RESEARCH PAPER:

Correlation and regression studies on storage characteristics of some banana varieties

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SUMMARY

The banana cultivars *viz.,* Williams, Zeling and Grand Nain were packed in polyethylene bags with ventilation and stored at room temperature (32 ± 2^0C), cold storage (20 ± 2^0C) and deep freezer (4 ± 2^0C). Changes in storage characteristics were recorded at 3 days intervals till the fruit's condition turned to rejectable stage. Correlation and Regression analysis of storage characteristics *viz.,* PLW, TSS, moisture and total sugar with storage days at various temperatures was done in the present investigation. The result clearly indicated that there existed a positive correlation between storage characteristics and storage days at various temperatures.

Banana (*Musa* sp.) is one of the oldest fruit known to mankind. Bananas are cultivated in over 100 countries. Temperature plays important role in ripening process of banana and for the development of optimum quality. To get banana fruit with good consumer acceptability and longer shelf-life, it is imperative to determine storage characteristic of banana at different temperatures. Therefore, the present study was undertaken to establish correlation among storage characteristic in banana.

MATERIALS AND METHODS

The available banana cultivars *viz.,* Williams, Zeling and Grand Nain were selected for the study. Bunches of these three cultivars of uniform size were harvested from keptive farm of Jain Foods Ltd., Jalgaon about 105 days after fruits set. Each fruit without any blemishes were cut from the bunches. Three lots were made from each variety. Banana fruits were packed in polyethylene bags (22.5 mm x 15mm and 40 micron thickness) with ventilation, having three samples of each variety in one bag.

One lot from each variety was kept at room temperature (32 ± 2^0C), cold storage (20 ± 2^0C) and deep freezer (4 ± 2^0C). Changes in quality parameter like PLW, TSS, moisture and total sugar were recorded at 3 days interval. Observations were recorded till the rejectable condition of fruit. One sample from each variety was taken out for analysis, therefore, total 9 samples *viz.,* 3 from room temperature, 3 from

cold storage and 3 from deep freezer were taken out.

RESULTS AND DISCUSSION

The estimates of correlation and regression analysis are presented in Table 1.In the present investigation, the high value of correlation R^2 indicated the high degree of relationship between dependent (storage characteristics) and independent (storage days) variable.

Physiological loss in weight (PLW):

PLW of banana fruits increased with increase in storage duration in all banana varieties at various temperatures. This may be due to transpiration and respiration losses. he relationship between PLW and storage days was found to be linear upon regression analysis for all samples. The high value of coefficient of correlation R^2 (0.83 to 0.99) indicated that there existed a high degree of relationship between dependent (PLW) and independent (storage days) variable (Fig. 1).

Total soluble solids (TSS):

The TSS of banana fruits increased with increase in storage duration in all varieties at 32, 20and 4^0C. This may be due to conversion of complex polymers into simple substances. During 4^0C storage, there was fall in TSS after 21 days of storage possibly because of decomposition of carbohydrates into CO_2 and H_2O. These results are in agreement with the