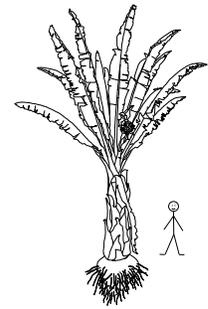


# Enset agriculture as adaptation strategy to climate change

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## Summary

Enset agriculture is established since thousands of years in parts of Ethiopia. Enset, with the scientific name *Ensete ventricosum*, belongs to the same plant family (Musaceae) as the common banana and the plants look similar. However, opposite to the common banana, all large below- and aboveground parts are utilised while the fruits are not routinely used since these mainly contain large and very hard seeds.

Enset is a multi-purpose crop which gives food (with similar nutritive values as potato), fodder (very suitable for lactating ruminants), fibre (sacks, food wrapping, ropes, carpets, cushions etc.) and traditional medicine. There are food products from enset that can be stored several years without cooling. In addition, enset gives shelter, moderate daily temperature, keep moisture, prevent erosion and improve soil quality; this because it is a large, evergreen, fast-growing perennial crop, resulting in sustainable agriculture. Around the world, search for perennial crops is ongoing. Since enset is drought-tolerant, grows well during extended and untimely rain and withstand frost, it is well proved to mitigate climate change, being an indigenous adaptation strategy by smallholder farmers in Ethiopia.

Enset is appointed "the tree against hunger" because it yields the highest energy output per time and area unit of crops grown in Ethiopia and because it remains green, saving many lives, when cereals wilt before harvest or collapse due to untimely rain. Thus, enset is a reliable food source where failure of annual crops is common due to adverse weather conditions.

Enset as a perennial staple crop which could be directly applicable by a lot of farmers in large areas, i.e. most of Africa and similar climates, to adapt to extreme weather conditions due to climate change. It is a suitable crop to meet food demand of growing populations, requiring minimum investments and with benefit to local environment. Current growers request reliable agricultural advice and new cultivars with new combinations of characteristics.

Our research shows that sprouting and growth for production, which is done by cloning similar to potato, can be enhanced by improved use of manure, thus not requiring any synthetic or expensive input. Watering can be applied for establishing enset during very dry conditions. Different traditional pre-treatments of corms to plant (propagules) can be utilised to adjust drought resistance before emergence and the number of new sprouts.

For new cultivars, conventional breeding, using seeds and selection, has not been applied on enset. It would give new genotypes due to natural genetic recombination. We have shown that seeds can germinate naturally without any special treatment, but more research is needed to get rapid and even germination of seed lots. When seedlings are achieved, the continued growth, enhanced by manure as for corms, is very efficient and thus promising for breeding.

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### Publications:

Karlsson LM, Dalbato AL, Tamado T, Mikias Y (2015) Sprouting and early growth of enset. *Exp. Agr.* 51:232–243.

Karlsson LM, Tamado T, Dalbato AL, Mikias Y (2013) Seed germination of enset. *Seed Sci. and Tech.* 41:357–370.

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