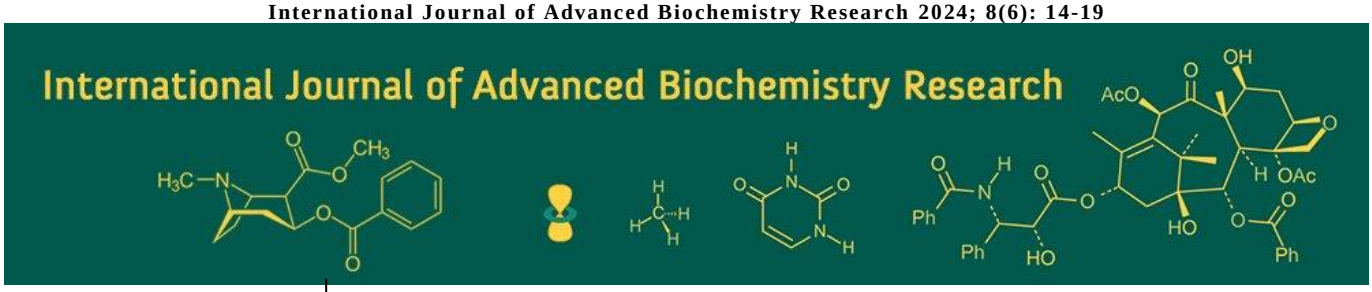

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Effect of covering materials and bunch feeding on yield attributes of banana (*Musa paradisiaca* L.) cv. Grand Naine

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Abstract
The present study was conducted during 2022–2023 and 2023–2024 at the College of Agriculture, IGKV, Raipur, with the objective to know the effect of covering materials and bunch feeding on yield attributes of banana (*Musa paradisiaca* L.) cv. Grand Naine. The bunch feeding was done after the completion of the female phase. The distal stalk of the banana bunch was fed with different nutrient sources like urea, sulphate of potash, banana special and organic manure forms like cow dung and cow urine with banana bunch covering materials and compared with the control (without bunch feeding and bunch covering materials). The results revealed that the treatment T_{19} *i.e.* 9 g Urea + 9 g SOP + 500 g Cow dung + 0.2% Banana Special + BPE recorded significantly maximum yield parameters *viz*., bunch weight (36.15, 35.39 and 35.77 kg), hand weight (3.28, 3.22 and 3.25 kg), weight of fingers (202.15, 198.95 and 200.55 g), pulp weight (152.55, 148.55 and 150.55 g), peel weight (50.42, 49.62 and 50.02 g), volume of fingers (168.52, 162.36 and 165.44 cc) and yield (83.29, 81.11 and 82.20 t/ha) followed by T_{20} *i. e* 9 g Urea + 9 g SOP + 500 g Cow dung + 0.2% Banana Special + WPE during both the years as well as in pooled data respectively.

Keywords: Cow urine, urea, sulphate of potash (SOP), blue polyethylene (BPE), white polyethylene (WPE), banana bunch feeding and covering materials

Introduction
Banana fruit is unique due to its high calorie and nutritive value and plays significant role in human diet by supplying vitamins, minerals and dietary fibre (Khader *et al*., 1990) [7]. It is a member of Musaceae family and important commercial fruit crop grown in tropical and sub-tropical climate of the world. It stood second to citrus in world fruit trade. There are many varieties of banana, all differing in flavour and appearance and are eaten when ripe (Dadzie and Orchard, 1997) [4]. Banana is the fifth most important commodity in world trade after cereals, sugarcane, coffee and cocoa (Uma, 2008) [18]. Banana is a monocarpic monocotyledon herbaceous plant and easily available with low cost having multipurpose use accompanied with essential vitamins and minerals.

Banana is one of the widely grown and consumed fruits due to their distinct aroma and taste, in all parts of the world. It is the staple food and economic life line for many countries. It is cheap source of carbohydrate and rich source of potassium, calcium, antioxidants and other micro-nutrients. The sugar rich and low-fat bananas have varied uses as infant food, functional food, dessert, carbohydrate based staple food and many more diversified food/feed uses (Agunbiade *et al*., 2006) [1].

