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Nilesh S Kalukhe

Ex-M.Sc Student, Department of
Horticulture, VNMKV, Parbhani,
Maharashtra, India

Sujata V Dhutraj

Assistant Professor, Banana
Research Station, VNMKV,
Parbhani, Maharashtra, India

Aditi A Deshmukh

Ex-M.Sc Student, Department of
Horticulture, VNMKV, Parbhani,
Maharashtra, India

Baslingappa M Kalalbandi

Associate Professor, Department of
Horticulture, College of
Horticulture, VNMKV, Parbhani,
Maharashtra, India

Corresponding Author:

Nilesh S Kalukhe

Ex-M.Sc Student, Department of
Horticulture, VNMKV, Parbhani,
Maharashtra, India

Analytical studies on different bunch covering materials in banana Cv. grand Naine

Nilesh S Kalukhe, Sujata V Dhutraj, Aditi A Deshmukh and Baslingappa M Kalalbandi

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Abstract

The experiment on “Analytical Studies on different bunch covering materials in banana Cv. Grand Naine” was conducted at the Banana Research Station, Nanded during 2021-2022. The experiment was laid out in Randomized Block Design with eight treatments and three replication viz., T₁-Bunch Cover with blue polyethylene bag, T₂-Bunch cover with white Non-woven polypropylene bag, T₃-Bunch cover with transparent polythene bag, T₄-Bunch cover with brown paper bag, T₅-Bunch cover with black cloth bag, T₆-Bunch cover with dry leaves, T₇-Bunch cover with gunny bag and T₈-Control. The treatment white non-woven polypropylene bag T₂ was most effective in finger characteristics and bunch characteristics among all treatments. Significantly maximum finger length (19.18 cm), maximum circumference of banana finger (12.60 cm) and weight of finger (125.29 g). The yield parameters maximum weight of bunch (23.79 kg) and banana yield per hectare (105.72 Mt/ha) was recorded by the treatment T₂ i.e white Non-woven polypropylene bag while minimum weight of bunch (19.96 kg) and yield per hectare (88.70 Mt/ha) was recorded in treatment T₈ i.e Control.

Keywords: Banana, bunch cover and grand Naine

Introduction

Banana are very important commercially used for both table and cooking purposes. It is a rich source of energy. It contains carbohydrates, crude fiber, protein fat ash, phosphorus, calcium, iron riboflavin and ascorbic acid (Forster *et al*, 2003) [5]. To prevent the losses caused by abiotic and biotic factors, several practices are becoming popular throughout the world. The development of alternative techniques improve the appearance and quality of fruit and reduce disease and insect infestation is becoming increasingly important consumer anxiety over the use of man-made Agrochemicals and environmental awareness increases. Banana fruit protection bags are also known as banana ripening bags, Banana bunch Covers, banana covers are used throughout the commercial banana growing areas of the world (Muchai *et al*, 2010) [8]. The net effect of bunch cover use is better fruit quality and increased Marketable yield.

Material and Methods

The experiments on Analytical Studies on different bunch covering materials in banana Cv. Grand Naine conducted at Banana Research Station, Nanded. The experiment was laid out in Randomized Block Design with three replication consisting of Eight treatments viz T₁-Bunch cover with blue polyethylene bag, T₂ Bunch cover with white Non-woven polypropylene bag, T₃-Bunch cover with transparent polythene bag, T₄-Bunch cover with brown paper bag, T₅-Bunch cover with black cloth bag, T₆-Bunch cover with dry leaves, T₇-Bunch cover with gunny bag, and T₈-control. Skirting bags are applied after removal of male flower and the bunches were covered with respective treatments. The cultural practices and other operation carried out during experimentation.

Results and Discussion

Results presented in Table 1 and 2 revealed that the “Analytical Studies on different bunch covering materials in banana Cv. Grand Naine”

Length of finger

The maximum length of finger (19.18 cm) was recorded by the treatment T₂ *i.e.* White Non-woven polypropylene bag. However it was found statically at par with treatment T₁ *i.e.* Bunch cover with blue polyethylene bag (18.64 cm) and T₃ *i.e.* Bunch cover with transparent polyethylene bag (18.52 cm). The minimum length (14.23 cm) was recorded by treatment T₈ *i.e.* control. The attains the maximum length of finger towards the harvesting as reported by (Pathak *et al.*, 2016) ^[9].

Circumference of finger (cm)

Significantly maximum circumference of finger (12.60 cm) was recorded by the treatment of T₂ *i.e.* White non-woven polypropylene bag. However it was statically at par with treatment T₁ *i.e.* Bunch cover with blue polyethylene bag (12.15 cm) and T₃ *i.e.* Bunch cover with transparent polyethylene bag. The minimum value (10.86 cm) of circumference of finger was observed by the treatment T₈ *i.e.* control. The increase in circumference of finger by the use of white and blue polypropylene bunch covers, it may be due to better filling of finger under the bunch cover treatments which had more temperature than that of open air temperature particularly in cold season and vice versa which help in better development of fruits. (Daniells *et al.* 2001) ^[4] reported greater finger length, finger diameter and finger density in bunches covered with plastics wrap which purpose the results obtained in the presents study.

