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GENETIC VARIATION IN SIMAZINE TOLERANCE OF A
Brassica campestris POPULATION

Brassica campestris, an outcrossing species of spring rapeseed is closely related to a number of cruciferous weeds which compete strongly with the crop and reduce yields. Development of a variety with increased tolerance to the triazine herbicide, simazine would allow selective weed control of these broadleaved species.

Because *B. campestris* is an obligate outcrosser, cultivars are genetically variable and improvement in simazine tolerance could be most simply achieved through selection within cultivars. Improvement would be dependent on presence of genes for simazine tolerance and the heritability of the character.

A composite population of *B. campestris* was developed by open pollination of a bulk created by mechanical mixing of seeds from 16 different *B. campestris* cultivars. (Figure 1). Sixty half-sib families were then extracted from the composite population for analysis of genetic variation in simazine tolerance using the growool system described in a previous paper.

Analyses of variance of two simazine response parameters provided estimates of family and residual variance components which, in turn, were used to estimate additive genetic (6^2g) and environmental variance (6^2e). Since the variance between half-sib family (6^2f) means is equal to one quarter of the additive genetic variance, the narrow sense heritability of differences between these means may be estimated as:

$$6^2f / (6^2f + 6^2e)$$

Values for variance components and heritabilities are given in Table 1 for each parameter. The heritabilities obtained indicate a good potential for improvement in simazine tolerance by selection within this composite population.

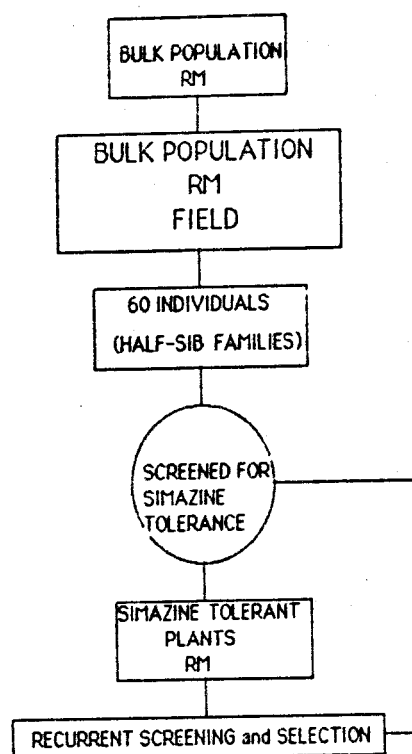


Figure 1: Production of *Brassica campestris* half-sib families for genetic determination of simazine tolerance.

Table 1: Analysis of *B. campestris* variation in simazine tolerance recorded as simazine tolerance index (STI) and % survival.

PARAMETER	F-RATIO	$\frac{2}{6g}$	$\frac{2}{6e}$	$\frac{2}{h_{ns}}$
%S	4.34**	352.68	316.37	0.53
STI	4.97**	82.52	62.37	0.57
	**P>0.01			