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Full Length Research Article

INFLUENCE OF ORGANIC SUBSTANCES ON QUALITY ATTRIBUTES OF GRAPES CV. MUSCAT

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ABSTRACT

An experiment was conducted to study the "Influence of organic substances on quality attributes of grapes cv. Muscat". The various organic inputs were given as foliar application in the form of seaweed extract, humic acid, panchakavya, vermiwash at the rate of 0.1% and 0.5% at pea and marble stage. The vermiwash application @0.5% showed the best result by recordingthe maximum reducing sugars(%), titrableacidity(%), juice content(%), total soluble solids(°Brix) than other treatments and also enhanced the shelf life by retaining grape berry in stalk for about 7 days from harvest.

INTRODUCTION

Grapes(*Vitisvinifera* L.) belongs to the family Vitaceae was introduced to India by the Persian invaders in 1300A.D. In India, it is cultivated over an area of 118.7 thousand hectares with an annual production of 2585.3 million tonnes. Tamilnadu has the maximum productivity of 29.8 tonnes per hectare and Maharashtra accounts for more than 75.3% of the total productionn. Grapes are grown in Punjab, Haryana, Maharastra, Karnataka and Tamilnadu in the southern part of India. Normally the harvest was done four to five crops in two year (Lester *et al.,* 2007). The popular grape variety of South India are Muscat, Thompson Seedless, Anab-e-shahi and Bangalore Blue. Muscat seeded is gaining more popularity on table purpose because of its nutritive value, high total soluble solids, thin skin and desirable taste. Cumbum is a major centre for grape production with 4,000 small farmers producing over 90,000 tonnes of Muscat grapes, known locally as Panner Dhrakshai. The unique factor about this area is the grapes are harvested throughout the year while in most grape growing centres elsewhere the season ends with summer. Nutrition is one of the most important aspect of crop production and accounts for 30% of the total cost of cultivation. Nutritional requirement of fruit crop like grape differs, due to long duration crop. The nutrition removed from the soil is increased by harvested procedure and has to be replenished for sustaining the soil fertility and productivity. Balanced fertilization is the only way for enhancing the crop productivity in a sustainable manner (Lester *et al*., 2007).

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Organic manures and fertigation methods are harmless to the environment. Organic farming is the most effective and convenient means of maintaining optimum fertility level and water supply according to the specific requirement (Schnitzer, 1991). The various organic inputs like humic acid, panchakavya, vermiwash, seaweed extract, are suitable for grapes. The various research work earlier carried out shows that these Organic substance influences the Quality of other fruit crops.Keeping this view point a study has been carried out with the following objectives.

- To study the effect of different organic substances on quality characters of grapes cv. Muscat

MATERIALS AND METHODS

An investigation was carried out at cumbum near Theni of Tamilnadu during the year 2010. The experiment was laid out on RBD with 9 treatments and three times replicated. The various organic inputs were given as foliar application in the form of seaweed extract, humic acid, panchakavya, vermiwash at the rate of 0.1% and 0.5% at pea and marble stage.Fruits were analyzed for Total sugars, Reducing and Non-reducing sugar(%), Titratable acidity(%), Juice content(%), Total soluble solids(°Brix), pH of juice, Physiological loss in weight(PLW), shelf life(days).

T_1 - 0.1% of Panchakavya
T_2 - 0.5% 0f Panchakavya
T_3 - 0.1% of Humic acid

T_4 - 0.5% of Humic acid
T_5 - 0.1% of Vermiwash
T_6 - 0.5% of Vermiwash
T_7 - 0.1% of Seaweed extract
T_8 - 0.5% of Seaweed extract
T9 - Control

RESULTS AND DISCUSSION

Results of present experiment envisaged that application of Vermiwash showed the best resultin treatment (T_6) and (T5), when compared to other treatments. The maximum TSS(15.78) and total sugars(15.49%) was found in the T_6(0.5% Vermiwash). This is mainly due to increase rate of translocation of photosynthetic products from leaves to developing fruits and thereby increasing the total sugars. High TSS and other quality parameters obtained in the present study was due to the better role of nutrients which is involved in carbohydrate synthesis, breakdown and translocation of starch, synthesis of proteins and neutralization of physiologically important organic acids. The titrable acidity of berries seems to be reduced due to the application of vermiwash @0.5% (0.33%) than other treatments. The acidity of grapes are very important to determine the consumption rate of grapes by consumers. The data are in conformity with the findings of Venketesh (1995) who found the readily assimilable form of nutrients present in the vermiwash reduces acidity percentage and improves quality. The minimum physiological loss in weight was recorded in the treatment T_6 (8.57) and the maximum was recorded in T_{11}(11.66). These findings was in accordance with the results of Venketash (1995) in grapes and reported that physiological loss in weight was found minimum in vermiwash. Dey *et al*., (2005) in guava also observed similar results wuth respect to physiological loss in weight. The maximum shelf life was recorded in T_6 (7.65) and the least shelf life was recorded in control T_{11} (3.12). The extended shelf life might be due to the consequence of reduced respiration and transpiration. The results lends support to the findings of Athani and Hulmani (2001) in banana who reported that the influence of nutrients derived from organic sources had a positive effect on the postharvest characters of the fruits. The results concluded that organic substance vermiwash maintained the quality attributes and increased the shelf life in grapes.

Effect of organic inputs on total sugar(%), titrable acidity(%) and TSS(°brix) content of grapes cv. Muscat

Treatment	Total sugar (%)	Titrableacidity (%)	TSS (°brix)
T_1	13.54	0.41	13.57
T_2	13.67	0.40	13.72
T_3	14.28	0.36	14.62
T_4	14.47	0.35	14.84
T_5	15.15	0.34	15.69
T_6	15.49	0.33	15.78
T_7	13.18	0.51	12.53
T_8	12.92	0.50	12.77
T9	11.36	0.62	10.15

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