REVIEW ARTICLE

DIFFERENT SYSTEM OF HYBRID DEVELOPMENT IN OKRA AND CUCURBITACEOUS VEGETABLES

Swamini Bhoi, Sourav Mahapatra* and Arindam Das

Division of Vegetable Crops, ICAR-IIHR, Bangalore, 560089

Received-04.01.2019, Revised-22.01.2019

Abstract: Okra (*Abelmoschus esculentus*) is a monotypic genus under the family Malvaceae having a significant place in the Indian vegetable market and export market. Cucurbitaceae is the largest family of vegetable crops consisting of about 800 species in around 130 genera with dominance in production and consumption among Indian people. In both of the above vegetable families several hybrids have been developed which played a major role in increasing the area and production of these crops. Heterosis or hybrid vigour has been exploited in its full potential in several vegetables of these two vegetable families. Presence of Genetic male sterility (GMS) in okra and gynoecy, monoecy and dioecy in cucurbits has been provided a convenient and cost-effective method of mass hybrid seed production in those crops. Here we have discussed several hybrids developed and their method of development in okra and major cucurbits like cucumber, bitter gourd, bottle gourd, musk melon, pumpkin, sponge gourd, squashes and water melon.

Keywords: Cucurbits, Hybrid, Male sterility, Okra, Vegetable

REFERENCES

Behera, T. K., Dey, S. S. and Sirohi, P. S. (2006). 'DBGy-201' and DBGy-202': two gynoeciouslines in bitter gourd (*Momordica charantia* L.) isolated from indigenous source. *Indian J. Genet*. 66:61-62.

Behera, T. K., Jat, G. S. and Dev, B. (2015). Improved seed production technology of bitter gourd and bottle gourd. In: MTC on Entrepreneurship development to ensure quality vegetable seed production for making the country nutritionally secure from 10-17th December, 2015 in the Division of vegetable Science pp. 46-50.

Chadha, K.L. and Ramphal, R. (1993). Vegetable Research in India. In: Advances in Horticulture. Malhotra Publishing House, New Delhi pp: 11-12.

Choudhary, B. and Singh, B. (1917b). Pusa Meghdoot and Pusa Manjari, two high yielding Bottle gourd hybrids. Ind.Hort., 16:15-16.

Choudhury, B. and Singh, B. (1971). Two high yielding bottle gourd hybrids. Indian Hort. 16:15-16.

Flemine, X. (2010). Studies on hybrid seed production in pumpkin under insect proof net house and open field conditions. M Sc. Thesis, Indian Agriculture Research Institute, New Delhi-110012.

Jat, G. S. (2011). Studies on hybrid seed production in bitter gourd under insect-proof net house and open-field conditions. M Sc. Thesis, Indian Agriculture Research Institute, New Delhi-110012.

Jeffrey, C. (2005). A new system of Cucurbitaceae**,** *Bot. Zhurn*., 90 (2005), pp. 332-33

Joshi, A. B., Singh, H. B. and Gupta, P. S. (1958). Studies in hybrid vigour III Bhendi. *Indian Journal of Genetics and Plant Breeding*, **18**, 57-68.

More, T. A., Sharma, S. C. and Mishra, J. P. (1991). Per significant estimates performance of gynoecious muskmelon hybrids. In: Golden Jubilee Symposium on Genetic Research and Education: Current Trends and Next Fifty Years (of ISGPB), New Delhi, Feb. 12-15, pp. 610-611.

More, T. A and Seshadri, V. S. (1987). Maintenance of gynoecious muskmelon with silver thiosulphate. *Veg Sci.* 14:138-142.

Munshi, A. D., Behera, T. K., Sureja, A. K., Jat, G. S. and Singh, J. (2015). Improved seed production technology of cucumber and sponge gourd. In: MTC on Entrepreneurship development to ensure quality vegetable seed production for making the country nutritionally secure from 10 -17th December, 2015 in the Division of vegetable Science pp. 20-23.

Peterson, C. E., and Anhder, L. D. (1960). Induction of staminate flowers on gynoecious cucumbers with gibberellin A3. *Science*, 131(3414):1673-1674.

Peterson, C. E., Owens, K. W. and Rowe, P. R. (1983). Wisconsin 998 muskmelon germplasm. *HortScience*, 18:116

Pitchaimuthu, M., Dutta, O. P., and Swamy, K. R. M. (2012). Studies on inheritance of Geneic Male Sterility (GMS) and hybrid seed production in okra [*Abelmoschus esculentus* (L.) Moench.]. Journal of Horticultural Science, 7(2):199-202.

Pitrat, M. (1984). Linkage studies in muskmelon. *Cucurbit Genet. Coop*.

Pradeepkumar, T., Hegade, V. C., Kannan, D., Sujatha, R., George, T. E. and Nirmaladevi, S. (2012). Inheritance of male sterility and presence of dominant fertility restorer gene in ridge gourd (*Luffa acutangula* (Roxb.) L.). *Scientia horticulturae*, 144:60-64.

Ram, D., Kumar, S., Banerjee, M. K., Singh, B. and Singh, S. (2002). Developing bitter gourd (*Momordica charantia* L.) populations with very high proportion of pistillate flowers. *Cucurbit. Genet. Coop*. Rep. 25:65-66.

*Corresponding Author

Singh, K. (2004). Vegetable Research in India: Some Issues. **In:** Kumar, S., Joshi, P. K. and Pal, S. (eds.); Impact of Vegetable Research in India. NCAP, New Delhi, Proceedings: 13. pp. 4-5.

Varalakshmi, B., Pitchaimuthu, M., Rao, E. S., Krishnamurthy, D., Suchitha, Y. and Manjunath, K. S. S. (2014). "Identification, preliminary characterization and maintenance of gynoecious plants, IIHRBTGy-491 and IIHRBTGy-492 in bitter gourd". In the International Bitter gourd Conference (BiG2014) organized by AVRDC at ICRISAT, Hyderabad.pp.36.

Wang, Y. H., Behera, T. K., and Kole, C. (Eds.). (2011). Genetics, genomics and breeding of cucurbits. CRC Press.

Zhang, X. P., Rhodes, B. B. and Baird, W. V. (1996). Development of Genic Male-sterile Watermelon Lines with Juvenile Albino Seedling Marker. *Hort.Science*, 31(3):426–429.

Zhang, X. P., Rhodes, B. B. and Baird, W. V. (1996). Development of Genic Male-sterile Watermelon Lines with Delayed-green Seedling Marker. *Hort.Science*, 31(1):123–126.