The rate of nutrient uptake in bananas reduces after shooting and increases throughout the fruit's peak growth phases. To produce high yields, the banana plant is fed nutrients through the soil, foliage, de-navelling (removal of the male inflorescence for nutrient diversion), and post-shoot feeding through the distal stalk-end of the rachis. The quantity and quality of the developing bunch of fruits are influenced by the plant's nutrient status and the unhindered movement of nutrients to it. The fertilizers injected to the soil may be significantly lost due to soil characteristics and environmental variables, resulting in a lack of nutrients available after shooting to satisfy the growing bunch's nutrient needs.

Consequently, bunch feeding of nutrients offers a significant opportunity not just for the effective utilization of nutrients but also to safeguard the economy of the farmer by improving the yield potential and quality of the produce. The procedure is said to be crucial for raising the fruit's yield and marketability. During harvest and transportation, bunch covers shield the fruit's surface from predatory birds, wind, cold, thrips, leaf and petiole scarring beetles, dust, light hail, sunburn and handling damage. Additionally, fruit from sleeved bunches has been demonstrated to have a considerably lower incidence of postharvest anthracnose disease. Better fruit quality and an increase in marketable output are the overall effects of using bunch covers; in India, it is also customary practice to cover bunches with dried leaves.

Materials and Methods

The experiment was conducted in the PFDC at the Department of Fruit Science, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya Raipur, during the years 2022–2023 and 2023–2024. The experiment was conducted on bananas of cv. Grand Naine with 25 treatments and three replications in a randomized block design (RBD). The land was ploughed twice, harrowed to bring the soil to a fine tilth, and leveled. The uniform pits of 60 cm^3 were dug out according to the plan of layout and recommended spacing (1.8m × 1.8m). All the cultural practices, like weeding, de-suckering, irrigation and plant protection, were taken up in timely intervals. For bunch stalk feeding, uniform bunches from each treatment were selected. Rachis at the distal end of the bunch were excised along with male buds, giving a slant cut. (De-navelling by excision of the rachis 10 cm after the last hand) Immediately after all the pistillate (female) flowers had set fruit, *i.e*., after four bracts were shed (about 15 days after flower emergence). The prepared 7.5 g of urea, 7.5 g of sulphate of potash and 0.2 g banana special were dissolved in 100 ml water prepared in 100 ml solution containing 500 g of fresh cow dung was poured in a thick polythene bag and tied securely by dipping the excised rachis and bunch cover blue polyethylene (BPE), white polyethylene (WPE) and maintained till harvest.

Treatment combination

S. No.	Treatments	Notations
1.	Control	T_0
2.	7.5 g Urea + 7.5 g SOP + 500 g Cow dung + BPE	T_1
3.	7.5 g Urea + 7.5 g SOP + 500 g Cow dung + WPE	T_2
4.	8 g Urea + 8 g SOP + 500 g Cow dung + BPE	T_3
5.	8 g Urea + 8 g SOP + 500 g Cow dung + WPE	T_4
6.	8.5 g Urea + 8.5 g SOP + 500 g Cow dung + BPE	T_5
7.	8.5 g Urea + 8.5 g SOP + 500 g Cow dung + WPE	T_6
8.	9 g Urea + 9 g SOP + 500 g Cow dung + BPE	T_7
9.	9 g Urea + 9 g SOP + 500 g Cow dung + WPE	T_8
10.	5% Cow urine + 500 g Cow dung + BPE	T_9
11.	5% Cow urine + 500 g Cow dung + WPE	T_{10}
12.	10% Cow urine + 500 g Cow dung + BPE	T_{11}
13.	10% Cow urine + 500 g Cow dung + WPE	T_{12}
14.	7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{13}
15.	7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{14}
16.	8 g Urea + 8 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{15}
17.	8 g Urea + 8 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{16}
18.	8.5 g Urea + 8.5 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{17}
19.	8.5 g Urea + 8.5 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{18}
20.	9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{19}
21.	9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{20}
22.	5% Cow urine + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{21}
23.	5% Cow urine + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{22}
24.	10% Cow urine + 500 g Cow dung + Banana Special (0.2%) + BPE	T_{23}
25.	10% Cow urine + 500 g Cow dung + Banana Special (0.2%) + WPE	T_{24}

Results and Discussion

The fruit yield traits during both years 2022-23 and 2023-24 of different treatments are mentioned in Table 1 and 2, which revealed a significant variation in fruit yield attributes bunch weight (kg), hand weight (kg), weight of fingers (g), pulp weight (g), peel weight (g), volume of fingers (cc) and yield (t/ha) among treatments.

