# ENHANCING THE FOOD SECURITY OF THE ETHIOPIAN POPULATION DEPENDENT ON ENSET AS STAPLE FOOD THROUGH BIOTECHNOLOGY

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Enset (*Ensete ventricosum*) is a carbohydrate-rich staple food for about one quarter of the Ethiopian population. Enset is cultivated in the densely populated areas of south and southwest Ethiopia for food and other uses. Currently its cultivation is expanding to other parts of the country. The crop can tolerate prolonged drought and has a high yield, which is important for the increasing population in the enset-growing regions. Despite its importance, the crop has not benefited from modern agro-technologies.

Nematodes, fungi, bacteria, and viruses cause economically important enset diseases. Bacterial wilt disease caused by *Xanthomonas musacearum* is the most destructive disease of enset—it also affects bananas—often causing outbreaks that have resulted in the loss of important enset clones. It is claimed that there is no complete disease resistance in extant enset clones. Although one or two clones are thought to tolerate this disease, these clones are not available to most farmers in the enset-growing regions. Consequently, the people that cultivate enset as a staple food are seriously affected, as the disease often wipes out their clones, threatening their food security and livelihood.

To overcome these drawbacks in a sustainable manner, effort is being made through the application of biotechnological methods. Tissue culture procedures are being developed to maintain and distribute enset clones. The genetic diversity and geographical distribution of domesticated and wild enset in southern Ethiopia have been studied and the high diversity of the enset gene pool has been documented. The uniqueness of the genotypes obtained from different regions has been shown to accord with their vernacular names using randomly amplified polymorphic DNA (RAPD) markers. The procedures being developed and the information generated will make a significant contribution to the selection of clones for immediate cultivation and future improvement programs.

In addition, microbes associated with enset clones in the field and the endogenous microbes that inhibit enset growth *in vitro* have been identified using the polymerase chain reaction (PCR) and DNA sequencing. The identification of these drug-resistant microbes will contribute to their control. Tissue-culture procedures in conjunction with genetic transformation will enable the development of clones that are resistant to bacterial wilt.

**Keywords**: *Ensete ventricosum*, Tissue culture, RAPD, PCR, DNA sequencing