Studies on Combining Ability and Heterosis
in Maize (Zea may, L)

1. Growth Attributes

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A complete diallel cross analysis among eight inbred lines and
Pioneer 514 were evaluated in two planting dates (early and
late) for tasseling date, Silking date, plant height, ear height
and leaf area. Data were genetically analysed by the procedures
developed by Griffing (1956). Planting date mean squares were
highly significant for all attributes. Genotypes mean squares re-
ached the significance level of probability for all traits. Appre-
iable genotype by planting date interactions were detected
for all traits except ear height. Significantly positive correlation
coefficient values between mid-parent values and \( F_2 \) mean
values obtained for, tasseling date, plant height, ear height
and leaf area.

The mean squares associated with general GCA and specific
SCA combining abilities were highly significant in all traits.
High ratios which largely exceeded the unity were obtained in all
traits except plant height, indicating that the largest part of the
total genetic variability associated with these traits was result
of additive and additive by additive gene action. Significant
reciprocal SCA mean squares were obtained for, tasseling
date, ear and plant height. Significant GCA and SCA by planting
dates mean squares were obtained in all traits.

Both inbred lines \( B_{16} \) and \( K_{44} \) expressed the best combiners
for Silking and tasseling dates, and plant and ear heights.
While both inbred lines G. 444 and G. 227 B seemed to be the
best combiners for leaf area. The crosses \( (1 \times 8) \) and \( (3 \times 8) \)
had the lowest values of SCA effects for earliness. Insignificant
SCA effect was detected in seven crosses for plant height. Leaf
area, six crosses had significantly positive SCA effect.

EARLINESS, if found in corn, is favourable for escaping destruc-
tive injuries caused by Sesamia nonica Led, Chilo simplex and
Pyrausta nubilalis Hb. Much efforts are devoted nowadays to
increase its productivity through genetical improvement. To car-
ry out a successful breeding programme, the breeder should have
enough knowledge about the type and relative amount of genetic
variance components and their interactions by environments for
the attribute in question.