

## Agronomic value of mixture of perennial rye-grass cultivars: preliminary results

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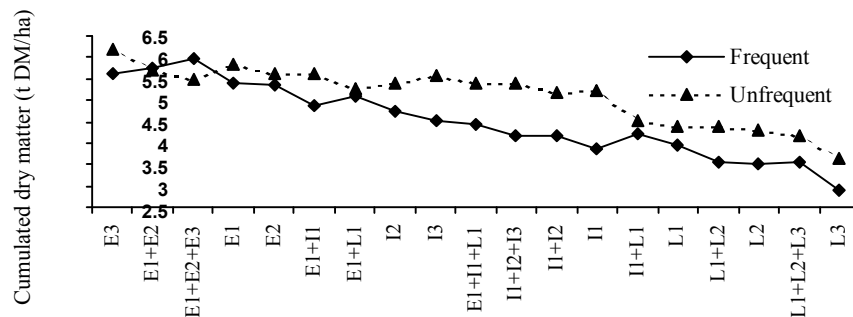
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**Introduction** Mixtures of grass and legume species are commonly used in sown grasslands. Mixtures have been shown to be favourable for stable production over cycles and years due to a succession of species over time (Mosimann & Charles, 1996 ; Nie et al, 2004). However, little is known whether the genetic variation in pure stands has an influence on the agronomic value and its variation over seasons.

**Materials and methods** Different initial genetic compositions were sown in spring 2003 at 25 kg/ha. Nine cultivars of perennial ryegrass from three maturity groups (early (E) (cv. Hamilton, Belramo and Vital), intermediate (I) (cv. Herbie, Brest and Milca) and late (L) (cv. Ohio, Kerval and Barlatan) were sown as pure stands or in mixtures of two or three cultivars. In mixtures, cultivars were either from the same or from different maturity groups. A total of 19 genetic compositions was studied. Two N levels (N+ : 250 and N- : 60 kg N/ha/yr) were applied. Swards were cut frequently, every 21 days, or infrequently, every 40 days. The experimental design was a split-plot with three replicates. In spring and summer 2004, these cutting regimes resulted in three and two cuts respectively. Statistical analysis was performed on the cumulated DM of the cuts in spring and summer 2004.

**Results** All three main factors (genetic composition, N fertilisation, cutting regime) had a significant effect on DM yield. As expected, the high fertilisation level and the infrequent cutting regime yielded more. Among the different genetic compositions, when grown in pure stands, the early heading cultivars yielded more than the late heading ones (Fig. 1) thanks to the production of stemmier forage. In every maturity group, mixtures of cultivars of similar maturity had a forage yield similar to the pure stands. Thus, in the first growing season, increasing the within-sward genetic variation did not influence the forage production. Binary mixtures of cultivars of different maturity groups tended to behave as the earliest heading one (figure 1). The mixture of three cultivars, each of different maturity, behaved as the intermediate group.



**Figure 1** Dry matter yield of the swards with different initial genetic composition under two cutting regimes

**Conclusion** The genetic composition x exploitation regime interaction was significant mainly because of the highest production of the intermediate group with the infrequent cutting regime. This is due to high biomass production of this group only as a consequence of a high proportion of stems. The N fertilisation x exploitation regime interaction was also significant. A large difference in DM production among cutting regimes was observed with high N fertilisation only.

### References

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