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RESEARCH PAPER

Control of physiological changes in the elakki banana (*Musa paradisiaca*) fruits using modified atmospheric packaging

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SUMMARY : Banana is one of the most appreciated fruit all over the world because of its multipurpose use as food. Lack of suitable post harvest treatment practices may lead to a huge economic loss for the banana producing regions. Different postharvest management practices are in use to enhance its shelf life by delaying the ripening, reducing respiration rate and reduces the storage losses. Respiration rate of Elakki banana was studied (*Musa paradisiaca*) at two different maturity levels (matured fruit and one day after maturity), placed at two different temperatures (Ambient and 15°C). A typical climacteric peak of 94.6 mg CO_2 $kg^{-1}hr^{-1}$ was noticed in fruits harvested at matured stage at ambient condition. At 15°C, fruits harvested at maturity showed the respiration peak of 74.5 mg CO_2 $kg^{-1}hr^{-1}$. The physiological loss in weight (PLW) of the Elakki banana fruits was continuous in the banana fruits stored both in ambient and low temperature storage conditions. This is attributed to the general loss of water (*i.e.*, partial desiccation of the fruit) during storage. Among the different (Ambient and 15°C) storage temperatures, fruits stored at room temperatures recorded significantly higher PLW up to 9.46 per cent compared to lower (15°C) temperature (5.43%) on 38th day of storage. The principle of extending the storage life by altering the storage atmosphere around the commodity and slowing down the metabolic ripening processes without affecting the quality of the commodity. Recently long term storage of vegetables has been achieved by using silicon membrane systems.

Key Words : Elakki banana, Respiration rate, Low temperature, Maturity, Shelf life

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Bananas are affordable, and delicious fruit that offer not only the taste and great value but also offers many excellent health benefits including being a great source of potassium, which helps to control blood pressure (and of course to prevent painful muscle spasms) and a natural antacid which helps to protection from ulcers in the stomach. In fact, the only downside to them is that they have relatively short life expectancy - it is not easy to keep fresh bananas.

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Banana (*Musa paradisiaca*), "Queen" of tropical fruits is cultivated by man from prehistoric times. Banana provides nourishment and well-balanced diet to million of people around the globe and contributes to livelihood through crop production, processing and marketing (Singh, 2002). It grows well in humid tropical lowlands and is predominantly distributed between 30°N and 30°S of equator.

Sunderaraju (1998) reported that the 'green-life' of fully matured Karpurvalli var. of banana could be stretched to 25 days when stored at 13°C with $KMnO_4$ impregnated vermiculite as against 4 days at room temperature (33°C). He also reported that the storage of green mature fruits under refrigeration (8-10°C) result in severe chilling injury after 24 hours in dessert varieties whereas plantain group are much less affected even after 5 days of storage . Fully mature Pachandan fruits stored at 10°C developed chilling injury symptoms characterized by pitting and black spots after 15 days of storage while at 15°C