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Effects of Tending Pperations on Some Plots of Naturally Regenerated Bamboos

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သဘာဝမျိုးဆက်သော ဝါးများအား ပြုစုပျိုးထောင်ပေးခြင်း၏ အကျိုးအာနိသင်များကို လေ့လာခြင်း

ဒေါက်တာဥာဏ်ထွန်း၊ B.Sc. (Hons.) (Rgn.), M.Sc. (MLU), Ph. D. (TUD)
ဌာနမှူး - နှင့်
ဦးသက်ထွန်း?B.Sc. (Bot.) (MDY.) ဒု -သုတေသနမှူး
သစ်တောသုတေသနဌာန

စာတမ်းအကျဉ်းချုပ်

တောင်ယာဟောင်းများ၊ ဖုန်းဆိုးများတွင် သဘာဝအလျောက် ပေါက်ရောက်လာသော ဝါးမျိုးများကို ပြုစုပျိုးထောင် ပေးခြင်းအားဖြင့် အကျိုးရှိ၊ မရှိ စမ်းသပ်ခြင်း ဖြစ်သည်။ တစ်ဧက စမ်းသပ်ကွက် (၃) ကွက်နှင့် နှိုင်းယှဉ်နိုင်ရန် ထိန်းချုပ်ကွက် တစ်ကွက်ဖော်ထုတ်ပြီး၊ ပင်ကြပ်နှုတ်ခြင်းအားဖြင့် ဝါးရုံများ လွတ်လပ်စွာ ဖော်ထုတ်ခြင်းနှင့် ပေါင်းရှင်းခြင်း များအား ဆောင်ရွက်ပေးသည်။ ဝါးလုံးများ၏ အချင်းကြီးထွားမှုနှင့် နှစ်စဉ် မျှစ်ပေါက် ဦးရေများကို မှတ်သား လေ့လာသည်။ ထို့အပြင်၊ ၎င်းနေရာဒေသရှိ ဝါးစမ်းသပ်ကွက်များ၏ ကုန်ကျစရိတ်များနှင့် နှိုင်းယှဉ်ထားရာတွင် ကုန်ကျစရိတ်နှင့် အာနိသင်မှာ သာ၍ အနည်းငယ်အကျိုးရှိကြောင်း တွေ့ရှိရပါသည်။

Effects of Tending Operations on Some Plots of Maturally Regenerated Bamboos.

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Abstract

Experimental plots were laid out in the old taungya areas and in areas where bamboos are naturally regenerated. There are three one - acre experimental plots and an acre controlled plot. Tending operations such as thinning - out - to individual clumps, cutting down even some clumps of bamboos and weeding were done. Measurements like diameter growth of clumps and counting the number of new shoots every year. The cost of the whole operation up to two years was recorded and compared to the cost of bamboo trial plots in the same area. The results showed accountable differences in cost and effect compared to trial plots.

Contents

1. Introduction

Bamboos are species as far as their properties and uses concerned. Although taken as a whole, they are versatile, not many of them could be classified as multipurpose and few of them can be specifically used for a single purpose. Bamboos have age-old connections with the materials needs of common people and can be aptly called " poor man's timber".

Bamboos can be adapted to a thousand uses with but a few simple tools (1). It is used for house construction, fencing, scaffolding, ladders, mats, basket, 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 of daily use. Bamboos are eaten not only by human beings but also by elephants and other herbivores (2). Wine can be tapped from a certain species in Africa and said to be very popular with rural population and low urban income earners (3).

Thomas Edison in 1980, after trying thousands of materials for filament hit upon carbonised bamboo. More than a century later, some of those antique bulbs can still burn glowing bamboo (1). Last but not the least bamboo contributed fibers for pulp and paper industries.

Bamboo belongs to the family Graminae. It has about 75 genera and nearly 1250 species spreading from tropics, sub-tropics and to the wild temperate regions. Burma has about 90 species belonging to 18 general. (4) For ornamental reasons people are trying to grow beautiful bamboos under artificial conditions, where previously no bamboo could be found. Due to demand in the world as ornamental plants and finished products, as well as industrial raw materials exploitation of these giant grasses became intensified. In Burma due to modernisation of pulp and paper industries as well as local use, bamboo becomes scarse in accesible areas. And the need to establish bamboo plantation becomes a necessity (5).

