

Variations on potential and harvested seed yield of *Lotus tenuis* sown at different densities during spring and fall.

G. Cambareri¹, J. Castaño¹, N. Maceira¹; O. Vignolio¹, O. Fernández¹, & J. Ceroni²

¹Unidad Integrada Balcarce (UIB: INTA EEA Balcarce – Facultad de Ciencias Agrarias, UNMDP)
RN 226, Km 73.5 (7620) Balcarce, Buenos Aires, Argentina

²KWS Argentina, Av. San Martín 4075 (7620)

Balcarce, Buenos Aires, Argentina.

E-mail: gscambareri@balcarce.inta.gov.ar

Lotus tenuis is a forage legume broadly adopted by beef cattle breeders in the Flooding Pampas of Argentina, because of its positive attributes like high nutritive value, non bloating effect, natural re-seeding, and tolerance to grazing, flooding and alkalinity conditions. In Argentina, national production of certified seed of *L. tenuis* evolved from 10 t in 1999 to 84 t in 2007. Although seed yields under commercial production are low (< 200 kg ha⁻¹), but yields of 1200 Kg seed/ha are possible when grown under non stress conditions. Forage seed crops are currently planted in the fall at ca. 6 Kg Ha⁻¹ in this region, and there is no information on how planting date and plant density affect seed yield for this species. The main goal of this work was to analyze the influence of plant density on potential and harvested seed yield of *Lotus tenuis*, in spring and fall crops. A field experiment was carried out in the Estación Experimental Agropecuaria Balcarce (INTA, 37° 45' S, 58° 18' W; 130 m.s.n.m). Nine 2.1 m x 6 m plots (17.5 cm wide rows) were planted in the spring of 2006 (September 21th) and the autumn of 2007 (April 12th) in a Typic Argiudoll Soil. The plots were maintained free of weeds, harmful insects and irrigated to keep soil moisture. After emergence, the seedling stands were hand-thinned attaining three plant densities: 26, 43 and 87 pl m⁻² (low, medium and high, respectively). Thus, a 3 densities x 3 blocks (related to topography) design was established and analyzed with statistical software R at each planting date. A 56 cm diameter wired circle was used to delimit a 0.25 m² harvest area. Two sub samples per plot were harvested at maturity (>50 % of mature brownish pods in a 0.33 m² area), clipping with hand-scissors and leaving a ca. 3 cm high remanent herbage. The effect of three plant densities on potential and harvested seed yield was analyzed at each planting date. Potential seed yield was estimated by means of a linear relationship between pods weight and seed number. Seed yields increased with plant density, for both spring and fall crops (**Table 1**). The highest potential seed yield was recorded in spring crops which almost doubled fall crops yields for all the densities. This finding also suggests the presence of a wider gap between harvested and potential seed yield when *Lotus* is sown in the spring. According to these results the gap between harvested and potential seed yield is smaller in fall crops of *Lotus tenuis* sown at high densities. Spring crops with low percentage of pod dehiscence and timely harvest are needed to reduce this gap.

Table 1. Potential and actual seed yield of *Lotus tenuis* (kg ha⁻¹) for three plant densities and two planting dates. Means with equal letter indicates no significant differences between densities within sowing date (Tukey HSD at 5 %).

Planting Date	Density	Seed Yield (kg ha ⁻¹)	
		Potential	Harvested
Spring	low	655.2 b	222.5 b
	medium	1174.2 a	508.7 a
	high	1413.9 a	523.8 a
Fall	low	342.6 b	295.6 b
	medium	485.4 b	427.8 b
	high	766.9 a	706.4 a