LEGUME PERSISTENCE IN MIXED PASTURE OF *Panicum maximum* JACQ. CV. ARUANA, UNDER TWO GRAZING HEIGHTS

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The work aimed to evaluate 25 legume accessions (7 perennial soybeans, 7 stylos, 4 calopo, 4 galaxias and 3 macrotilomas) using a complete randomized block design, with three replications and two grazing heights (low = 15-20 cm and high = 25-30 cm). The legumes and the grass were sown on 12/21/99 in rows (two of each accession) 0.80 m apart, intercalated by lines of the grass. Until 10/10/2001 the 6 paddocks (2000m2) were rotationally grazed (one day/paddock), maintaining the herbage height around 20-25 cm in both treatments. The paddocks rested from April to July to permit the legumes to flower and set seeds. On 10/18/2001 they were mowed at the two planned heights and started being grazed again on 10/23/2001 (two days/replication) by 4-6 steers (190kg) per treatment height. On 04/01/2002 the steers were weighed and removed from the experiment. The mean stocking rates were 1.66 and 1.33UA/ha, and the daily live weight gains 908 and 898 g/steer for low and high grazing height, respectively. The legumes presence was evaluated on 06/12/2002, using the linear and point method. It was used a rope 40 m long, with nodes 8m apart, where it was assigned the absence or presence of legumes. It was measured 260 points/paddock. Perennial soybean and macrotiloma accessions had greater presence in the high grazing treatment and the calopos in the low one. Stylos and galaxias were not present in the evaluation points. In the legumes sum, the high grazing management had more legumes than the low one.

NITROGEN LEVELS AND SOWING DATES FOR RYE GRASS (*Lolium perenne*) AND WINTER OATS (*Avena sativa*).

SOTO, P. AND JAHN, E.

Two experiments were sown at an irrigated andisol soil. The first experiment was sown in february after wheat and the second sown in april after maize silage. In both trials a split plot design with 5 replicates and 6x2 m plots were used. The objective was to evaluate winter forage production of oats and rye grass at 4 levels of nitrogen fertilization when the next crop is maize for silage. Nitrogen levels (0-100-200 and 400 kg ha-1) were applied as urea in three applications: at sowing, after the first cutting and after the second cutting. All plots received a base fertilization of P and K. Oats cv.Nehuen was sown at a rate of 130 kg ha-1 and rye grass cv Tama was sown at a rate of 30 kg ha-1, rows spaced at 0.20 m. In the first trial yield of rye grass was higher ($P < 0.05$) than oats and a posite response to N was observed up to 200 kg N ha-1. In the second trial yield of oats was higher ($P < 0.05$) than rye grass and yield response was up to 100 kg N ha-1. N fertilization had an effect on forrage quality.

DRY MATTER YIELDS OF THE STAR GRASS *Cynodon plectostachius* CUTTED AT THREE DIFFERENT AGES IN THE TREASURE SECTOR -VENEZUELA

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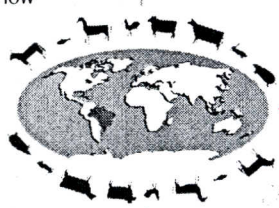
A field study was conducted in The Treasure sector-Venezuela to define the yield behavior of the Star grass *Cynodon plectostachius* cutted at three different ages (4, 6 and 8 weeks). The evaluation was carried out on a sandy loan soil, with pH 7,0., half content of organic matter, low content of phosphor, high contents of potassium, copper, zinc and manganese. The average precipitation of the sector was 1300 mm/year. A randomized block design with three repetitions was used. The plots had 18 square meters (6x3 m) with separations of 2 m among blocks and among plots. The results showed a trend to increase the yields of green matter, dry matter for hectare and heights, as the lengthened period of cut was increased from 4 to 8 weeks. The yields averages of DM/ha, in the rain period, were of 3,1 ton/ha., 5,1 and 7,1 Ton/ha., at the 4, 6 and 8 weeks, respectively. The 6 week frequency cut was the best for this period. The dry matter yields per hectare, during the dry period, were 1,3 Ton/ha., 1,34 and 4,76 Ton/ha.. at the 4, 6 and 8 weeks, respectively. For the dry period it was recommended to use the 8 week frequency cut.



SURFACE-APPLIED LIMESTONE ON INTENSIVELY MANAGED TROPICAL GRASS PASTURES

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Very little is known about surface applied limestone needed by intensively N-fertilized tropical grass pastures. The objective of this study was to find out the optimal amount and the frequency of limestone application on *Brachiaria decumbens* pastures receiving 100 kg/ha/cutting of N as ammonium sulphate, each 30-day resting period in the rainy season. In a randomized block design, with four replications, doses of 0, 1, 2, 4 and 8 t/ha of limestone were tested. Additionally, the following treatments were tested: 2 t/ha of limestone with annual maintenance doses of 1 t/ha; 4 t/ha buried in the soil; and 4 t/ha without NK-fertilizer. Forage production was measured, and its quality analyzed. Production curves of the first 2 years did indicate 4.5 t/ha of lime applied on the surface as the best dose. No significant differences appeared among limestone doses, using nitrogen. The worst treatment was that without N-fertilizer. Limestone buried in the soil did delay forage production in about 60 days, but provided the best results in raising pH-CaCl2 values to 5.8 in soil depth, and an accumulated non significant higher forage yield after 8 cuttings. Limestone dose of 8 t/ha applied on soil surface will improve pH-CaCl2 values in the 10-cm surface soil layer from 4.2 to 5.0 in 70 days, reaching the maximum value of 6.5 at 2.5 cm, in an Oxisol with 27% clay content. These initial data, considering environmental safety with lesser soil losses, suggest that pastures can receive lime on soil surface without hampering forage yield.