研究论文

大麦杂种优势利用研究　Ⅰ.**F1**杂种的离中亲优势和超优亲优势

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摘要　　以7个细胞质雄性不育系及相应保持系和4个恢复系，按NCⅡ交配设计配成7×4=28个F1杂种，研究了12个数量性状，即株高(PH)、穗长(SL)、穗下节间长(IL)、每株穗数(SP)、主穗粒数(KMS)、每株粒数(KP)、每株粒重(KWP)、每株干重(DWP)、千粒重(KW)、籽粒产量(KY)、籽粒蛋白质含量(PC)和赖氨酸含量(LP)的杂种优势表现。以杂种离中亲优势值Hm和超优亲优势值Hb作为杂种优势大小的指标，以显著的Hm和Hb的出现率作为一个性状杂种优势潜力的指标。结果表明: Hm较为普遍，正、负向显著的Hm出现率分别为46%和12%。然而，显著的Hb出现率平均仅为28%；其变化范围是0～79%，随性状而异。本研究中可推荐的强优势组合是3×10和6×8，它们分别属于六棱×六棱和二棱×二棱的杂交类型。在这两种杂交类型中，似乎要比在六棱×二棱和二棱×六棱的杂交类型中更容易选得强优势杂种。文中对杂种优势和遗传效应的关系也作了简要讨论。

关键词　　大麦　杂种优势　离中亲优势　超优亲优势

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Studies on the Heterosis of Barley (Hordeum vulgare L.)

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Abstract　The heterosis performance of 12 barley quantitative traits, including plant height (abbreviated to PH), spike length excluding awns (SL), internode length below spike (IL), spikes per plant (SP), kernels on main spike (KMS), kernels per plant (KP), kernel weight per plant (KWP), dry mater weight per plant (DWP), 1 000-grain weight (KW), kernel yield (KY), protein content (PC) and lysine content (LC), was investigated in 7 CMS lines and corresponding maintainers, 4 restorers and their 7×4=28 F1 hybrids. The superiority values of hybrid F1 from mid-parent, Hm, and that over better-parent, Hb, were used to describe the heterosis, and the occurrence rate of the significant Hm or Hb described the heterosis potence of a trait. The results showed that the Hm often existed and the occurrence rates of positively and negatively significant Hm were 46% and 12%, respectively. On the other hand, the occurrence rate of the significant Hb was 28% on average, ranging from 0% (PH and KMS) to 79% (IL), varied with the traits. In the present study, the crosses of 3×10 and 6×8 had strong heterosis, and they belong to the combinations of 6-row×6-row types and 2-row×2-row types, respectively. It seems that the hybrid with strong heterosis could be easier to be found in the combinations of 6-row×6-row or 2-row×2-row barley types than that of 6-row×2-row or 2-row×6-row barley types. The relationship between the heterosis and genetic effects was also discussed briefly.

Key words　Barley　Heterosis　Superiority from mid-parent　Superiority over better-parent

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