

# Summary

The study was in two parts: (1) to describe the dynamics of *Stylosanthes capitata* in associated pastures that had been managed during 14 consecutive years by cattle raisers of the Eastern Plains of Colombia; and (2) to conduct two exploratory experiments on these farms to recover those pastures in which the legume was in an advanced state of degradation. The botanical composition of the pastures was determined at 3 to 4-month intervals, over 14 years, on seven farms that had pastures of the grass *Andropogon gayanus* cv. Carimagua, or *Brachiaria decumbens* cv. Basilisk, associated with one or both ecotypes of *S. capitata*, CIAT 1019 and 1315, that were planted between 1979 and 1981. The pastures studied measured between 5 and 80 ha each and were established by 2 to 3 harrowings and applications of 20, 20, 10, and 10 kg/ha of P, K, Mg, and S, respectively. Only one cattle raiser applied maintenance fertilization during the observation period. Before seeding, and in each subsequent year, samples were taken from the top 20 cm of soil for chemical analysis. The BOTANAL method was used to

determine the botanical composition of the pastures, and the percentages presented refer to the contribution of *S. capitata* to the forage-on-offer. To determine the amount of seed in the soil and, depending on pasture size, between 15 and 100 samples were taken from the top 5 cm of soil of each pasture, using cylinders with a 5-cm diameter. The recovery techniques evaluated here reproduce the most frequent fertilization rates and combine them with the rest treatments applied at different times and in different scenarios in terms of opportunity costs. The low to moderate rates of P and K, alone or in combination, did not result in significant increases in the contribution of the legume to the biomass production of the association. Among the constraints observed was the dominant effect of the sand content (which was used as an indicator of soil texture) on the grass-legume balance in the pastures. The results suggest that the natural niche of *S. capitata* in the higher areas of the Colombian Eastern Plains would be restricted to the lightest soils, if it is to comprise, over the long term, more than 20% of the pasture biomass. The legume's use in heavier soils would be restricted to its contribution as a pioneer species in the first 2 or 3 years.