THE INFLUENCE OF LEGUME SPECIES ON THE PRODUCTIVITY AND QUALITY OF MULTI-SPECIES SWARDS IN FOUR PRODUCTION YEARS

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Message: In Latvia’s farms, the use of multicomponent grass–legume mixtures is a traditional practice, because swards can secure good persistence and stable productivity. Red clover Trifolium pratense (Tp) and lucerne Medicago sativa (Ms) are traditional forage crops, but fodder galega Galega orientalis (Go) is grown for a relatively short period.

Materials and Methods
Field trials were conducted at three experimental sites were conducted at three experimental sites in Latvia. At each of the three sites, the same mixtures were sown, in three replications, with a 10 m² plot size.
Sowing time: June 2014 without a cover crop
Fertilization: N60; P78 and K90 kg ha⁻¹
Grass combinations used in mixtures:
(G): Festuca arundinacea; ×Festulolium loliaceum, Lolium boucheanum in equal parts
Mixtures:
Tp+G: Trifolium pratense 50% and grasses 50%;
Ms+G: Medicago sativa 50% and grasses 50%;
Go+G: Galega orientalis 50% and grasses 50%

Results:
Significant differences in DM yield, the CP and Ca content in DM yields were found between production years and mixture types. The highest yields for all legume-containing mixtures were obtained in the first harvest year. (Fig.1)
Significant NDF content increase during first three production years were stated for Tp+G mixtures. It correspond with red clover content decrease in sward during production years. Legumes accumulated Ca more than grasses, and Ca content in mixture DM is closely connected with legume proportion in sward. The Ca content in Go+G mixtures in the third and fourth production years was significantly higher in comparison with Tp+G mixtures (Fig. 2)

Conclusion
Three production years was the maximal duration of sward use for the mixture containing red clover. Even in third production year, a decrease in red clover proportion in sward contributed to a significant decrease in DM yield and in the content of CP and Ca.
Mixtures containing lucerne are appropriate for four years of sward use, providing high average DM yields with good forage quality. Longer (five or more) year use of Ms+G sward in three cutting management are not recommended due to significant productivity and forage quality decline.
Mixtures containing fodder galega could be recommended for long term (more than for year) sward use. Slow establishment and development of galega caused lowest DM yields in first and second production year. Galega containing mixture demonstrated more stable productivity and DM forage quality during sward aging.

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