

## Effect of post harvest treatments of fungicides, grape guard and their combinations on chemical parameters of grapes stored at ambient conditions

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### ABSTRACT

Studies deal with effect of post harvest treatments of fungicides, grape guard and their combinations on different chemical parameters of grape berries stored at ambient conditions. The post harvest treatments of carbendazim, captan + grape guard and carbendazim + grape guard showed the TSS to the lower side, i.e. 19.05, 20.07 and 20.87%, respectively. However, these treatments did not affect acidity, total sugars and ascorbic acid after 7-10 days of storage of grape.

**Key words :** *Vitis vinifera*, Fungicides, Grape guard, Chemical parameters.

### INTRODUCTION

*Vitis vinifera* (L.) the species of the cultivated varieties of grapes is native of Asia, having originated from caucasus in Russia, Iran, Afghanistan and Asia minor ( Khanduja, 1974). The fresh grape berries are good source of sugars carbohydrates, vitamins, proteins and minerals. They are used for table purpose, wine, juice, raisins and canning fresh as well as dried fruits.

The post harvest losses of fruits and vegetables in India have been reported from 20 to 30 percent (FAO, 1977). Grapes are susceptible to post harvest spoilage because of highly perishable nature. Due to relative soft texture, grape berries are easily affected by temperature, careless handling while harvesting, packaging, transportation and post harvest diseases due to microorganisms . To control post- harvest diseases of grapes the post- harvest treatments of fungicides , grape guard and their combinations are being practiced. Therefore, it was felt necessary to see the effect of post- harvest treatments of fungicides, grape guard and their combinations on chemical parameters of grapes stored in 2 kg CFB boxes at ambient conditions.

### MATERIALS AND METHODS

Grape bunches of equal maturity weighing from 300-700 g were harvested from grape garden and brought into the laboratory. They were given post- harvest treatments as follows:

#### 1) Post - harvest fungicidal treatments and packing

The fungicides namely captan (0.2%), carbendazim (0.1%), mancozeb (0.25%) thiophanate-methyl (0.1%) were weighed as per the concentrations and solutions were prepared in water separately. Then grape bunches weighing 2 kg were dipped for two minutes in the solutions of each of the above fungicides. Then they were dried under shade to remove moistness. The treated grape bunches with each fungicide were packed in 2 kg CFB boxes. Before keeping the treated grape bunches in the box, a colour paper was spread at the bottom then a thin layer of cushioning material was spread in the box and then treated grape bunches were placed over the cushioning material. Again a layer of cushioning material was spread over bunches and remaining colour paper was covered on it and boxes were packed and sealed by silo tape .

#### 2) Post- harvest fungicidal treatments+ grape guard and packing

The fungicides namely captan (0.2%), carbendazim (0.1%), mancozeb (0.25%) thiophanate methyl (0.1%) were weighed as per the concentrations and solutions were prepared in separate buckets and grapes were treated by dipping them in the solutions for 2 minutes. They were dried under shade and packed as described above. But before covering the colour paper over grape bunches treated with above three fungicides, a quick release grape guard

paper was placed in such a way that it's white side remained in contact with grapes and brown side on upper side. Then a colour paper was covered and boxes were packed.

#### 3) Grape guard and packing

In this treatment, only grape bunches weighing 2 kg, without any fungicidal treatments were packed in CFB boxes and a quick release grape guard was placed as described above and boxes were packed.

#### 4) Control and packing

In this treatment, only grape bunches weighing 2 kg were packed, without any fungicidal treatment or use of grape guard. i.e. grape bunches were packed as an absolute control. The grape bunches of all above treatments were packed in 2 kg CFB boxes and stored at ambient conditions by using completely randomized design with three replications.

### Chemical Parameters

The initial chemical status of grape bunches in respect of TSS, acidity, total sugars and ascorbic acid was found out by analysing randomly selected 10 samples of grapes from the lot. The final observations in respect of these chemical parameters i.e. TSS, acidity, total sugars and ascorbic acid were worked out, when each of the treatments showed 10 % weight loss. The intact berries were only selected to estimate the chemical parameters.

#### 1) Total soluble solids(TSS)

The percentage of TSS was determined with the help of Erma Hand Refractometer. Care was taken to wash its prism with distilled water and dried before taking each reading. The brix reading were presented at 20°C temperature by using the reference table given by Lal *et. al.* (1986)

#### 2) Acidity

The acidity of grape berries was determined by titration method (Ranganna, 1979). 10 ml of fruit juice was taken in 50 ml beaker and titrated against 0.1 N NaOH using phenolphthalein indicator. Pink red colour marked the end point of titration. The total percentage of acidity was expressed as tartaric acid. It was computed by using the following formula-

$$\text{Total acidity (\%)} = \frac{\text{Titre} \times \text{Normality of NaOH} \times \text{Volume made up}}{\text{Wt./Vol. of sample taken for estimation} \times \text{Wt./ Vol. taken for titration}} \times \frac{\text{Equivalent weight of acid}}{100} \times 1000$$

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