

3. The number of genes involved in pollen restoration.

A number of inbreds have the ability to restore pollen production to sterile plants of both the S and T types. One of these restorers (Ky 21) crossed on A158 S sterile and backcrossed four generations has shown no completely sterile plants in two progenies. About 15 plants in each progeny were grown each generation. This past season pollen samples from several anthers from 20 plants in two of these backcrossed progenies were examined under the microscope. Pollen production ranged from 0 to 70 percent normal pollen in individual anthers, but all plants produced some pollen.

These restored fertile A158 plants were crossed on to I205 T sterile and backcrossed. Two of these backcrossed progenies grown this past season segregated into 12 plants showing no anthers and 11 plants with normal anther production. Pollen examination under the microscope showed no normal pollen grains in the sterile plants, and 90 to 95 percent normal pollen in the fertile plants. Other backcrossed T lines from the same original source of the restorer gene gave a total of 42 sterile and 45 fertile plants. This evidence shows clearly that this restoring inbred has several genes capable of restoring pollen production to the S type, but only one restorer gene for the T type. This one T restorer does a better job of pollen restoration than the several S restorers.