

1. Mutations in pollen sterility.

Pollen-producing plants that occur rarely in otherwise sterile WF9 of the S type, propagated by backcrossing by normally fertile plants of the same genotype, have remained fertile in all of the progenies during three generations of selfing. The original backcrossed fertile plant was slightly taller than the sterile plants in the same progeny but appeared to be otherwise normal. The selfed plants in the following three generations have been shorter and slower in growth and show considerably more yellow chlorophyll streaking than is characteristic of the WF9 inbred. These fertile plants are clearly weaker and less productive than normal. Pollen production seems to be about normal for this inbred.

These fertile plants have been tested for mutation to dominant gene pollen restorers by crossing on other sterile progenies of the same inbred, as reported last year. Five progenies were grown and all plants were completely sterile, no anthers being extruded on any plants. This past season two progenies of crosses of these fertile plants by normal fertile plants of the same inbred were grown. These all produced normal pollen. This eliminates the possibility of a mutation to recessive gene restorers. The evidence, therefore, points clearly to some change or segregation in the cytoplasmic condition itself. These fertile plants occur normally about one in 400 sterile plants in this inbred. They might include some normal plants by accidental mixture, but this possibility seems to be ruled out by the increased chlorophyll deficiency of this mutant line.