

Effects of different methods of meadow maintenance and non-tillage seeding on yield and plant composition

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Introduction

The seed potential of valuable grasses such as English ryegrass (*Lolium perenne*) in high-quality fodder meadows is reduced because the grass is mown before flowering takes place. Unwanted grasses and weeds which propagate by stolons, e.g. roughstalk meadowgrass (*Poa trivialis*) and creeping buttercup (*Ranunculus repens*), then spread. The yield and the food quality decreases.

The aim of this project is to investigate the effect of different machines for meadow maintenance on forage yield and botanical composition.

Results

Due to the dry summer of 2009 the yields on the Wagen site turned out lower than in 2008 across all machine variants (Table 1). On the Tänikon site the 2009 yields were somewhat higher than those of the previous year, as water is not the limiting factor. Neither treatment or seeding made any significant change to the percentage of *Lolium perenne* in the plant population. In 2009, the maintenance could not prevent the increase of *Poa trivialis* across all the plots. The percentage of *Poa trivialis* in the plots treated with seed was slightly lower than in the unsown plots.

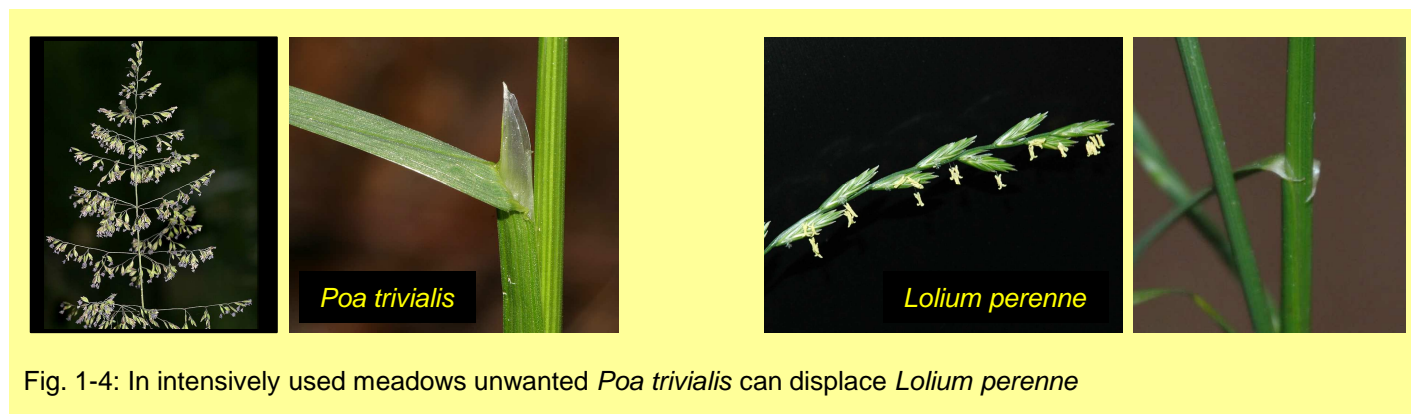


Fig. 1-4: In intensively used meadows unwanted *Poa trivialis* can displace *Lolium perenne*

Methods

The efficiency of the methods selected was checked on two different sites in Switzerland: Tänikon and Wagen: Tänikon is situated at an altitude of 535 m and has an average precipitation of 1 200 mm year⁻¹. Wagen is 442 a.s.l. and has an average precipitation of 1 400 mm year⁻¹.

Each spring, the machines (Fig 6-9) were used in six repetitions (split-plot design, 12 x 6 m²) half sown and half unsown. Additional non mechanical treated sown and unsown control plots were established.

Table 1: Percentage yield of *Lolium perenne* and *Poa trivialis* in sown and unsown variants.

Site	Method	<i>Lolium perenne</i>		<i>Poa trivialis</i>	
		2008	2009	2008	2009
Tänikon	without seeding	17 %	17 %	22 %	23 %
	with seeding	20 %	18 %	18 %	20 %
Wagen	without seeding	21 %	14 %	14 %	34 %
	with seeding	21 %	15 %	15 %	30 %



Fig. 5-9: Machines used in trail with and without seeding.

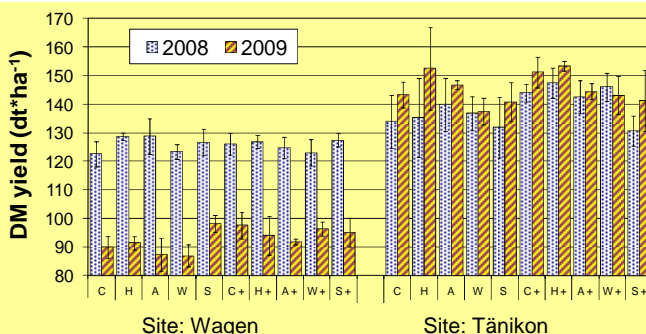


Fig. 10: Average yield (with standard deviation) of different variants ("+" = sown) at Tänikon and Wagen in the years 2008 and 2009.



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