

SHRUB PALATABILITY TO RUSA DEER (*CERVUS TIMORENSIS RUSSA*) IN NEW CALEDONIA

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ABSTRACT

The objective of this study was to determine a palatability scale of five shrub legumes to rusa deer during the dry season in New Caledonia. *Acacia ampliceps* and *Samanea saman* remain low in acceptability. *Gliricidia sepium* is more palatable but quite less than *Leucaena leucocephala* (native cultivar) and *Calliandra calothyrsus* (San Ramon). Therefore, since the regression of *Leucaena leucocephala* population, *Calliandra calothyrsus* could be very promising to replace it in the deer diet. On the other hand, *Acacia ampliceps* seems to be the most interesting shrub legume to plant in the west coast, where soil erosion, due to successive droughts and deer overgrazing, needs to be controlled.

KEYWORDS

Palatability, shrub legumes, rusa deer, behaviour, New Caledonia

INTRODUCTION

During the mid-eighties, in New Caledonia as in most tropical areas, the insect pest psyllid (*Heteropsylla cubana*) devastated the productivity of *Leucaena leucocephala*, which provides a supply of highly nutritious feed to supplement and enhance the utilisation of the lower quality grasses into the dry season. Strategies tried to overcome this problem by agronomic research on other shrub legume accessions. Under New Caledonian climatic and edaphic conditions, four species seem to be extremely promising according to their productivity or their nutritive value : *Calliandra calothyrsus*, *Gliricidia sepium*, *Samanea saman* and *Acacia ampliceps* (Durand, 1993 ; Corniaux et al, 1996).

To complement our studies, this trial was carried out to be more specific about palatability of these shrubs. The animal model was javan rusa deer (*Cervus timorensis russa*) because of its browsing behaviour and its commercial importance in New Caledonia (Le Bel, 1993).

METHODS

A preliminary study (Corniaux and Le Bel, 1996) permitted the definition of methods to measure shrubs palatability to rusa deer. This trial is based on its results.

After a fortnight adaptation period, 22 stags (40 to 50 kg) browsed cut shrubs during 5 d (in September, at the beginning of the dry season). They were complemented with hay at 2 p.m.. They had free access to fodders all day long.

Every day, 5 shrub legume species were supplied to the deer separately in the rack, early in the morning (8 a.m.) :

- *Leucaena leucocephala* (native cultivar)
- *Calliandra calothyrsus* (San Ramon)
- *Gliricidia sepium*
- *Samanea saman*
- *Acacia ampliceps*.

Daily, we changed their place in the rack.

Offered and consumed shrubs (leaves and stems) were weighed every day in terms of fresh and dry matter. A consumption note (0 to 10) was given to each shrub 2, 4, 8 and 24 h after the beginning of the meal. During the first meal (around 75 mn), we noted also the deer

numbers eating each shrub.

RESULTS AND DISCUSSION

Palatability. Shrubs palatability to javan rusa deer may be summarized in Figure 1. During the first hour after the fodders distribution, deer essentially choose both *Leucaena leucocephala* and *Calliandra calothyrsus*. At the same time, *Gliricidia sepium* is eaten at a low level (less than 2 stags / observation) and *Samanea saman* and *Acacia ampliceps* are not. Figure 2 confirms this trend on a 24 h period. It shows that, only 4 h after the beginning of the first meal, *Leucaena leucocephala* and *Calliandra calothyrsus* are almost totally consumed (80%). After 24 h, 100% of edible forage (leaves and stems) are eaten for the both of them, while the results are respectively 66, 28 and 22% for *Gliricidia sepium*, *Samanea saman* and *Acacia ampliceps*.

High *Leucaena leucocephala* and low *Gliricidia sepium* palatability are well known for a lot of ruminants (Shelton and Brewbaker, 1994 ; Simons and Stewart, 1994). This is confirmed by our study. However, *Calliandra calothyrsus* seems to be better used by deer than by other ruminants, regarding only palatability level (Palmer et al, 1994). It is quite possible that the proline-rich salivary proteins of deer may permit them to utilise the proteins in high tannin tree legumes such as *Calliandra* in a way not available to cattle because of their different digestive system (Semiadi et al, 1995). Anyway, *Calliandra calothyrsus* is promising to replace *Leucaena leucocephala* in the rusa deer diet.

On the other hand, *Acacia ampliceps* palatability is low. Therefore, this shrub legume could be useful to control the effects of slope erosion on the New Caledonian west coast. Indeed, in this dry area, before its regression, *Leucaena leucocephala* contributed to limit soil degradation, despite overgrazing of deer and wild goats.

Limits and next study. A lot of factors may explain apparent differences in palatability. They are well known for species. But other possible reasons for the variation in palatability are also cultivars, climatic and edaphic conditions and season (Ickowicz, 1994 ; Owen-Smith and Cooper, 1987). So, we will have to check our classification with other species and cultivars for the end of the dry season and for the wet season.

Further studies should be done in the shrubs management for javan rusa deer, because of his intermediate feeder's behaviour. We intend also to get a better understanding of the digestible degradation of tannins in *Calliandra* eaten by rusa deer.

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Figure 1

Deer number at the rack from the beginning of the meal.

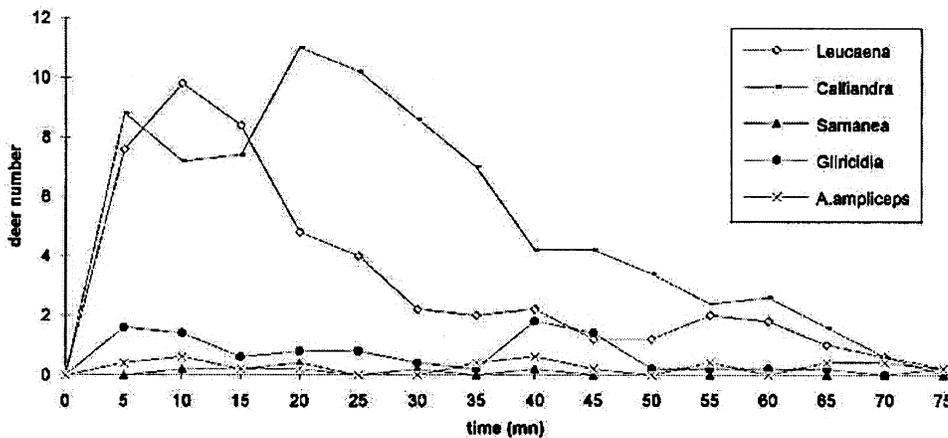


Figure 2

Evolution of the shrub consumption note in 24h (note 10: all the edible fodder is eaten)

