

# EFFECT OF PLANT DENSITY ON DRY MATTER PRODUCTION, LIGHT INTERCEPTION AND YIELD OF FIELD PEAS

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Two trials were conducted in 1994 to examine the effect of planting density on growth, light interception, dry matter production and grain yield of four pea genotypes of contrasting morphology.

## MATERIALS AND METHODS

Trials were sown at Hart (13 June) and Kingsford (30 June) in the Lower North of South Australia. Three tall genotypes (Alma, late-season conventional; Laura, mid-season conventional and PSE23, late season semi-leafless) and one short genotype (PSE16, mid-season semi-leafless) were sown at 5 densities (30, 45, 60, 80, 100 viable seeds per m<sup>2</sup>) in a split plot design (plots were 10 m x 8 row at 0.18 m spacings). PSE16 and PSE23 are advanced lines from the Victorian Pea breeding program. Canopy light interception (LI) was measured using a sunfleck ceptometer.

## RESULTS AND DISCUSSION

Plant density had a significant positive effect on dry matter production (DM) early in the season. These differences were less obvious by mid-flowering as the amount of basal branching was inversely proportional to plant density, enabling plants to compensate for reduced populations. As a result, at mid-flowering only the lowest density had a consistently lower DM at both sites than the other treatments and this response was similar for all genotypes. LI was highly correlated with dry matter throughout the growing season with the 3 tall lines having a similar relationship regardless of leaf type. Later in the season PSE16 appeared to intercept less light for a given dry matter than the other 3 lines. The effect of density on grain yield was different at the 2 sites (Fig. 1 and 2) and this was probably due to terminal moisture stress being more severe at Hart. This effect was most noticeable in the later genotypes which showed a declining yield as density increased.

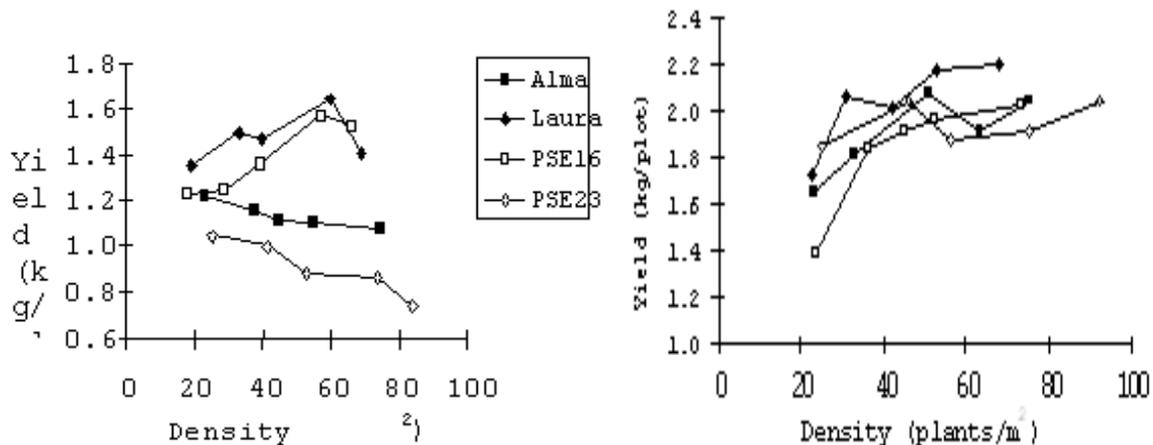


Figure 1. Grain yield vs density, Hart. Figure 2. Grain yield vs density, Kingsford.

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