



Introduction

To meet the increasing demand for forage quality from grassland, different strategies of re-seeding are used in practice. Commercial seed mixtures are usually sown with different over-seeding techniques such as slot-drill machines or combined harrows. Natural self-seeding of grassland, which was the common method for grassland renovation in the past, has become less important through the significant increase of cutting and grazing frequency.

Material & Methods

- ◆ Field experiments were established in Austria to determine the potential of natural self-seeding on grassland



- ◆ Two variations of natural self-seeding were tested (singular = only once in the first year, and regular = every two years)
- ◆ Once the dominating plants reached the optimal stage of maturity the plots were cut and threshed with a combine harvester
- ◆ The threshing material was then dried, cleaned, separated for species and tested for germination capacity



Results

- ▶ The total yield of cleaned seeds ranged between **20 and 92 kg ha⁻¹ year⁻¹** of which the highest proportions were dominated by grasses, followed by herbs and clover
- ▶ There were great differences in the total seed yield both between years and sites, which indicates that the outcome of natural self-seeding is difficult to predict

Table 1. Yield and forage quality data of reseeded experiments

sites ⇒ parameters ⇒ treatments ↓	Gumpenstein (average of 2005-2010)			Piber (average of 2006-2010)		
	DM ¹ (t ha ⁻¹)	CP ² (g kg DM ⁻¹)	GJ NEL ³ ha ⁻¹	DM (t ha ⁻¹)	CP (g kg DM ⁻¹)	GJ NEL ha ⁻¹
control	101.0 ^{ab}	132.2 ^a	51.3 ^a	70.9 ^a	115.4 ^a	39.2 ^a
singular natural self-seeding ⁴	95.4 ^b	131.5 ^a	46.8 ^{ab}	71.9 ^a	106.6 ^a	36.7 ^a
regular natural self-seeding ⁵	79.8 ^c	114.8 ^b	36.7 ^b	65.5 ^a	106.1 ^a	28.7 ^b
technical seeding	106.6 ^a	135.4 ^a	53.9 ^a	69.4 ^a	112.8 ^a	36.6 ^a

¹Dry Matter, ²Crude Protein, ³Gigajoule Net Energy Lactation, ⁴natural self-seeding only once in the first year, ⁵natural self-seeding every two years, ^{a, b, c} treatments with different letters are significantly different ($P < 0.05$)

- ▶ Concerning germination capacity *Poa pratensis*, *Lolium perenne* and *Phleum pratense* partly even exceeded the required values, whereas *Dactylis glomerata*, *Festuca pratensis* and *Trifolium repens* failed

- ▶ About 20 different grassland species could be identified in the threshing material which is much more than the average number of species in commercial seed mixtures

- ▶ An increase of grasses could be noticed at both sites within the observation period. The proportion of legumes declined whereas that of herbs remained stable

- ▶ The late harvest time of the self seeding variants negatively influenced yield and forage quality of the particular growth and was resulting in partly significant lower average values of regular natural self-seeding compared to the untreated control and the technical re-seeding treatments (Table 1)

Conclusions

- Natural self-seeding of grassland provides remarkable amounts of seeds with a mostly acceptable germination capacity
- This alternative method of grassland re-seeding causes a significant yield reduction and low forage quality of the concerned growth
- Natural self-seeding can be regarded as a method primarily recommended for farming systems that follow a low intensity strategy