

## Summary

The potential of the legume shrub *Cratylia argentea* (*Cratylia*) to reduce feeding costs in dual-purpose production systems in the piedmont region of Colombia's Eastern Plains was analyzed using different feeding systems: *Cratylia* alone, as cut-and-carry forage, at milking; *Cratylia* mixed with grass forage or molasses at milking; and direct grazing associated with *Brachiaria decumbens* at two planting densities (2500 and 5000 shrubs/ha) and three shrub replacement frequencies (every 3, 4, or 5 years).

Thirty-two livestock producers of the municipality of Villavicencio were interviewed to get a better picture of local production systems, use of resources, prices of inputs and products, and technologies used.

A simulation linear programming model was used as tool to evaluate ex-ante the costs and profits of current and potential land use as well as the interactions between technological components and biological productivity. At the time of the study, the cost/kg milk produced was US\$0.183 versus a milk price received at US\$0.203/kg, for a slight margin of 11.5%. Meat production cost was US\$0.640/kg liveweight versus a price received of US\$0.745/kg for a margin of 16.4%. However, in view of the reduced volume of milk and meat sold each year by farms representative of the region, this margin represents an average income of US\$952/farm per year, without considering a remuneration of the cost of opportunity for the producers' time. Therefore, dual-purpose production systems did not prove very profitable. The adoption of *Cratylia* under the cut-and-carry system made it possible to reduce milk and meat production costs by 7% when supplemented with molasses; by 11% when mixed with cut-and-carry forage grass cv. Napier; and by 13% when offered only at milking. This suggests that the nutrients found in the legume are sufficient to maintain milk production without providing inputs as molasses or Napier together with the basal diet of *B. decumbens*. Production costs were lower when *Cratylia* was established at a rate of 2500 shrubs/ha. Similarly, the lowest production costs occurred when *Cratylia* was replaced every 5 years. The adoption of *Cratylia* under direct grazing with a planting density of 2500 shrubs/ha reduces milk and meat production costs by 19% when replaced every 5 years; by 13% when replaced every 4 years, and by 2% when replaced every 3 years. The adoption of *Cratylia* under the modality of direct grazing associated with *B. decumbens* makes it possible to release 18% of the current area under pastures when the legume is replaced every 3 years and 25% of the area when replacement is done every 5 years.