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A NOTE ON THE EFFECT OF LEAF NUMBER ON ROOTING OF *HOPEA ODORATA* STEM CUTTINGS

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One of the factors affecting the formation and development of adventitious root on stem cuttings is the presence of leaves (Hartmann & Kester 1983). For example, leafless cuttings of *Triplochiton scleroxylon* were found to root very rarely (Leakey *et al.* 1982). Avidan and Lavee (1978) also found negligible rooting in defoliated cuttings of several cultivars of *Oka* species. Similar results were obtained with leafless cuttings of *Acacia mangium* (Darus 1988). Some species also require an optimum leaf area for a maximum rooting percentage. This has been demonstrated by Leakey *et al.* (1982) where leaf area of 50 cm^2 was optimum for the rooting of *T. scleroxylon* stem cuttings. This study was to investigate the effect of leaf number on the rooting of *Hopea odorata* stem cuttings.

Stem cuttings of *H. odorata* were taken from *9-mth-old* seedlings raised in the nursery. The average height of these seedlings was about 48 *cm.* Five types of cuttings were prepared for the experiment, *viz* 1) single node cutting with half-leaf (+ 10cm^2), 2) single node cutting with one leaf (+ 20 cm^2), 3) two node cutting with two half-leaves (+ 20 cm^2 , 4) two node cutting with two leaves (+ 40 $cm^{2)}$, 5) leafless cuttings. These cuttings were planted in pure river sand medium (60% with less than 2 *mm* and 40% with more than 2 *mm* diameter of particle size). They were arranged in a completely randomized design with six replications for each treatment. Ten cuttings were used for each treatment and a total of 300 cuttings were planted. The planted cuttings and the rooting medium were kept moist by an automatic mist sprinkler system operated at hourly intervals and each duration of spray was about one minute. In addition to this, the rooting bed was covered with clear plastic sheet supported by wooden frame to maintain a high humidity around the cuttings. Observations were carried out at twelve weeks after planting and all cuttings were lifted to assess the rooting and the root number of every rooted cutting.

The results show that the leafless cuttings produced almost negligible rooting (1.7%) and all the unrooted cuttings were dead. The highest rooting percentage was achieved with cuttings with one leaf (86.7%) followed by two leaves, two half-leaves and half-leaf (Table 1). These results indicate that the presence of leaves was necessary for rooting of *H. odorata* cuttings.

Table 1. Mean rooting percentage of *H. odorata* stem cuttings by different leaf treatments

Leaf treatments	Rooting percentage
Leafless cuttings	1.67 a
Half-leaf	75.0 b
Two half-leaves	78.3 b
Two leaves	85.0 b
One leaf	86.7 b

Means with the same letters are not significantly different at 5% level of significance

The importance of leaves in rooting of cuttings could be due to the nutritional effect and the influence of the leaves on auxin production (Hartmann & Kesterl983). The non-significant results among different leaf numbers could probably be due to the small leaf size of *H. odorata,* which did not need trimming to reduce water loss through transpiration, in contrast to the large leaf size of *T. scleroxylon* (Leakey *et al.* 1982) and *A. mangium* (Darus 1988) where optimum leaf size was required to minimise such water loss while in the rooting beds.

Since very poor rooting was achieved with leafless cuttings, comparison of the mean root number was made among the cuttings of different leaf number. The root number produced by the single node cuttings with half-leaf was significantly lower than those with one and two leaves. On the other hand, the root number of the cuttings with the other leaf treatments was not significantly different from one another (Table 2). The heavier root system of those cuttings is most probably due to the rate of photosynthesis which was more efficient in cuttings with larger leaf size (20 to 40 cm^2) than those with smaller leaves (10 cm^2).

Table 2. Mean root number of *H. odorata* stem cuttings by different leaf treatments

Leaf treatments	Root number per rooted cutting
Half-leaf	3.07 a
Two half-leaves	3.80 ab
One leaf	4.47 b
Two leaves	4.77 b

Means with the same letters are not significantly different at 5% level of significance

The results of this experiment show that the presence of leaf is essential in rooting of *H. odorata* stem cuttings and a single whole leaf is recommended to be retained on each cutting for optimum rooting.

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ANNOUNCEMENTS

IUFRO S4.02,05 WORKSHOP: REMOTE SENSING AND WORLD FOREST MONITORING

DATE: JANUARY 13 - 17, 1992

VENUE: AMBASSADOR CITYJOMTIEN, PATTAYA, THAILAND

Topics:

1. Establishment and use of permanent monitoring sites
2. Remote sensing techniques for forest monitoring
3. Applications for Geographic Information System

The meeting will consist of presentations and work group efforts. Discussion will focus on appropriate monitoring methods in different physical, technological and infrastructural circumstances. Work groups will focus on developing specific guidelines. Recommendations developed during this meeting will be incorporated with those from the ILVESSALO SYMPOSIUM to be held in Helsinki, Finland during August 17-21, 1992.

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THIRD INTERNATIONAL INORGANIC-BONDED WOOD AND FIBRE COMPOSITE MATERIALS CONFERENCE

DATE: SEPTEMBER 27 - 29, 1992

VENUE: CAVANAUGH'S INN AT THE PARK HOTEL, SPOKANE, WASHINGTON, UNITED STATES OF AMERICA

Topics under consideration:

1. The latest developments in technology
2. The progress of gypsum fibreboard marketing
3. Opportunities provided by the clear air act for mineral-bonded composite manufacturing

4. Cement fibreboard expansion in North America
5. The latest marketing considerations for cement particleboard
6. The use of recycled raw material for mineral-bonded composite
7. The expanding applications for gypsum and cement fibreboards
8. Panel discussions on investment opportunities in these technologies
9. Architectural and builder experiences in applying these composites

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SEMINAR ON ECOTOURISM, FOREST CONSERVATION AND BIODIVERSITY MANAGEMENT

DATE: DECEMBER 18 - 19, 1991

VENUE: BANDAR SERI BEGAWAN, BRUNEI DARUSSALAM

OBJECTIVES:

1. Bringing together the concerned parties in the fields of ecotourism, forest conservation and biodiversity management into a common forum in order that problems and development opportunities in these fields can be highlighted and deliberated upon
2. Enabling participants to learn the latest thinking and concepts regarding ecotourism, forest conservation and floral diversity management and use
3. Presenting and discussing results of recent research and development work in relevant fields

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The following people have reviewed the manuscripts for JTFS Volume 3. Without their painstaking work, it would be nearly impossible to maintain the quality of a professional journal. If I have omitted anyone from the list, I sincerely apologise. With thanks to these people who cared.

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