

Enhancement of Shelflife of Malta Fruit with Active Packaging

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Abstract : Citrus fruits rank third in area and production after banana and mango in India. Sweet oranges are the second largest citrus fruits cultivated in the country. Andhra Pradesh, Maharashtra, Karnataka, Punjab, Haryana, Rajasthan, and Uttarakhand are the main sweet orange-growing states. Citrus fruits occupy a leading position in the fruit trade of Uttarakhand, is casing about 14.38% of the total area under fruits and contributing nearly 17.75 % to the total fruit production. Malta is grown in most of the hill districts of the Uttarakhand. Malta common is having high acceptability due to its attractive colour, distinctive flavour, and taste. The excellent quality fruits are generally available for only one or two months. However due to its less shelf-life, Malta can not be stored for longer time under ambient conditions and cannot be transported to distant places. Continuous loss of water adversely affects the quality of Malta during storage and transportation. Method of picking, packaging, and cold storage has detrimental effects on moisture loss. The climatic condition such as ambient temperature, relative humidity, wind condition (aeration) and microbial attack greatly influences the rate of moisture loss and quality. Therefore, different agro-climatic zone will have different moisture loss pattern. The rate of moisture loss can be taken as one of the quality parameters in combination of one or more parameter such as RH, and aeration. The moisture contents of the fruits and vegetables determine their freshness. Hence, it is important to maintain initial moisture status of fruits and vegetable for prolonged period after the harvest. Keeping all points in views, effort was made to store Malta at ambient condition. In this study, the response surface method and experimental design were applied for optimization of independent variables to enhance the shelf life of four months stored malta. Box-Benkhen design, with, 12 factorial points and 5 replicates at the centre point were used to build a model for predicting and optimizing storage process parameters. The independent parameters, viz., scavenger (3, 4 and 5g), polythene thickness (75, 100 and 125 gauge) and fungicide concentration (100, 150 and 200ppm) were selected and analyzed. 5g scavenger, 125 gauge and 200ppm solution of fungicide are the optimized value for storage which may enhance life up to 4months.

Keywords : Malta fruit, scavenger, packaging, shelf life

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