

Sweetpotato Action for Security and Health in Africa



Exploiting sweetpotato as an animal feed in East Africa

What is the problem?

East Africa has the highest per capita consumption of livestock products of any of the regions in Sub-Saharan Africa (SSA), but surprisingly, consumption has been declining over 0.7% a year during the last decade. High population pressure has led to increasing competition between food grains and feed resources. Compounding these problems is a lack of quality feed year-round and major feed shortages during the dry season, which severely affect the lactation cycle. Quality feed concentrates are too expensive for many farmers. East African smallholders engaged in dairy, dual purpose goats (bred for meat and milk), and pig production systems have adopted mixed crop and livestock systems that draw heavily on locally available feed ingredients. The challenge is how to effectively improve productivity in such complex systems.

Pig farmers raising pigs for sale in Kenya currently use commercial feed as a protein source and supplement it

with sweetpotato vines and low quality maize grain. The main crop used to feed dairy animals is Napier grass. The latter requires significant allocation of land, thus livestock producers are actively seeking alternative sources of feed. A recent outbreak of disease in Napier grass has compounded the concern to find alternatives.

Sweetpotato vines could provide the answer. They are superior to Napier grass in terms of protein and dry matter production per unit area on an annual basis, and they require less land to produce. Kenyan researchers have found that 4 kgs of vines could replace 1 kg of dairy concentrate. However, in contrast to China, where 25-30% of sweetpotato is used as animal feed, the potential of dual purpose and forage varieties in SSA has not been fully exploited. Presently, little land is allocated to sweetpotato production for animal feed due to a lack of awareness of its potential and the lack of appropriate varieties for feed.



The Sweetpotato Action for Security and Health in Africa (SASHA) is a five-year initiative designed to improve the food security and livelihoods of poor families in Sub-Saharan Africa by exploiting the untapped potential of sweetpotato. It will develop the essential capacities, products, and methods to reposition sweetpotato in food economies of Sub-Saharan African countries to alleviate poverty and under-nutrition.

⦿ **What do we want to achieve in the first five years?**

Our challenge is to integrate enhanced sweetpotato production with improved livestock productivity to the benefit of smallholders and, ultimately, consumers. To accomplish this we need the right kind of dual purpose (bred for both animal feed and human consumption) or forage varieties (vines only) and knowledge about how to integrate them into existing livestock systems of the African highlands to improve profits for farmers and product quality. The first step is to evaluate improved feeding systems with sweetpotato as an animal feed in East Africa. Building on its vast experience with partners in China, CIP will guide adaptive participatory research to test the economic feasibility of silage and leaf protein supplements, both produced from sweetpotato leaves, as part of feeding regimes. A computer model simulation on livestock feeding strategies, LIFE-SIM, will be used to determine appropriate feeding regimes to test, based on the availability and cost of feed resources in different seasons.

By undertaking the dairy components of this research directly with farmers participating in the East African Dairy Development (EADD) Project and pig producers contracted by Farmer's Choice, the largest pork product manufacturer in East Africa, results from this 3-year research effort will be immediately available to users.

⦿ **Where are we going to work?**

We will link to EADD dairy farmers in Kenya and Rwanda and pig producers within a 150 km radius of the city of Nairobi, where the Farmer Choice's factory is located.

⦿ **How are we going to make it happen?**

First, we will identify and promote dual-purpose sweetpotato varieties.

Second, we will train local researchers on using the LIFE-SIM model. Third, we will engage on-farm with smallholder livestock producers themselves, monitoring feed availability and testing improved feeding regimes. This will produce recommendations that can be integrated within the EADD project and into the Farmer's Choice network of contract farmers.

⦿ **Who are we going to work with?**

We will be working with local Universities and national breeding programs in Kenya and Rwanda in collaboration with the EADD project in Kenya and Rwanda, Farmer's Choice, and with the producer themselves.

⦿ **What's next?**

A major advantage of silage is the reduction in water weight that drives up the cost of fresh root marketing. If silage proves to be a viable product, a market for silage will be created that smallholder farmers in the surrounding area can respond to, even if they themselves are not involved in more intensive livestock production systems. Ultimately, enhanced local feed markets based on silage and leaf protein supplements could lead to at least a 30% increases in feed availability during the dry season and overall farm productivity.



⦿ **Bag of sweetpotato silage**
(credit J. Low, CIP)



⦿ **Chinese researcher examining bags of silage**
(credit J. Low, CIP)

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