

GENETIC ANALYSIS OF QUANTITATIVE CHARACTERS
IN WINGED BEAN (PSOPHOCARPUS TETRAGONOLOBUS (L.) DC)

By

ARUMUGAM SOORIYAKALA

Thesis

Submitted in partial fulfilment of the requirements
for the degree of

MASTER OF PHILOSOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

C 635.65
S55



401824

AGRICULTURE LIBRARY
UNIVERSITY OF PERADENIYA

Approved :

Supervisor

.....
(Dr. H.N. de Silva)

Examiner

.....
(Dr. N.E.M. Jayasekera)

Examiner

.....
(Dr. A.L.T. Perera)

November 1987.

401824/x

ABSTRACT

Genetic variability among six basic generations was studied in three different crosses of winged bean (Psophocarpus tetragonolobus(L.)DC). These generations were evaluated for some quantitative traits during Yala 1985. The individual plants in the six generations of each cross were completely randomized within the experimental area. Data collected were analysed for components of mean.

Net directional value of additive effect was found to be present in all the fitted models. Therefore, considerable genetic advance could be expected by selecting between crosses for these traits. Non-allelic interactions were present in all the fitted models.

Cross I (SLS44 x UPS122) could be recommended as a superior cross for days to flower and shelling percentage, whereas cross II (UPS122 x SLS72) could be recommended for seed yield. Cross I and cross II performed equally well for seeds/pod. Similarly cross II and cross III (UPS53 x SLS60) were found to be superior for pods/plant. These crosses may be recommended for the production of recombinant inbred lines.

Significant heterosis was obtained in days from flowering to maturity, pods/plant and seed yield in cross I.

For some traits the basic generations were found to be inadequate in explaining the variation among generation means, suggesting the probable existence of higher order interactions. Therefore, more generations should be included in addition to the six basic generations to test the variation among means for these traits.