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Testing the Methods of Propagation of Bamboos

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ဝါးမျိုးပွားနည်း အမျိုးမျိုးကို စမ်းသပ်ခြင်း

ဒေါက်တာဉာဏ်ထွန်း နှင့် ဦးစိခူး
သစ်တောသုတေသနဌာန၊ ရေဆင်း။

စာတမ်းအကျဉ်းချုပ်

ဝါးများကို နေ့စဉ် လူ့အသုံးအဆောင်အဖြစ် ပိုမိုသုံးစွဲလာသည်သာမက၊ စက္ကူစက်များအတွက် စက်မှုကုန်ကြမ်းအဖြစ်များစွာ လိုအပ်လာသည့်အလျောက် တနေ့ထက် တနေ့ဝါးများကို ပို၍ ခုတ်ကြခြင်းကြောင့် ဝါးတောများ ပြုန်းစ ပြုလာကြောင်းတွေ့ရှိရသည်။ ထို့အတွက်ကြောင့် ဝါးတောများ အုပ်ချုပ်ရေး သုတေသန၊ ဝါးစိုက်ခင်းတည်ထောင်ခြင်း သုတေသန အစရှိသည်တို့ကို ပြုလုပ်ရန် အရေးကြီးလာပေသည်။ ဝါးစိုက်ခင်းများ တည်ထောင်ရန် ဝါးမျိုးပွားနည်းများကို သစ်တောသုတေသနဌာန ရေဆင်းမှ စမ်းသပ်လျက် ရှိရာ စမ်းသပ်နည်း (၂) မျိုးအပေါ်တွင် တွေ့ရှိချက်များကို ကြားဖြတ်အစီရင်ခံစာ အဖြစ်တင်ပြအပ်ပါသည်။ ဤစာတမ်းတွင် ဝါးပျိုးပင်ပေါက်များ နှင့် အရိုင်းအလှေအကျ ပေါက်ပင်ကလေးများ၏ အမြစ်ဆုံများကိုခွဲ၍ မျိုးပွားထားခြင်းကို ဖော်ပြထားပါသည်။

Testing the Methods of Propagation of Bamboos

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Abstract

Due to intensive cuttings for local use and for the market, bamboo forests are getting thinner all the time. With modernization of pulp and paper industry has its share of demand on bamboos, which also added to the danger of deletion of bamboo forests. Therefore, management and plantation establishment research are urgently needed. Methods of propagations, known and unlisted for establishment of plantations are tested by the F.R.I. Yezin and the interim report on two methods tested are given in this paper. And the paper deals with methods of propagation of bamboo seedlings and wildlings by splitting of their young rhizomes.

Introduction

Bamboo is a poor man's timber through out the tropics. Because of its strength, straightness, lightness, variation in size, etc., made bamboo a material of immense use. It is used for house construction, scaffolding, ladders, mats, baskets, fencing, containers, pipes, umbrellas, tool handles, spear, bows and arrows, fans, toys, musical instruments, spoon, chop-sticks, cooking pots, rafts, binders in place of ropes, fishing rods, furniture, handicraft and many other articles of daily use. Bamboo shoots are eaten not only by human beings but also by elephants and other herbivores. Another contribution Bamboo to the human community is its long fibres as raw material for the pulp and paper production.

Bamboo belongs to the family Graminae. It has about 75 genera and nearly 1250 species. Spreading from tropics, sub-tropics and to the mild temperate regions. Burma has about 90 species belonging to 18 genera. Due to intensive cuttings for local use and for the market, bamboo becomes scarce in accesible areas. With modernization, pulp and paper industry has its share of demand on bamboos, which also added danger of depletion of bamboo forests.

Objective

The main objective of this research is to find out the most feasible method of propagation of bamboos for establishment of bamboo plantations.

Methods

The following methods were tested for trial plantings in the fields:

- (1) Splitting of young rhizomes from potted seedlings;
- (2) Splitting of young rhizomes from potted wildlings;
- (3) Field Trial of potted wildling;
- (4) Other methods.