Weight of Finger (g)

The data presented in Table 1 Significantly maximum (125.29 g) weight of the finger at harvest was recorded by the treatment T₂ *i.e.* Bunch cover with non-woven polypropylene bag and followed by treatment T₁ *i.e.* Bunch cover with blue polyethylene (122.74 g) whereas minimum (102.28g) weight of finger was recorded by the treatment T₈ *i.e.* control. The increases in weight of finger of by bunch covering materials, it may be white and blue polypropylene covers, it may be due to higher supply of photosynthesis to the developing fruits faster conversion of carbohydrates and better assimilation of metabolites which were again proved by warmer temperature inside bunch cover (Patil *et.al.*, 1989) ^[10] and (Anon. 2003) ^[2] reported that the bunch with different coloured polyethylene bag significantly increased the fruit length, girth and weight over

uncovered fruits.

Circumference of Bunch

The maximum circumference of bunch (39.21 cm) was recorded by the treatment T₂ *i.e.* White Non-woven polypropylene bag. The minimum (30.26 cm) bunch circumference was recorded by the treatment T₈ *i.e.* control.

Length of bunch

Significantly longest bunch length (69.98 cm) was recorded by the treatment T₂ *i.e.* Bunch cover with Non-woven polypropylene bag and followed by treatment T₁ *i.e.* Bunch cover with blue polyethylene (68.36 cm). The shortest (54.09 cm) bunch length was recorded by the T₈ *i.e.* control.

Weight of bunch

The highest weight of bunch (23.79 kg) was recorded by the treatment T₂ *i.e.* White Non-woven polypropylene bag. It was found Statically at par with treatment T₁ *i.e.* Bunch cover with blue polythelene (23.38kg). The least bunch weight (19.96 kg) was recorded by no bunch cover treatment T₈ *i.e.* control.

Yield per hectare

The data presented in Table 2 Significantly the highest yield per hectare (105.72 Mt/ha) was recorded in the treatment T₂ *i.e.* Bunch cover with Non-woven polypropylene bag. However it was found statically at par with treatment T₁ *i.e.* Bunch cover with blue polyethylene bag (103.90Mt/ha) and found significantly superior over rest of the treatments. The minimum (88.70 mt/ha) yield per hectare was observed by the treatment T₈ *i.e.* control. The increase in yield per hectare by the use of skirting material, it may be due to a higher supply of photo synthates to the developing fruits, faster conversion of carbobytrates and better assimilation of metabolites which were again affected by warm temperature inside the yield (Anonymous. 2013) ^[3] reported increase in bunch weight by (2.8 kg) in Rasthati banana over control Similar results were also reported by (Kassem *et al.*, 2011) ^[6] (Mohamed and Al-Qurashi 2012) ^[7] in date palm and (Abbasi *et al.*, 2014) ^[1] in Guava. The finding of above researchers are in accordance with the results obtained in the present study.

Table 1: Effect of different bunch covering material on finger characters of banana

Tr. No.	Treatment	Length of Finger (cm)	Circumference of Finger (cm)	Weight of Finger (g)	Circumference of bunch (cm)	Length of bunch (cm)
T ₁	Bunch cover with blue polyethylene bag	18.64	12.15	122.74	38.34	68.36
T ₂	Bunch cover with white Non-Woven Polypropylene	19.18	12.60	125.29	39.21	69.98
T ₃	Bunch cover with transparent poly thene bag	18.52	11.91	120.86	37.68	65.79
T ₄	Bunch cover with brown paper bag	15.28	11.23	109.21	32.37	63.38
T ₅	Bunch cover with black cloth bag	17.01	11.48	113.88	34.32	63.56
T ₆	Bunch cover with dry leaves	14.47	10.98	108.29	31.37	59.73
T ₇	Bunch cover with gunny bag	14.69	11.11	112.98	32.28	61.44
T ₈	Control	14.23	10.86	102.28	30.26	54.09
SE _±		0.32	0.27	0.36	0.35	0.44
CD at 5%		0.99	0.83	1.11	1.09	1.35

Table 2: Effect of different bunch covering material on yield attributes of banana.

Tr. No.	Treatment	Weight of bunch (kg)	Banana Yield (Mt/ha)
T ₁	Bunch cover with blue polyethylene bag	23.38	103.90
T ₂	Bunch cover with white Non-Woven Polypropylene bag	23.79	105.72
T ₃	Bunch cover with transparent polythene bag	21.66	96.25
T ₄	Bunch cover with brown paper bag	21.16	94.03
T ₅	Bunch cover with black cloth bag	21.36	94.92
T ₆	Bunch cover with dry leaves	20.53	91.23
T ₇	Bunch cover with gunny bag	20.60	91.54
T ₈	Control	19.96	88.70
SE±		0.56	1.16
CD at 5%		1.72	3.54

Conclusion

In conclusion, the study demonstrated that using White Non-woven polypropylene bags (T₂) significantly improved key growth parameters of banana plants compared to other bunch covering materials and the control. This treatment resulted in the greatest finger length (19.18 cm), circumference (12.60 cm), and weight (125.29 g), as well as the highest bunch circumference (39.21 cm), length (69.98 cm), and weight (23.79 kg). Consequently, the highest yield per hectare (105.72 Mt/ha) was observed with T₂. These findings highlight the effectiveness of White Non-woven polypropylene bags in enhancing banana fruit development and yield.

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