

Grassland management options to extend the lifespan of sown grasslands

Huguenin-Elie O.¹, Stutz C.J.¹, Gago R.² and Lüscher A.¹

¹Agroscope, Forage Production and Grassland Systems, 8046 Zurich, Switzerland; ²Arbeitsgemeinschaft zur Förderung des Futterbaues AGFF, 8046 Zurich, Switzerland

Introduction: Long-lasting sown grasslands would be advantageous for grassland-based production systems and the environment. However, the botanical composition of sown grasslands typically deteriorates after three to five years of utilisation. The aim of this experiment was to test management options to extend the lifespan of sown grasslands.

Materials and methods: The experiment began in spring 2014 on a mown and grazed grassland sown in 2011. At the experiment's onset in 2014, the sward had 20% *Lolium perenne*, 10% *Poa pratensis*, 10% other forage grasses, 15% clover, 30% forbs and 15% poor quality grasses. Two grazing levels (no grazing, cattle grazing in spring) and three seed addition levels were compared in a factorial design arranged as a strip plot with six replicates. The seed addition treatments were (1) no seeds, (2) overseeding with a mixture of *L. perenne*, *P. pratensis*, *Dactylis glomerata*, *Festuca rubra* and *Trifolium repens*, and (3) allowing the sward to shed seeds (self-reseeding) at the second harvest following an early harvest in April.

Results: Cattle grazing in spring enhanced the proportion of forage grasses in the sward ($P=0.031$), which translated into higher yields ($P=0.005$; Figure 1A). The effect of the seed-addition treatments was statistically not significant for the total proportion of forage grasses but almost significant for the yield ($P=0.062$, interaction with grazing $P=0.005$). Overseeding improved the proportion of the oversown grass species in the plots without grazing but not with grazing ($P_{seed\ addition}=0.018$, interaction with grazing $P=0.087$; Figure 1B). The proportion of forage grasses decreased between 2016 and 2018 in all treatments (data not shown).

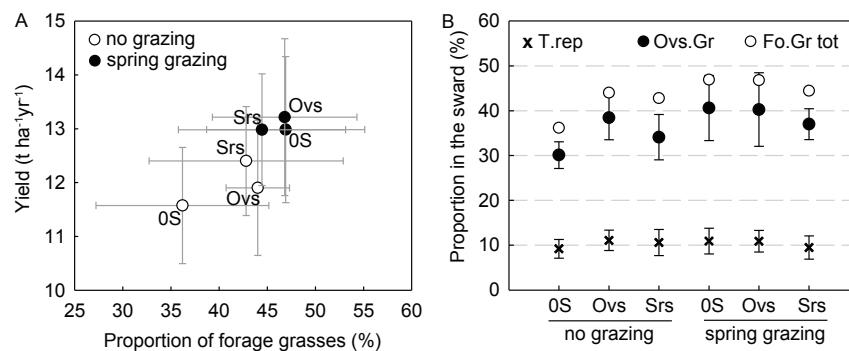


Figure 1. (A) Dry matter yield of the six management treatments as a function of the proportion of forage grasses in the swards and (B) proportions of *Trifolium repens* (T.rep), oversown grass species (Ovs.Gr) and total forage grasses (Fo.Gr tot) in swards managed with or without spring grazing, and without seed addition (OS), with yearly overseeding (Ovs) or with yearly self-reseeding (Srs). Data are the means of six replicates over the years 2015 to 2018 \pm SD.

Conclusion: The mowing-only management without seed addition was clearly the least appropriate to sustain yields and a satisfactory botanical composition. Spring grazing seems more promising than overseeding, and especially compared with self-reseeding, to extend the lifespan of sown grasslands with *L. perenne* and *P. pratensis* as dominant grass species.