Splitting of young rhizomes from potted seedlings

One year old seedlings of Myin-wa, Tin-wa, Kyathaung-wa and Thaik-wa, which were sown in germination boxes and then transplanted in plastic tubes (bags) (3" dia x 8" ht) are uprooted. The average height of seedling being 3ft. The soil in the tubes become loose, when uprooted to obtain the young rhizomes. (Fig 1, 2, 3 & 4), The soil ball around the root system was clean for seperation of rhizomes.

The young rhizomes is cut (splitted) as many times as possible. (Diagram 1 a & b) but the cutting always includes at least one or two young culms; with a few leaves, some roots and part of rhizome. The splitted rhizome, roots and young culms are then transferred to a new plastic tube containing prepared soil. The small culms are than cut at 18 inches above the ground leaving just a few leaves.

The transplanted seedlings are then placed under shade and then are gradually hardened. Then they are planted out in the field in 4 randomised plots of each having 49 plants. Survival counting was after 3 months of planting.

Splitting the young rhizomes of potted wildlings

Wildlings of Kyathaung-wa, Tin-wa and Thaik-wa are dug-up from the forest and also from old taungya. The rhizomes were splitted as many as possible. The splitted rhizomes consist always of a portion of rhizomes, some roots, a few small culms and a few leaves. The culms are then cut at 18 inches height. The splitted rhizomes are potted as soon as possible, either in earthen pots or bamboo baskets of suitable sizes, watered and placed under the shade and then gradually hardened. The form and size of the wildlings are almost identical with the seedlings.

This was done early in April, 1983. And during the planting season they are planted out in the field, in 4 randomised plots of each having 49 plants.

Survival counting was done after 3 months of planting.

Field Trial of potted wildlings

Wildlings of Kyathaung-wa, Tin-wa and Thaik-wa are collected from taungya and from the forest by digging. The collected wildlings are potted as soon as possible either in earthen pots or bamboo baskets of appropriate sizes. And they are kept under the shade in nursery after the small culms are cut at 18 inches in height, leaving some leaves. The collection was done during the last week of March and are planted out in the field towards end of June. They are planted in 4 randomised plots of 49 plants each.

Survival counting was done after 3 months of planting .

Others Methods

Other methods such as culm cutting and rhizomes plantings were tested at the same time. [Note; This was only repetition of last year's work]. Survival counting was also done two time.

Results

The splitting of the rhizome of the potted seedlings

Out of [78] Myin-wa [53] Tin-wa [90] Thaik-wa and [100] Kyathaung-wa seedlings, [312], [440] [235] and [520] new shoots arised respectively.

Survival after 3 months of planting for Myin-wa, Tin-wa, Thaik wa and Kyathaung-wa showed 91.8 %,98.4% 97.9 % and 92.1% respectively and after 5 months of planting showed 81.6 % , 95.4%, 92.8% and 86.3% respectively .[Table No. 1].

The splitting of the rhizome of potted wildlings

Out of [150] wildlings from Kyathaung-wa [500] splitted plants were obtained, [300] from Tin-wa [100] and [378] from Thaik-wa [100] were obatined.

Survival percentage in the field after 3 months was 66% for Kyathaung-wa, 97% for Tin-wa and 96% for Thaik-wa. After 5 months of planting the survival percentage was 60%, 93 % and 92% respectively for Kyathaung-wa, Thin-wa and Thaik-wa . [Table No.2].

Table No. 1 Splitting of Rhizomes of Seedlings And Survival Counting At The Field Trial

No	Species	No. of seedling splitted	No. obdt .by plitting	Survival in Nursery	Planted out in the field	No.of Survival	
						Aug	Nov.
1.	Myin-wa	78	312	297	49 x 4	180	160
2.	Tin-wa	90	440	403	49 x4	193	187
3.	Thaik-wa	53	235	230	49 x 4	192	182
4.	Kyathaung-wa	100	520	493	49 x 4	175	164

Table No. 2 Field Trial of Rhizome Splitted Potted Wildlings

No	Species	No. of wildlings splitted	No. obdt .by splitting	Planted out in the field	No. of Survival	
					Aug.	Nov.
1.	Kyathaung-wa	150	500	49 x 4	130	118
2.	Tin-wa	100	300	49 x 4	191	183
3.	Thaik-wa	100	378	49 x 4	198	181

Field Trial of plotted wildlings

Some of the potted wildlings shed their leaves after one or two days when replanted in the pots, but new leaves appeared gradually after 10 days time. Very small number of wildlings died in the nursery.

