Transmission of Translocation Chromosome of Wheat Restoring Line with Triticum timopheevii Cytoplasm "2114" in Gametes (in press)

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Abstract

"2114" was a monogenic restoring line with Triticum timopheevii cytoplasm. It contained a fragment of chromosome 6U which was translocated naturally from Aegilops umbellulata. Competition between two types of gametes generated by heterotic translocation plants caused abnomal transmission of the translocation chromosome in the gametes. Average selfed seed-set of plants in the F1 of the cross D Sumai No.3 A×2114 was 91.6±2.6%. D Sumai No.3 was a near-isogenic line of Sumai No.3 with dwarfing gene Rht3. The sterility of its sterile line was easy to be restored. Seperation ratios of plant height and fertility in the F2 plants of the cross showed that seperation of Rht3 gene was in accordance to the monogenic seperation model while the seperation ratio between fertile plants and sterile plants deviated from the expected ratio seriously. According to the ratio between fertile plants and sterile plants in F1 group of the cross in which (Sumai No.3A×2114) F1 was used as male parent to make test cross with Sumai No.3A, the transmission frequency of the translocation chromosome in the male gametes was 30.8%. Ratios between fertile plants and sterile plants in the F1s of two crosses in which (Sumai No.3A×2114) F1 were used as female parents crossed with Sumai No.3 and Yangmai No.5 respectively showed that the translocation chromosome transmitted normaly through the female gamates. Discussion on the cause of low transmission frequency of the translocation chromosome in the male gamates and the method for using the translocation chromosome was also made in the paper. That would be beneficial to the application of the translocation chromosome in the selection of restoring lines with Triticum timopheevii.

Key wrods: restoring lines, translocation chromosome, transmission frequency, gamete