Notes on the palatability of the two most dominant forage plants on the Swartrand, *Stipagrostis uniplumis* (Blinkaarboesman grass) and *Petalidium linifolium* (Lusernbos) for the period February 2006 to November 2008

**INTRODUCTION**

Palatability of forage plants is a complex topic comprising a number of elements. The selection of a plant by the grazing animal does not only depend on its chemical composition, but also on a number of other factors such as the type of animal, physiological status of the animal, climate, soil, topography, morphology of the plant (presence of hair, thorns, texture, stickiness) and so on.

However, it has been shown by a number of workers in this field that a significant correlation exists between protein content (amongst other chemical compounds in the plant), and the palatability of a plant. Some researchers are of the opinion that it is not so much the quantity of any compound, but the combination of chemical compounds in the plant that influences herbage selection (Botha, 1979).

Some plant characteristics and a number of nutritional traits of three dwarf shrubs and five grass species (the dominance of which were established through point surveys) were measured on the Swartrand from February 2006 to November 2008. Harvesting and analysis of plant material took place on six farms in this area during February, April, July and November of 2006, 2007 and 2008. This paper indicates the Crude Protein (CP) and Crude Fibre (CF) levels of the most dominant forage species on the Swartrand (*Stipagrostis uniplumis* and *Petalidium linifolium*) and briefly discusses the influence of these compounds on palatability and selection.

**DISCUSSION**

From Figure 1 it is clear that *P. linifolium* consistently contains higher levels of CP than *S. uniplumis*, and it was therefore expected that it would be well taken by the grazing animal (the high CP value of *Petalidium* in February of 2008 cannot be explained at this point). However, casual observations on all six sites seldom showed a real “thorough” utilisation of this species when compared to, for example, *Leucospaera bainsii* (Wolbos), which is a much desired dwarf shrub in this area. A possible reason for the (observed) fairly poor utilisation of *Petalidium* may be explained by the higher levels of ether extract as compared to all other species measured during the three year period. Louw, Steenkamp and Steenkamp (1967) as quoted by Botha (1979)
“have found that plants with high ether extract values are highly unpalatable in the Karoo”. The ether extract values of *P. linifolium* (2.69%: the average of 24 analyses per year over three years), are consistently higher than the ether extract values of *L. bainesii* (1.05%: average of 8 analyses per year over three years) and *S. uniplumis* (1.20%: the average of 24 analyses per year over three years). It is suspected that the difference in ether extract between the two dwarf shrub species is a result of higher levels of resin in *Petalidium*, but this is purely speculation (since the indicated ether extract value also incorporates fat, and it is not sure which portion of the 2.69% is resin and which portion is fat). It is also not clear at what point (%) resin content becomes a factor influencing selection. Taking a handful of *Petalidium* stems and leaves, and rubbing them together in one’s hands, releases a fairly strong resin smell while at the same time bringing about stickiness to the palms of one’s hands. The 2.69% may therefore be sufficient to deter animals from readily foraging this plant.

So, although high protein levels suggest that this may be a palatable plant, selection of this species by grazing animals may possibly be limited, due to an elevated resin content. The species may therefore not be of such a good grazing value as many perceive it to be.

A further factor that influences plant selection is the fibre content. From Figure 2 it can be seen that the CF content of *S. uniplumis* is consistently higher than that of *P. linifolium* throughout the year. However, this may not be a realistic comparison, since mainly mature *S. uniplumis* tufts were harvested over the three year period, whereas young as well as mature plants of *P. linifolium* were harvested over the corresponding period. Although it was possible to harvest *P. linifolium* in different stages of maturity, this was not possible in the case of *S. uniplumis*, since very few young plants were observed on all sites for the three year period. CF levels may therefore be a bit lower, but not much, since most of the veld is predominantly in a mature stage. It is well known that small stock readily graze the plumes of *S. uniplumis*, and may nibble at the bottom of the plant, while very little of the stalk of the plant (where the majority of fibre manifests itself towards reaching maturity), is grazed.

Casual observation of the data depicted in the graphs indicates more or less the same trend (increasing) for *P. linifolium* in terms of CF levels from February to November of 2006 and 2008. The same applies to *S. uniplumis*. Yet, in 2007, an opposite trend compared to the other two years, is observed for *S. uniplumis*, while *P. linifolium* shows neither an upward nor a downward trend in terms of CF content for that year. However, these trends would definitely be more pronounced if a longer period of data collection was allocated to this project.

It is concluded that although *S. uniplumis* and *P. linifolium* constitutes by far the majority of the forage species on the Swartrand, both these plants have limiting factors in terms of their palatability and the extent to which they are being utilised. This probably reflects on the remarkable ability of especially small stock to select a diet amongst the remaining veld components to such an extent that they can easily maintain and reproduce over the long term.

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