Dehydration curves in the different layers of Tifton 85 in the field

M.A. Neres[1], D.D. Castagnara[1], E.C. Cristofori[1], C.Gabriel[1], J.P.Ames[1], P.S.R.de Oliveira[1]
[1] *Western Paraná State University, Marechal Cândido Rondon, Paraná, Brazil Email: marcela.neres@unioeste.br*

Introduction The drying curve of forage plants is a function of the material being fenado and climatic conditions of the dehydration period, and typically has an exponential form, so that each additional unit of water loss requires a longer time (Macdonald and Clark, 1987). The changes that occur during the drying of hay, exert a marked influence on the nutritional value of conserved fodder, but in Brazil, few studies that include assessments of the changes that occur during the process of haymaking (Jobim et al., 2007). Thus, work aimed at studying the curves of dehydration of Tifton 85 grass in the different layers of the material provisions of the field.

Materials and Methods The experiment was conducted in Marechal Cândido Rondon, Paraná, Brazil (24º 33 '40"S, 54º 04' 12"W) in a field of Tifton 85 grass implanted for 8 years and designed for the production of hay. The grass Tifton 85 was cut with the help of tractor-implement cutter knives at a height of 5 cm from the ground when he found himself at the age of 38 days regrowth. The experimental design was completely randomized split-plot in 4 x 9, four layers of hay to be sampled (bottom, middle, upper and total) and nine sampling times (0, 8, 32, 47, 56; 71, 80 and 95 h after cutting). The sampling times corresponded to the following times a day (day of the cut): (time 0) 9:00, (8th time) 17:00, Day 2: time (23) 8:00, time (32) 17:00, Day 3 (47th time) 8:00, (56th time) 17:00, Day 4: (time 71) 8:00, (80th time) 17:00, Day 4: (time 95) 17:00. After sampling the hay was packaged in paper bags and dried in an oven with forced air ventilation for the determination of dry matter (DM). From the DM were obtained curves of dehydration. The data were statistically analyzed, and the layers were compared by Tukey test (%), while the accumulation of MS over the sampling times was studied by means of regression analysis.

Results and Discussion The dry matter of Tifton 85 were affected by the layers, drying times and the interaction of factors ($p < 0.01$). In the unfolding of the layers studied at each time of dehydration, at 8, 23 and 32 hours after cutting, the top layer had higher dry matter content of the bottom layer, however, differed from the middle tier and the total (Table 1). At the time of cutting (time zero), and 47, 56, 71 and 80 hours after cutting, the dry matter in all layers were similar. At the time of baling (time 95), the bottom layer had the lowest dry matter content in relation to others. In the unfolding times of dehydration in each layer of Tifton 85, dehydration of the upper layer is adjusted to the cubic model of regression (Figure 1), two sudden drops in the dry matter in the times that corresponded to the dawn of the 4th and 5th day the period of dehydration. This result is due to water coming from the dew, as the hay is hygroscopic and rehydration of the plants with dew occurs when it is absorbed by the internal tissues (Rotz, 1995). Neres et al. (2010) by working with the cultivation of alfalfa observed similar behavior for the material under dehydration, with sharp drop of DM each morning from dew at night. For the other layers, the regression model was significant quadratic and higher dry matter were obtained at 66, 56 and 67 hours after cutting to the middle layers, and lower total (Figure 1).

Conclusion The surface layer of Tifton 85 is more subject to weather conditions, with greater variations in dry matter.

References

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Table 1. Dry matter of Tifton 85 over the period of dehydration in the different layers studied during the period of 95 hours of dehydration

	0	8	23	32	47	56	71	80	95
Superior	28.42a	47.67a	56.82a	72.16a	75.74a	74.43a	58.90a	85.28a	67.42a
Intermediate	28.52a	41.30ab	46.06ab	65.14ab	69.95a	73.53a	56.41a	84.06a	60.11a
Less	28.37a	35.57b	40.20b	59.59b	68.94a	76.02a	62.43a	82.70a	40.05b
Total	29.51a	45.86ab	47.47ab	69.36ab	72.76a	74.32a	54.95a	87.48a	66.89a
CV1(%)		12.92			CV2(%)			11.12	

* Means followed by same letter in columns do not differ statistically by Tukey test (5%).

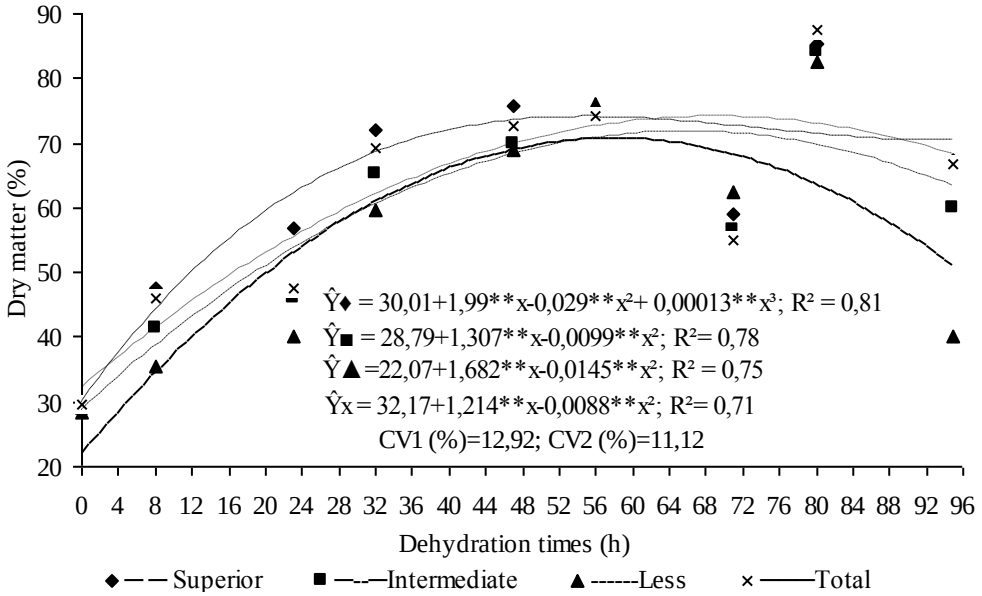

Figure 1. Dehydration curves of Tifton 85 hay in the upper, middle and lower throughout the period of dehydration. (Significant at 1% probability by t test)