

✓ **TRITICALE** [trɪtəke'li], a cereal crop developed by crossing wheat with rye. Its name is a combination of the botanical names of the parent plants, *Triticum* (wheat) and *Secale* (rye). The major advantage of triticale, the first crop species scientifically created by man, is its high grain yield, especially under adverse conditions, such as acidic soils or heavy competition from weeds. It is also, like rye, high in the amino acid called lysine, which contributes to the quality of the plant's proteins. Nutritionally, triticale is superior to both wheat and rye.

The present drawbacks of triticale include a lack of winterhardiness and the tendency of the grains to sprout prior to harvest, which affects nutritional quality and other features. The flour, like rye flour, is also physically weak, lacking spring and tending to break when stretched. Currently, triticale flour is mixed with wheat flour to make an acceptable bread.

Although described in scientific reports as early as 1876, triticale remained a biological curiosity for over half a century because its mixture of wheat chromosomes and rye chromosomes did not provide the matching pairs necessary for normal development. In 1937 it was discovered that the chemical colchicine would induce chromosomes to reproduce themselves. It was therefore used to overcome the mismatch of wheat and rye chromosomes by producing paired sets of each.

A subsequent problem was that the hybrid offspring were partially sterile and produced few seeds. However, in 1967, in northwest Mexico, a stray grain of wheat pollen fertilized a triticale plant, accidentally producing a new, fertile strain. Further breeding improvements soon followed.

In 1983 the worldwide cultivation of triticale covered about 2.5 million acres (1 million hectares), mainly in the Soviet Union, Australia, and the United States. Most of the crop is used as poultry and livestock feed.

Triticale is classified as genus X *Triticosecale* of the family Gramineae (grass). **NORMAN E. BORLAUG AND PAUL FOX**