



Field characterisation of the forage tree legumes *Leucaena diversifolia* and *L. trichandra* – an ongoing project in Colombia

K. Zöfel¹, R. Schultze-Kraft¹, M. Peters², B. Hincapie² and L. H. Franco²

¹University of Hohenheim; ²Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia

Background. The tree legumes *Leucaena diversifolia* (Schltdl.) Benth. and *Leucaena trichandra* (Zucc.) Urb. are taxonomically closely related species that are considered as promising for forage and agroforestry, with characteristics similar to the widely used *Leucaena leucocephala*. However, *L. leucocephala* does not tolerate neither cool temperatures nor acid soils; these limitations restrict its use in many areas of the tropics and subtropics. In contrast, *L. diversifolia* and *L. trichandra* have shown adaptation to both constraints, making them an interesting alternative to *L. leucocephala*.

Objective of the study. Comprehensive agronomic information on the two trees still is lacking, likewise an overview on the morphological characteristics of the germplasm collected so far and its variability. Hence, the germplasm available worldwide was gathered for agronomic and morphological evaluation.

Materials and Methods. A field trial with 50 accessions of *L. diversifolia* and 11 accessions of *L. trichandra* was established in Santander de Quilichao, Colombia, by June 2005. Agronomic evaluation included vigour, susceptibility to pests and diseases, nutrient deficiencies, plant height and diameter and number of regrowing branches below 0.5 m (cutting height). Morphological evaluation included leaf morphology (form, colour, pubescence, glands), inflorescence characteristics and growth habit. A standardization cut was done in October 2005. Cuts for the evaluation of dry matter (DM) production were done in December 2005 and May 2006. DM production was differentiated into edible and non-edible plant parts (the latter $\varnothing > 8$ mm).

Results and Discussion. Accessions show great variety in their growth habit; erect to prostrate forms were found. Also the number of branches below 0.5 m fluctuates greatly among accessions, hence differing regrowth capacity could be expected. DM production within eight weeks during the rainy season ranged from 570 to 110 g/plant, from which 400 to 80 g/plant were classified as edible (see figure 1).

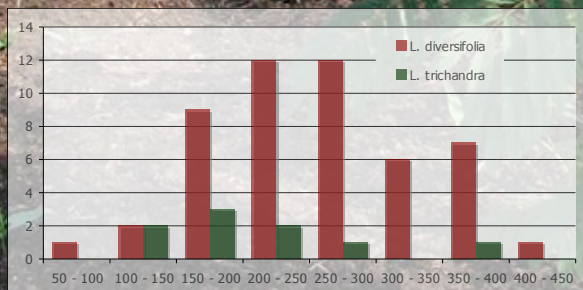


Figure 1. Range and frequency of edible DM production in grams per plant within eight weeks during rainy season.

Acknowledgements. The financial support by the VolkswagenStiftung and BMZ/BEAF/GTZ is gratefully acknowledged.

The morphological data confirm the large genetic variability within the two species that is reported in the literature. Features like colouring of pinnules' border, pubescence, length and width of leaves and length and width of pinnules vary greatly within one species. Great differences regarding the texture of the leaves make differences in palatability probable.

Main morphological differences between the two species *L. diversifolia* and *L. trichandra* are length and width of the pinnules and number of pinnae/leaf and number of pinnules/pinna, both being distinctly lower for *L. trichandra* (see figure 2).



Figure 2. Leaves of *L. diversifolia* (left) and *L. trichandra* (right), visualising the morphological differences between the two species.

Conclusions and Outlook. The regrowth capacity, even after cutting as low as 0.5 m above ground, appears to be very good. This indicates suitability of the two species as forage plants for intensive use (both cut-and-carry and grazing). Further investigations regarding palatability, nutritive value and DM production during the dry season are presently being carried out.