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# MEAN SEED MASS DEVELOPMENT IN THREE ARCHITECTURAL TYPES OF AUTUMN-SOWN WHITE LUPIN (*LUPINUS ALBUS* L.)

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## Summary

Mean seed mass (MSM) development was examined in determinate, dwarf and indeterminate autumn-sown white lupin in France and the USA. Accumulated growing degree days from 50% flowering to the beginning of linear MSM increase was constant on the mainstem. Duration of linear MSM increase was longer for the indeterminate and dwarf compared to determinate lines.

**Key words :** seed mass, plant architecture, dwarfism, determinate growth habit

## Introduction and methods

Recently developed architectural lines of determinate and dwarf white lupin offer new opportunities for improvement of yield stability, but their effects on mean seed mass development have not been studied previously. Mean seed mass development was examined in two determinate (CH304/70 and CH304/73), one dwarf (XA100) and one indeterminate line (Lunoble) of autumn-sown white lupin during two years at Lusignan, France and Shorter, Alabama, USA.

## Results and discussion

The total growing degree days from 50% flowering to the beginning of linear MSM increase was constant for all genotypes on the mainstem inflorescence but shorter in the determinate than in the indeterminate and dwarf lines. The total growing degree days for this same period was constant on the primary inflorescence level of the determinate lines. On the primary inflorescence level of the indeterminate and dwarf lines, this period was earlier at locations and years when vegetative growth was more limited.

The duration of linear MSM increase was shorter for the determinate than the indeterminate and dwarf lines at each location, year and inflorescence level as previously reported for a determinate and indeterminate line (1). For each genotype and inflorescence level, locations and years with less vegetative growth induced a shorter duration and greater slope for the linear MSM increase.

Between the mainstem and primary branch levels, final mean seed mass was more uniform in the determinate than in the indeterminate and dwarf lines (Fig.1). Under reduced vegetative growth in the determinate lines, the mean seed mass was higher on the mainstem than on the primary and secondary inflorescence levels. Final mean seed mass was always highest on the primary inflorescence level of the dwarf line because the high pod abortion observed on this line's mainstem and the long flowering period shifted plant resources to the primary inflorescence level.

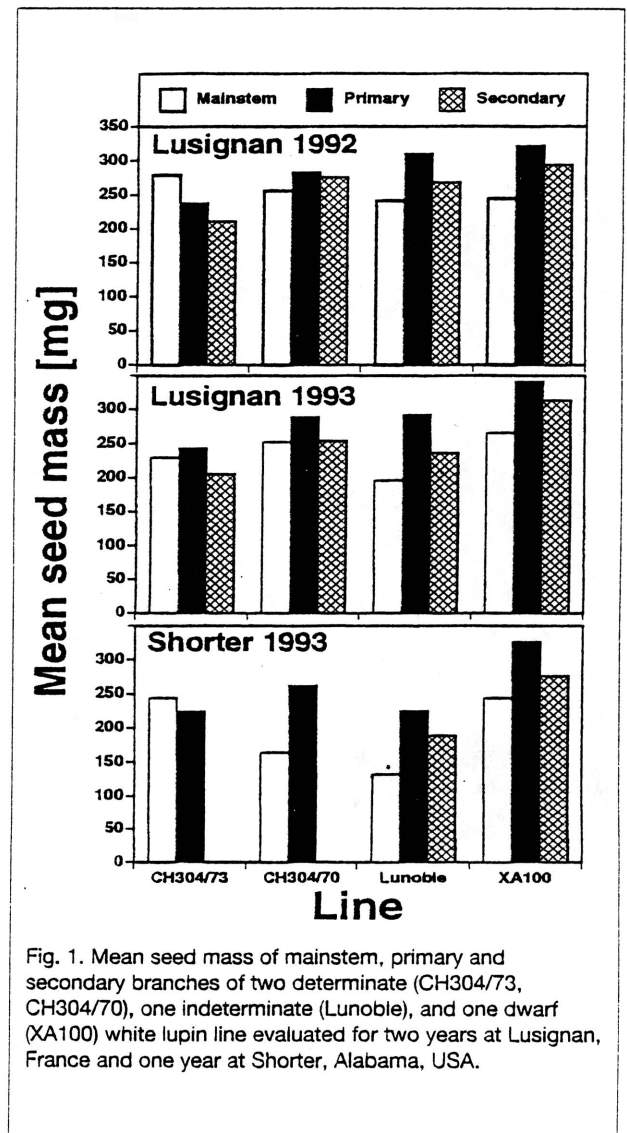


Fig. 1. Mean seed mass of mainstem, primary and secondary branches of two determinate (CH304/73, CH304/70), one indeterminate (Lunoble), and one dwarf (XA100) white lupin line evaluated for two years at Lusignan, France and one year at Shorter, Alabama, USA.

(1) NOFFSINGER, S.L., A. KRAEPIEL, C. HUYGHE and Edzard VAN SANTEN (1994)

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