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LONG-TERM ANIMAL PRODUCTION IN GRASS ALONE AND ASSOCIATED WITH LEGUMES IN THE LLANOS OF COLOMBIA

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**BACKGROUND**

- Well drained savannas of Colombia represent approximately 2 million ha. Soils are acid (pH 4.5) with high Al saturation (86%), low P (1-2 PPM-Bray II) and low exchangeable bases. Average rainfall is 2400 mm/year with a well defined 4 month dry season (Figure 1). Herbaceous native vegetation is of low nutritional value (Lascano and Alvarez, 1987) and consequently animal production is low (70-90 kg/hd/year and 10-20 kg/ha/year) (Paladines and Leal, 1979).
- *Brachiaria decumbens* cv. Basilisk introduced from Africa is the most common improved grass sown in neo-tropical savannas.

**OBJECTIVE**

To monitor long-term animal production in pastures of *Brachiaria decumbens* cv. Basilisk with and without a legume.

**Protocol**

- Experimental pastures
  - *B. decumbens*
  - *B. decumbens*/Kudzú
- Establishment
  - Pastures: Sown in replicated plots in 1978; legume introduced in strips; grazing initiated in 1979 and has continued for 16 years. In 1989 one the replications (grass and grass-legume) was plowed and sown to upland rice.
  - Fertilization: 44 P, 40 K, 11 Mg, and 22 S (kg/ha) at establishment; maintenance fertilization every two years with 10 P, 13 K, 10 Mg and 16 S (kg/ha).
  - Grazing: Continuous with seasonal stocking rate adjustments (1 hd/ha dry and 2 hd/ha rains).

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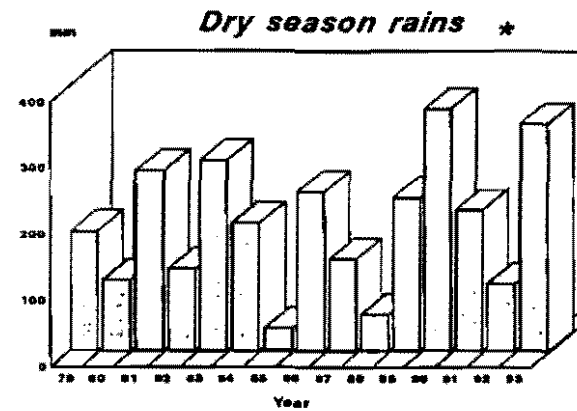
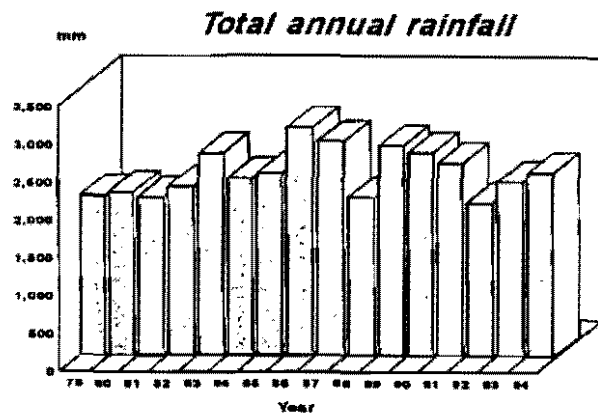
**Results**

- Annual liveweight gains (LWG) averaged across 16 years were 137 kg/hd and 235 kg/ha in the grass only pasture and 184 kg/hd and 315 kg/ha in the grass-legume pasture (Figure 2).
- Benefit of the legume in terms of average daily gain greater in the dry season (67%) than in the rainy season (24%).
- Legume content in the pasture has been variable (Figure 3), as a consequence of severity of dry season and spittlebug attacks. Damage caused by spittlebug on the grass (i.e. loss of vigor) has favored legume recovery.
- Average crude protein in the grass associated with the legume (8%) has been consistently higher than in the grass alone (6%).

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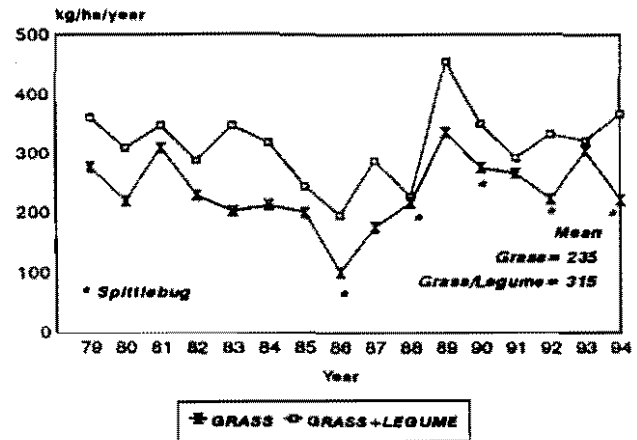
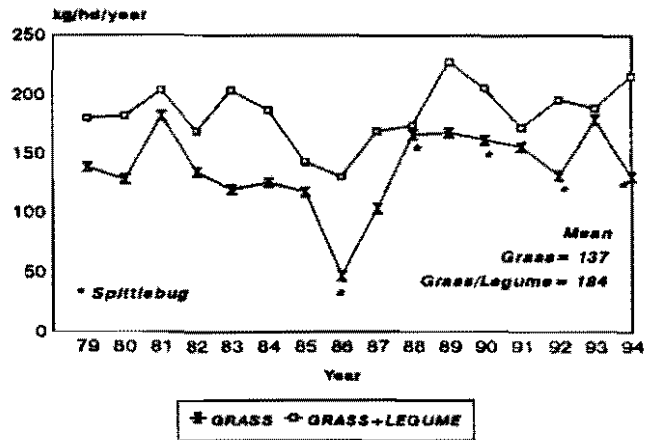
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**Figure 1. Rainfall during the duration of the long-term grazing experiment (Carimagua).**

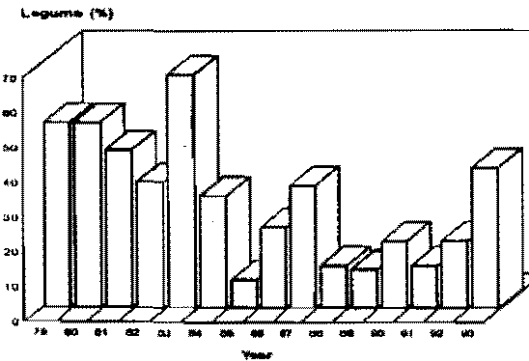


**\* Dec, Jan, Feb, March.**

**Figure 2. Long-term liveweight gain of steers grazing *B. decumbens* alone and with a legume (Kudzu) in the Llanos of Colombia.**



**Figure 3. Legume content in pastures of *B. decumbens*/Kudzu under continuous grazing in the Llanos of Colombia.**



## CONCLUSIONS

- Remarkably good long-term animal production on *B. decumbens* without N input, but with proper management (i.e. maintenance fertilizer, seasonal adjustment of stocking rate).
- Significant increase (34%) in long-term animal production by introducing a legume in the pasture.
- Legume in the association has compensated negative effects of dry season and spittlebug on grass productivity/quality and animal production (i.e. type of insurance).
- Severe spittlebug attacks on the grass has favored legume recovery.

## References

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