

LIGHT INTERCEPTION AS A FACTOR IN SEED AND GUM YIELD OF GUAR

H.E. Murphy, R.J. Fletcher, and N. Caffin

The University of Queensland, Gatton College, Lawes, Qld 4343

Guar (*Cyamopsis tetragonoloba*) is an annual, summer-growing legume adapted to the semi-arid tropics and sub-tropics. Its seed contains up to 35% galactomannan, a gum that has many industrial applications.

This experiment investigated the effect of varying sowing date, row spacing and accession on light interception by the guar canopy and the implications for seed and gum yield.

MATERIALS AND METHODS

Four accessions of guar (CP177, IC 9203, CP177 Selection 9 and Brooks) were grown at three sowing dates (5 Dec 1992, 5 Jan 1993 and 15 Feb 1993) and three row spacings (40, 27 and 20 cm) at Lawes, southern Queensland. A split-split-plot design was used with the sowing date treatment occupying main plots, row spacing as the sub-plot treatment and cultivar as the sub-sub-plot treatment.

RESULTS

Sowing date and row spacing had significant overall effects on light interception after one month with differences between accessions at different sowing dates ($P=0.05$). At 46 days, sowing date and accession had significant overall effects with differences between accessions both at different sowing dates and different row spacings.

Sowing date and accession influenced guar seed yield, gum percentage and thus gum yield. The lower seed yield for the December sowing was associated with lower light interception at one month, with the greatly reduced yield for the late sowing being associated with low light interception at 46 days. However, light interception at 46 days did not account for differences in seed yield between accessions. Sowing date, but not accession, affected mean gum percentage and gum yield through its effect on light interception in the early stages of growth.

CONCLUSIONS

Guar seed yield responds to light interception differences associated with sowing date, row spacing and cultivar treatments during the early stages of growth. The percentage of gum in the guar seed is influenced by sowing date and cultivar, but only the former appears to exert its effect through its influence on light interception.