As the researches for artificial regeneration of bamboos through plantation techniques are underway this paper on the other hand tries to supplement the need to increase the bamboo resources through natural regeneration. In other words, this experiment in its preliminary stage tries to find out whether there are effects by tending the naturally regenerated bamboo areas such as old taungyas, plantations destroyed by natural and human causes. Expenses for per acre basis for this experiment was given for two years.

2. Materials and Methods

Tin-wa (*Cephalostachyum pergracile*_ Munro) was chosen for the case study because it is readily and abundantly available as small as natural regenerated bamboo brakes around the Research Forest Area in Moswe, Ngalaik Forest Research in Pyinmana Township.

2.1 Method

Four-one-acre-plots were maked out in Moswe area where Tin-wa grows naturally. Out of the 4 marked out plots, three plots were put under tending operations. And one plot is left unattended as control plot.

2.2 Tending Operation

In every plot, clumps which are to be removed and also to be left were marked out. (Please see diagrammatic explanation No 1-4 and also Fig 1 an 2)

Clumps which were to be remove are out down just above the ground. But the trees in the plots are left undistributed.

Herbs, shrubs and climbers were removed also as weeds.

Some very congested clumps are also thinned out.

All the three experimental plots were weeded twice every year.

2.3 Measurements

The number of culms per clump was recorded.

Every new shoot per clump was recorded for every year.

The diameters of the largest new shoots were recorded for every clump.

The same type of measurements were done with the control-plot.

2.4 **Results**

(a) Out of 145, 131,93 clumps from plot 1,2 and 3 number of new shoot formed in the first year were 668, 559 and 310 each respectively. The control plot with 242 clumps had 741 new shoots. (See Table 1)

(b) In the second year plot 1,2 and 3 showed 505, 458, 403 new shoots and control plot with 731 new shoots. (See Table 2)

(c) The average diameter of the new shoots for the whole plots 1,2 and 3 showed 1.93", 1.52" and 1.63" respectively where for control plot average diameter of the total number of new shoots was 1.28" (See Table 1)

(d) Diameter measurements for the second year showed 1.89", 3.16" and 5.27" for plot 1,2 and 3 and for control plot with average diameter 2.00". (See Table 2)

(e) The largest diameter of the new shoot measured 2.86", 2.23" and 2.64" for plot 1,2 and 3 respectively and for control plot 2.64 inches for the first year and 2.96", 4.29" and 5.86" for plot 1,2 and 3 and for control plot 2.91 inches.

Plot No.	No. of Clump	No. of New shoots	Avg Dia. of New Shoots	Largtest Dia. of New Shoot
1	145	668	1.93"	2.86"
2	131	559	1.52"	2.23"
3	93	310	1.63"	2.64"
Control	242	741	1.28"	2.64"

Table No.1 Measurement of the 4 plots (1985)

Plot No.	No. of Clump	No. of New shoots	Avg Dia. of New Shoots	Largest Dia. of New Shoot
1	145	505	1.89"	2.96"
2	131	458	3.16"	4.29"
3	93	403	5.27"	5.86"
Control	242	731	2.00"	2.91"

Table No.2 Measurements of the 4 plot (1986)

3. Discussion and Conclusion

Discussion should be focussed on three points namely, the size of the individual culm, the number of new shoots for every year and the cost of the operation.

By looking at the interim results obtained after the two years of tending operations of 3 expt 1 plots, three were increment in the size of diameter of new shoots. There was also a slight increase in the largest diameter of a single culm in the second year. These increments when compared to control plot, showed large in diameter for the average and for single largest culm diameter. Another point that should be noted when one tended the naturally regenerated bamboo is the size of the clumps and culm which are large compared with the artificially planted seedlings or dug-up wildings, where the latter started forming small clumps and small new shoots during the second year of the planting only.

Another point of discussion centred on the number of new shoots formed every year. By looking at the results, the tended plots formed more new shoots than control plots. Further studies, such as whether there was site condition changes or an increase in nutritional up take in each clump, should be made.