Bunch weight (kg)

There was significant difference observed among the treatments with respect to bunch weight, however, the maximum bunch weight (36.15, 35.39 and 35.77 kg) were recorded in T_{19} - (9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE), which wasno-significant followed by T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE and T_{13} -7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (36.07, 35.31 and 35.69 kg) and (35.93, 35.17 and 35.55 kg), respectively, but significantly superior over the treatment T_{22}- (32.57 kg) with bunch weight during first year. While, the minimum bunch weight of 29.65, 29.03 and 29.34 kg were recorded in T_0 (Control) during both the year 2022-23, 2023-24 and pooled data, respectively. Bunch fed with combination of (9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE increased the character of bunch weight. Sulphur is present in SOP, resulting in increased bunch weight as it may have a direct impact on catalase peroxidase enzyme activation in plant by forming iron-sulphur protein (ferredoxin) as discussed by Sreekant *et al*. (2017) [17]. Another reason behind the increased bunch

weight might be due to increased carbon assimilation and allocation to the fruit because of the application of potassium and secondary nutrient mainly sulphur. The results of the present investigation were in conformity with the finding of Sreekant *et al*. (2017) [17] and Devraj *et al*. (2019) [5].

Hand weight (kg)

During the year 2022-23, the maximum hand weight (3.28 kg) was produced by T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was statistically non-significantly followed by (3.23kg) T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE and T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (3.17 kg) but showed significantly difference with T_{17} (2.98 kg). While, minimum hand weight (2.00 kg) was observed with T_0 (control). During the year 2023-24, the maximum hand weight (3.22 kg) was recorded with T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was statistically non-significantly followed by (3.17 kg) T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE and T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (3.11 kg), except T_1 (2.91 kg) it was statistically significant. While, minimum hand weight (1.96 kg) was observed with T_0 (control). The pooled data presented in revealed similar trend of response as that of individual years *i.e*., maximum hand weight (3.25 kg) was observed with T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was statistically non-significantly at par with (3.20 kg) T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + WPE and T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (3.14 kg) but significantly superior over the treatment T_{18} with hand weight 2.97 kg. While, minimum hand weight (1.98 kg) was observed with T_0 (control).

Increase in the hand weight might be due to the present of sulphur in the sulphate of potash (SOP) which is responsible for the formation of ferridoxin (Iron - sulphur protein) in plants which have a direct impact in activating the catalase and peroxidase enzymes. It might also had a synergistic effect with zinc, which is essential for carbon dioxide absorption and utilization, synthesis of RNA and auxin. Zinc is also essential for chlorophyll formation, which improves the photosynthetic activity. Thus, sulphur is the key factor that created a positive impact on hand weight by attributing more accumulation of dry matter and starch. The results of the present investigation are in close confirmity with the finding, Alagarsamy and Neelakandan (2008) [2], Kumar *et al*. (2008) [8] and Bhalerao *et al*. (2009) [3].

Weight of fingers (g)

During 1st year (2022-23) the maximum average weight of fingers was observed in T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (202.15 g) which was non-significantly at par with T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (201.71 g) and T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (199.23 g). The treatment T_{19} was statistically superior over treatment T_{23} (180.99 g), while the minimum average weight of fingers (165.44 g) was reported under the treatment T_0- control. During 2nd year (2023-24) the maximum average weight of fingers was observed in T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (198.95 g) which was non-significantly followed by T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (198.51 g) and T_{15} - 8 g Urea + 8 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (197.86 g). While it was statistically significant with treatment T_{23} (178.13 g). The minimum average weight of fingers (162.82 g) was reported under the treatment T_0- control. In case of pooled data, maximum average weight of fingers was observed in T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (200.55 g) which was statistically non-significantly at par with T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (200.11 g), T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (197.65 g) but significantly superior over the treatment T_{21} with weight of finger of (181.70 g). Whereas, the minimum average weight of fingers was observed in control (164.13 g). The increased weight of finger might be due to fast growth and development of cells leads to more accumulation of sugars, carbohydrate and water in expanded cells as reported. Also the results are in confirmity with those reported by Sandhya *et al*. (2016) [15] and Kumar *et al*. (2011) [9].

