

PEPTIDASES INHIBITION IN FORAGE SPECIES

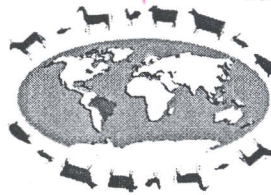
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During recent years, the significance of plant peptidases in the conservation and utilization of forage proteins by herbivores has been an issue receiving great attention and is currently subject of much research. We studied the enzymatic profile in fresh extracts in a large number of forage germplasm and only one or two peptidases of mayor importance were identified. The objective of this work was to characterize the class of enzyme activity by assessing their susceptibility to various peptidase inhibitors. Samples of *Medicago sativa*, *Trifolium pratense*, *Trifolium repens*, *Festuca arundinacea*, *Lolium perenne* and *Lolium multiflorum* were analyzed using zymograms incubated overnight in the presence of Serine-, Cysteine-, Aspartate- and Metallo-peptidases inhibitors. The action of peptidases in the zymograms of the six evaluated germplasm were significantly reduced ($P < 0.05$) by the three Serine-peptidase inhibitors used: completely inhibited by PMSF, and partially inhibited by TLCK and TPCK. Metallo-peptidase inhibitors stimulated the activity of the peptidase in *Lolium perenne* and all the others inhibitors showed no significant depression in peptidases activity. The identification of Serine class peptidases in all six species is a key feature that may guide future research. The search for inhibitors of Serine-peptidases safe for animals and their associated microorganisms may be a way to reduce protein breakdown during forage conservation and digestion. Reduced proteolysis in forages may lead to improvements in the overall efficiency of protein utilization, may lower the cost of protein supplementation and may also reduces environmental hazards caused by the release of high quantities of soluble nitrogen compounds.

EFFECTS OF HARVESTING FREQUENCY AND YEAR SEASON ON THE CHEMICAL COMPOSITION OF MARANDU GRASS (*Brachiaria brizantha*, STAPF) SILAGE

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The objective of this trial was to evaluate the effects of harvesting frequency and the year season over chemical composition of Marandu grass (*Brachiaria brizantha* (A. Rich.) Stapf, cv. Marandu) silage. The trial was carried out in 20 field plots (10m x 10m), assigned to 5 harvesting frequencies (treatments), 4 replications each, in a block design. Treatments consisted of the following forage harvesting frequencies: 15, 30, 45, 60 and 90 days of vegetative regrowth (VR). Silages were prepared, both in the summer and in the winter seasons, in 20L plastic buckets provided with a Bunsen type valve to allow gases to escape and a dried sand layer at the bottom to drain effluent. After 90 days storage, silage samples were submitted to chemical (pH, DM, ash, CP, NDF, ADF, hemicellulose, cellulose, lignin, IVDOM and IVDDM). In the summer, silages showed a trend ($P < 0.05$) for increased cell wall fractions (NDF, ADF, cellulose and lignin) except for hemicellulose ($P > 0.05$) and decreased cell content (ash, CP, IVDOM, IVDDM) as the time of VR increased. There were no differences in chemical composition among treatments during the winter cut. Mean digestibilities in summer silages (58.18%) were lower than winter silages (60.24%) mainly due to the higher NDF, ADF and cellulose levels. No differences were observed for pH (4.9), ash (11.31%), CP (10%), hemicellulose (30.2%) and lignin (4.09%) across seasons. The average DM content in the winter silages (39.20%) was increased in 202% when compared to the summer silages (19.36%).



MILK PRODUCTION FROM TROPICAL PASTURE IN THE MOST SOUTHERN REGION OF BRAZIL

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The high costs of supplements used for dairy production is one of the greatest problem of Brazilian farmers. The use of grasses with high growth rate and good quality can be very useful mainly for small farmers. Furthermore, the use of perennial grasses helps to reduce the soil erosion. The main objective of this study was to access the potential of milk production of three important tropical grasses: dwarf elephant grass cv. Mott (*Pennisetum purpureum*), *Panicum maximum* cv. Tanzânia and bermuda grass cv. Tifton-85 (*Cynodon dactylon*) in the southern region of the most southern state of Brazil. The experiment was carried out in a Latin Square Design from January to November 2002. It was used three testers (Holstein cows) in each treatment. The experiment started after the lactation peak. The pasture offer was uniformed in 8 kg of dry green leaf/100 kg of cow live weight and the milk yield was corrected to 4% milkfat. There was no significant ($P < 5\%$) difference between pasture type in relation to milk production/cow (average = 14 l/cow/day). Although *Panicum maximum* cv. Tanzânia showed the highest milk production/hectare (average = 28 l/ha/day), it demonstrated to have the lowest tolerance to low temperatures. Dwarf elephant grass cv. Mott and bermuda grass cv. Tifton-85 showed to be important alternative to dairy farmers in the region.

PHYSICAL PARAMETERS OF MARANDU GRASS SILAGES AFFECTED BY YEAR SEASON AND HARVESTING FREQUENCY

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The trial was carried out in 20 field plots (10m x 10m) of Marandu grass (*Brachiaria brizantha* Stapf, cv. Marandu) allocated to 5 harvesting frequencies, 4 replications each, in a block design. Treatments consisted of the following forage harvesting frequencies: 15, 30, 45, 60 and 90 days of vegetative regrowth (VR). Silages were prepared, both in summer and in the winter seasons, in 20L plastic buckets provided with a Bunsen type valve to allow gases to escape and a dried sand layer at the bottom to recover effluent yield. After 90 days storage, silage samples were submitted to physical analysis (electrical conductivity-EC, water activity-Aw, particle size-PS, effluent-E and gases-G production and dry matter recovery rate-DMRR). Both, in the winter and summer silages, the EC was higher at 15d and 30d cuts and became lower in further cuts, which may be due to the ash content, mainly during summer. In the summer, up to 45d cuts, there was no change in PS (31.2mm), however, mean PS was increased at 60 and 90d cuts (36.1mm). Even tough, the mean PS (33.7mm) in the winter was not different from summer cuts (33.1mm), effluent yield in the winter was only (0.16L/l) when compared to summer silages (37.6L/t). The higher DM content observed during the winter silages also led to increased losses associated with gases yield (7.24%DM vs 4.69%DM). There was a trend for higher DMRR during the winter and from 60 to 90d summer harvesting, which also is related with higher silage DM content.