

Overcoming Sterility and Associated Problems in Triticales. *

F. J. Zillinsky and N. E. Borlaug

International Maize and Wheat Improvement Center (CIMMYT)

Londres 40, Mexico, 6, D. F.

The Triticale breeding program at CIMMYT is devoting its major effort to producing Triticales as a commercial crop competitive with other cereal grains. The principal barrier to its success is infertility, and associated problems of poor endosperm development. The wheat and rye components of Triticale are more or less in harmony during vegetative growth, but early in the reproductive stages evidences of antagonism appear. The end results are sterility, shrunken endosperm, malformed seeds, poor germination, etc. The difficulties, arising from reproductive disturbances, have been overcome by favorable genetic combinations of wheat and rye parents, and by rigid selection in the segregating generations. Strains isolated for higher fertility in April 1968, have maintained this high level of fertility through four successive generations under three widely different environments. Seed quality and yield of the fertile strains are better than previous Triticales. F₁ hybrids involving one fertile parent have a higher seed set than found among hybrids involving regular strains. Selection pressure is directed primarily towards overcoming reproductive problems first and subsequently incorporating other desired agronomic characteristics. Signs of reproductive disturbances are apparent from meiosis to seed maturation and these signs provide reliable guidelines for selection. To obtain genetic combinations which will overcome the sterility complex problem it is essential to create Triticale populations having a wide genetic base, make large numbers of crosses and use large segregating populations for selection.

*Presented at the Meetings of the American Society of Agronomy, Nov. 10, 1969 at Detroit, Michigan.

See also: Agronomy Abstract 1969 p. 12.