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“Bridging the gap between increasing knowledge and decreasing resources”

Forage Diversity: An Essential Resource to Support Forage Development

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Abstract

Poor-quality feed, fluctuating feed supplies and seasonal feed shortages are the major constraints to increasing livestock productivity in many tropical countries. Forage diversity is an essential resource for the selection and breeding of superior forages for use in smallholder farming to alleviate these constraints. Forages have a key role in natural resource management through positive effects on soil fertility and carbon sequestration for improving system resilience and sustainable land management in crop-livestock systems.

The collection maintained at the International Livestock Research Institute (ILRI) includes about 19,000 accessions of forages from over 1400 species of forage grasses, legumes, fodder trees and shrubs as a global public good, held in trust under the International Treaty on Plant Genetic Resources for Food and Agriculture. This is one of the most diverse global collections of forages and includes the world's major collection of African grasses and tropical highland forages.

The forage diversity activities in ILRI focus on three areas:

Save: Seeds of most accessions are stored at low seed moisture contents in laminated aluminum foil packets at 8°C for medium-term storage and at -20°C for long-term storage at the genebank, while grasses that rarely produce seeds or whose seeds are short-lived are maintained in field genebanks. These seeds are also safety duplicated at the International Center for Tropical Agriculture (CIAT) in Colombia and at the Svalbard Global Seed Vault in Norway.

Study: The forage resources are characterised for suitability as livestock feed and evaluated for systems adaptation. This involves assessing phenotypic traits, yield, disease and drought tolerance in the field and linking with genomic and nutritional studies in the laboratory.

Use: ILRI distributes about 1,000 samples of germplasm globally each year for evaluation, forage development and use. Two accessions of Napier grass with resistance to smut disease from the ILRI in trust collection are already being used in Kenya and other accessions have been identified as tolerant to Napier grass stunt disease.

In order to promote use and adoption of forages, ILRI is a partner in the development of on-line knowledge tools and information sheets and is supporting capacity development efforts in forage diversity.

Keywords: Forage development, forage diversity