

研究论文

芸芥(*Eruca sativa* Mill.)与芸薹属(*Brassica* L.) 3个油用种的远缘杂交

孙万仓, 官春云, 孟亚雄, 刘自刚, 张涛, 李桐, 杨随庄, 令利军, 陈社元, 曾秀存, 王鹤林

甘肃农业大学农学院, 甘肃兰州 730070

收稿日期 2003-8-22 修回日期 2004-1-9 网络版发布日期 接受日期

摘要 采用芸芥(*Eruca sativa* Mill.)与芸薹属3个油用种 (*Brassica napus*, *Brassica juncea*, *Brassica rapa*) 进行杂交, 共授粉15 990朵花, 获得1 257个角果, 711粒杂交种子, 结角率为7.86%, 亲和指数0.045。经形态学鉴定, 无论芸芥作母本还是芸薹属的三个油用种作母本, F1植株均为偏母植株。杂交所获得角果的角粒数很低, 许多角果为空角果, 但在多数角果中可见到许多败育胚的残迹, 这些败育胚中可能不乏杂种胚。对角果生长发育测量结果表明, 远缘杂交角果在授粉后9 d左右停止生长, 据此推断杂种胚的败育时期可能就在授粉后9 d左右。采用苯胺蓝染色法, 在荧光显微镜下对芸芥与甘蓝型油菜杂交时花粉在柱头上的粘合、萌发及萌发花粉管在柱头和花柱中的生长、伸长情况观察结果表明, 异源花粉很难在柱头上粘合和萌发, 同时在花粉粘合的部位及其附近柱头乳突细胞内产生大量胼胝质; 萌发的少量花粉粒, 其花粉管进入柱头也比较困难。表明芸芥与芸薹属杂交, 存在严重的生殖隔离障碍, 而且主要是受精前障碍。

关键词 [芸芥](#) [芸薹属](#) [远缘杂交](#)

分类号 [S565](#)

Intergeneric Crosses between *Eruca sativa* Mill. and *Brassica* Species

SUN Wan-Cang, GUAN Chun-Yun, MENG Ya-Xiong, LIU Zi-Gang, ZHANG Tao, LI Xun, YANG Sui-Zhuang, LING Li-Jun, CHEN She-Yuan, ZENG Xiu-Cun, WANG He-Lin

Gansu Agricultural University, Lanzhou 730070, Gansu

Abstract Crosses were made between *Eruca* Mill. and *Brassica napus*, *Brassica juncea* and *Brassica campestris* and the parent materials were selfed. Totally 15 990 stigmas were pollinated and 1 257 pods, 711 pollinated seeds and 675 F1 plants were obtained. The pods set rate and compatibility index were 7.86%, 0.045 respectively. All the F1 plants showed the same morphological characters as their female parents, which suggested that F1 was matroclinous hybrid and the crosses between *E. sativa* Mill. and *B. napus*, *B. juncea* and *B. campestris* were highly incompatible. The relics of abortive embryos could be found in most of the pods developed from the distant crosses between *Brassica* and *Eruca*, and they were possibly the hybrid embryos. The hybrid embryos stopped growth 9 days after pollinated. The pollen-stigma binding, germination of pollen grains and the growth of pollen tubes in the surface of stigma and style were observed under fluorescent microscope. The results showed that the binding degree and germinating rate of pollen grain were weakened when *E. sativa* Mill. was pollinated with *B. napus* and the binding degree and germinating rate of pollen grain varied on the cross direction. The pollen of *B. napus* was hardly ever observed binding to the stigma of *E. sativa* Mill. which was used as female parent. The callose could be found easily depositing in papillose cells when both *B. napus* and *E. sativa* Mill. were used as female parent. It was suggested that the incompatible reaction caused by pollen-stigma interaction could be the one of main barriers of intergeneric incompatible crosses between *E. sativa* Mill. and *Brassica* crops.

Key words [Eruca sativa Mill.](#) [Brassica](#) [Intergeneric crosses](#)

DOI:

通讯作者 孙万仓 wangcangsun@yahoo.com.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(173KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [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](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“芸芥”的 相关文章](#)

▶ 本文作者相关文章

- [孙万仓](#)
- [官春云](#)
- [孟亚雄](#)
- [刘自刚](#)
- [张涛](#)
- [李桐](#)
- [杨随庄](#)
- [令利军](#)
- [陈社元](#)
- [曾秀存](#)