GROWTH RESPONSES OF THREE SUMMER LEGUME SPECIES

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Crop diversification is an important issue for the rural industry in Queensland, with a keen farmer interest in options for a whole of farm management strategy Navy beans (*Phaseolus vulgaris*) have been a traditional legume crop in the Burnett district, interest in adzuki beans (*Vigna angularis*) has been strongly re-vitalised, and bush lima beans (*Phaseolus lunatus*) grown as a grain crop may provide a new crop opportunity.

MATERIALS AND METHODS

Four varieties each of lima and of adzuki beans, and eight elite selections or varieties of navy beans were all sown fully irrigated at each of four monthly intervals from November to February in 1994/95, on a farm 20 km from Kingaroy. Plot size was 4 rows x 0.9 m x 7.5 m, with central 2 as datum rows. Three replicates of sowing dates were used, split for varieties. Inter-specific and intra-specific comparisons examined sensitivity of yield, phenology and growth to sowing date.

RESULTS AND DISCUSSION

Adzuki beans were about two days later in emergence than either lima or navy beans in all sowing dates. This delay affected seedling establishment during hot weather in December because of heating and crusting of soil surface before emergence.

Despite a lower population for December sowing, the yield of adzuki beans dramatically peaked in the December sowing, being 1/3 greater than the next best January sowing. No grain yield was obtained from the February sowing which had stunted growth. No varietal differences were observed except for seed size, lodging and to marginal extent flowering time.

For lima beans the greatest yields were achieved with a December sowing, 26% above the next best November sowing. Yields from the February sowing were only 18% of the December sowing varieties. Bridgeton performed best in the November, Q23620R in the December and Jackson Wonder in the January and February sowings. Varieties differed by up to 2 days in flowering time but had equivalent maturities.

Navy beans were least sensitive to date of sowing, the maximum yield with December sowing were 8% above the next January sowing. February sowing was the poorest at 50% of the yield from the December sowing. Selection 255-19D yielded consistently well across all dates, varieties Sirius and Spearfelt which are late maturing performed best with a December sowing, and with a January sowing both Spearfelt and the early maturing Actolac yielded well.

CONCLUSIONS

Adzuki bean grain yields are very sensitive to date of sowing, followed by lima beans and then navy beans. Lima beans are more adapted to a warmer growing period associated with a November sowing than the other species. Only navy beans showed partial adaptation to cooler growing conditions of a February sowing.

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