The third point of discussion should lead us to the cost of the operation (See table 3 & 4). The cost of tending operation for one acre plot for one year was K 143.00. When compared with an artificial regeneration plot of one acre, the latter is much more than the former but is not comparable to one another.

Table 3. Cost of tending operation for one acre of naturally regenerated bamboos.

No.	Particulars	Kyats	Pyas
1.	Cleaning, thinning (6 labourers @ K 6. 50 p/ day for 2 days)	78	00
2.	Weeding 2 times / year at K 32 / 50 per weeding.	65	00
	Total	143	00

Table 4. Cost of Artificial Planting for one acre

No.	Particulars	Kyats	Pyas
1.	Site Preparation	120	00
2.	Cleaning / reburning	50	00
3.	Weeding 3 times at K 32 / 50	97	50
4.	Nursery espenditures *	-	-
	Total	267	50

4. Conclusion

The results obtained were by no means decisive but there are some indications that by applying the tending operation methods, bamboo resources in certain areas could be maintained or even increased.

The diameter size of the culm from the tended plots increased in the second year. (Note: The operation will continue for up to 5 years.)

There were also some increase in the number of new shoots because of tending operations.

By proper management, bamboo from naturally generated bamboo areas and from old taungyas could be made into good yielding crops.

With a cost as little as kyats two hundreds / acre, old taungyas and regenerated bamboo areas can be turned into ready - made - bamboo - production areas.

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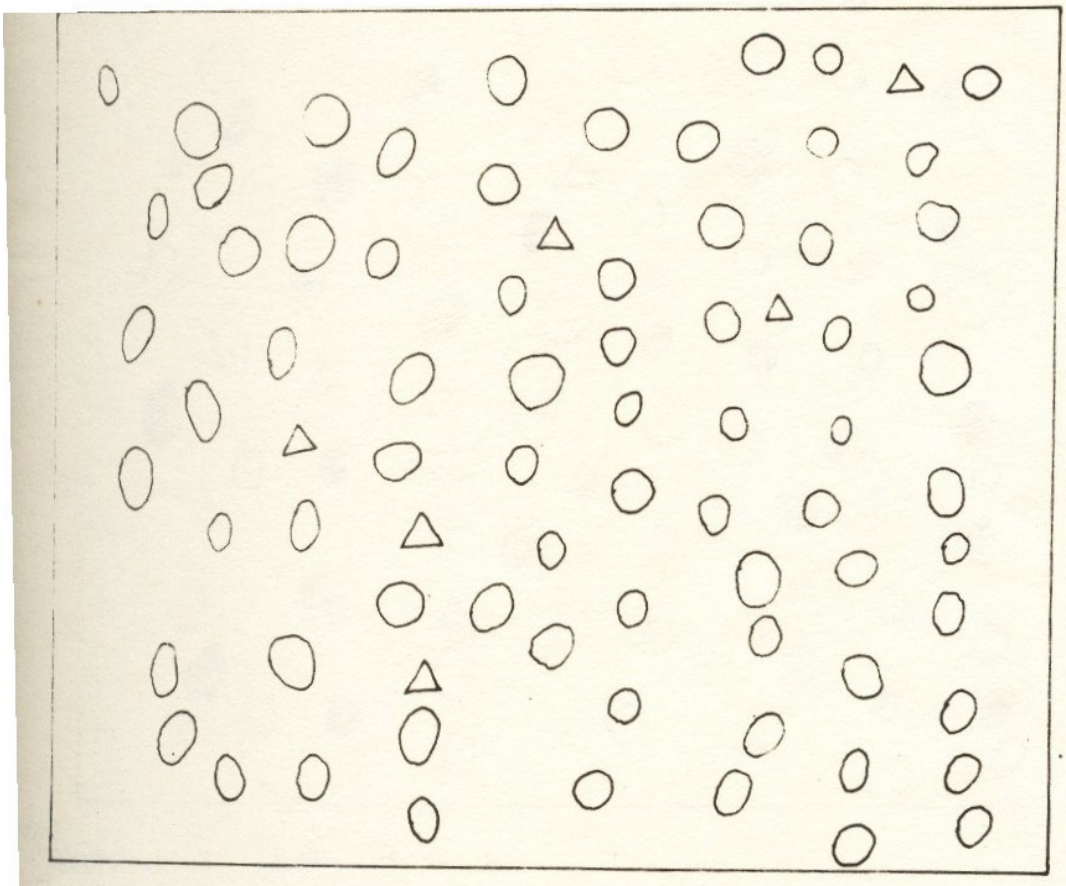

Diagram. No.1 Selected plot of bamboos.

