Productivity and management of herb-rich mowed grassland in Flanders

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Introduction

Recent droughts, restrictions on N fertilizer use, N fertilizer prices and incentives to stimulate use of leguminous plants and herb-rich mixtures are leading many farmers to explore different management approaches for at least some of their grasslands. ILVO started a field trial in 2020 as a demonstration of productive herb-rich grassland mixtures and with the aim of gaining more practical knowledge about fertilization and botanical evolution. This poster illustrates the results of the first production year.

Objectives

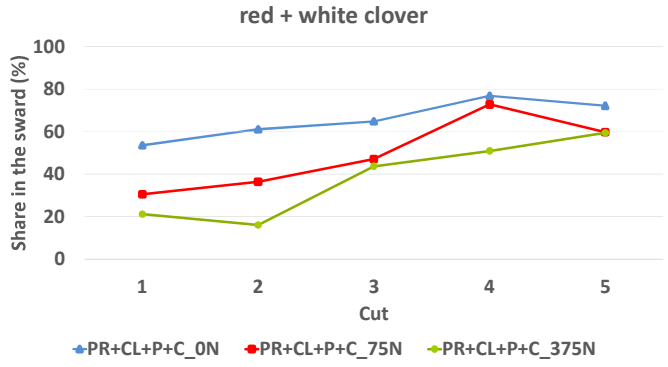
- What is the optimal N fertilization level of herb-rich grassland?
- What is the botanical evolution of herb-rich mixtures?

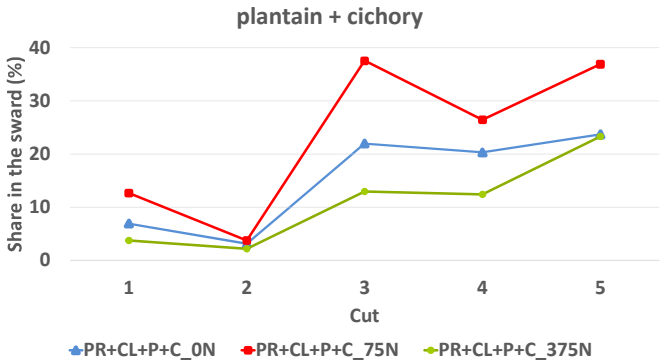
Material and methods

- Sandy loam soil (pH-KCl = 6.3; 0.82% C, flax = preceding crop), average annual temp. = 9°C, annual precipitation = 780mm
- 6 mixtures with plantain/cichory, compared to perennial ryegrass and grass/clover
- Randomized complete block design, 4 blocks; 5 cuts; 190 kg K ha^{-1} $year^{-1}$
- Crop yield determined with a Haldrup field trial harvester, and sward composition determined by hand-sorting of grab samples

Results

Treatment	Mixture	N fertilization (kg N ha^{-1})	Crop yield (kg DM ha^{-1})
PR_375N	perennial ryegrass 30 kg ha^{-1}	375	**19 239** bc
PR+CL_125N	perennial ryegrass 30 kg ha^{-1} + white clover 3 kg ha^{-1} + red clover 8 kg ha^{-1}	125	**19 600** bcd
PR+CL+P_75N	perennial ryegrass 30 kg ha^{-1} + white clover 3 kg ha^{-1} + red clover 4 kg ha^{-1} + plantain 1.5 kg ha^{-1}	75	**18 586** ab
TF+CL+P+C_75N	tall fescue 35 kg ha^{-1} + white clover 3 kg ha^{-1} + red clover 4 kg ha^{-1} + plantain 1.5 kg ha^{-1}+ Chicory 1.5 kg ha^{-1}	75	**18 781** ab
PR+CL+P+C_0N	perennial ryegrass 30 kg ha^{-1} + white clover 3 kg ha^{-1} + red clover 4 kg ha^{-1} + plantain 1.5 kg ha^{-1}+ Chicory 1.5 kg ha^{-1}	0	**17 313** a
PR+CL+P+C_75N		75	**19 117** bc
PR+CL+P+C_125N		125	**20 542** cd
PR+CL+P+C_375N		375	**21 106** d





Observations in the first production year

- N fertilization of 75 kg N ha^{-1} seems to be a good compromise between maximum yield and share of herbs
- Tall fescue does not perform better than perennial ryegrass as grass partner in the herb-rich mixtures
- Clover was omnipresent in cut 4 and 5 and severely suppressed the grass (<5% of the sward)
- Further observations in 2022(-2024) are necessary to observe whether grass is again productive in the spring cuttings and whether plantain and chicory will maintain their present share in the sward.

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