



Full Length Article

Sapling performance of *Thyrsostachys oliveri* Gamble rhizome under different spacing levels at Bamboo Nursery

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ABSTRACT

Thyrsostachys oliveri is a solid culm and quick growing bamboo with high economic potential. Establishment of sapling was achieved through rhizome cutting technique at nursery condition. Planting of rhizomes at three different spacing level resulted in varying responses to new shoots formation. Close spacing 09" length X 06" breadth between the rhizomatous culms produced highest percentage of shoot responses with an average number of shoots 30.60 ± 6.49 per culm. Partial shading of the nursery bed is essential for growth and survival of the proliferating shoots of *T. oliveri* culm.

Key words: *T. oliveri*, rhizome cutting, sapling establishment.

INTRODUCTION

Thyrsostachys oliveri is a very remarkable bamboo species due to very solid culm and quick growing in nature (Tewari, 1992). The species is native of Myanmar and yields early economic returns within 2-3 years of their plantation. Culm harvesting initiated after two years onward can be continued for every year within the span of 10-13 years of their plantation (Haque and Karmakar, 2004). Species is very good for intensive farming unlike many other bamboo species.

In Tripura, the species is reported to be restricted distribution in localized areas (Singhal and Gangopadhyay, 1999) in spite of high economic potential of the culm for various purpose and rural uses (Bennet and Gaur, 1990). Cultivation practices for *T. oliveri* needs proper documentation of sapling performance of rhizomes under nursery condition for higher and sustainable production of commercial culms of the species. Very little literature is available on vegetative propagation of

T. oliveri (Dabral, 1950; Seethalakshmi, 1995). In view of the above context, present communication reports on sapling performance of *T. oliveri* rhizome under different spacing of nursery condition, as spacing may play important role in nursery sapling establishment depending upon the nature of bamboo species (Salam and Deka, 2007).

MATERIAL AND METHODS

Experimental nursery bed sizes of 6 X 3 m, 18 x 13 m, and 18 x 17 m (Length X Breadth) were prepared by digging of land soil and filling with river water washed sand. The beds were kept slightly below the general level of the ground as sunken bed to facilitate easy irrigation during dry condition. Prior to planting rhizome of *T. oliveri*, the nursery beds were well flooded with water and allowed to percolate for an overnight. Beds were so prepared that there is no scope of water stagnation. Partial shading of the bed was created by using 90% green Agronet to prevent excessive day temperature.

T. oliveri rhizomes collected from field (fig.1) were washed thoroughly and treated with 0.5% solution of Bavistin to overcome termite and fungal attack. Finally rhizomes were treated with 0.5% Boric acid and used for plantation purposes in the nursery beds. Rhizomes were planted in a slight inclined position with different spacing condition. Plantation in the nursery was allowed to grow for 3-4 months for their survival and vegetative growth. Experimental data were collected and tabulated in table-1. Observation on sapling performance and vegetative growth were suitably analyzed.

RESULTS AND DISCUSSION

The rhizomes of *Thyrsostachys oliveri* with 2 to 3 nodes from the base and ground level (fig.1) were collected from Katlamara, Mohanpur R.D Block of west Tripura. A total of 300 healthy rhizomes were selected and planted (fig.2) in three different experimental beds i.e., Bed-I, Bed-II & Bed III respectively. In Bed-I the rhizomes were treated with Boric acid solution (0.5%) for 6 hours before plantation and then planted in the sand bed with a spacing of 18X17 inch (LXB) between the culms. Whereas in Bed-II and Bed-III the rhizomes were

planted without the treatment of Boric acid solution in the sand bed with a spacing of 18X13 inch (LXB) and as close as 9X6 inch (LXB) in between the culms respectively. The planted rhizomes were watered regularly.

Rhizomes were found to response to new shoots formation, after 3 months of plantation under Agronet shaded condition (fig.3). The rhizomes treated with Boric acid solution and planted with a spacing of 18X17 inch (LXB) showed 22% of rhizome response to new shoot formation with an average branch number 10.10 ± 5.28 . Whereas the rhizome planted without the treatment of Boric acid solution and with a spacing of 18X13 inch (Bed-II) and 9X6 inch (LXB) in between the culms showed 40% and 90% response to new shoots with an average branch number 29.40 ± 4.72 and 30.60 ± 6.49 respectively (table 1). The rhizomes planted without the treatment of Boric acid solution and with minimum spacing 9X6 inch (LXB) in between the culm rhizomes resulted in highest percentage of shoot responses then the rhizomes treated or without treatment of boric acid solution with a larger spacing of 18X17 inch (LXB) and 18X13 inch (LXB) in between the culm rhizomes.

Table 1: Sapling of *Thyrsostachys oliveri* through rhizome

Experimental Bed number	Size of spacing Length X Breadth (LXB)	Percentage of rhizome response to shoots	Number of Branch shoot per culm (range)	Number of shoots per culm (Mean* \pm SD)
I	18X17 inch	22	5 – 19	10.10 ± 5.28
II	18X13 inch	40	21 - 37	29.40 ± 4.72
III	09X06 inch	90	18 - 38	30.60 ± 6.49

*Mean of 10 random observations.

T. oliveri sapling raised in experimental nursery beds of Tripura University were allowed to grow for a period of 6 months and subsequently uprooted (fig.4) for plantation at distal experimental field. Field plantation of saplings (fig.5) were successfully carried out at Bhubonban of west Tripura District. Present study clearly indicated that close spacing is very useful to produce maximum survival of

saplings and could be utilized for large scale plantation purposes.

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Figure-1-5, *T. oliveri* sapling and plantation

1. Rhizomes with 2-3 nodes for sapling establishment.
2. Plantation of rhizomes in nursery bed.
3. Saplings and shoots of three months old rhizomes.
4. Uprooted saplings before field plantation.
5. Field plantation

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