

CROSS-FERTILIZATION IN PEAS

Lonnig, W.-E.

Institute of Genetics, University of Bonn
Federal Republic of Germany

A simple method to determine the frequency of cross-fertilization occurring in cultivated peas is to grow control groups homozygous for gene *i* (green seeds) or gene *r* (wrinkled seeds) among a majority of plants with *I* and *R*. (yellow and round seeds). Through the phenomenon of xenia, contamination of pollen carrying *I* or *R* or both is immediately apparent in the seeds of the control plants.

We used the following two lines for our investigations:

- a) WL 6040: green, round seeds, linearly fasciated (derived by Vasileva from the variety 'Virtus'); provided by Dr. Blixt, Weibullsholm, Sweden.
- b) Variety 'Gribowo Kronenerbse': green, wrinkled seeds, strongly fasciated; provided by Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben, DDR.

These lines were among several thousand plants with yellow, round seeds. The percentage of cross-fertilization is given in Fig. 1. In detail, 27 plants of WL 6040 produced 1422 seeds, 34 of which could be clearly distinguished as yellow (2.39%), and 26 plants of 'Gribowo Kronenerbse' with 831 seeds showed 10 seeds which were yellow and round (1.20%). In the former case 20 out of 27 plants (74%) showed at least one cross-fertilization, and in the latter the ratio was 6 out of 26 plants (23%). Bumble bees (*Bombus* spp.) were the chief cause for the pollen transfer. Bees were present in large numbers and they actively visited the blossoms. As fasciated plants tend to have more flowers open at one time than normal plants, the percentage may be higher in them than in normal plants.

Varying results have been obtained with respect to the amount of cross-pollination in the pea (1). More material of different normal and mutant lines under different ecological conditions are needed for a general statement.

1. Blixt, S. 1972. *Agri Hort. Genet.* 30:1-293-

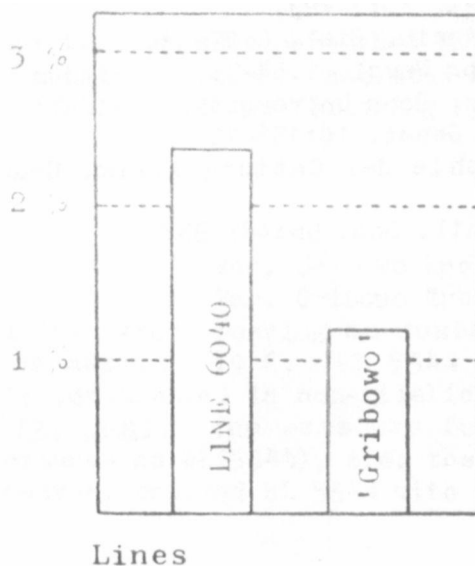


Fig. 1. Percent of cross-fertilization