

incomplete dominance. But growth rate exhibited complete dominance and yield showed overdominance. **ABSTRACT**

The high yielding, rapidly growing, late flowering tall cultivars possessed most dominant genes for these characters and most recessives for high 1,000 seed weight and many seeded pods. A comparison of a survey of cultivar variability showed that large differences existed in the duration and intensity of flowering, plant height and seed characters. Tests of natural cross-pollination indicated that it averaged between thirty and forty per cent.

Controlled daylength and date of sowing experiments demonstrated that pigeon peas are short-day plants but the number of photoperiodic cycles necessary to induce flowering varied with genotype, the late flowering cultivars requiring the most cycles. The time taken for plants to become receptive to the short-day stimulus, however, was lengthened by drought conditions which retarded physiological development. Beside flowering date other positively correlated responses to day-length included plant height and yield.

In a half 6×6 F_1 diallel experiment, involving parents representing a wide range of population variability, the inheritance of the following characters were studied, time of flowering, height at flowering, 1,000 seed weight, number of seeds per pod, yield, time to peak yield and growth rate. With the exception of a distantly related cultivar from Ceylon which sometimes showed overdominance, the inheritance of most characters could be explained by an additive gene system showing

incomplete dominance. But growth rate exhibited complete dominance and yield showed overdominance.

The high yielding, rapidly growing, late flowering tall cultivars possessed most dominant genes for these characters and most recessives for high 1,000 seed weight and many seeded pods. A comparison of parents and hybrids in contrasting environments provided evidence that heterosis was modified more in a wide cross which exhibited overdominance than in crosses of comparatively closely related parents.

It is concluded that farmers could benefit most by the issue of mixed superior inbred lines which show high general combining ability.

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