(Note: Bamboo clumps spread over the whole area of the slected plot. Trees are also in cluded.) △ = trees. ○ = bamboo clumps.

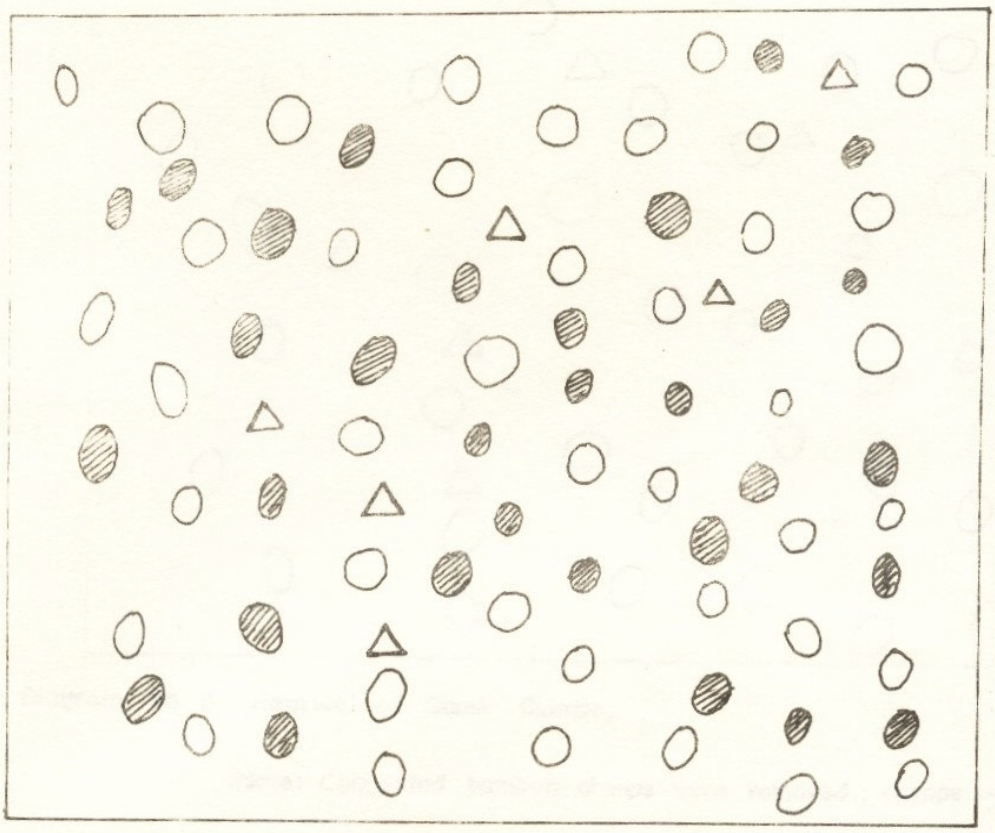

Diagram .No.2 Clumps of bamboo .

(Note: Black circles are to be removed and white circles to be left; trees are also to be left in the plot.)

