



The impact of white clover-lucerne interactions in the swards on pasture seasonal productivity



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Introduction

White clover tolerates intensive grazing and is the most beneficial pasture legume in many regions of Europe. However, white clover has some drawbacks such as insufficient tolerance of unfavourable abiotic conditions.

The use of two or more legume species in mixtures could mitigate some disadvantages.



Materials and Methods

During 1998 – 2008 a randomized block design field trial was carried out on a loamy *Endocalcari-Epihypogleyic Cambisol* near Dotnuva, Lithuania (55°24'N, 23°50' E). Soil pH varied from 6.5 to 7.0, humus content was 2.5-3.2 %, available P 50-80 mg and K 100-150 mg kg⁻¹. The treatments involved different swards consisting of *Trifolium repens*, *Medicago sativa*, *Lolium perenne*, *Poa pratensis* and *Festulolium hybrid*. The grazing season lasted from the beginning of May until middle of October and four grazings used. During 10 years of experiment climatic conditions differed to a great extent: grazing periods 2000, 2001, 2004 and 2005 were normal, 1999 and 2007 wet, 2003 dry, and 2002, 2006 and 2008 very dry and warm.

Results and Discussion

The proportion of legumes in the legume/grass mixtures fluctuated both from year to year and within individual growth periods, and was very strongly influenced by environmental stress. As a result, legume yields affected the sward composition and total yield.

