



Research Paper

Article history :

Received : 03.03.2012

Revised : 20.09.2012

Accepted : 21.10.2012

Variability studies in progeny population of gynodioecious papaya varieties

■ BHARATHI NIRUJOGI¹ AND M.R. DINESH

Members of the Research Forum

Associated Authors:

¹Division of Fruit Crops, Indian Institute of Horticulture (IIHR), BENGALURU (KARNATAKA) INDIA

Author for correspondence :

M.R. DINESH

Division of Fruit Crops, Indian Institute of Horticulture (IIHR), BENGALURU (KARNATAKA) INDIA

ABSTRACT : Evaluation is one of the prerequisites for choosing the parents in a breeding programme as it helps in the selection of parents and forms a basis for development of recombinants with the desirable traits. In gynodioecious varieties certain fruit characteristics like shape of the fruit vary with the sex type. The gynodioecious varieties are maintained by sibmating over a number of generations. To derive information whether this sibmating induces variability in certain fruit characteristics, an experiment was conducted utilizing the sib mated progenies of the varieties Arka Surya and Arka Prabhath. These varieties besides being stable gynodioecious are advanced generation hybrids evolved by selection. The study showed that variation existed mainly because of the different sex types *viz.*, female and hermaphrodite for plant and fruit characteristics.

KEY WORDS : Variability, Gynodioecious, Papaya varieties, Silomating, Hermaphrodite

HOW TO CITE THIS ARTICLE : Nirujogi, Bharathi and Dinesh, M.R. (2012). Variability studies in progeny population of gynodioecious papaya varieties, *Asian J. Hort.*, 7(2) : 365-368.

Papaya, (*Carica papaya* L.) is one of the major fruit crops cultivated in tropical and sub-tropical zones. According to 2009-2010 estimates, papaya is grown in 95,700 ha with an annual production of 39,13,500 metric tons and productivity of 40.9 metric tons per hectare (Anonymous, 2010). Improvement of any crop depends on the chosen parents for hybridization programme. In the case of gynodioecious papaya varieties, due to the presence of female and hermaphrodite plants owing to the different genetic constitution of the sex types, some variation like fruit shape exist. Over a period of time, due to sibmating there is every chance that this uniformity is lost, although, inbreeding depression has not been reported so far in papaya (Ito *et al.*, 1977). This is because either the hermaphrodites are selfed or crossed with females, in either case there is always segregation for female and hermaphrodite plants in the subsequent generation. Hence, evaluation of sibmated progenies would help in generating information on the uniformity of plant and fruit characteristics (Pal *et al.*, 1980; Dinesh *et al.*, 2000). With the above objective in mind, an experiment was carried out to evaluate sib mated progenies of Arka Surya and Arka Prabhath for various plant and fruit characteristics.

RESEARCH METHODS

Investigation on evaluation of gynodioecious papaya hybrids- Arka Surya and Arka Prabhath was carried out during 2010-2011 at the Division of Fruit Crops, Indian Institute of Horticultural Research (IIHR), Bangalore. Arka Surya is from the cross Sunrise Solo x Pink Flesh Sweet. It is a gynodioecious variety bearing medium sized fruits of 600 to 800 g and smooth skin. Arka Prabhath is an advanced generation hybrid derived from the cross of (Arka Surya x Tainung-1) x Local Dwarf released from Indian Institute of Horticultural Research. It is gynodioecious in nature, with large sized fruits of 1200 to 1500 g and smooth skin. Both the varieties bear fruits with attractive deep pink colored, soft, crisp pulp free from typical papaya odour with high TSS (13-14⁰B). Fruit cavity is small and on ripening fruits attains yellow skin colour. The sibmated progeny seedlings raised from the sib mated crosses of Arka Surya and Arka Prabhath varieties were field planted and two months after planting were evaluated for morphological characters. General package of practices were followed for the cultivation. Fifteen progenies with five replications formed the material and were designated as 15 treatments in each of the varieties (Arka Surya and Arka Prabhath). Each treatment was carried out with five replications following Randomized