RESEARCH ARTICLE

DISTRIBUTION OF SEX PHENOLOGICAL CHARACTERS AMONG BITTER GOURD (*MOMORDICA CHARANTIA* L.) GENOTYPES AND ITS CORRELATION WITH YIELD POTENTIAL

Asna A.C.,* Jiji Joseph[1], Sainamole Kurian P.[2] and Joseph John[3]

[1]Department of Plant Breeding and Genetics, Kerala Agricultural University, Thrissur
[2]Department of Plant Pathology, Kerala agricultural University, Thrissur
[3]National Bureau of Plant Genetic Resources, Regional Station, Thrissur
Email: asna.ac@gmail.com

Received-04.03.2020, Revised-23.03.2020

Abstract: Bitter gourd (*Momordica charantia* L.) is one of the most popular vegetables in India. The natural flowering behavior of bitter gourd to produce a greater number of pistillate flowers than staminate flowers is the major limitation for the yield improvement. Fifty-three genotypes of bitter gourd were evaluated for the sex phenology, yield and yield contributing characters. The wild genotype AC-16/25 can be marked as an early variety based on sex phenology. The number of pistillate flowers and number of fruits per plant was found to be the highest in JJNS-15/65. Even though, a greater number of pistillate flowers and fruits per plant were produced by the wild genotypes, the fruit yield per plant was found to be the highest in cultivated *charantia* types. A significant positive correlation was observed between yield per plant and other yield contributing characters *viz.,* fruit weight, fruit length, fruit width and flesh thickness.

Keywords: Bitter gourd, Correlation, Pistillate, Sex phenology

REFERENCES

Ananthan, M. and Pappiah, C. M. (1997). Combining ability and correlation studies in cucumber (*Cucumis sativus* L.). South Indian Journal of Horticulture, 45(1): 57-58.

Bates, D. M., Merrick, L. C. and Robinson, R. W. (1995). Minor cucurbits. In: Smartt, J. and Simmonds, N. W. (eds.), Evolution of Crop Plants. John Wiley and Sons, New York, USA. 110p.

Behera, T. K., Dey, S. S., Munshi, A. D., Gaikwad, A. B., Pal, A. and Singh, I. (2009). Sex inheritance and development of gynoecious hybrids in bitter gourd(*Momordicacharantia*L.).*ScientificHorticultura e*,120: 130-133.

Bharathi, L. K. and John, K. J. (2013). *Momordica* Genus in Asia: An Overview. Springer, New York, 147p.

Chakravarty, H. L. (1990). Cucurbits of India and their role in the development of vegetable crops. In: Bates, D. M., Robinson, R.W. and Jeffrey, C. (eds.), Biology and Utilization of Cucurbitaceae. Cornell University Press, Ithaca, New York, pp. 325–334.

Deshpande, A. A., Venkatasubbaiah, K., Bankapur, V. M. and Nalawadi, U. G. (1979). Studies on floral biology of bitter gourd (*Momordica charantia* L.). Mysore Journal of Agricultural Science. 13:156-159.

Dey, S. S., Behera, T. K. and Munshi, A. D. (2010). Gynoecious inbred with better combining ability improves yield and earliness in bitter gourd (*Momordica charantia*L.). *Euphytica*, 173: 37-47.

Dey, S. S., Behera, T. K., Munshi, A. D. and Sirohi, P. S. (2007). Studies on genetic divergence in bitter gourd (*Momordica charantia* L.). Indian Journal of Horticulture, 64: 53–57.

Dey, S. S., Singh, A. K., Chandel, D. and Behra, T. K. (2006). Genetic diversity of bitter gourd (*Momordica charantia*L.) genotypes revealed by RAPD markers and agronomic traits. *ScientificHorticulturae*, 109: 21-28.

Islam, M. R., Hossain, M. S., Buhiyan, M. S. R., Husna, A. and Syed, M. A. (2009). Genetic variability and path coefficient analysis of bitter gourd (*Momordica charantia*L.). International Journal of Sustainable Agriculture, 1: 53-57.

