NATURAL CROSSING IN WINTER WHEAT.  

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Formerly it was believed that natural crossing in wheat seldom occurs, but evidence collected during the past few years has shown that such a belief was not well founded. Natural wheat hybrids have been observed in various parts of the world by different plant breeders, among whom may be mentioned Hayes, Leighty, and Smith in the United States; Saunders in Canada; Nilsson-Ehle in Sweden; Meister in Russia; Pridham in Australia; the Howards in India; Rimpau and Kornicke in Germany; Boeuf in Tunis and Vilmorin in France. From a review of the literature it is apparent that natural crossing in wheat is by no means uncommon. The frequent occurrence of such hybridization augments the difficulty of maintaining pure lines.

The object of this paper is to present evidence of natural crossing in winter wheat grown on the Agronomy Farm near Morgantown, West Virginia.

EVIDENCE OF NATURAL CROSSING.

In the summer of 1921 over 3000 spike selections were made from nineteen impure varieties of winter wheat grown in rod-rows. These varieties, together with the admixtures they contained, presented spike characteristics differing in awn development, outer glume color and covering (pubescent or smooth). The three characters just mentioned were the ones primarily used in detecting the F₁ plants and also in determining segregation.

Of the selections made, 1550 were seeded in individual plant-rows, 18 inches long and one foot apart. Twenty-five seeds from a selection were scattered in each row. Some of the selections were killed by freezing and other were eliminated because of infection with loose smut before the spike characteristics could be ascertained. In all there were 1461 pure line selections whose spikes were carefully studied.

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