production of sweetpotato appreciably exceeding the rate of human population increase. However, this increase is not yet sufficient to allay the maize and banana/ plantain deficit, making the continent increasingly food deficient. Furthermore, the increase in sweetpotato production has been the result of increased land being planted rather than a technology-boosted improvement in productivity.

*Production of major food staples in Africa (FAOSTAT)*

	Average production (in 1,000 tonnes):		Change in production (%)
	1993-1997	1998-2002	
<b>Sweetpotato</b>	7,609	10,188	34
<b>Cassava</b>	84,329	96,650	15
<b>Yams</b>	31,624	36,539	16
<b>Maize</b>	40,889	42,185	3
<b>Plantains &amp; bananas</b>	27,195	29,261	8
<b>Human population</b>	(average increase between 1990 and 1995, and 1995 and 2000)		13

Most of the sweetpotato varieties grown by farmers throughout eastern and southern Africa have white or cream-coloured flesh, which contains little or no beta-carotene, a precursor to Vitamin A in the body. Many rural people in these same areas, particularly children, suffer from vitamin A deficiency. Severe deficiency leads to night blindness and/or death; less severe forms reduce a person's general health and capacity to fight off malaria and other diseases. One particularly effective means of addressing sub-clinical vitamin A deficiencies is through the promotion of food based agricultural interventions, such as new varieties of sweetpotato rich in beta-carotene. Orange-fleshed sweetpotato varieties introduced from other parts of the world or bred locally have passed consumer acceptance tests in pilot areas in East Africa, and preliminary results have shown that they contain sufficient beta-carotene to play an important role in eliminating vitamin A deficiency. Orange-fleshed varieties rich in beta-carotene have been identified as the least expensive, year round source of dietary vitamin A and in the pilot areas mothers have demonstrated their understanding of the vital role they can play in boosting household nutrition. Sub-Saharan Africa is the only region of the developing world where both the number and proportion of malnourished children has been consistently rising in recent years. According to International Food Policy Research Institute (IFPRI) projections, the number of malnourished children will continue to increase from 33 million in 1997 to somewhere between 39 and 49 million in 2020. The high vitamin A content of many of the sweetpotato varieties is viewed as important by nutritionists not only for its role in child developmental health but also because of the high incidence of households with HIV-positive members in the region.

In Africa, the growth rates in sweetpotato production, particularly, the area planted, are the highest of any region. However, these are offset by reductions in average annual yields. Average yields of 5 tonnes/ha in Africa are low compared to those of 14 tonnes/ha in other developing regions such as China. Currently, several factors, including: lack of planting materials; shortage of high yielding, early maturing, drought tolerant, high dry matter and high beta-carotene content varieties; sweetpotato weevils (particularly in the drier areas); sweetpotato viruses (particularly in the wetter areas); low soil fertility; lack of markets and/or market information; short shelf life of fresh roots after harvest; and limited processing opportunities cause considerable reductions to sweetpotato production.

The problem begins at the beginning of the planting season, as the prolonged dry season is frequently followed by a shortage of planting material. As a result, planting is often delayed and there is little opportunity to select cleaner younger vine parts for planting. This has implications for both pest and disease build up through infested planting materials. Few early-maturing sweetpotato varieties exist in East Africa, and as a result of the delayed planting the crop usually matures after the end of the rains and the soil around the roots dries out and cracks providing easy access to the roots for *Cylas* weevils. While external weevil damage to roots can affect their quality and value, internal damage can lead to complete loss. Many farmers practice piecemeal harvesting removing the larger exposed roots for household consumption as required, but when weevil populations build up, farmers tend to harvest the remaining crop. As a result, in areas where sweetpotato is not processed into chips, flour, crisps, mandazis, chapatis or stored as fresh roots or dried chips, a glut develops as most local farmers tend to harvest around the same time.

Despite the array of factors that still impede sweetpotato yields in the region, great progress has been made over the past years. Through regional breeding programs a considerable number of varieties with high yielding potential and adapted to low input conditions and broad environments in Africa have been developed. SPN/O, a variety selected in Uganda, Kenya and Tanzania is one such example and is now grown throughout East, Central and Southern Africa under a diverse range of local names. At the same time the varieties have been tested for resistance against major pests and diseases. The introductions in different countries have been supported by vigorous multiplication schemes and enabled evaluation of new germplasm in the national breeding trials. There have been a number of pilot projects with rural women's groups that have successfully marketed products with sweetpotato as a major ingredient. There has also been much progress in the improvement of the quality of flour produced by farmers using simple technologies. Research efforts to introduce sweetpotato utilization into bakery and flour milling companies have also yielded promising results. All these efforts have left a changed and positive perception of the crop's use in food systems in the region.

The long-term challenge for sweetpotato development in sub-Saharan Africa is to increase production per unit area, yield has not only remained static but is below the continental average. The immediate challenge is to ensure that improved varieties that have been generated together with improved production technologies, and nutritional information reach a wider section of the farming community. This problem has been aggravated by programs that support research and development in independent disciplines; while it is the same crop that is affected by all these constraints.

The experiential learning approach of farmer field schools will provide participating farmers with a deeper understanding of crop ecology and observational, analytic and problem solving skills, which help farmers evaluate the importance and applicability of their existing and innovative practices. These understandings and skills are usually transferable between field activities (often resulting in the reduced use of synthetic and often inappropriate pesticides or fertilisers on other crops), and can be passed on through traditional knowledge pathways. The formation of cohesive farmer groups during these collective learning activities and their exposure to economic analysis can often increase the negotiating power of producers with traders or suppliers, and lead to an increased awareness of rights and establishment of farmer action networks.