Pulp weight (g)

During the year 2022-23, maximum pulp weight per fruit (152.55 g) was obtained under the treatment T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was statistically non-significant followed by T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (1152.11 g), T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (150.30 g), and T_{14} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (149.41 g), except with treatment T_6 (137.30 g). Whereas, minimum pulp weight per fruit was recorded under treatment T_0 - control (121.34 g). During second year (2023-24), highest pulp weight per fruit (149.07 g) was obtained in T_{15}- 8 g Urea + 8 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE which was non-significant followed by T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (148.55 g), T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (148.11 g), T_{17} - 8.5 g Urea + 8.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (148.06 g) and T_{18} - 8.5 g Urea + 8.5 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (147.01 g) but show significantly difference with T_{22} (134.77 g) Whereas, minimum pulp weight per fruit was recorded under treatment T_0 - control (118.16 g). The pooled data indicated that treatment receiving 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (T_{19}) maximum pulp weight per fruit (150.55 g) which was non-significant followed by T_{20} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + WPE (150.11 g), T_{13} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (148.33 g) and T_{14} - 7.5 g Urea + 7.5 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (147.45 g) except with treatment T_5 (136.32 g) and T_6 (135.50 g). The minimum pulp weight per fruit was recorded under T_0 - control (119.75 g). The increase in pulp thickness may be related to the role of potassium in influencing the developing fruit, which act as a strong sink for potassium than for other nutrients (Kumar *et al*. 2006) [10]. Additional supply of potassium shown a

favourable role to get good pulp recovery. This might be due to less experienced physiological loss in weight by fruits may contribute towards the more pulp weight. The results were in confirmity with those obtained by Kumar *et al*. (2008) [8], Kumar *et al*. (2011) [9].

Peel weight (g)

During the year 2022-23, the maximum peel weight (50.42 g) was obtained with T_{19} where 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was statistically non-significantly followed by T_{20}, T_{13}, T_{14} and T_{16} (50.40 g, 49.71 g, 49.60 g and 49.50 g respectively). The minimum peel weight (44.73 g) was recorded in T_0 – control. During second year (20023-24), the maximum peel weight was observed with T_{19} - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (49.62 g) which was statistically non-significantly followed by T_{20}, T_{15}, T_{17} and T_{18} (49.60 g, 49.57 g, 49.37 g and 49.06 g respectively). The minimum peel weight (44.03 g) was recorded in T_0 – control. As regards pooled data, it was observed that the trend matches with the data individual Year. The maximum peel weight of 50.02 g was recorded with - 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE which was non-significantly followed by T_{20}, T_{13}, T_{14}, T_{15} and T_{16} - (50.00 g, 49.32 g, 49.21 g, 49.18 g and 49.11 g, respectively). While minimum peel weight of 44.38 g was observed with T_0 (control) treatment. Peel thickness was significantly influenced by potassium application, which has multiple enzymatic and catalytic functions used in many photosynthetic and metabolic processes in plants and increased the peel thickness of orange fruit as reported by Omaima and Metwally, 2007 [14].

Volume of fingers (cc)

Volume of fingers (cc) was significantly influenced due to different treatment used in present investigation. Result in 2022-23, 2023-24 and pooled mean, the volume of fingers (cc) was recorded highest in treatment T_{19} (168.52, 162.36 and 165.44 cc, respectively), which was statistically non-significant followed by T_{20} (167.15, 161.05 and 164.10 cc, respectively) and T_{13} (166.48, 160.40 and 163.44 cc, respectively) where as it was found significantly differ with rest of the other treatment. While it was statically significant with treatment T_7 (153.10 cc) and T_{18} (153.20 cc) during first year, T_6 (145.25 cc) during second year and T_5 (148.50 cc) pooled mean. However, the volume of fingers (cc) was observed lowest in treatment T_0 (138.87, 133.79 and 136.33 cc, respectively) and this was statistically inferior to all other treatments. The increase in length, girth and weight of finger reflected on finger volume. The increase in finger weight might be due to the rapid multiplication and enlargement of cells and greater acculmulation of photosynthates and water in the expanded cells. Similar observations made by Mustaffa *et al*. (2004) [13], Sharma *et al*. (2014) [16].

