ABSTRACT

Two investigations were carried out concerning the *in vitro* digestibility of grasses. The first was designed to investigate the Tilley and Terry (1963) method of *in vitro* digestibility determination and it was concluded that, for the sample in question, a 48 hour rumen fluid digestion must be followed by a second stage pepsin digestion which need not be extended beyond 24 hours. Also, urea supplementation of the rumen fluid in the first stage significantly increased *in vitro* organic matter digestibility values only when the second stage was not used.

The second study investigated the effect of stage of growth and season on the *in vitro* organic matter digestibility, crude protein, mineral, and dry matter contents of four *Digitaria* grasses over two 8-week growth cycles in the late wet and early dry seasons. There were significant effects due to age of grass, species or variety, and season on all parameters measured. Age of the grass was the outstanding factor affecting both *in vitro* organic matter digestibility and crude protein content, while the age and season effects on dry matter and mineral contents were similar.

In vitro organic matter digestibility, crude protein, and ash contents decreased with age, and in general the two former characters were higher in the dry season than the wet, while the latter was lower. Dry matter contents increased with age and were higher in the dry season than the wet season.

The nutritional values of all grasses were better than that of Pangola grass and on the basis of present evidence *D. milanjiana* subsp. *eylesiana* 730 is the most promising of the four grasses, while further testing of *D. umfolozi* 892 may prove it to be a useful grass. Also, animal production during the early dry season should be better than in the late wet season.