



Diversity Assessment of the Tropical Legume Genus *Stylosanthes*: A Research Project in Venezuela

Teodoro Calles, Rainer Schultze-Kraft and Orlando Guenni¹

¹Central University of Venezuela (UCV), Apdo. Postal 4579, Maracay 2101, Venezuela

Introduction

- *Stylosanthes* is probably the most important tropical non-grain legume genus (e.g. for purposes such as forage, soil cover, soil improvement).
- Some species have a particular importance for low-input agro-ecosystems in tropical and subtropical America, Australia, Africa, Southeast Asia, India and China.
- Venezuela can be considered, after Brazil and Mexico, as the third center of diversification of *Stylosanthes*.
- A group of well-researched species, i.e. *S. humilis*, *S. guianensis*, *S. hamata*, *S. scabra*, *S. capitata*, and *S. macrocephala* has been the subject of agronomic research that led to the release of a number of commercial cultivars. Nevertheless, diversity of the genus is far from being understood.

Objectives

- To assess the diversity of the genus *Stylosanthes* in Venezuela using both morphological and molecular analyses.
- To collect seed and nodule samples of *Stylosanthes* species occurring in Venezuela, assess local knowledge about the species, and identify particularly promising species or ecotypes, e.g. for soil conservation, grassland improvement and forage.



Fig. 1. New species *Stylosanthes venezolensis* ined. (in its natural shady habitat, Distrito Capital)



Fig. 2. New species *Stylosanthes falconensis* ined. (at Sierra de San Luis, State of Falcón)

Partial Results

- A comprehensive biogeographical database of Venezuelan *Stylosanthes* species was assembled, containing approximately 1,500 entries.
- An inventory and taxonomic determinations of all Venezuelan *Stylosanthes* species, germplasm accessions and herbarium specimens were accomplished, including two as yet not described new species, i.e. *Stylosanthes venezolensis* and *S. falconensis* (Figures 1 and 2), and one new botanical variety of *Stylosanthes viscosa* (Figure 3) from high altitudes (above 2,500 m asl).
- *S. guianensis* and *S. scabra* are the most diverse *Stylosanthes* species in Venezuela; they deserve further treatment at the infra-specific level.
- Most of the Venezuelan *Stylosanthes* species are well adapted to dry environments: perennials have tap roots (Figure 2) and thus can reach deep soil layers, whereas annual species produce particularly large quantities of seed.
- Germplasm collection gaps were identified using the biogeographical database. Information will be used for planning further collection trips.



Fig. 3. New botanical variety of *Stylosanthes viscosa* (vicinity of El Paramito, State of Mérida)