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## Effect of different potting media on success of Bullock's heart (*Annona reticulata* L.)

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### Abstract

The effect of different potting media on seed germination and survival of Bullock's heart (*Annona reticulata* L.) was determined. The highest germination percentage (70.66 %) was recorded in Soil + FYM (2:1) whereas, the lowest germination percentage (33.33 %) was observed in Soil + FYM (1:2). All the potting media treatments had non-significant effect on survival percentage. In most of the treatments survival percentage was 100 %. It can be concluded that the success of Bullock's heart seedlings was best in Soil + FYM (2:1). However, performance was also better in soil + vermicompost (1:1), soil + FYM + cocopeat (1:1:1) and FYM + vermicompost + cocopeat (1:1:1). Moreover, FYM + vermicompost + cocopeat (1:1:1) is soilless medium under study that also showed better results. With view to reduce weight of potting media or use of soilless media for easy transportation especially by air or sea, these potting medium have future prospects.

**Keywords:** Potting media, *Annona reticulata*, seed germination, survival percentage

### Introduction

Bullock's heart (*Annona reticulata* L.) is an important crop in dryland Horticulture. Recently, the demand for Bullock's heart in local as well as in metropolitan markets is increasing at an alarming rate (Indira, 2014) [5]. Moreover, due to its rainfed nature and insensitivity to climatic changes, it can be very good component of sustainable cropping system. However, systemic effort for crop improvement and propagation needs to be done.

Germination and survival of seedlings are closely linked with the nutritional status of potting media. Merely, soil is not satisfactory media for raising healthy and vigorous growing seedlings in containers because aeration, porosity, water holding capacity, good drainage, low bulk density, microbial activity and good nutritional status are essential characters of ideal potting media. Also, for long distance transportation and export purpose, light weight potting media is preferred. Attempts were made to study the effect of different potting media on success of Bullock's heart (*Annona reticulata* L.).

### Material and Methods

A field experiment was conducted at the Department of Horticulture, College of Agriculture, Dapoli, Dist. Ratnagiri during the year 2016-2017. The experiment was conducted in Randomized Block Design (RBD). There were seven treatments of potting media and each was replicated thrice. The treatments were T<sub>1</sub>: Control i.e. Soil + FYM (2:1), T<sub>2</sub>: Soil + Vermicompost (1:1), T<sub>3</sub>: Soil + FYM (1:2), T<sub>4</sub>: Soil + Cocopeat (1:1), T<sub>5</sub>: Soil + FYM + Cocopeat (1:1:1), T<sub>6</sub>: Soil + Vermicompost + Cocopeat (1:1:1) and T<sub>7</sub>: FYM + Vermicompost + Cocopeat (1:1:1).

The required numbers of seeds were soaked in 250 ml Gibberellic acid solution at the concentration of 250 ppm for 24 hrs. Potting mixtures were prepared as per the treatments. Then the mixture was filled in black polythene bags of size 15 cm x 20 cm.

The count of germinated seeds was taken at an interval of fifteen days after sowing of seeds up to 80 days. The percentage of germination was calculated from the number of seeds germinated in each treatment per replication.

Number of seedlings survived per treatment per replication was counted at the end of six months and was recorded in terms of percentage survival.

The data obtained in the present investigations were statistically analysed by the method suggested by Panse and Sukhatme (1995) [9].

## Results and Discussion

The highest germination percentage (70.66 %) was obtained in treatment T<sub>1</sub> i.e. Soil + FYM (2:1) which was significantly superior over the rest of the treatments (Table 1). The lowest per cent germination (33.33 %) was observed in T<sub>3</sub> i.e. Soil + FYM (1:2) after 80 days to sowing. Higher germination in FYM i.e. treatment T<sub>1</sub> may be due to the fact that compost is non-toxic, rich in NPK and has adequate aeration and moisture which were congenial for germination of seeds (Justice, 1972) [6]. It might also be because of media containing organic manures possess organic acid within them. Therefore, more available moisture and some acids may have improved germination percentage (Bisla *et al.*, 1984) [3]. Similar results were obtained by Govind and Chandra (1993) [4] in Khasi mandarin with soil + sand + FYM; Kumar and Raju (1988) [7] in Robusta coffee (*Coffea canephora* Pierre) with soil: FYM: sand (5:3:1); Bihari *et al.*, (2009) [2] in Aonla

with soil + sand + FYM (1:1:1); Bali *et al.*, (2013) [1] in *Terminalia bellirica* (Gaertn.) Roxb. with FYM and Parasana *et al.*, (2013) [10] in Mango with soil + sand + Farm Yard Manure (2:1:1). Sand as a germination substratum is preferred for tree species having large seeds (Magini, 1962) [8] because aeration in sand medium is best. However, *A. reticulata* have a hard seed coat, which may need constant moisture conditions to soften it, which is not present in sand.

After six months all the treatment showed non-significant effect on survival percentage of seedlings (Table 2). In treatments T<sub>3</sub> to T<sub>7</sub> survival percentage was 100%. Treatments T<sub>1</sub> i.e. Soil + FYM (2:1) and T<sub>2</sub> i.e. Soil + Vermicompost (1:1) recorded little less survival i.e. 99.63% and 99.42% respectively. This may be because all the media combinations under the study were favourable for root development due to presence of organic material in them which helped for good survival of seedlings.

**Table 1:** Effect of different potting media on germination (%) of Bullock's heart

Treatments	Per cent germination			
	35 DAS	50 DAS	65 DAS	80 DAS
T <sub>1</sub>	49.33 (44.63)	61.33 (51.55)	66.00 (54.33)	70.66 (57.21)
T <sub>2</sub>	45.33 (42.32)	57.33 (49.22)	58.00 (49.60)	60.00 (50.77)
T <sub>3</sub>	11.33 (19.67)	18.67 (25.60)	24.00 (29.33)	33.33 (35.26)
T <sub>4</sub>	23.33 (28.88)	26.67 (31.09)	33.33 (35.26)	40.00 (39.23)
T <sub>5</sub>	34.00 (35.67)	42.00 (40.40)	47.33 (43.47)	56.00 (48.45)
T <sub>6</sub>	32.00 (34.45)	43.33 (41.17)	45.33 (42.32)	47.33 (43.47)
T <sub>7</sub>	41.33 (40.01)	49.33 (44.62)	50.00 (45.00)	53.33 (46.91)
Mean	33.80	42.66	46.28	51.52
S. Em ±	1.95	1.55	1.41	1.65
CD at 5%	6.02	4.78	4.36	5.09

(Figures in the parentheses are arcsine transformed values)

**Table 2:** Effect of different potting media on survival (%) of Bullock's heart seedlings after six months

Treatments	Survival Percentage
T <sub>1</sub> - Control – Soil + FYM (2:1)	99.63 (86.50)
T <sub>2</sub> - Soil + Vermicompost (1:1)	99.42 (85.64)
T <sub>3</sub> - Soil + FYM (1:2)	100 (90.00)
T <sub>4</sub> - Soil + Cocopeat (1:1)	100 (90.00)
T <sub>5</sub> - Soil + FYM + Cocopeat (1:1:1)	100 (90.00)
T <sub>6</sub> - Soil + Vermicompost + Cocopeat (1:1:1)	100 (90.00)
T <sub>7</sub> - FYM + Vermicompost + Cocopeat (1:1:1)	100 (90.00)
Mean	99.86
S. Em ±	0.24
CD at 5%	NS

(Figures in the parentheses are arcsine transformed values)

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