

Agroforestry systems in Cuba: some aspects of animal production

J.M. Iglesias, L. Simón, L. Lamela, I. Hernández, M. Milera and T. Sánchez

Estación Experimental de Pastos y Forrajes "Indio Hatuey", CP 44280, Matanzas, Cuba Email: iglesias@indio.atenas.inf.cu

Keywords: agroforestry systems, animal production

Introduction The silvopastoral systems, that nowadays constitute scientific achievements of the Grasses and Forages Research Station "Indio Hatuey", have been developed from the results of investigations that were carried out since the 1980s, to improve the productivity of natural pastures through the introduction of valuable herbaceous species and tree legumes. Those investigations also determined the essential elements of pasture management such as the optimal stocking rates for low input systems and suitable methods of grazing to obtain sustainability of grasslands.

Material and Methods Among the diverse types of Silvopastoral systems under study, the protein banks and multiple associations of legumes and grasses have contributed much to the development of sustainable dairy and meat production, and could be considered as systems that can be extended and to the farmers and that integrate well with the production objectives of Cuban cattle production.

Results *Leucaena leucocephala* has been the most frequently used tree in Cuban silvopastoral systems and it has also contributed much to experimental data that demonstrate the real advantages of agroforestry (Table 1). However, it is not the only species used. Others such as *Albizia lebbbeck*, *Erythrina berteroaana*, *E. poeppigiana*, *Gliricidia sepium*, *Bauhinia purpurea* and *Morus alba*, have been tested with success and appear to be important elements of diversification of plant communities in silvopastoral systems in Cuba.

Table1 Effect of different silvopastoral systems with low external inputs on performance of young fattening bulls

Production System	Genotype	Accumulated gain (g/day)	Live weight at slaughter (kg)	Age (months)
Association of <i>P. maximum</i> with <i>L. leucocephala</i>	Zebu	621,8	413,7	24
Association of <i>P. maximum</i> with <i>L. leucocephala</i>	1/2 H x 1/2 C	525,6	376,3	26
Association of <i>P. maximum</i> with <i>L. leucocephala</i>	5/8 H x 3/8 C	491,6	357,1	28
Protein Bank of <i>L. leucocephala</i> (25 % of the total area) + Natural pasture	Zebu	394,0	355,0	24
Protein Bank of <i>L. leucocephala</i> (25 %) + <i>P. maximum</i> (80 kg of N)	Zebu	555,0	372,5	25
Protein Bank of <i>L. leucocephala</i> (25 % of the total area) + <i>A. gayanus</i>	Zebu	487,0	449,0	29
Association of <i>P. maximum</i> with <i>Albizia lebbbeck</i>	Zebu	729,0	409,2	24
Association of <i>P. maximum</i> with <i>L. leucocephala</i>	Zebu	788,0	424,0	24

Conclusion The main results obtained on the use of agroforestry for animal production in Cuba are 1. Daily live weight gains of between 500 and 600 g in young bulls for fattening, with an average production of around 800 kg of meat per ha annually. 2. Daily milk production of 7-10 kg/cow (14-25 kg/ha), without supplements. 3. Daily live weight gains of between 400-525 g in growing replacement heifers, which allows a live weight for reproduction of 290-300 kg at 20-27 months of age. 4. Minimal use of external inputs to the system