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粘、易型1B/1R小麦雄性不育系产生单倍体的遗传机理及育性恢复性能的研究

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摘要 调查了ms(Ae.kotschyi)-77(2)和ms(Ae.variabilis)-77(2)低、高世代和在转育、组配 中单倍体频率的变化趋势及在不同胞质间、核型间存在的变异。结果表明：(1)粘、易型1B/ 1R小麦雄性不育系产生单倍体的遗传机理是由于1B/1R卵细胞与粘、易胞质的专一互作，并 在花粉蒙导下而导致孤雌生殖的结果；(2)1B·1B/1R杂合核型比1B/1R·1B/1R纯合核型产生 的单倍体频率高，1B/1R·1B/1R 纯合核型世代间单倍体诱导频率相对稳定；(3)在同一核背 景下，诱导单倍体频率粘质高于易质；(4)用不同来源的1B/1R易位系来转育粘、易型不育系 及用不同核型的父本与其组配杂种，诱导单倍体频率明显不同；依此差异进行亲本选择，分 别可选出与组配出不产生或很少产生单倍体的粘、易型1B/1R不育系和F1杂种。此外，分析了粘、易型1B/1R不育系一般恢复度不高的内在原由，认为与1B·1B/1R杂合核型中的易位染 色体在减数分裂中能否正常联会配对直接相关。

关键词 山羊草,异质小麦,1B/1R易位系,雄性不育系,单倍体

分类号

Studies of Genetic Mechanism of Haploid Induced by Male Sterile Lines of 1B/1R W heat with Ae. kotschyi, Ae. variabilis Cytoplasms and Its Performance of Fertili ty Restoration

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Abstract

The varied tendency of frequency of haploid induced by ms(Ae. kotschyi)-77(2) and ms(Ae. variabilis)-77(2) from lower to higher generations and in substitut ing backcrosses of fertility and breeding hybrid combinations, and the variabilit y of haploidy in different cytoplasms and nucleus genotypes were investigated. T he results are as follows: 1. The genetic mechanism of haploid induced by the ma le sterile lines of 1B/1R wheat with Ae. kotschyi, Ae. variabilis cytoplasms is caused by the female parthenogenesis induced by the special interaction of 1B/1R egg nuclei and Ae. kotschyi, Ae. variabilis cytoplasms under mentor effect of p ollen. 2. The frequency of haploid induced by the 1B·1B/1R hetero nucleus was higher than that by 1B/1R·1B/1R pure nucleus, and the frequency of haploid of 1B/1R·1B/1R pure nucleus was relatively stable among different generations. 3. Under the same nucleus background, the frequency of haploid induced by Ae. kots chyi cytoplasm was higher than that by Ae. variabilis. 4. When the male sterile lines of wheat with Ae. kotschyi, Ae. variabilis cytoplasms were substituted by different 1B/1R translocation lines and were used to produce hybrids with the ma le parent having different nucleus genotypes, the frequency of haploid was obvio usly different. Based on the differences, the parents were selected. The male st erile lines of 1B/1R wheat with Ae. kotschyi, Ae.variabilis cytoplasms and F1 hy brid without or with less haploids could be found respectively. In addition, the factors of low degree of fretility restoration of the male sterile lines of 1B/ 1R wheat with Ae. kotschyi, Ae. variabilis cytoplasms were also analysed they we re considered to be ralated to whether the translocation chromosomes of 1B·1B/1 R hetero nucleus in meiosis were paired normally.

Key words Aegilops Alloplasmic wheat 1B/1R translocation line Male sterile line Ha ploid

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