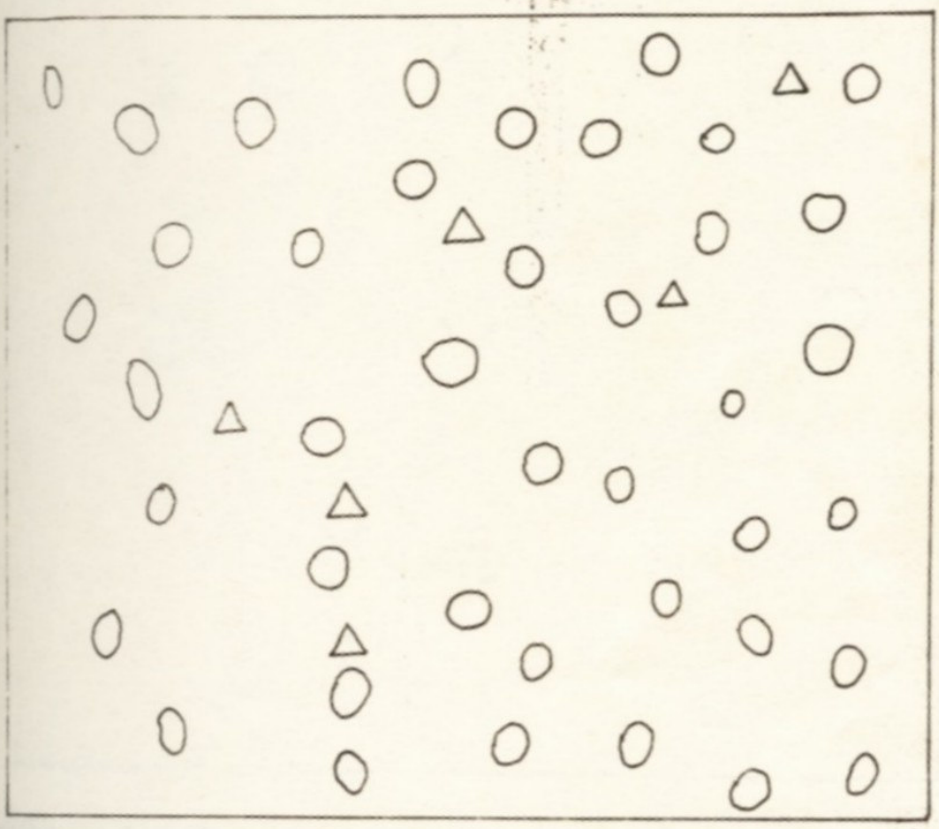

Diagram. No. 3. Removal of Some Clumps.

(Note: Congested bamboo clumps were removed ; clumps were left, so that they lied in rows as much as possible . Tree were also left undisturbed.)