Yield (t/ha)

Among the treatments, maximum fruit yield was recorded in T_{19} (83.29 t/ha) was found in 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (T_{19}), which was significantly higher as compared to most of the treatments, which was statistically non- significantly followed by T_{20} - (83.04 t/ha) and T_{13} - (81.57 t/ha) but showed significant difference with T_9 (75.19 t/ha) and T_{22} (75.24 t/ha). While, the minimum yield (64.95 t/ha) was found in under treatment T_0 - (Control) during the year 2022-23. Whereas in year 2023-24, the maximum fruit yield (81.11 t/ha) was found in 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (T_{19}), which was statistically non-significantly followed by T_{20} - (80.86 t/ha) and T_{17} - (80.86 t/ha) except with treatment T_{10} (72.46 t/ha). The minimum fruit yield (63.25 t/ha) was found in under treatment T_0 - (Control). In case of pooled data, maximum fruit yield was recorded in T_{19} (82.20 t/ha) was found in 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special 0.2% + BPE (T_{19}), which was statistically non- significantly followed by T_{20} - (81.95 t/ha) and T_{13} - (80.50 t/ha) but show significant difference with T_{10} (73.44 t/ha) and T_{11} (73.20 t/ha). The minimum fruit yield (64.10 t/ha) was found in under treatment T_0- (Control). Yield increase might be due to sulphur present in SOP helps in energy transformation and activation of enzymes in carbohydrate metabolism leads to more partitioning of photosynthates which increases the yield of banana. The similar reports were reported by Dombale *et al*. (2018) [6] (Millik *et al*. 2018) [12]. and Devraj *et al*. (2019) [5] in Grand Naine.

Table 1: Effect of covering materials and bunch feeding on yield attributes of banana (*Musa paradisiaca* L.) cv. Grand Naine

