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The potential of tropical forage species maintained in the ILRI-forage-genebank for sustainable agriculture and food-security

MEKI SHEHABU MUKTAR¹, ALEMAYEHU TERESSA NEGAWO¹, ALICE MUCHUGI¹, CHRIS S.
JONES²

¹*International Livestock Research Institute (ILRI), Ethiopia*

²*International Livestock Research Institute (ILRI), Kenya*

Abstract

The International Livestock Research Institute (ILRI) forage genebank, at Addis Abeba, Ethiopia, maintains a collection of 18,664 accessions of tropical forage germplasm, including species of leguminous fodder trees, herbaceous legumes, and forage grasses. The fodder tree species are a good source of high-quality, protein-rich forage for subsistence and commercial livestock production and supply foliage during dry periods when herbaceous species are not available. They can enhance the sustainability of farming systems because of their longevity, enhancement of fertility and physical stability in the landscape, they fit well in agroforestry systems and rehabilitation of degraded lands and offer opportunities for sustainable agriculture and intensification of tropical biodiversity. We have been characterising some of them, such as *Sesbania sesban*, to identify climate resilient, adaptive, and high biomass yielding genotypes that can be used as an alternative feed source in the dry season. The majority of the herbaceous legumes maintained in the genebank can be used for both human food and animal feed, however, most are underutilised and less characterised orphan crops. Currently we are working on some of them, including lablab (*Lablab purpureus*) and Cowpea (*Vigna unguiculata*). Improving the production and productivity of these underutilised crops is a promising strategy to diversify food systems. The perennial grasses maintained in the genebank also offer many beneficial characteristics. For instance, Napier grass, the most well-known tropical forage grass, is produced primarily as a fodder crop for animal feed because of its high feed quality, high dry matter content, and year-round availability. Given that it contains a lot of cellulose, which can be utilised as a source of carbon (energy), it has the potential to make biofuels, and is used in paper industry. In conclusion, we have been studying some species from each of these categories with the intent of tapping into the genetic diversity that sits in these crops, in order to better understand how we can support their improvement so that they can contribute to food and feed systems, soil health management, and rehabilitation of degraded lands. Some of the works will be presented in the seminar.

Keywords: Forage genebank, ILRI, perennial fodder tree, tropical forage