

Summary

This study evaluates forage options that can significantly improve the competitiveness of dual-purpose farms in Esparza, Costa Rica, and Esquipulas, Nicaragua, by increasing farmers' net income, reducing milk production costs, and freeing areas that can be dedicated to other alternative uses, such as reforestation and conservation. In both countries, these forage options completely eliminate the need to purchase animal supplements (concentrates, molasses, or FYM) during the dry season, while reducing not only the dependency of farms on external inputs and price fluctuations but also the risk inherent to milk production.

In Pucallpa, Peru, the situation was different. In this area, all forage options evaluated, except the use of Stylo by pre-weaning calves, improved the competitiveness of farms under current management and production conditions, attributable to the low percentage of milking cows (41%). Therefore the depreciation per milking cow is high because forage options do not compensate the investment involved, especially when both production per cow (3 kg/cow per day) and stocking rate (0.9 AU/ha) are extremely low for an ecoregion with practically no water shortage problems.

The forage options presented in this study—except for the establishment of *Cratylia argentea* + sugarcane in Costa Rica and Nicaragua and the use of Stylo for calf nutrition in all three countries—reduce the area needed to maintain the same size of herd. This way it is possible to intensify production and, as a result, areas can be freed for other uses such as conservation and reforestation.

Despite the fact that all forage options, except in the case of Peru, enhanced the competitiveness of dual-purpose farms, the prevailing conditions of the countries' financial systems hinder their potential adoption. Elsewhere, the opportunity cost and the conditions of capital payment are positioned between 6% and 9% per year, in real terms, payable up to 15 years, the financial markets in these countries differ radically. Real interest rates currently governing agricultural and livestock credits are around 13% in Costa Rica, 18% in Nicaragua and 34% in Peru, all payable in a maximum time of 5 years.

The level of income of small producers in the study areas ranged between one and three minimum wages (see Table 4), which makes them illiquid to invest in new forage options, unless they can do so with bank credits.

In view of the current financial system conditions of these countries, the adoption of new forage alternatives by small producers will not only be slow but also very limited. Current interest rates and terms of credits make their adoption almost impossible. In an open-market scheme, which induces Latin American producers to openly compete with other countries, producers should have access to credit under conditions similar to those found worldwide.