Tr.	Bunch weight (kg)			Hand weight (kg)			Average weight of fingers (g)			Pulp weight (g)		
	22-23	23-24	Pooled	22-23	23-24	Pooled	22-23	23-24	Pooled	22-23	23-24	Pooled
T_0	29.65^{e}	29.03^{b}	29.34^{b}	2.00^{k}	1.96^{h}	1.98^{k}	165.44^{g}	162.82^{e}	164.13^{h}	121.34^{e}	118.16^{f}	119.75^{h}
T_1	33.55^{abcd}	34.27^{a}	33.91^{a}	2.87^{defgh}	2.91^{bcde}	2.89^{cdefgh}	187.66^{abcdef}	190.68^{abcd}	189.17^{abcdefg}	139.46^{abcd}	143.22^{abcd}	141.34^{abcdefg}
T_2	33.48^{abcd}	34.2^{a}	33.84^{a}	2.82^{defghi}	2.86^{cdef}	2.84^{defghi}	186.91^{abcdef}	189.91^{abcd}	188.41^{abcdefg}	138.89^{abcd}	142.63^{abcd}	140.76^{abcdefg}
T_3	34.19^{abcd}	33.47^{a}	33.83^{a}	2.81^{defghi}	2.77^{defg}	2.79^{defghij}	187.59^{abcdef}	184.63^{abcd}	186.11^{abcdefg}	140.62^{abc}	136.94^{abcde}	138.78^{abcdefg}
T_4	34.05^{abcd}	33.33^{a}	33.69^{a}	2.80^{defghi}	2.76^{defg}	2.78^{defghij}	187.43^{abcdef}	184.47^{abcd}	185.95^{abcdefg}	140.49^{abc}	136.81^{abcde}	138.65^{abcdefg}
T_5	32.79^{abcde}	33.49^{a}	33.14^{a}	2.71^{efghij}	2.75^{defg}	2.73^{efghij}	181.94^{bcdefg}	184.86^{abcd}	183.40^{abcdefg}	134.51^{cde}	138.13^{abcde}	136.32^{bcdefg}
T_6	33.45^{abcd}	32.75^{a}	33.10^{a}	2.72^{efghij}	2.68^{efg}	2.70^{fghij}	183.84^{abcdefg}	180.94^{abcde}	182.39^{abcdefgh}	137.30^{bcd}	133.70^{cde}	135.50^{bcdefg}
T_7	33.78^{abcd}	34.5^{a}	34.14^{a}	2.91^{cdefg}	2.95^{abcde}	2.93^{cdefg}	189.48^{abcdef}	192.52^{abcd}	191^{abcdefg}	141.10^{abc}	144.90^{abc}	143.00^{abcdef}
T_8	34.33^{abcd}	33.61^{a}	33.97^{a}	2.93^{cdef}	2.89^{cde}	2.91^{cdefg}	191.40^{abcdef}	188.38^{abcd}	189.89^{abcdefg}	143.89^{abc}	140.11^{abcde}	142.00^{abcdef}
T_9	33.12^{abcd}	32.42^{ab}	32.77^{ab}	2.60^{hij}	2.56^{g}	2.58^{ij}	178.16^{efg}	175.34^{de}	176.75^{efgh}	131.71^{cde}	128.25^{ef}	129.98^{fgh}
T_{10}	32.98^{abcde}	32.28^{ab}	32.63^{ab}	2.58^{ij}	2.54^{g}	2.56^{j}	177.87^{efg}	175.05^{de}	176.46^{fgh}	131.48^{cde}	128.04^{ef}	129.76^{fgh}
T_{11}	32.24^{cde}	32.94^{a}	32.59^{ab}	2.51^{j}	2.55^{g}	2.53^{j}	173.25^{fg}	176.03^{cde}	174.64^{gh}	126.51^{de}	129.91^{def}	128.21^{gh}
T_{12}	32.02^{de}	32.70^{a}	32.36^{ab}	2.50^{j}	2.54^{g}	2.52^{j}	173.04^{fg}	175.82^{cde}	174.43^{gh}	126.34^{de}	129.74^{def}	128.04^{gh}
T_{13}	35.93^{ab}	35.17^{a}	35.55^{a}	3.17^{abc}	3.11^{abc}	3.14^{abc}	199.23^{ab}	196.07^{ab}	197.65^{abc}	150.30^{ab}	146.36^{abc}	148.33^{ab}
T_{14}	35.47^{abc}	34.73^{a}	35.10^{a}	3.14^{abc}	3.10^{abc}	3.12^{abc}	198.23^{abc}	195.09^{ab}	196.66^{abc}	149.41^{ab}	145.49^{abc}	147.45^{abc}
T_{15}	34.53^{abcd}	35.27^{a}	34.90^{a}	3.03^{abcd}	3.07^{abc}	3.05^{abcd}	194.72^{abcde}	197.86^{a}	196.29^{abc}	145.15^{abc}	149.07^{a}	147.11^{abc}
T_{16}	35.23^{abcd}	34.49^{a}	34.86^{a}	3.04^{abcd}	3.00^{abcd}	3.02^{abcd}	197.29^{abcd}	194.17^{abc}	195.73^{abcd}	148.57^{ab}	144.67^{abc}	146.62^{abcd}
T_{17}	34.42^{abcd}	35.16^{a}	34.79^{a}	2.98^{bcde}	3.02^{abcd}	3.00^{abcde}	193.54^{abcde}	196.66^{ab}	195.10^{abcde}	144.18^{abc}	148.06^{ab}	146.12^{abcd}