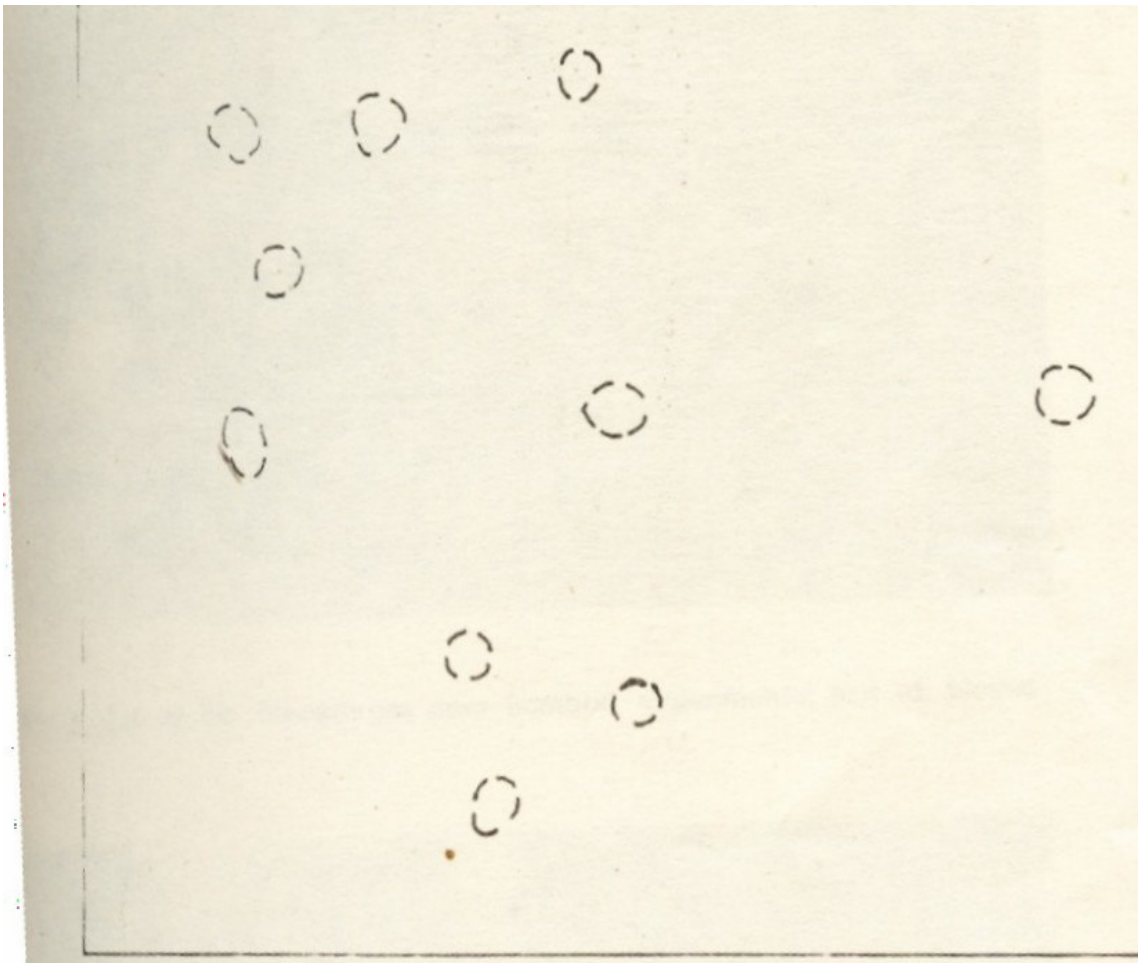

Diagram. No. 4. Some very congested clumps are thinned out.

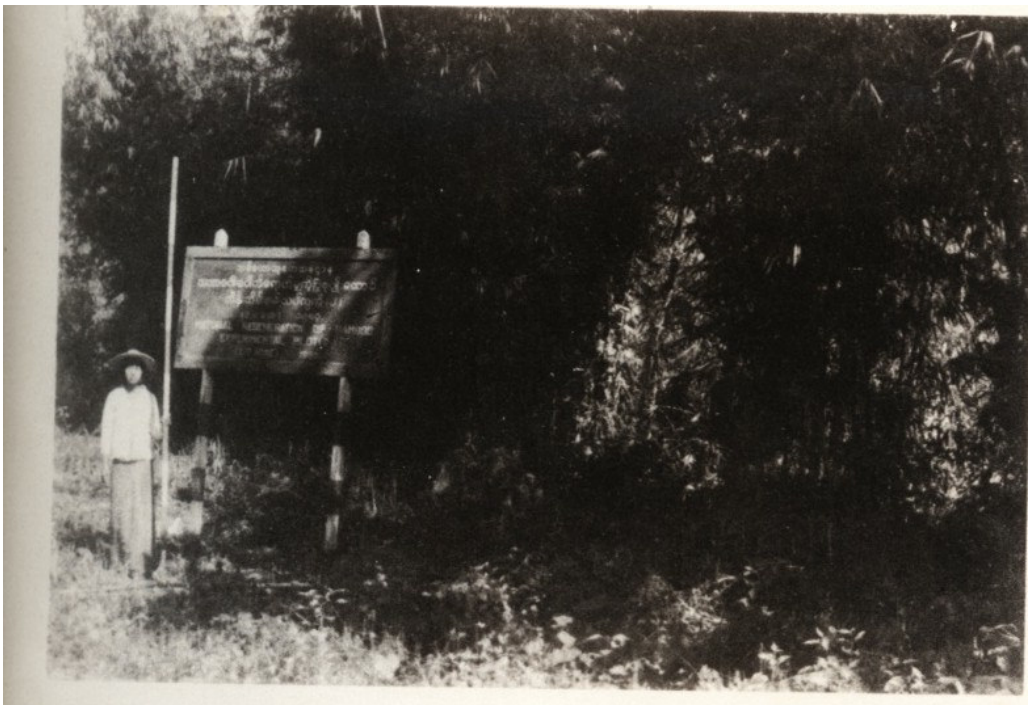

Fig.1. One of the Tended-one acre bamboo experimental plot at Moswe.

Fig. 2. The same as above in another aspect.