

## Chromosome number, seedlings and seed size in *Lotus tenuis* and *L. corniculatus*

[ADRIANA I. CELOTTO](#)\*<sup>1</sup> and ANDREA MARIEL SANZO<sup>2</sup>

<sup>1</sup> Facultad de Ciencias Veterinarias. Universidad Nacional del Centro de la Provincia de Buenos Aires. Campus Universitario. 7000 Tandil. Argentina.

<sup>2</sup> CONICET

\* Corresponding author

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*Lotus tenuis* Waldst & Kit. and *L. corniculatus* L. are forage legumes, phenotypically similar, extensively accepted and utilized as spontaneous species in grasslands or sown in pastures *consortium*. The seeds of these species do not exhibit macromorphological characteristics that allow us to differentiate them and they have been cited as very similar in size. They cannot be identified early considering morphological characteristics of the seedlings, although differences in relation with the pubescence of them have been reported.

The purpose of our studies is to answer the need to differentiate these two species in the state of seed or during the germination utilizing methodologies that turn out to be sufficiently fast, reliable, economic and reproducible. For it, chromosomal studies in native cultivars and populations were carried out. Due to the lack of data with respect to the seed size and to the seedling pubescence and in order to know if these characters resulted to be differential among both *Lotus*'s species, they were screened on the same samples chromosomally analyzed.

Seeds from cultivars registered at National Institute of Seeds (INASE) and samples of populations sent to test at laboratories belonging to Asociación de Laboratorios Agropecuarios Privados (ALAP) were analyzed. The analysis of the mitotic chromosomes was carried out from root apices obtained from seeds in germination. In order to estimate the seed's size 50 seeds taken at random of each origin were studied. The lengths of the longest and minor axes of the seeds were obtained with an eye micrometric incorporated into a magnifying glass triocular and an increase of 40x.. The measurements were expressed as the mean  $\pm$  standard deviation. The seedling pubescence was observed when seedlings reached a length of 2 mm.

The studied cultivars turned out to be almost homogeneous in relation with the chromosomal number: those of *L. tenuis*,  $2n = 2x = 12$  and those of *L. corniculatus*,  $2n = 4x = 24$ , although some few individuals with different somatic numbers were found (between 0.7 and 4%). On the other hand, the samples analysis provided by private laboratories revealed that species or mixes of seeds are distributed under different denominations. Sometimes, *L. corniculatus* (with lower commercial value) is sold as *L. tenuis*.

Data of seed's size of several cultivars of *L. corniculatus* and of *L. tenuis* showed

superimposed values, and for this reason it would not be a reliable characteristic to differentiate them, especially in samples of seed containing both species. Epicotyls and leaflets of the first leaf of *L. tenuis* seedling have been cited as glabrous and those of *L. corniculatus*, with white hairs. Nevertheless, only some cultivars as Tresur Chajá and Esmeralda of *L. tenuis*, and Gladiator of *L. corniculatus* presented between 98 and 100% with the characteristic expected.

The variability found in relation with the seedling pubescence and the dispersion of seed's size values show that these two characters are not useful to differentiate both species, although some cultivars show homogeneity in relation with seedlings pubescence. On the other hand, the chromosomal analysis allows fast, reliable and reproducible results for the specific differentiation between *L. tenuis* and *L. corniculatus*. The used cytogenetic techniques could be implemented in private laboratories with limited equipment and a relative low cost.