

# Grazing, biodiversity and pastoral vegetation in the South Sudanien area of Burkina Faso

E. Botoni-Liehou<sup>1</sup> and P. Daget<sup>2</sup>

<sup>1</sup>INERA Farako-Bâ, BP 910 Bobo Dioulasso (Burkina Faso), Email: edwigebot@hotmail.com, Cirad-emvt, TA 30/E, campus international de Baillarguet 34398 Montpellier cedex5, (France)

**Keywords:** biodiversity, grazing pressure, *Isoberlinia doka* forest

**Introduction** Grazing impact on plant diversity is dominated by two contradictory views. In some studies, it has been found to lead to an increase in diversity and in other studies to a decrease associated with dominance of a few species (Nösberger *et al.*, 1998, Hiernaux, 1998). In an *Isoberlinia doka* forest ecosystem, considered as the climax vegetation in the South Sudanien area of Burkina Faso, a study was carried out to assess the impact of grazing on the diversity of herbaceous species. The *Isoberlinia doka* forest is one type of South Sudanien savanna. The woody stratum is open and allowed development of a continuous stratum of gramineae dominated by *Andropogonea* such *Andropogon ascinodis* and *Hyparrhenia spp.*

**Materials and methods** Seven sites (4 m X4 m) had been protected in three areas which had been submitted to three levels of grazing pressure according to the duration and the season of grazing:

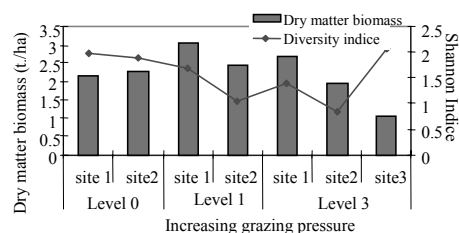
Level 0: No grazing pressure. Two sites had been surveyed in a protected forest

Level 1: Low grazing pressure. Two sites had been also surveyed in a pastoral area. This unoccupied area had been managed only for pastoral use since 2001. It received cattle from May to February.

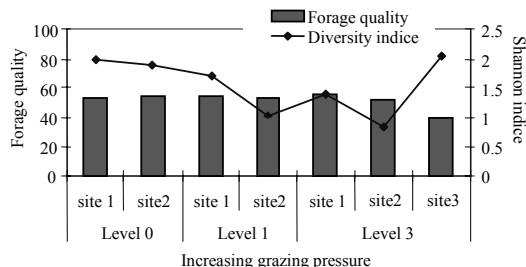
Level 2: High grazing pressure. Three sites had been surveyed in the village of Torokoro which is submitted to silvopastoral pressure

Individual animals pressure cannot be identified because of common use of the pastureland. Measurements of floristic richness, forage production and forage quality (pastoral value) were made according to Daget & Poissonet (1972).

**Results** The higher the grazing pressure the greater was the floristic richness of herbaceous plants. However, the added species were unpalatable (e.g. *Spermacoce* spp. and *Indifofera* spp.). Species diversity, measured by the Shannon index, was higher in grazed than in the ungrazed vegetation. Grazing allowed other species to alter the balance of the native grasses such as *Andropogon ascinodis*, *Andropogon shirensis*, *Schyzachyrium sanguineum* and *Hyparrhenia* spp. Forage production and its quality was lower when plant biodiversity (floristic richness, specific diversity) increased.



**Figure 4** Forage production evolution according to grazing pressure



**Figure 5** Forage quality according to grazing pressure

**Conclusion** In the South Sudanien savannah of Burkina Faso, grazing pressure led to increased plant diversity. But this is not favourable to livestock sustainability because of a reduction in forage productivity and its quality. These results show that a high biodiversity is not a good indicator for high productivity of pastoral vegetation.

## References

- Hiernaux P. (1998). Effects of grazing on plant species composition and spatial distribution in rangelands of the sahel. *Plant Ecology*, 33, 387-399.
- Nösberger, J., M. Messerli & C. Carlen (1998). Biodiversity in grassland. *Annales de Zootechnie*, 47, 383-393.
- Daget P. & Poissonet J., (1972). Un procédé d'estimation de la valeur pastorale des fourrages. *Fourrages*, 46, 31-39