Islam, S., Mis, M. A. B., Das, M. R., Hossain, T., Ahmed, J. U. and Hossain, M. M. (2014). Sex phenology of bitter gourd (*Momordica charantia*L.) landraces and its relation to yield potential and fruit quality. Pakistan Journal of Agricultural Science, 51(3): 651-658.

KAU(2011). Package of Practices Recommendations*: Crops.* Kerala Agricultural University, Directorate of Extension, Thrissur, India, 169p.

Khan, M. H., Bhyiyan, S. R., Saha, K. C., Bhuyin, M. R. and Ali, A. S. M. Y. (2015). Variability, correlation and path co-efficient analysis of bitter gourd (*Momordica charantia*L.). Bangladesh Journal of Agricultural Research, 40(4): 607-618.

Li, J. W., Sun, S. R. and Rer, Y. H. (1997). Study on genetic correlation and path analysis of the main agronomic characters of cucumber. Acta Agricultural UniversityHenanensis. 31(3): 244-247.

Linnaeus, C. (1753). Species Plantarum (2 Vols). Stockholm, Facsimile of the first edition Published by Ray Society, London, 259p.

Mia, M. A. B. and Shamsuddin, Z. H. (2011). Physio-morphological appraisal of aromatic fine rice (*Oryza sativa* L.) in relation to yield potential. International Journal of Botany, 7: 223-229.

*Corresponding Author

Mia, M. A. B., Das, M. R., Kamruzzaman, M. and Talukder, N. M. (2012). Biochemical traits and physio-chemical attributes of local aromatic fine rice landraces in relation to yield potential. American Journal of Plant Science, 3 (12): 1788-1795.

Mohanty, B. K. and Mishra, R. S. (1999). Studies on heterosis for yield and yield attributes in pumpkin (*Cucurbita moschata*duch. Ex. Poir.). Indian Journal of Horticulture, 56: 173-178.

Palada, M. C. and Chang, L. C. (2003). Suggested cultural practices for bitter gourd. Taiwan: Asian Vegetable Research and Development Center (AVRDC). 547 (3): 1-5.

Peter, K. V. and Abraham, Z. (2007). Biodiversity in horticultural crops. Daya Publisher, New Delhi, India, 201p.

Rajput, J. C., Paranjape, S. P. and Jamadagni, B. M. (1996). Variability, heritability and scope of improvement for yield components in bitter gourd (*Momordica charantia*L.). Annals of Agricultural. Research, 17: 90-93.

Ram, D., Kumar, S., Banerjee, M. K. and Kalloo, G. (2000). Occurance, identification and preliminary characterization of gynoecium in bitter gourd (*Momordica charantia*L.). International Journal of Agricultural Science,72: 348-249.

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 Genetics Cooperation Report, 25: 65-66.

Rasul, M. G., Hiramatsu, M.and Okubo, H. (2004). Morphological and physiological variation in Kakrol (*Momordica diocia*Roxb.). Journal of Faculty Agriculture, 49: 1-11.

Rheede, V. H. A. (1688). *Hortus Malabaricus*, vol 8, Joannis V S, Joannis D V. (eds), Amsterdam, pp: 17-36.

Saimbhi, M. S. and Thakur, M. R. (2006). Growth, sex expression and yield of squash melon (*Citrullus vulgaris* var. fistulosus) as influenced by (chloroethyl) phosphonic acid, 2,3,5-tri-iodobenzoic acid and (2-chloroethyl) trimethyl-ammonium chloride. Physiological Plant, 28: 383-387.

Schaefer, H. and Renner, S. S. (2010). A three-genome phylogeny of *Momordica* (Cucurbitaceae) suggests seven returns from dioecy to monoecy and recent long-distance dispersal to Asia. Molecular Phylogenetic Evolution, 54: 553-560.

Shawaf, I. I. S. and Baker, I. R. (1981). Combining ability and genetic variances of GXH F1 hybrids for parthenocarpic yield in gynoecious pickling cucumber for once over mechanical harvest.Journal of American Society Horticulture Science, 106: 365-390.

Shiefriss, O. and Galun, E. (1956). Sex expression in the cucumber. Journal of American Society Horticulture Science, 67: 479-486.