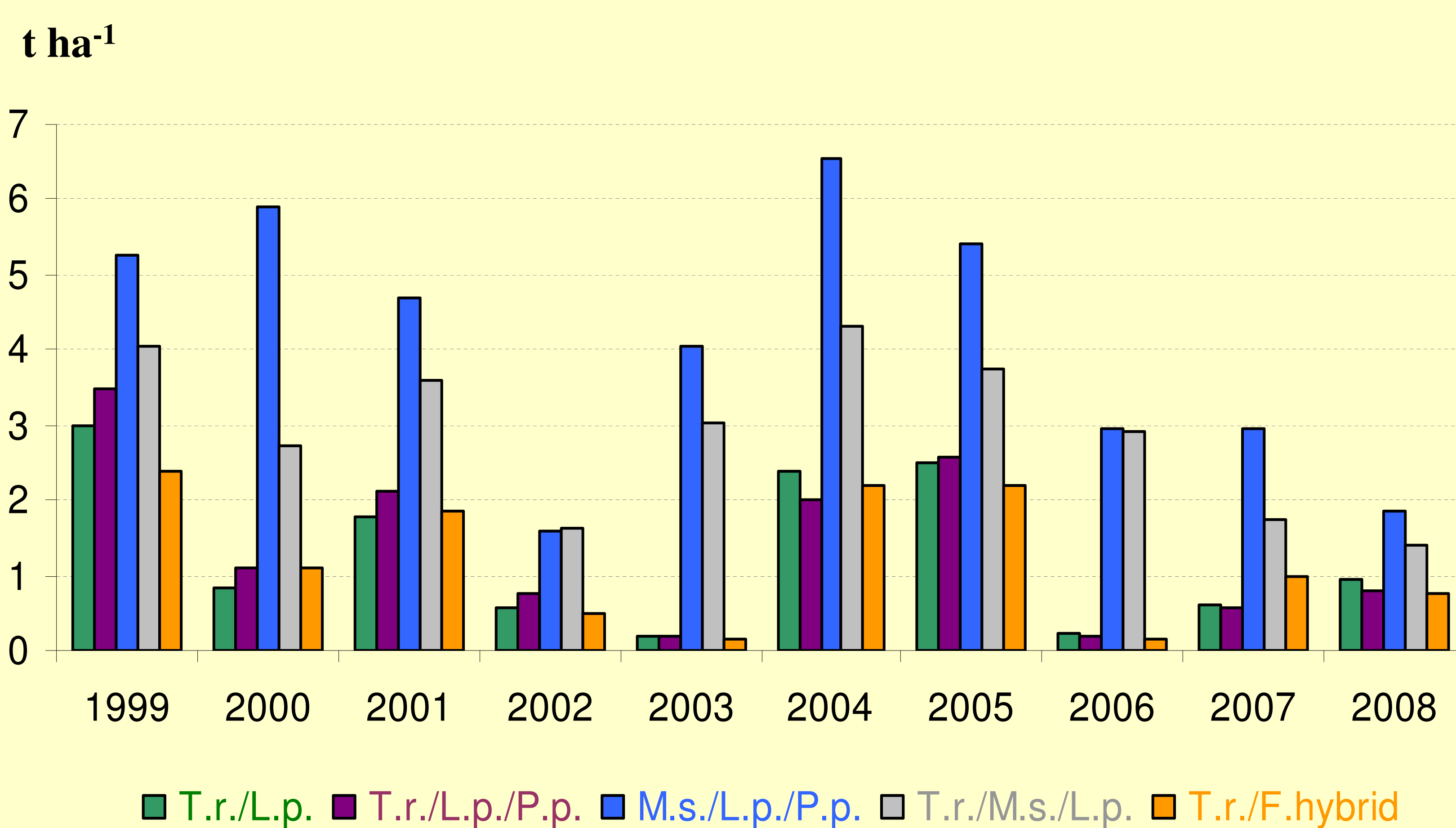


Fig.2. Legume annual DM yield of different swards over ten years of use

The yield of legumes in the swards consisting of lucerne after ten years of grazing accounted for nearly half and even more than half of the total sward yield.

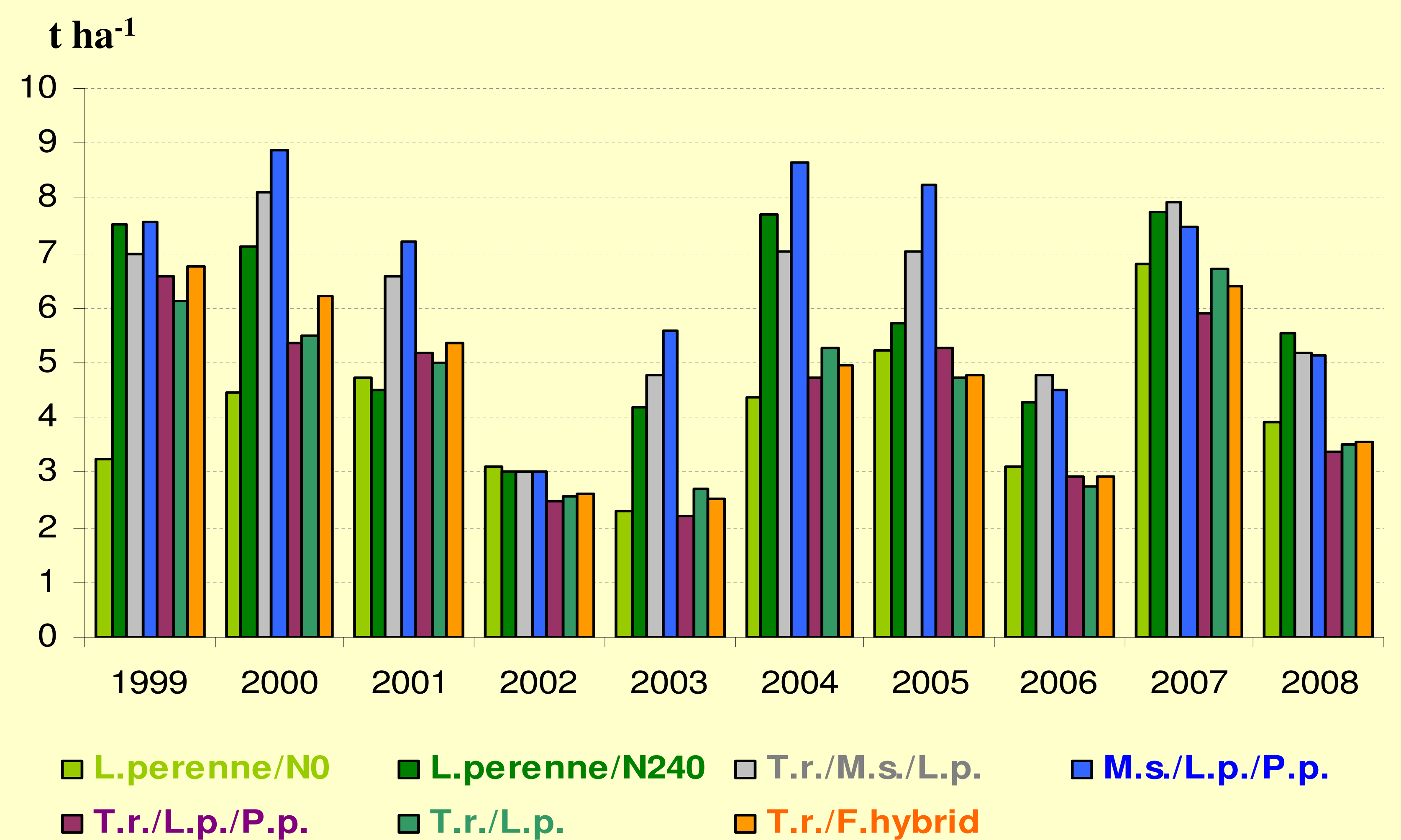


Fig.1. Total DM annual yield of different swards and its persistence over ten years of use