In the field trial survival after 3 months for Kyathaung-wa , Tin-wa and Thaik -wa were 99 %, 98% and 97 % respectively. 98% survival by Kyathaung-wa and Tin-wa by the same methods was reported from trial plots near Yeni Paper Mill. 5 months after planting were 83%, 94% 88% for Kyathaung -wa, Tin-wa and Thaik-wa respectively. [Table No. 3].

Other Methods

Methods like planting of culm cutting [with two nodes] and whole- rhizome planting very poor survival even after 3 months planting. [Table No. 4].

Discussion and Conclusion

The above methods were tested with intentions such as [a] to have maximum survival; [b] to find an easy way in transportation and handling of propagules; [c] and thereby cost of operations be reasonable.

The following points are noted in the tests of method mentioned above

- [1] The survival percentages of potted seedlings and wildlings in the field trials were remarkably higher than culm planting and whole -rhizome planting.
- [2] The size of the propagules such as splitted seedlings and wildlings are smaller and easier to transport than culm cuttings and whole-rhizome cuttings.
- [3] The cost of procurement of seedlings and wildlings are not very costly. The cost of planting, the cuttings of two-noded culms seemed to be less but compared with high survival rate of seedlings/ wildlings tipped the scale the other way.

Therefore, the following conclusion could be drawn with caution.

- [1] Methods of splitting the rhizomes of seedlings and wildlings could be used in propagation bamboos. [Only Kyathaung-wa, Tin-wa, Myin-wa and Thaik-wa were tested. Applying this methods to other species is yet to be tested].
- [2] The result of the methods, tried were a preliminary findings. Further trial for large scale plating is undertaken. However the methods indicate a favorable survival percent.
- [3] The cost of handing the whole-rhizome for planting than seedling of wildlings.
- [4] A sufficient propagules could be obtained from the wildlings.

Table No. 3 Trial Planting of Potted Wildlings.

No	Species	No. Planted	Survived Aug.	Survived Nov.
1.	Kyathaung-wa	49 x 4	195	162
2.	Tin-wa	49 x 4	193	184
3.	Thaik-wa	49 x 4	190	173

Table No.4 Trial Planting of Bamboos (Other Methods)

No	Species	Methods	No. planted	Survived	
				Aug.	Nov.
1.	Kyathaung-wa	2 Noded culm	49 x 4	40	30
2.	Tin-wa	-do-	49 x 4	65	32
3.	Thaik-wa	-do-	49 x 4	53	25
4.	Kyathaung-wa	Rhizome	49 x 4	70	30
5.	Tin-wa	-do-	49 x 4	66	35
6.	Thaik-wa	-do-	49 x 4	55	37

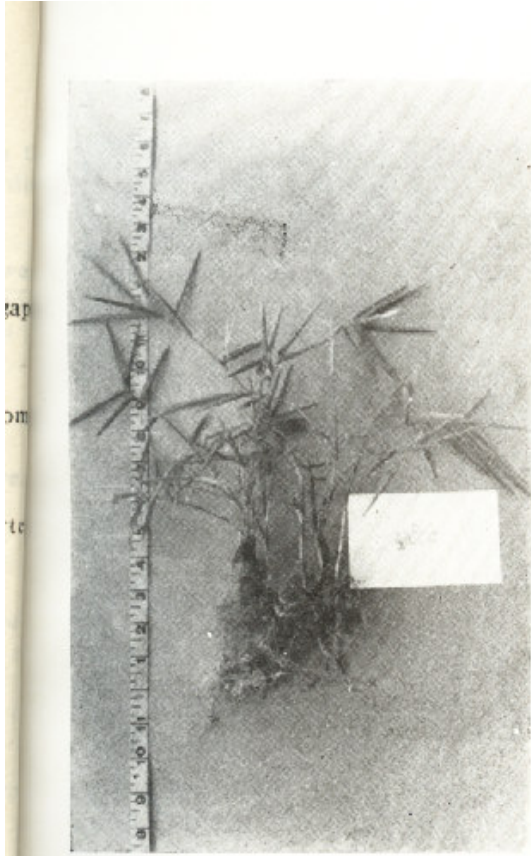


Figure 1. Uprooted seedlings of Myin-wa which were subdivided again for further propagation.