T_{18}	34.02^{abcd}	34.76^{a}	34.39^{a}	2.95^{cde}	2.99^{abcd}	2.97^{bcdef}	192.2^{abcde}	195.30^{ab}	193.75^{abcdef}	143.15^{abc}	147.01^{abc}	145.08^{abcde}
T_{19}	36.15^{a}	35.39^{a}	35.77^{a}	3.28^{a}	3.22^{a}	3.25^{a}	202.15^{a}	198.95^{a}	200.55^{a}	152.55^{a}	148.55^{ab}	150.55^{a}
T_{20}	36.07^{a}	35.31^{a}	35.69^{a}	3.23^{ab}	3.17^{ab}	3.20^{ab}	201.71^{a}	198.51^{a}	200.11^{ab}	152.11^{a}	148.11^{ab}	150.11^{a}
T_{21}	32.74^{abcde}	33.44^{a}	33.09^{a}	2.66^{fghij}	2.70^{efg}	2.68^{ghij}	180.25^{cdefg}	183.15^{abcd}	181.70^{bcdefgh}	132.22^{cde}	135.78^{abcde}	134.00^{cdefg}
T_{22}	32.57^{bcde}	33.27^{a}	32.92^{a}	2.64^{ghij}	2.68^{efg}	2.66^{ghij}	179.06^{defg}	181.94^{abcd}	180.50^{cdefgh}	131.23^{cde}	134.77^{bcde}	133.00^{defgh}
T_{23}	33.24^{abcd}	32.54^{a}	32.89^{a}	2.65^{ghij}	2.61^{fg}	2.63^{hij}	180.99^{bcdefg}	178.13^{bcde}	179.56^{cdefgh}	134.02^{cde}	130.50^{def}	132.26^{efgh}
T_{24}	33.20^{abcd}	32.50^{ab}	32.85^{a}	2.62^{hij}	2.58^{g}	2.60^{ij}	179.12^{defg}	176.28^{cde}	177.70^{defgh}	132.43^{cde}	128.95^{ef}	130.69^{fgh}
SE(m) +	0.99	1.00	0.99	0.08	0.08	0.08	5.40	5.40	5.40	4.04	4.04	4.04
C.D. at 5%	2.82	2.85	3.83	0.23	0.23	0.23	15.40	15.42	15.37	11.52	11.52	11.52

Table 2: Effect of covering materials and bunch feeding on yield attributes of banana (*Musa paradisiaca* L.) cv. Grand Naine

