

## Varietal development in Papaya (*Carica papaya* L.) through conventional and heterosis breeding

I Medagoda and M D S A Chandrasekara

*Horticultural Crop Research and Development Institute, Gannoruwa, Peradeniya*

Papaya (*Carica papaya* L.) is recognized as one of the major fruit crops in Sri Lanka due to its year round availability, high demand, high income and high export potential. But still the crucial problem faced by the grower is lack of true-to-type cultivars. Therefore, studies were initiated to develop varieties through conventional and heterosis breeding.

As a result of the exploration conservation and evaluation carried out by the Horticultural Crop Research and Development Institute, Gannoruwa in 1990, a genotype 'Hordi' was selected for dwarfness, high yield, fruit taste, and resistance to papaya ringspot virus (PRSV). It has a special characteristic of purple colour petiole and a plant height of 104 cm at flowering. The variety was developed by selfing and selection for five consecutive generations until the desirable characters have become stable. The ratio of the plant types of the 5<sup>th</sup> generation was approximately 2 hermaphrodite : 1 female. The PRSV was not observed up to the 4<sup>th</sup> generation and it was visible on the 5<sup>th</sup> generation, hence the variety is not resistant to PRSV. But the other characters were uniform and stable. The mature fruits were pear shaped and the flesh colour was orange yellow. The fruits had a good taste with the brix value of 13.1. The average fruit weight and number of fruits per plant were 800 g and 35 fruits respectively.

The second objective was to develop varieties through heterosis breeding. Reciprocal crosses were made between the available variety of Rathna and the previously developed variety 'Hordi'. The seedlings of two parents and F1 hybrid were raised in polybags and planted in horticulture field at Gannoruwa. The plants were characterized morphologically using IPGRI standards. The varieties could be crossed reciprocally and success was 68% in pistillate plants while hermaphrodite plants showed lower percentage. Morphological characters of the hybrid showed both the parental characters. Fruit shape was similar to Rathna but the flesh colour was orange yellow confirming that it's a dominant character over red flesh colour.