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“Bridging the gap between increasing knowledge and decreasing resources”

***Lablab purpureus* (L.) Sweet: A Promising Multipurpose Legume for Enhanced Drought Resistance in Smallholder Farming-Systems of Eastern Kenya**

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Abstract

In Kenya arable land is scarce, accounting only for 20% of the total land area with the majority found in semi-arid regions. For these drier regions where farming activities are mostly operated by smallholder farmers, unreliable and highly variable rainfall, lack of irrigation facilities and poor soils lead to low crop yields. Facing also the impacts of climate change, the introduction of drought tolerant germplasm may help farmers manage risk. Because *Lablab purpureus* (L.) is considered to be drought tolerant and is a highly valued traditional crop for food and fodder in Africa; it offers great potential for smallholder farming-systems in semi-arid eastern Kenya.

The aim of this study therefore was to evaluate the production potential of different lablab accessions in semi-arid eastern Kenya as well as their acceptability for human consumption. Six promising short-season lablab accessions (Q6880B, CPI60795, CPI52508, CPI52513, CPI52535, and CPI81364) were grown on-station in a water-deficit and on-farm in a rainfed-only experimental setting. Data on time to flowering and maturity, dry matter (DM) production and leaf area index (LAI) were taken. Additionally an organoleptic tasting was conducted to identify suitable accessions for human consumption.

Time to flowering ranged from 63 to 70 days after planting (DAP) with Q6880B, CPI60795 and CPI81364 being the earliest. Final DM yields ranged from 1200 kg ha⁻¹ to 7200 kg ha⁻¹ under rainfed conditions on-station and from 500 kg ha⁻¹ to 5000 kg ha⁻¹ on-farm. Under irrigation, DM yields reached 14000 kg ha⁻¹. Most promising and high yielding lablab accessions included Q6880B and CPI81364 with grain yields from 1200 kg ha⁻¹ to 1600 kg ha⁻¹. The accession CPI52535 seemed to be more suitable for fodder or dual-purpose use with the highest biomass production. In the organoleptic tasting CPI81364 proved to have high cooking and eating qualities.

In summary this study indicates the great potential of Q6880B and CPI81364 for semi-arid farming systems due to high grain yields and short growing periods. However, the susceptibility of lablab to pests and diseases is a significant issue that requires management packages to be developed so that farmers may successfully cultivate this important food legume.

Keywords: Drought resistance, dry-land farming systems, eastern Kenya, *lablab purpureus* (L.) sweet