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“Development on the margin”

Testing Agro-ecological Adaptation and Participatory Acceptability of ten Herbaceous Legumes in South Kivu, DR Congo

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Abstract

South Kivu Province in eastern Democratic Republic of the Congo experienced a long period of war and unrest that strongly affected agricultural production. After some time of relative calm, the region has now an increasing need to satisfy consumer demand for agricultural produce, including animal-based produce. Livestock is either reared in herds on natural grasslands or individually tethered to feed on spontaneous vegetation. Productivity is low, especially during the dry season. Using improved forages could play an important role to both enhance livestock production and improve soil fertility also preventing from soil erosion; however, research has been neglected in the recent past.

CIAT's Tropical Forages Program preselected ten herbaceous legume species and accessions that were previously evaluated under similar ecological conditions in tropical America and Southeast Asia. This research included *Canavalia brasiliensis* CIAT17009, *Centrosema molle* CIAT15160, *Clitoria ternatea* CIAT20692, *Macroptilium atropurpureum* cv. Siratro, cowpea (*Vigna unguiculata* IT95K52-34, IT97K1069-6 and IT98K131-2), *Lablab purpureus* CIAT21603 and CIAT22759, and *Stylosanthes guianensis* CIAT11995, with *Desmodium uncinatum* cv. Silverleaf (as ILRI6765) for local check. Researcher-managed, small-plot agronomic evaluation took place on farmers' fields from November 2009 to January 2011 at higher (1600–1700 m asl.; Mulungu, Nyangezi) and lower sites (900–1100 m asl.; Kamanyola, Tubimbi), representative for agro-ecological conditions in South Kivu. After flowering started, plants were cut every 2 months up to four times. Differences of mean fresh leaf yield (MFLY) were established by ANOVA. Farmers' criteria and their selections were gathered during both rainy and dry season, ensuring gender equity in the groups at all four sites.

Across sites, stylo and Silverleaf desmodium produced the highest MFLY. Cowpea was not adapted anywhere showing low production, disease susceptibility and plant loss after the second cut. Differential plant adaptation occurred, e.g., *Clitoria* being adapted only to Kamanyola, where MFLY was higher and different from the other three sites.

Farmers' selection criteria differed slightly among sites, but stronger so between rainy and dry season, emphasising overall biomass production with a preference for *Canavalia* and stylo. Uneven ranking of drought tolerance demonstrated how important the timing of participatory evaluation was. There was differential plant selection according to site.

Keywords: Agronomic evaluation, ecological adaptation, Kivu, participatory selection, smallholder, tropical forages