Figure 2. Uprooted seedlings of Tin-wa which were subdivided again for further propagation.

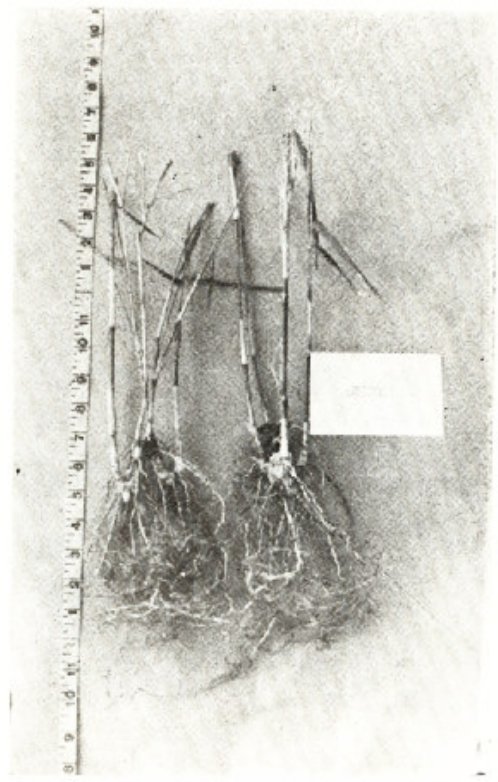
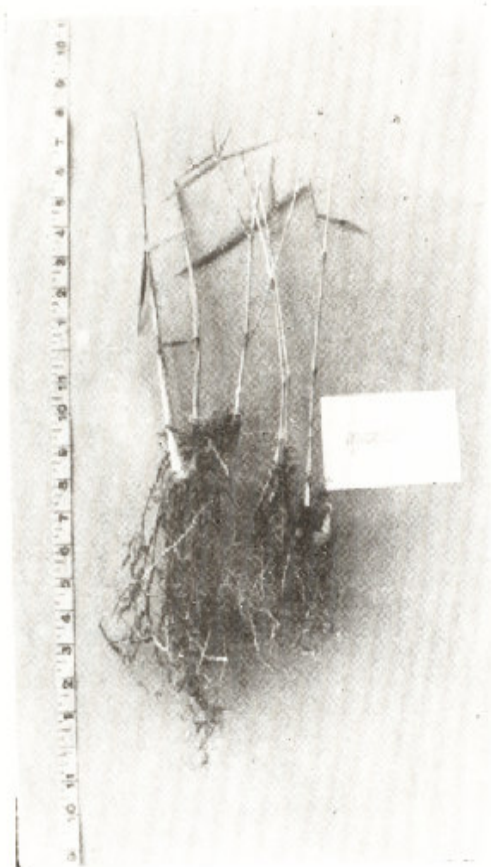




Figure 3. Uprooted seedlings of Thaik-wa which were sub-divided again for further propagation.

Figure 4. Uprooted seedlings of Kyathaung-wa which were sub-divided again for further propagation.





၁) ကုသောငါးတိး

ဗျာမြ အားသောဒေရာတွင် ကမ်းကြားမြင့်မြတ်ချိန်ဖြစ်သည်



References

1. Doo. Y.A.C., Htun Lynn and Nyan Htun. (1983). Regional Studies of Bamboo Propagation.
2. Etsuzo Uchimura (1979). Studies on multiplication of Bamboo by different growth types of Bamboo Rhizomes. Tropical Research Center. Ministry of Agriculture, Forestry and Fisheries.
3. Htun,N (1983 August). Department Report on Bamboo Propagation Methods. (Quarterly Report).
4. Lessard G. and A. Chouinard (1980). Bamboo Research in Asia [Proceedings of a workshop held in Singapore . 28-30 May 1980]
5. Wint, S.M. (1978). Report from Burma. Forest News for Asia and the Pacific FAO Quarterly Newsletter .Vol. II November 1978 No, 4 pg. 7-8