

本期目录 | 下期目录 | 过刊浏览 | 高级检索

[打印本页] [关闭]

## 论文

### 偏凸-柱穗山羊草双二倍体与普通小麦不同杂种世代的染色体及性状分离特点

王玉海<sup>14</sup>,王黎明<sup>5</sup>,鲍印广<sup>1</sup>,崔法<sup>1</sup>,郝元峰<sup>1</sup>,宗浩<sup>1</sup>,李兴锋<sup>1</sup>,高居荣<sup>3</sup>,王洪刚<sup>123\*</sup>

1山东农业大学作物生物学国家重点实验室, 山东泰安271018; 2山东农业大学农学院, 山东泰安271018; 3国家小麦改良中心泰安分中心, 山东泰安271018; 4枣庄学院, 山东枣庄277100; 5河南科技大学农学院, 河南洛阳471003

摘要:

为探讨偏凸山羊草-柱穗山羊草双二倍体SDAU18在小麦遗传改良中的利用价值,以SDAU18和普通小麦品种烟农15及其9个杂种世代为材料,分析不同自交和回交世代染色体和性状分离的特点。结果表明,随自交和以烟农15为轮回亲本回交世代的增加,染色体数目逐渐减少,回交比自交能使后代的染色体数目更快趋近普通小麦的42条,至F<sub>5</sub>和BC<sub>3</sub>F<sub>1</sub>代,染色体数目为42的植株已分别达93.9%和92.0%。与自交世代相比,回交后代减数第一分裂中期的花粉母细胞的染色体构型较为简单,回交次数过多不利于外源染色体与普通小麦染色体发生重组,一般应以回交2~3次为宜;随自交和回交世代的增进,杂种的育性提高,至F<sub>3</sub>和BC<sub>2</sub>F<sub>1</sub>代育性基本稳定。在不同杂种世代可分离出具有矮秆、大穗、大粒、对白粉病、条锈病免疫或高抗及外观品质优良的变异类型,以F<sub>3</sub>和BC<sub>1</sub>F<sub>1</sub>代的变异类型最丰富。

关键词: 偏凸山羊草 柱穗山羊草 双二倍体 小麦 杂种后代 染色体分离

### Segregation of Chromosomes and Traits of Hybrid Generations Derived from Cross between *Triticum aestivum* and Amphidiploid of *Aegilops ventricosa* X *Aegilops cylindrica*

1State Key Laboratory of Crop Biology, Shandong Agricultural University, Tai'an 271018, China; 2Agronomy College of Shandong Agricultural University, Tai'an 271018, China; 3Subcenter of National Wheat Improvement Center, Tai'an 271018, China; 4Zaozhuang College, Zaozhuang 277100, China; 5College of Agronomy, Henan Science and Technology University, Luoyang 471003, China

1State Key Laboratory of Crop Biology, Shandong Agricultural University, Tai'an 271018, China; 2Agronomy College of Shandong Agricultural University, Tai'an 271018, China; 3Subcenter of National Wheat Improvement Center, Tai'an 271018, China; 4Zaozhuang College, Zaozhuang 277100, China; 5College of Agronomy, Henan Science and Technology University, Luoyang 471003, China

Abstract:

SDAU18 is an amphidiploid derived from the cross between *Aegilops ventricosa* and *Ae. cylindrical*, which carries excellent traits from the both parents. Because of the good crossability with common wheat (*Triticum aestivum* L.), it also acts as a bridge material to transfer objective genes from *Ae. ventricosa* and *Ae. cylindrical* to improved wheat cultivar through hybridization. To disclose the chromosome segregation of hybrid progenies derived from common wheat × SDAU18 cross, we used a common wheat cultivar Yannong 15 as female parent and recurrent parent to develop hybrid generations F<sub>1</sub>, F<sub>2</sub>, F<sub>3</sub>, F<sub>4</sub>, F<sub>5</sub>, BC<sub>1</sub>F<sub>1</sub>, BC<sub>2</sub>F<sub>1</sub>, BC<sub>3</sub>F<sub>1</sub>, and BC<sub>1</sub>F<sub>2</sub>. The mitosis in root tip cells and meiosis in pollen mother cells were observed. Agronomic traits, such as plant height, spike length, spikelet number per spike, grain number per spike, and seed-setting rate were also investigated in BC<sub>1</sub>F<sub>1</sub>, BC<sub>2</sub>F<sub>1</sub>, and BC<sub>3</sub>F<sub>1</sub> generations. In higher generations of selfing and backcross, the chromosome number gradually decreased and eventually tended to 42, which was the same as common wheat. Backcrossing was able to fasten the process than selfing. In the F<sub>5</sub> and BC<sub>3</sub>F<sub>1</sub> generations, plants with 42 chromosomes were accounted for 93.9% and 92.0%, respectively. Chromosome configuration in PMCs MI was simpler in backcross generations than in selfing ones. Compared with the BC<sub>1</sub>F<sub>1</sub> and BC<sub>2</sub>F<sub>1</sub> generations, BC<sub>3</sub>F<sub>1</sub> showed less diversity in chromosome configuration, indicating that excessive backcross resulted in less chromosomes recombination between SDAU18 and common wheat. Two or three rounds of backcross were feasible. With the increasing generation of selfing and backcross, fertility of the hybrid was improved till the stable status in F<sub>3</sub> and BC<sub>2</sub>F<sub>1</sub> generations. In various generations, variant plants with excellent traits were found, such as dwarf plant, huge spike, large grain, high resistance or immunity to powdery mildew and stripe rust, and good appearance of grain. In particular, the

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(361KB)
- ▶ [HTML全文]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 偏凸山羊草
- ▶ 柱穗山羊草
- ▶ 双二倍体
- ▶ 小麦
- ▶ 杂种后代
- ▶ 染色体分离

本文作者相关文章

PubMed

F<sub>3</sub> and BC<sub>1</sub>F<sub>1</sub> generations had the most variation types.

Keywords: *Aegilops ventricosa* *Aegilops cylindrica* Amphidiploid Wheat Hybrid progenies  
Chromosome segregation

收稿日期 2008-11-28 修回日期 2009-03-23 网络版发布日期 2009-05-19

DOI: 10.3724/SP.J.1006.2009.01261

基金项目:

本研究由国家科技支撑计划(2006BAD13B02)资助。

通讯作者: 王洪刚, E-mail: hgwang@sda.u.edu.cn

作者简介:

---

参考文献:

---

本刊中的类似文章

---

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

HTTP Status 404 -  
/zwxb/CN/comment/listCommentInfo.jsp

---

**type** Status report

---

Copyright 2008 by 作物学报