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A LARGE CAPACITY WHEAT RESOURCE WITH BROAD MUTATION SPECTRUM AND NOVEL ALLELE IDENTIFICATION BY TILLING APPROACH

Henan province is located in central China. It is the core wheat production area with the largest wheat cultivated area, single yield and total production and the highest quantity of export commodity grain, with 5 million hectares, accounting for about 22% of the country's wheat area, the average yield about 6150 kg/hm², the production more than 65 million kilograms, accounting for 25% of the country. By the end of 2017, Henan province wheat breeding units using mutagenesis technology had bred 21 new mutant varieties of wheat. These varieties have made great contribution to the production of wheat in Henan, of which Taikong 5, Zhengmai 3596, Fumai 2008, Yufeng 11 and Zhengpinmai 8 realized the effective combination of high yield and high quality. The institute of isotopes of HAAS is one of the earlier units of wheat mutation breeding in Henan province. By now, we have bred 6 new wheat mutant varieties including Yutong 843, Fumai 2008, Zhengpinmai 8, etc. In addition, 10 new wheat mutant lines are tested in Henan or national regional trials. At the same time, we have created a large number of dwarf, high-yield, high-quality characteristic wheat germplasm resources. Based on the independent innovation of common wheat cytoplasm background of wheat male sterile line (89AR), we have begun to study the hybrid wheat seed production system. We have now bred some new sterile lines, screening a number of excellent maintainer line, breeding a little of new restorer lines. One excellent restorer line (recovery degree > 99%) was found by measuring the offspring fertility analysis, and it was preliminarily considered that the restorability was controlled by 3 pairs of major genes. This study will provide a new approach for the utilization of hybrid wheat in the world.

Country or International Organization

China

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