

研究论文

甘薯与低倍体种间杂种杂交低结实性的克服

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收稿日期 1998-7-22 修回日期 1998-12-30 网络版发布日期 接受日期

摘要 通过观察花粉萌发、花粉管生长、受精、胚发育等过程, 发现甘薯与低倍体(3x, 5x)种间杂种杂交低结实性的原因: 一是花粉附着量少、花粉萌发量少、花粉管生长缓慢导致子房受精不足, 使子房出现第一次大量脱落; 二是胚发育异常导致子房出现第二次大量脱落。这种胚发育异常对甘薯×5x杂种来说是受精卵发育缓慢; 对甘薯×3x杂种来说是胚发育停滞于球形胚阶段。

研究了克服甘薯×低倍体种间杂种低结实性的方法。结果表明: 甘薯与5x杂种反交, 其受精前障碍较小。植物生长调节剂(共6种配方)处理子房可改善甘薯×低倍体种间杂种的结实性, 其中配方 I (100 mg/L NAA+50 mg/L 6-BA)效果较好。利用配方 I 做两次处理可使甘薯×5x种间杂种的结实率进一步提高。通过观察植物生长调节剂处理对子房寿命和胚发育过程的影响, 发现植物生长调节剂通过提高有效胚存在率而提高甘薯×3x种间杂种的结实率; 通过促进胚的发育和延长子房寿命而提高甘薯×5x种间杂种的结实率。

关键词 [甘薯](#) [低倍体种间杂种](#) [种间杂交](#) [结实性](#)

分类号

Overcoming of Low Seedset in Sweet Potato × Triploidy/Pentaploidy Interspecific Hybrids

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Abstract The causes of low seedset in the hybridizations between sweet potato and 3x/5x interspecific hybrids were found as: ① few pollens attached to stigma, few pollens germinated, and slow growing of pollen tube led to low fertility rate which resulted in the first abscission of pollinated ovules; ② slow differentiation of fertilized egg (in sweet potato×5x) or embryo developmental cease at globular stage (in sweet potato×3x), resulted in the second abscission of pollinated ovules. Some methods were tried to overcome the low seedset. Sweet potato to be used as male parent was available to overcome the pre-fertilization barrier. Application of NAA(100 mg/L)+6-BA(50 mg/L) was available to extend ovary life, so that the number of embryo in pollinated ovules might be increased (in sweet potato×3x), or embryo development might be improved (in sweet potato×5x). Duplicating application of NAA (100 mg/L)+6-BA(50 mg/L) could further increased the seedset in sweet potato×5x.

Key words [Sweet potato](#) [3x/5x interspecific hybrids](#) [Interspecific cross](#) [Seedset](#)

DOI:

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