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**HM Santhosha**  
ICAR- Krishi Vigyan Kendra,  
Hanumanamatti, Haveri,  
Karnataka, India

**MJ Manju**  
ICAR- Krishi Vigyan Kendra,  
Sirsi, Uttara Kannada,  
Karnataka, India

**Roopa S Patil**  
ICAR- Krishi Vigyan Kendra,  
Sirsi, Uttara Kannada,  
Karnataka, India

## Bunch care technologies to maximize yield in banana (*Musa sp. var. elakki bale*)

**HM Santhosha, MJ Manju and Roopa S Patil**

### Abstract

Frontline demonstration was carried out by ICAR-Krishi Vigyan Kendra, Sirsi, Uttara Kannada to study the effect of various bunch caring technologies on yield of elakki bale. Application of Arka banana special @ 5 gram/liter, during 5<sup>th</sup> month after planting, 4 sprays at monthly interval, denavelling – removal of male bud after appearance of last hand in bunch, bunch feeding through the distal end of the bunch peduncle after denavelling and bagging of bunch with poly propylene covers after emergence of last hand was carried out in ten farmers field at kayagudde village of Uttara Kannada district. In demo field, yield increased by 19.11 per cent over check. Benefit cost ratio of 2.59 in demo field and 2.30 in check field were recorded. The results revealed that the highest yield, yield related components and B:C ratio were recorded by following bunch caring technologies under demonstration field compared to farmer practice.

**Keywords:** Banana, bunch, micronutrients, bunch feeding, bunch covering

### 1. Introduction

Banana (*Musa sp. var. elakki bale*) is a major fruit crop of the Uttara Kannada district. The district has 3,064 ha. area under banana with total production of 101285 t. and average productivity of the district is 33.06 t/ha (Anon., 2018) [2]. During the survey by KVK in banana growing area it is came to know that farmers are not practicing denavelling, bunch feeding and other cultural practices. None of the banana grower is aware about banana bunch covering using polypropylene covers. The knowledge regarding micronutrients also very minimal.

Bunch care technologies viz., micronutrient spray, denavelling, bunch feeding and bunch covering are those which enhance bunch size and in turn the banana yield. An average the banana crops removes 6 kg of iron, 125 kg of magnesium, 4.70 kg of zinc, 12.0 kg of manganese 0.37kg copper and 1.27 kg of boron from one hectare. To meet the required micronutrients demand, external application is necessary to get maximum yield (Krishnamoorthy and Noorjahan, 2017) [3]. Poor agricultural and field management practices, especially improper nutrition leads to large losses in yield and fruit quality. The quality characteristics of ripened fruits are mainly determined by the genetic potential of the cultivar and nutrient status of the soil (Roy and Chakroborty, 1993) [6].

Denavelling includes removal of male bud after appearance of last hand in bunch. By this removal of unwanted male flower bud, which is prone to infections, incidence of pest and disease. It also saves mobilization of nutrients into the unwanted sink of banana plant and earns additional income when the excised male bud is used as a vegetable (Patil *et al.*, 2018) [4]. Banana plant is supplied with nutrients through soil and foliage, denavelling and post-shooting feeding nutrients through the distal stalk-end of rachis to achieve high yields (Ancy and Kurien, 2000) [1]. The benefits of bunch covers are both physiological and physical. Banana bunch cover has been reported to increase in yield, fruit size and improve fruit quality. Bunches developed in bunch covers were bigger, cleaner, attractive, and dark green in colour. Fruits of bagged bunches showed neither scratches nor blemishes, whereas those of uncovered bunches showed physical injury (Weerasinghe and Ruwanpathirana, 2002) [8]. Therefore, demonstration was carried out on bunch caring technologies to create awareness and to enhance the bunch yield in banana.

