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Pasture management strategies to support sustainable production of dual purpose farms in western Venezuela

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Key words : pasture management, dual purpose farms, sustainable production

Introduction The dynamic process in grasslands and the activities that farmers develop to obtain the best forage resources assume that sustainability of production can be considered from the perspective of strategic pasture management. Dual purpose systems represent 78% of the bovine inventory in tropical Latin America and contribute with approximately 42% of the fresh milk produced (Argel, 2006). Most of the Venezuelan farmers agree that pastures must occupy an important place in dual purpose farms management to guarantee feeding resources and success of livestock production (Osechas et al., 2006). The socioeconomic conditions of the Venezuelan farmers have changed significantly in the last five years due to the price policy implemented by the government. As a result, the farmers must search for answers to face the current situation. In this regard, it is necessary to use appropriate strategies without damaging the grasslands. The purpose of the present study was to examine pasture management strategies used in dual purpose farms located in four states in western Venezuela.

Materials and methods The data were collected using a questionnaire supplemented with an interview to farm owners. The questionnaire comprised 16 items and addressed the following issues: pasturing scheme, fertilization, soils analysis, weed control, use of forage legumes, irrigation methods, average milk production and average weight gain. The sample consisted of a group of 99 dual purpose farms ($X = 150$ ha), randomly selected from a population of approximately 2,000 farms, located in low tropic zone in four western Venezuelan states: Mérida, Táchira, Trujillo and Zulia, near Maracaibo lake basin, (15; 15; 54 and 15 farms per state respectively). The sea level ranged from 10 to 850 m, the average temperature ranged from 29°C to 21°C and the average rainfall from 900 to 1600 mm/year. The data were analyzed using SPSS, version 12.0°C.

Results and discussion The pasturing schemes were observed in 100% of farms. Average occupation of pasture was 3.3 days (SD 2.7); resting plant period was 31.79 days (SD 6.3), which indicated that the farmers protected the forage plants. Pasture fertilization was used in 62.75% of the farms. The most common source of nutrients were Triple 14 (14 N, 14 P and 14 K), Urea (46% N), Fosfopoder (45% PO₄) and Manure. Soil analyses were reported by 31.24% of farmers who used the source and dose recommended by laboratory to fertilize the soils. Mechanical weed control was used in 100% of farms. Chemical products were reportedly used in only 12% of the farms. Mechanical methods represented an excellent alternative because they do not contaminate the ecosystems. The use of forage legumes was observed in 23% of farms; the most common species were *Leucaena leucocephala*, *Glyricidia sepium* and *Pueraria phaseoloides*; however management programs were far from being an efficient strategy. Pasture irrigation was used in 17% of the farms; 83% of the farmers claimed that this technology was very expensive. The average milk production was 5.40 l/an/day; this value is higher than the average for Venezuelan dual purpose farms (Chacon et al., 2006). Similarly, weight gain average was 395.3 g/an/day, which differed from the findings reported by Chacon et al. (2006).

Conclusions Pasture management strategies examined in the present study can be considered the foundation of sustainable production in dual purpose farms in western Venezuela because they allow the accumulation of nutrients reserves to help persistence of forage plants, produce economical benefits to farmers, reduce environmental contamination and help to assure that natural resources will be available for use for future generations.

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