

AN EASY METHOD OF HYBRID SEED PRODUCTION IN BHINDI

One of the major limitations in the exploitation of heterosis in vegetables is the difficulties associated with the crossing of individual flowers for the production of hybrid seeds. The use of male sterile lines has not yet become practically feasible in most of the vegetable crops. The usual method of hybridization in bhindi involves three steps namely emasculation, protection, and artificial cross pollination. Of these, the process of hand emasculation is the most tedious one since it involves the scraping of large number of small reniform anthers from the delicate and mucilaginous staminal tube of each bisexual flower. So a crossing technique which can exclude the emasculation process will definitely economise the hybrid seed production programme.

In bhindi the stigma attains receptivity about 6 hours before flower opening. The anthers however dehisce only after the opening of flowers (Bhandari, 1974). Thus a clear protogynous condition prevails in bhindi. This could be made use of in developing an easy technique of crossing by simply pollinating the virgin flowers without emasculation. In order to test the efficiency of this method, a study was undertaken in the Department of Plant Breeding, College of Agriculture, Vellayani during 1980 by crossing a local cultivar of bhindi namely 'Kilichundan' with a wild species *Abelmoschus moschatus* Medic. This inter-specific cross (*A. esculentus* x *A. moschatus*) gives only nonviable seeds of smaller size compared to the normal open pollinated bhindi seeds. So the percentage of crossing can be estimated by simply counting the number of small and normal seeds in each crossed fruit.

Ten flowers of 'Kilichundan' variety were examined immediately after their opening (this was round about 8 a. m. under Vellayani conditions) with a hand lens to ascertain the absence of any pollen on the stigmatic surface and confirm the virginity of the flowers. Open flowers were selected from *A. moschatus* and the dehisced anthers on the staminal column were thoroughly brushed over the virgin stigmatic surface of 'Kilichundan' flowers. These crossed flowers were then left uncovered and allowed to set fruit. On maturity the number of small and normal seeds in each fruit were counted. The number of seeds of ten fruits at random from the open pollinated flowers of 'Kilichundan' variety were also counted and the mean given as control. The data are presented in Table 1.

The results indicate that crossing can be effectively done by simply smothering the virgin stigmatic surface of the bhindi flower with large quantity of pollen from the male parent. Since the processes of emasculation and protection are excluded, the hybrid seed production efficiency is considerably improved. This technique of pollinating virgin flowers without emasculation can therefore be profitably adapted for large scale hybrid seed production in bhindi.

Table 1
Seed analysis in the crossed and open pollinated fruits of
'Kilichundan' variety of bhindi

Type of fruit	number of small seeds	number of normal seeds	total	% of crossing
I crossed fruits				
1	64	4	68	94.12
2	58	2	60	96.66
3	54	3	57	94.56
4	61	2	63	96.82
5	55	3	58	94.82
6	60	1	61	98.36
7	56	0	56	100.00
8	64	1	65	98.46
9	55	0	55	100.00
10	60	0	60	100.00
Mean	58.7	1.6	60.3	97.38
II Open pollinated control (mean of 10 fruits)	—	46	46	not known

സംഗ്രഹം

വെണ്ടച്ചെടിയിൽ സങ്കരണം എളുപ്പമാക്കിത്തീർക്കുന്നതിനുള്ള ഒരു രീതി നിർദ്ദേശിക്കുന്നു. രാവിലെ 8 മണിയോടുകൂടി വെണ്ടപ്പൂക്കൾ വിടർന്നു അവസരത്തിൽ *raraojcoj^eis* സ്റ്റാൻഡർഡ് മാതൃകയിൽ പരാഗരേണുക്കൾ ഒന്നും പററിയിട്ടില്ല എന്നു ഒരു ലെൻസ് വച്ച് നോക്കി ഉറപ്പുവരുത്തിയ ശേഷം പിതൃ ഇനമായി ഉപയോഗിക്കുന്ന ചെടിയിൽ നിന്നും വിടർന്ന പൂക്കൾ ശേഖരിച്ച് അതിലെ ആന്തറുകൾ പെൺപൂവിന്റെ സ്റ്റാൻഡർഡ് മാതൃകയിൽ പൂശി സങ്കരണം നടത്തുന്നു. 'കിളിച്ചുണ്ടൻ' ഇനത്തിന്റെ പൂക്കളിൽ ഒരു വന്യ ഇനമായ *അമ്പൽമോസ്കസ* മോസ്ചാറസിന്റെ പരാഗം ഉപയോഗിച്ച് ഈ രീതിയിൽ സങ്കരണം നടത്തിയപ്പോൾ 97 ശതമാനം OTTO! ലേറെ സങ്കരവിത്തുകൾ ലഭിച്ചതായി കണ്ടു.

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Reference

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