Advance Research in Agriculture and Veterinary Science
Volume 5 [1] January 2018: 23-24
CODEN : ARAVCG, USA
Online ISSN : 2348-5353

MINI REVIEW

A Breeding Methodology in Fruit crops

1. B. Hari vara Prasad 2. T. Anjaneyulu and 3. L.K.Verma
1 & 2. Teaching associates in college of Horticulture, Dr. Y. S. R. H. U; 3. Ph.D scholar UAS Dharwad.

Received 11.12.2017 **Revised 13.01.2018** **Accepted 26.01.2018**

CITATION OF ARTICLE
B. Hari vara Prasad, T. Anjaneyulu and L.K.Verma. A Breeding Methodology in Fruit crops. **Adv. Res. Agri. Vet Sci.,** Volume 5 [1] January 2018: 23-24

Fruit crops play very important role in terms of yield and quality aspects with acreage of 6373 ('000 ha) and production of 92918 ('000 MT). India occupies second place in production of fruit crops with GDP contribution is over 8 % from agriculture output. Asia is home of diversity for many fruit crops like Mango, Banana, etc. so naturally there is lot of genetic diversity exists among the cultivars.

Breeding methodology is very much different compared with other vegetable and flower crops because of its long perennial nature and most of them are highly propagated through vegetative means like Grafting, Layering, Cuttings etc,.

The breeding prospective vary accordingly whether scion cultivar or Root stock. While breeding Scion cultivar breeding objectives are a) Early generation cycle b) Dwarfing growth habit c) High yielding ability d) Good fruit quality e) Resistance to biotic and abiotic stresses. While for root stock a) Dwarfing nature b) Tissue compatibility c) Resistant to Biotic and abiotic stresses.

The common breeding problems in fruit crops are a) Long juvenile Phase b) Parthenocarpy c) Polyploidy d) Polyembryony e) single seed per fruit incase of mango f) lack of inheritance information.

The most commonly followed breeding method in developing cultivars is of Clonal selection method. It involves utilization of genetic variation existing naturally within the cultivars because of their highly cross pollinating nature which leads to heterozygous nature.

Intra specific and interspecific hybridization is followed by making selective crosses between parents having cross compatibility. The hybridization leads enormous variability in the F1 generation itself. Crossing between two highly heterozygous parents leads to different F1 families. Selection has to be practiced between F1 families and the best F1 family can be multiplied or maintained through the vegetative propagation method. Evaluation of seedlings can be made by allowing grafting on mature plants to asses atleast fruit quality and other disease/pest resistance. Crossing can be taken up easily between two self incompatible cultivars like in mango, apple etc,.

The obtained F1 families can be back crossed to recurrent parent if the breeding programme is focused on disease/ any desired characteristic feature. Or the F1 families can be allowed to next generation by open pollination or selfing to delay selection by one generation.

Uniformity of root stock is very much essential in multiplication of best plants by grafting method. In mango Polyembryony is taken advantage for root stock selection while layering in guava and cuttings in pomegranate, grapes etc. Incase of mango and citrus apomictic seedlings were taken as root stock for grafting because apomictic seedlings maintain uniformity. Even zygotic seedlings also can be used for grafting if there is no detrimental effect of root stock on scion.

In case of papaya where gyndioecious varieties are highly popular sibmating is followed in developing inbred lines for varietal hybridization or heterosis breeding. In this sibmating involves close mating between hermaphrodite plants and female plants or selfing of hermaphrodite plants.

Mutation breeding is a short term approach in developing cultivars particularly perennial crops instead of hybridization programme which is a long term. Incase of mutation breeding mutants can be created by using seed or vegetative propagule as a mutagenic material. Obtaining stable mutant is important aspect because of unstability occurs due to chimera at the tissue level. Even the seedlessness in grapes is also because of natural mutations. Pusa nanha ia gamma ray mutant in papaya.

Micropropagation is highly followed in banana where many somaclones was also developed because of its unstable genomic constitution leads to somatic mutations.

REFERENCES

1. Janick, J. and J.N. Moore. 1996. Fruit Breeding (3 vol.). Wiley, New York.
2. Janick, J. and J.N. Moore, (eds.), 1975. Advances in Fruit Breeding. Purdue University Press, West Lafayette, Indiana.
3. Moore, J.N., and J. Janick. 1983. Methods in Fruit Breeding. Purdue University Press, West Lafayette, Indiana.