### 2. Materials and Methods

For the purpose of demonstration 10 farmers were selected after discussion with Farmer producer organization (FPO) members. The demonstration was conducted during 2018-19 at FPO member farmers field in kayagudde village of Uttara Kannada district. The planting of elakki banana was taken up during March 2018. The pits of one and half foot cubic size were dugout at 2.1 x 2.1m spacing and filled with media containing organic manure and top soil

**Corresponding Author:**  
**HM Santhosha**  
ICAR- Krishi Vigyan Kendra,  
Hanumanamatti, Haveri,  
Karnataka, India

with equal proportion. Fifty banana plants were randomly selected and tagged for the study in each farmer field. Foliar application of Arka banana special, denavelling, bunch feeding and bunch covering was carried out in twenty five tagged plants. Remaining twenty five plants were served as control. Application of Arka banana special (IIHR, Bengaluru) @ 5 gram/liter, during 5<sup>th</sup> month after planting, 4 sprays at monthly interval was taken up. For denavelling purpose male bud was removed by giving slant cut after appearance of last hand in a bunch. For bunch feeding 7.5 gram of urea, 7.5 gram sulphate of potash and 500 gram of fresh cow dung dissolved in 100 ml of water and filled it in polythene bag followed by tied to the bunch end after denavelling. Bunch covering was carried out with polypropylene covers after emergence of last hand of the bunch. Observation on days to harvest, bunch weight, finger length, finger girth, bunch length, number of hands/bunch, number of fingers per hand and yield were recorded. The data obtained were statistically analyzed for analysis of variance and to test the significance of demo and check treatment, Student 't' test was performed.

### 3. Results and Discussion

Data on the effect of bunch caring techniques on yield parameters of banana is depicted in Table 1. The results indicated that, there was a significant difference between demonstration and farmers practice for yield and yield parameters like weight of bunch, finger girth and length. At

5% level of significance there was no significant difference was observed for other yield attributing characters like bunch length, number of hands per bunch and number of finger per hand. The farmer method had observed with lowest yield, bunch weight, finger length, finger girth, bunch length, number of hands per bunch and number of finger per hand. Under demonstration, bunches were harvested 14 days earlier than the farmer practice. Covering banana bunch with polypropylene covers is effective in reducing the harvesting period and it also improved the general appearance of fingers in the bunch. Reduction in crop duration, particularly days taken from flowering to physiological maturity might have influenced the harvesting period under bunch cover demonstration. These results were in close conformity with findings of Vargas *et al.* (2010)<sup>[7]</sup>. The increase in weight of bunch could be the result of an increase in finger length and girth. The increase in finger size can be a major factor contributing to the bunch weight (Patil and Jagadeesh, 2016)<sup>[4]</sup>. The maximum yield of 34.59 t/ha was obtained under demonstration field where bunch caring technologies viz., micronutrient spray, denavelling, bunch feeding and bunch covering were followed. The yield difference of 6.62 t/ha was observed with 19.11 per cent increase in demo yield over farmer practice. The increased yield in demonstration is attributed to higher weight of bunches. The highest B:C ratio of 2.59 was also observed under demonstration compared to 2.30 under control.

**Table 1:** Banana yield and yield attributing traits as influenced by bunch caring techniques

Sl. No.	Parameters	Mean		Variance		Significance level (t test)
		Demo	Check	Demo	Check	
1	Days to harvest	378.10	392.20	101.65	89.06	NS
2	Weight of bunch (Kg)	15.27	12.35	3.88	3.66	**
3	Finger length (cm)	9.325	8.805	0.09	0.25	*
4	Finger girth (cm)	9.15	8.23	0.08	0.11	**
5	Bunch length (cm)	38.88	37.55	3.51	3.68	NS
6	No. of hands/bunch	10.34	10.25	0.56	0.52	NS
7	No. of fingers/hand	12.40	12.10	3.37	2.98	NS
8	Yield (t/ha)	34.59	27.97	19.85	18.71	**

\*Significant at p=0.05 \*\* significant at p=0.01 NS= non significant

### 4. Acknowledgement

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