Tropentag, October 5-7, 2011, Bonn

"Development on the margin"

Tropical Forages to Enhance Productivity of Monogastric Animals with Low-income Farmers in Nicaragua and Honduras

Rein van der Hoek[1], Martin Mena[2], Carlos Rodriguez[3], Marlene Posas[4], Alexander Benavidez[2], Elmer Moreno[2], Conrado Burgos[5], Michael Peters[6]

[1] *International Center for Tropical Agriculture (CIAT) Central-America / CIM, Nicaragua*
[2] *Instituto Nicaraguense de Tecnología Agropecuaria (INTA), Nicaragua*
[3] *International Center for Tropical Agriculture (CIAT), Central-America, Nicaragua*
[4] *SERTEDESO, Honduras*
[5] *Consultant, Honduras*
[6] *International Center for Tropical Agriculture (CIAT), Colombia*

Abstract

Monogastrics (*e.g.*, swine, poultry) are important for family nutrition and income of smallholder farmers and often managed by women. Scarcity of high-quality (protein) feed is the main constraint to production and market competitiveness. Typically feed of low nutritional value in combination with costly cereal-based concentrates is used, causing a direct competition of monogastrics with humans.

This research identifies and tests potentially suitable high-quality forage-feed resources for integration within smallholder production systems in Nicaragua and Honduras.

In a first stage, the agronomic characteristics of herbaceous forage legumes, including accessions of *Vigna unguiculata*, *Lablab purpureus*, *Clitoria ternatea* and *Stylosanthes guianensis*, were determined and among the most promising were *Vigna unguiculata* CIAT 4555 and *Lablab purpureus* CIAT 22759.

In a second stage, the effect of partly substituting concentrates by fresh foliage of these legumes was assessed in 19 on-farm feeding trials. At each farm three pigs of the same sex and litter received each one of three treatments: 0 % (control), 25 % and 50 % substitution of sorghum/maize by forage, the latter harvested daily at flowering stage with fresh supply guaranteed by planting small plots (100 m^2) at weekly intervals.

Daily average live weight gain was 140 g per animal without significant differences between the treatments;no differences between sexes were found neither. Initial live weight, however, had an important effect: animals over 15 kg grew 220 g day^{-1}, in comparison to less than 100 g for smaller pigs.

In spite of the relatively low performance, results are promising and imply that at typical farm production level substitution of up to 50 % of concentrate by forages does not affect productivity and leads to a decrease in costs if the extra labour - mostly provided by the family - needed for forage production (less than an hour per day) is not taken into consideration. In ensuing experiments only animals over 15 kg will be included, as smaller pigs are not capable to efficiently utilise forages with a relatively high fiber content. Furthermore, silages will be included and production level will be enhanced by the addition of some locally available ingredients with higher nutritive content.

Keywords: Central-America, herbaceous forage legumes, monogastrics, smallholders

Contact Address: Rein van der Hoek, International Center for Tropical Agriculture (CIAT) Central-America / CIM, Managua, Nicaragua, e-mail: r.vanderhoek@cgiar.org