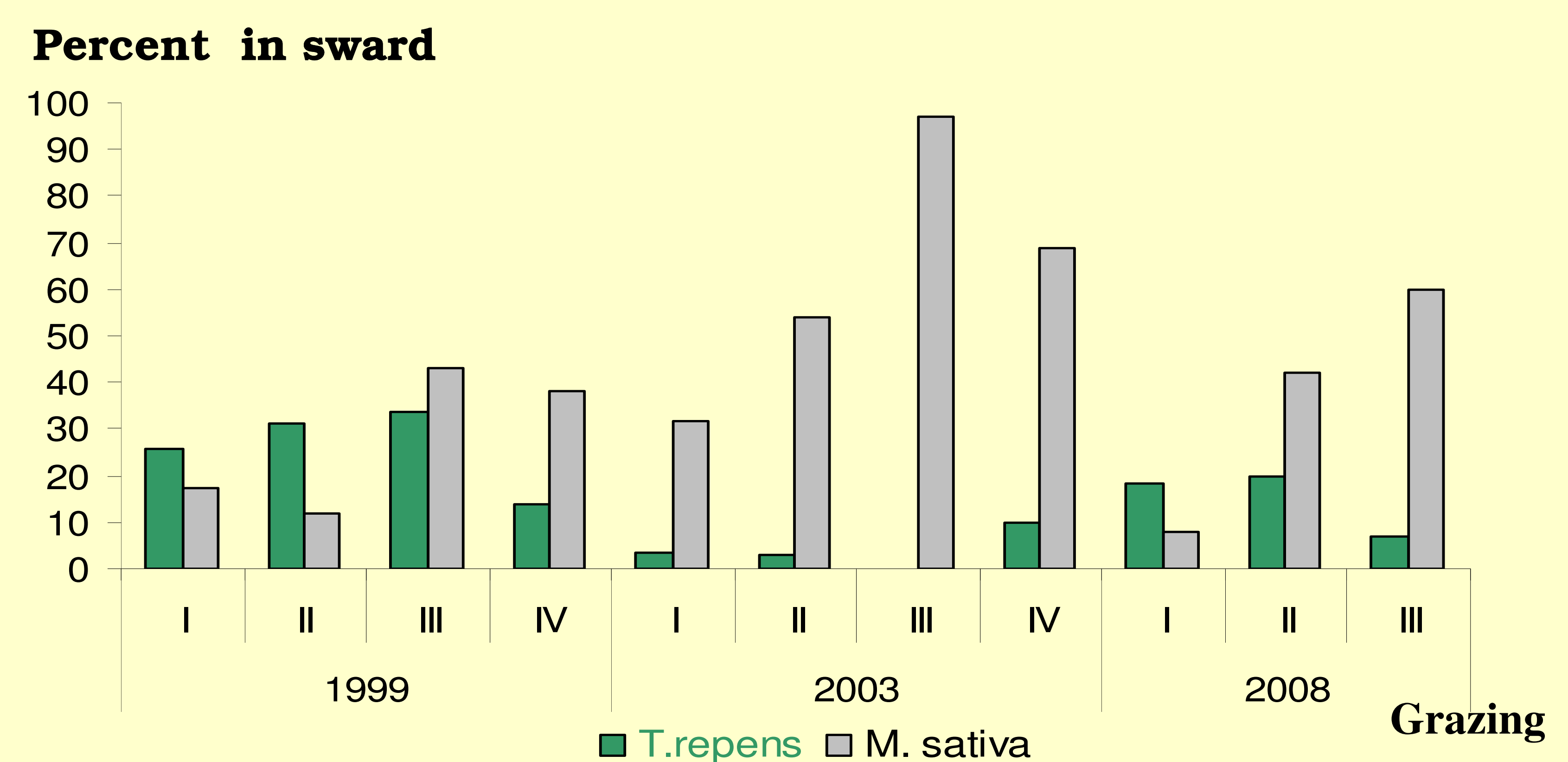


Fig.3. *T. repens* and *M. sativa* swards persistence over ten years of use in mixture *T. repens/M. sativa/L. perenne*

Conclusions

The white clover-lucerne-grass sward outyielded white clover-grass sward and in oldest swards lucerne-grass swards. The content of white clover decreased more rapidly than that of lucerne. A positive effect of lucerne was obtained on yield and its distribution over the grazing season.