STAGE OF HARVESTING AND HANDLING PACKAGE FOR PAPAYA VARIETY RATHNA

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Papaya is a nutritious fruit having high medicinal value and market demand. Recently released Rathna papaya variety has a greater demand due to its attractive colour, medium size, better post harvest quality and lesser susceptibility to mechanical damage during transport.

Cultivated extent of this variety has rapidly expanded due to greater market demand. Large-scale growers who adopt very good management practices mainly grow Rathna. However, consumers often complain about the poor taste and inferior external appearance of the fruits of this variety at the market especially about fruits come from small-scale growers. Studies were therefore, conducted to find the causes for the poor quality of ripe fruits in the market.

The recommendation is to harvest papaya fruits when 20 – 25% fruit surface turns yellow. Rapid softening with ripening of fruits can cause considerable post harvest losses if suitable packaging is not used during transport. Tea chests are widely used to transport papaya fruits with or without wrapping of individual fruits. Based on their experience on mechanical damages taking place in ripe fruits, traders harvest papaya at a stage between mature green and 25% yellow colour development. Since papaya is a climacteric fruit, green mature fruit can also initiate the ripening process.

STAGE OF MATURITY AT HARVEST AND FRUIT QUALITY

To find out the effects of stage of maturity at harvest on quality of Rathna papaya, fruits were harvested at 04 stages of maturity from a well-managed plantation at Neelabemma, Puttalam. The maturity stages used were trace yellow, 25% yellow, 50% yellow and 75% yellow development in the fruit skin.

Results showed that quality of the ripe fruits was the best when fruits were harvested at 50% yellow skin stage of maturity. Fruits harvested at 75% yellow colour stage reached table ripe stage within 3 days and had certain mechanical damages even when transported in plastic crates. In addition, higher susceptibility of these fruits to diseases resulted in poor external appearance.

Fruits harvested at trace yellow and 25% yellow stages showed very high weight loss and shriveling of the skin at table ripe stage. Very high susceptibility to post harvest diseases at table ripe stage caused excessive post harvest losses in these fruits. In addition, poor peel colour development especially in fruits harvested at trace yellow colour stage resulted in poor consumer attraction. Further, when fruits were harvested at trace yellow stage, ripe fruits had poor characteristics such as pale flesh colour, latex flavour and slight bitterness.

These observations indicate that Rathna variety papaya fruits must be harvested at 50% yellow skin stage to obtain better quality fruits.

Another interesting observation was the occurrence of "green islands" on ripe fruit skin when fruits were harvested at trace yellow and 25% yellow stages (figure 1 on page 19). Green patches remain on yellow skin are termed as green colour disorder. These green islands make the external appearance of the ripe fruits unattractive and remain green even at over ripe stage. Inhibition of ripening changes at green islands may be the reason for this disorder. Further, the taste and flavour of the tissues immediately below the green islands are also significantly poor.

TRANSPORT METHODS AND QUALITY OF PAPAYA

Formation of green islands however, has a relationship with the occurrence of mechanical damage to the skin during harvesting and/or transport. Another study was therefore, conducted to find out the effects of different packaging used during transport on green island disorder. For this study, fruits at 25% yellow stage of maturity were used.

When fruits were transported as individually wrapped fruits with Styrofoam nets or newspapers, occurrences of green islands were very low compared to fruits transported without wrapping in plastic crates. Individual wrapping of fruits reduced the impact damage hence the disorder was minimized. Higher occurrence of impact damage in fruits transported without wrapping resulted in higher incidence of green islands.

Fruits harvested at 50% yellow stage and transported using either Styrofoam nets or newspapers as wrapping for individual fruits had superior external appearance compared to those transported without individual wrapping. Apart from that higher incidences of diseases were also associated with fruits transported without individual wrapping.

CONCLUSIONS

Quality of Rathna variety papaya is not completely related to varieteal characteristics but partially affected by harvesting stage of maturity and other handling practices. Fruits must be harvested when at least 50% skin turn yellow and harvested fruits must be packed in rigid ventilated containers with individual packing of fruits using Styrofoam nets or newspapers. These packages must be carefully loaded into lorries and transported with a shelter from rain and hot sun. If these practices are adopted, quality of Rathna papaya can be maintained at higher level. In addition, these improved practices minimize post harvest losses.