Tr.	Peel weight (g)			Volume of fingers (cc)			Yield (t/ha)		
	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled
T_{0}	44.73^{b}	44.03^{b}	44.38^{b}	138.87^{h}	133.79^{d}	136.33^{g}	64.95^{f}	63.25^{d}	64.10^{d}
T_{1}	47.45^{ab}	48.21^{ab}	47.83^{ab}	150.84^{cdefgh}	156.56^{abc}	153.70^{abcdef}	77.46^{abcd}	79.54^{ab}	78.50^{ab}
T_{2}	47.27^{ab}	48.03^{ab}	47.65^{ab}	148.41^{defgh}	154.03^{abc}	151.22^{abcdefg}	77.26^{abcd}	79.34^{ab}	78.30^{ab}
T_{3}	47.71^{ab}	46.95^{ab}	47.33^{ab}	153.46^{abcdefgh}	147.86^{abcd}	150.66^{abcdefg}	79.04^{abcd}	76.96^{abc}	78.00^{abc}
T_{4}	47.68^{ab}	46.92^{ab}	47.30^{ab}	153.10^{bcdefgh}	147.50^{abcd}	150.30^{abcdefg}	78.99^{abcd}	76.91^{abc}	77.95^{abc}
T_{5}	46.70^{ab}	47.46^{ab}	47.08^{ab}	145.74^{efgh}	151.26^{abc}	148.50^{bcdefg}	76.84^{abcde}	78.92^{abc}	77.88^{abc}
T_{6}	47.26^{ab}	46.52^{ab}	46.89^{ab}	150.75^{cdefgh}	145.25^{bcd}	148.00^{cdefg}	78.83^{abcd}	76.77^{abc}	77.8^{abc}
T_{7}	47.62^{ab}	48.38^{ab}	48.00^{ab}	153.10^{bcdefgh}	158.90^{ab}	156.00^{abcdef}	77.95^{abcd}	80.05^{ab}	79.00^{ab}
T_{8}	48.27^{ab}	47.51^{ab}	47.89^{ab}	158.44^{abcdef}	152.66^{abc}	155.55^{abcdef}	79.71^{abcd}	77.61^{abc}	78.66^{ab}
T_{9}	47.14^{ab}	46.40^{ab}	46.77^{ab}	148.21^{defgh}	142.79^{cd}	145.50^{defg}	75.19^{bcde}	73.21^{abc}	74.20^{abc}
T_{10}	47.07^{ab}	46.33^{ab}	46.70^{ab}	147.70^{defgh}	142.30^{cd}	145.00^{defg}	74.42^{cde}	72.46^{bc}	73.44^{bc}
T_{11}	46.06^{ab}	46.80^{ab}	46.43^{ab}	142.01^{gh}	147.39^{abcd}	144.70^{efg}	72.23^{def}	74.17^{abc}	73.20^{bc}
T_{12}	46.02^{ab}	46.76^{ab}	46.39^{ab}	141.81^{gh}	147.19^{abcd}	144.50^{fg}	69.37^{ef}	71.23^{cd}	70.30^{cd}
T_{13}	49.71^{a}	48.93^{ab}	49.32^{a}	166.48^{ab}	160.40^{ab}	163.44^{ab}	81.57^{abc}	79.43^{ab}	80.50^{ab}
T_{14}	49.6^{a}	48.82^{ab}	49.21^{ab}	165.20^{abc}	159.16^{ab}	162.18^{abc}	81.32^{abc}	79.18^{abc}	80.25^{ab}
T_{15}	48.79^{ab}	49.57^{a}	49.18^{ab}	161.24^{abcde}	159.20^{ab}	160.22^{abcd}	79.08^{abcd}	81.22^{a}	80.15^{ab}
T_{16}	49.5^{ab}	48.72^{ab}	49.11^{ab}	162.98^{abcd}	157.02^{abc}	160.00^{abcde}	80.91^{abc}	78.79^{abc}	79.85^{ab}
T_{17}	48.59^{ab}	49.37^{a}	48.98^{ab}	155.28^{abcdefg}	159.16^{ab}	158.22^{abcdef}	78.54^{abcd}	80.66^{a}	79.60^{ab}
T_{18}	48.28^{ab}	49.06^{a}	48.67^{ab}	153.20^{bcdefgh}	159.00^{ab}	156.10^{abcdef}	78.15^{abcd}	80.25^{ab}	79.20^{ab}
T_{19}	50.42^{a}	49.62^{a}	50.02^{a}	168.52^{a}	162.36^{a}	165.44^{a}	83.29^{a}	81.11^{a}	82.20^{a}
T_{20}	50.40^{a}	49.60^{a}	50.00^{a}	167.15^{ab}	161.05^{a}	164.10^{a}	83.04^{ab}	80.86^{a}	81.95^{a}
T_{21}	47.32^{ab}	48.08^{ab}	47.70^{ab}	145.05^{fgh}	150.55^{abc}	147.80^{cdefg}	76.72^{abcde}	78.78^{abc}	77.75^{abc}
T_{22}	47.12^{ab}	47.88^{ab}	47.50^{ab}	144.85^{fgh}	150.35^{abc}	147.60^{cdefg}	75.24^{bcde}	77.26^{abc}	76.25^{abc}
T_{23}	47.68^{ab}	46.92^{ab}	47.30^{ab}	149.23^{defgh}	143.77^{cd}	146.50^{defg}	75.49^{abcde}	73.51^{abc}	74.50^{abc}
T_{24}	47.38^{ab}	46.64^{ab}	47.01^{ab}	148.61^{defgh}	143.19^{cd}	145.90^{defg}	75.29^{abcde}	73.31^{abc}	74.30^{abc}
SE(m) +	1.39	1.44	1.41	4.55	4.39	4.47	2.31	2.34	2.32
C.D. at 5%	3.96	4.10	4.03	12.98	12.53	12.75	6.59	6.66	6.61

Conclusion

On the basis of two year study, it is concluded that the application of 9 g Urea + 9 g SOP + 500 g Cow dung + Banana Special (0.2%) + BPE per bunch was found significantly superior over remaining treatment combinations in terms of yield attributes bunch weight (kg), hand weight (kg), weight of fingers (g), pulp weight (g), peel weight (g), volume of fingers (cc) and yield (t/ha).

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