Seed Productivity of *Festulolium* and *Lolium X Boucheanum* Varieties

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Introduction Hybrid ryegrasses are intermediate lines between perennial ryegrass and Italian ryegrass as regards growth parameters, productivity and resistance. Good quality and digestibility of forage and higher yield are the main advantages of hybrid ryegrass over perennial ryegrass. Climatic conditions in the Baltic States and North Europe are not favourable enough for ryegrass cultivation but *Festulolium* is a prospective forage crop for this area (Nesheim, 2000, Adamovich, 2003). Ryegrasses, including hybrid ryegrasses, surpass *Festulolium* in forage quality. However, *Festulolium* persistance (resistance, winter-hardiness and, thus, high productivity) are noteworthy. Due to yield quality and competitive productivity, *Festulolium* may rank equally with timothy and fescue, the main grasses of this climatic zone.

Materials and methods Field experiments (2001-2003) were conducted on sod-podzolic soil to determine the productivity of *Festulolium* (*Lolium ssp. x Festuca ssp*.) and hybrid ryegrass *(Lolium x boucheanum*) seeds. The seed fields were developed using both local and foreign varieties of *Festulolium* of different origin: 'Ape' (control), 'Lofa', 'Hykor', 'Perun', 'Punia', and 'Tapirus' and 'Ligunda', 2 foreign hybrid ryegrasses. The seeding rate was 600 germinating seeds/m^2. Two rates of mineral fertilisers were applied in the seed production year: P104 , K150, N90 kg/ha, or P104 , K150, N120 kg/ha.

Results Lodging occurred on both fertiliser backgrounds in all varieties except 'Hykor'. The lodging resistance was only 2.3-3.3 points. Table 1 shows mean seed yield and yield structure data on both fertiliser backgrounds.

Table 1 Seed productivity and yield structure of *Festulolium* and *Lolium x boucheanum*

Varieties (FB)	Winter hardiness (points)	Seed yield		TKW (g)	Generative tillers (p/m)	Flowerhead	
		(kg/ha)	(%)			Length (cm)	Weight (g)
Ape (LV)	8.5	1397	100	3.8	1915	23.2	0.67
Lofa (DLF)	6.8	1547	111	4.0	1950	23.7	0.69
Hykor (DLF)	7.5	963	68	2.8	1600	17.1	0.57
Perun (DLF)	7.5	866	62	4.2	1550	25.4	0.83
Tapirus (DSV)	6.5	665	95	4.2	1390	21.4	0.72
Ligunda (DSV)	2.5	640	46	2.9	892	18.7	0.46
Punia (LT)	8.0	800	57	3.9	1830	23.4	0.70
LSD 0.05		105					

Mean seed yields were relatively high (0.61-1.58 t/ha). 'Tapirus', a late maturing hybrid ryegrass, produced similar seed yield (0.63 and 0.70 t/ha) on both fertilizer treatments. *Festulolium* gave higher seed yields (0.76-1.58 t/ha). The variety 'Lofa' *(L. multiflorum x F. arundinacea)* produced the highest seed yield (1.58 t/ha) at the fertiliser rate N120. The 1000 seed mass for the varieties ranged from 2.89-4.26 g. 'Tapirus' and 'Perun', respectively, produced the coarsest seed (4.23 and 4.19 g). Flowerhead length ranged from 16.5-25.9 cm. Flowerhead mass was 0.44-0.88 g. *Festulolium* 'Perun' had the longest flowerhead with the greatest mass (25.4 cm and 0.84 g, respectively).

Conclusions *Festulolium* and hybrid ryegrasses are prospective forage grasses for the Baltic States and North Europe. Due to quality and competitive productivity, these forage grasses equally rank with other grasses grown in Latvia. Some foreign *Festulolium* and hybrid ryegrass varieties are suitable for seed production under agroclimatic conditions of Latvia.

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