

## **Growth, Nitrogen and Phosphorus economy in two *Lotus glaber* Mill. Populations grown under contrasting P-availability.**

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With the aim of comparing the growth and economy of phosphorus (P) and nitrogen (N) of two *Lotus glaber* populations differing in their ploidy level, an experiment was performed under two soil P-availabilities. Plants were grown in the open air from mid January to April 2003 in soil filled pots kept under field capacity. The experimental design was a 2x2 factorial consisting of two *Lotus glaber* populations, a colchicine-induced autotetraploid (Barufaldi et al., 2000) and diploid cv. Chaja, provided by KWS Argentina S.A., and two P-fertilization doses (0 and 100 ppm of P as triple super phosphate). The original extractable P concentration was 4 ppm (Bray and Kurtz N°1). At transplanting time, all germinated seeds were inoculated with 10<sup>8</sup> cells per plant of the commercial inoculant strain LL32 produced by Laboratorios Biagro S.A. Argentina. Twenty plants were harvested at 46, 74 and 102 days after germination and on each occasion growth parameters, P and N concentration were determined. In addition to the greater growth of all fertilized plants, the two populations showed similar growth rate (GR) and relative growth rate (RGR) at each P-availability. Variability of dry biomass was greater for tetraploid than for haploid plants. In spite of similar means at each harvest, the tetraploid population included the plants with the highest individual dry biomass. Leaf area of diploid plants at the end of the experiment was larger than that of tetraploids, due to a higher biomass partitioning to leaves. Phosphorus concentration was similar between populations and greater in P-fertilized plants. Differences were not found either for P-absorption and P-utilization efficiencies or P-partitioning between shoots and roots. As was expected, P-fertilization increased P-uptake and reduced P-utilization efficiencies, but partitioning was not affected in either population. In a similar manner to the results obtained with phosphorus, neither N-concentration nor N-use efficiencies were different between populations. Differences in N-content observed between P-availabilities were partially attributed to the higher number of nodules observed in P-fertilized plants. Under P-fertilization higher nodule number and nodule dry weight were observed in the diploid population.

### **References**

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