

## Evaluation of lucerne cultivars for dry matter and seed production in Latvia

S. Rancane and M. Sparnina

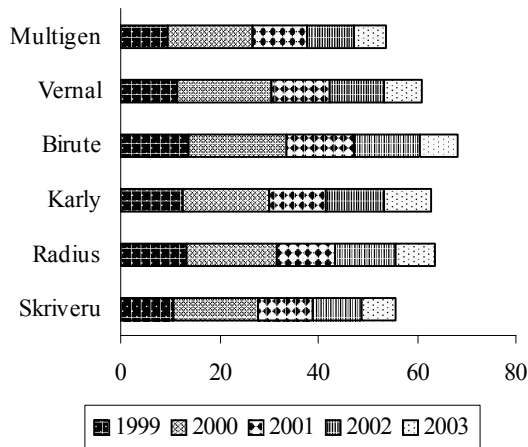
*Skriveri Research Centre of LUA, Skriveri-1, LV 5126, Aizkraukles reg., Latvia, Email: rancanei@inbox.lv*

**Keywords:** lucerne, cultivars, winterhardiness, seed production, yield

**Introduction** Lucerne is highly productivity and has a high quality. Nevertheless, lucerne growing in Latvia is limited, because of a large area of acid soils ( $\text{pH}_{\text{KCl}} < 5.8$ ) as well as low and unstable seed yields (Berzins, 2002). In recent years lucerne has taken a more important place in forage production in Latvia, because it is a fast growing crop and in good years gives 3-4 harvests per season. It is important to determine which cultivars of lucerne are more productive and give good seed yields every year in Latvia (Luksa, 2002).

**Materials and methods** For the estimation of green mass and dry matter (DM) yield of lucerne cultivars, a field trial was conducted using a split plot design with 4 replicates. Plot size was 1.5 x 7.0 m. Seed productivity was estimated at the 5.0 m long rows from the centre to the outside of a circle, where space between rows was 0.1 m in the centre of the circle and 1.20 m on the outside. The purpose of that arrangement was to evaluate the optimal space between rows for successful seed production. The field trial was conducted on a podzolic loamy sand, with a 24-25 cm top layer, a soil organic carbon content of 20 g/kg, soil  $\text{pH}_{\text{KCl}}$  of 5.8- 6.2, a content of plant available  $\text{P}_2\text{O}_5$  of 88-124 mg/kg and of  $\text{K}_2\text{O}$  126-150 mg/kg. The experiment lasted for 5 years.

**Results** High green mass and DM yields were harvested for 4 – 6 years depending on the cultivar (Figure 1). In order to obtain high lucerne seed yields, it is necessary, during the vegetation period that the sum of temperatures above +10 °C is > 2000 °C. During the first year, when summer was hot and the sum of temperatures above +10 °C was 2413°C, seed production was extremely high (53-90 g/m<sup>2</sup>). During the fifth year, however, the yields obtained went down markedly as the summer was cooler; and subsequently the production diminished. The productivity in the case of the U.S. seeds fell faster than that of local and East European cultivars (Table 1). Highest yields of green mass were obtained during the 2nd year (84.5–98.0 t/ha). The sum of temperatures above +10 °C in that year was 2255 °C.



**Figure 1** DM yield (t/ha) of lucerne cultivars

**Table 1** Evaluation of lucerne cultivars

Cultivar (country)	Winter-hardiness 1 - 10 points	Re-growth at spring 1 - 10 p.	Yield of seeds g/m <sup>2</sup>	
			1st year	5 <sup>th</sup> year
Skriveru (Latvia)	9.0	7.0	90.1	21.0
Radius (Poland)	9.0	9.5	90.7	6.6
Karly (Estonia)	9.5	7.5	66.3	21.6
Birute (Lithuania)	9.0	9.0	80.6	20.3
Vernal (USA)	6.0	8.0	62.3	5.2
Multigen (USA)	7.0	8.0	53.2	12.2

**Conclusions** It was concluded that the cultivar 'Birute' (Lithuania) stood out with high and durable green mass and seed yields. The cultivar 'Skriveru' (Latvia) stood out with durable and high yields also in more acid soils.

### References

- Berzins P., B. Jansone, S. Bumane, M. Sparnina. & S.Luksa (2002) Results obtained in breeding of forage grasses and legumes. *Proceedings in Agronomy-* (Latvian) Nr.4, 181- 185.
- Luksa S., M Sparnina & S. Bumane. (2002) The forage quality of legume and perennial ryegrass varieties in SRC, Latvian Multi-function grasslands. Quality Forages, Animal products and Landscapes. *Proceedings of the 19<sup>th</sup> General Meeting of the European Grassland Federation*, La Rochelle, France 27-30 May 2002, 440-441.