Dehydration curve of Vaquero grass during summertime

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Introduction Haying is one of the most versatile activities in preserving fodder when it is properly stored (Reis et al., 2001). The basic principle of haying is mostly based on preserving the nutritive value of fodder by fast dehydration, since the respiratory activity of plants and microorganisms is stopped. The fast dehydration can maintain fodder quality, which results in hay with high nutritive value (Calixto Junior et al., 2007). According to Mizubuti et al. (2006), the most available grasses for hay production are from *Cynodon* spp, whose main representative is Tifton 85 bermudagrass. There are also high productions of dry matter, crude protein content (Carvalho et al., 2000), fast growth during the summer and resistance to cold in the winter. Several cultivars of *Cynodon* sp have emerged in the market as options for hay production as Vaquero grass and Jiggs. Based on the structural features, Vaquero grass has thin stems, so its dehydration is faster when compared to Tifton 85 bermudagrass, hence, it has wide acceptance by hay producers. Thus, this study aimed at evaluating the dehydration curve of leaves, stems and whole Vaquero grass plant (*Cynodon dactylon* L.).

Material and Methods The trial was carried out in a farm that has been producing hay in Marechal Cândido Rondon municipality, PR, Brazil. The hay cutting was carried out on November 10th, 2012 with a mower with free swinging nylon flail fingers, whose residual height was 5 cm from the ground when Vaquero grass was at resprouting age of 36 days. The dehydration curve was determined with sample collections from the whole plant and part of them were separated into leaf and stem in seven times. Time 0 corresponded to sample taken before cutting, obtained at 7:30 PM (DST) (time 0) and, on the other days, the procedures were at 08:30 AM, 1:30 PM and 5:30 PM. The evaluated times were at 0, 13, 18, 22, 37, 42 and 44 (baling time) after cutting. The experimental design for dehydration curve was in randomized blocks with subdivided plots over time with three parts of collection in plant height to determine DM (whole plant, leaf and stem), seven collection times as subplot and five replications. The leaves and stems were then wrapped in paper containers duly weighed and the same occurred to determine the dry matter of the whole plant. Then, the material was taken to an oven with forced ventilation and kept at 55 ºC for 72 hours. After this period, the dried samples were removed from the oven and weighed again, so that dry matter content of each sample could be determined. The stem diameter was evaluated using a digital caliper, based on the median region of the first internode. Data were submitted to analysis of variance and when there was a significant answer by F test, the dry matter contents were studied throughout dehydration period by regression analysis, with the model choice that would show a minimum significance of 5% by t test and the highest coefficient of determination (R^2).

Results and Discussion Changes in DM Vaquero grass were observed at different times after cutting (Figure 1), with rehydration of plants in the morning due to dew. During cutting time, the dry matter yield of Vaquero grass was 3500kg/ha. Dehydration in different parts of the plant also showed differences ($P<0.05$), while the leaves showed higher dry matter with an average 65.69%, the whole plant showed an average 58.37% and stem 55.80%.

The time required for baling was 44 hours after cutting when the plant reached 89.10 % dry matter. This value was superior to the one recorded by Castagnara et al. (2011), who observed that Tifton 85 bermudagrass after 45 hours dehydration and with two passages of conditioner and one pile turning, have obtained 80.33% dry matter content. Vaquero dehydration was faster due to its stem diameter, which reported an average of 0.64 mm.

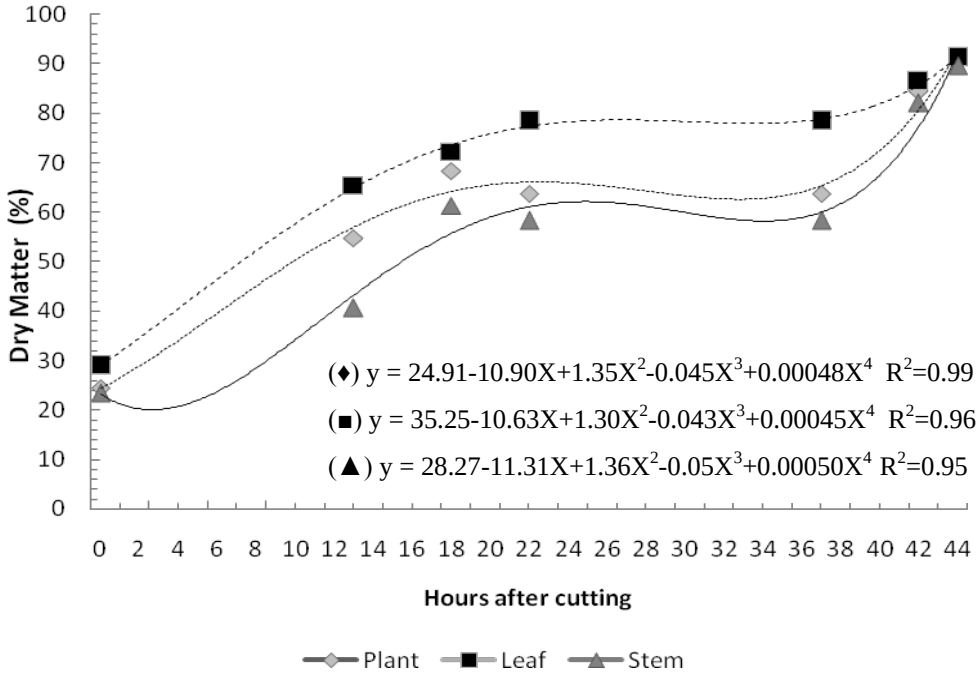

Figure 1 Dehydration curve of the whole plant, leaf and stem after cutting of vaquero grass

Conclusions Vaquero grass has shown fast dehydration, thus, the possibility of losses on field due to rainfalls has decreased.

Reference

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