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Effect of Long Sowning in Urine Cow (Auxin) and Number of Books on Growth of Thoughtful Bamboo Cuttings (Gigantochloa nigrociliata (Büse) Kurz.)

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ABSTRACT

The results showed that soaking time in cow urine and number of books did not show any interaction with all variables. Separately, the soaking time did not have a significant effect on all variables at all ages, but the treatment of the number of nodes had a significant effect on root growth and the percentage of live cuttings, number of roots, fresh weight of roots and dry weight of roots at the age of 77 – 100 dap, where the treatment 2 books got the best results. There is a strong correlation between the number of roots and other root growth variables and the percentage of living cuttings. The number of roots influences the growth and percentage of living cuttings, where the roots provide food for the plant. Continuous utilization without replanting results in reduced production and germplasm. Not many bamboo seedlings have been provided due to the length of time needed for nurseries. To overcome this, an effort is needed to accelerate the growth rate and increase the percentage of successful seedlings, namely by soaking the material in auxin ZPT contained in cow urine and the number of books. Cow urine is an alternative provider of auxin ZPT for the high cost of artificial ZPT.

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1. INTRODUCTION

Bamboo is a shrub-like plant with woody stems. In Indonesia there are approximately 35 species of bamboo out of 1,070 species spread all over the world, but only 13 species of bamboo have economic value (Yudodibroto, 1985). Among the several bamboo species there is tabah bamboo (Gigantochloa nigrociliata (Büse) Kurz.) which has advantages in terms of taste and aesthetics of its shoots, as well as being one of the germplasm that makes up ecosystem biodiversity that grows naturally and is quite well known because it has many benefits, both ecology, economy, socio-culture, food and medicinal ingredients.

The duration of growth of bamboo seedlings is related to the amount of auxin content in the bamboo itself and whether or not exogenous auxin is given. One of the exogenous auxins that can be given to plants is found in cow urine. Physiologically, auxin plays a role in cell elongation, organ formation of roots, the movement of tropism, and apical dominance, so that by giving auxin it is hoped that there will be an acceleration of budding and rooting.

The proper application of the length of time of immersion in cow urine (auxin) is based on the anatomy of bamboo, where young bamboo stems have a layer of fiber consisting of lignin and silica

which is quite thick compared to other perennials, so that the absorption capacity of bamboo against auxin ZPT solutions, in this case Cow urine is different from other hard plants

The number of buds will affect the percentage of success of cuttings and the growth rate of seedlings, because the addition of buds will further extend the segment used and this will increase the availability of food reserves. The availability of increased food reserves will affect the rate of growth and germination in the nursery process. With the application of soaking time and number of nodes, the amount of endogenous and exogenous auxin will increase and is expected to accelerate the growth rate of seedlings and the success of cuttings.

Cow urine can be used to improve technical culture in plant growth to minimize external input in the process of plant growth and production. The use of synthetic chemical compounds is relatively expensive. The urine of animals, especially those that consume food from plants, contains a lot of auxin which can be used for plants, even the auxin contained therein consists of auxin a, auxin b, and hetero-auxin.

Cow urine contains hormones that function as growth regulators. There are two important hormones in cow urine, namely auxin and gibberellins (GA). Auxin levels varied from 146.50 ppm in Bostaurus type cows of Frisien Holstein breed (Sugiarto, 1998) to 3822.80 ppm in dairy cows. The length of immersion of the material in the hormone is related to the amount of exogenous auxin absorbed by the planting material (stem). Each type of plant has a different absorption capacity, this is related to the anatomy of the plant itself. The high levels of auxin that can be absorbed by plants affect the growth of roots and shoots, where auxin can stimulate growth at low levels, whereas inhibiting growth at high levels.

2. METHOD

2.1 Types of research

This research is an experimental research by making variations on the independent variables by looking at the effect on the dependent variable

2.2 Research Variables

The variables in this study consisted of independent variables which tested the effect of soaking cow urine on bamboo steaks.

2.3 Research design

This study used the Factorial Divided Plot Design (RPT) method with 2 factors, namely the length of soaking of cuttings in cow urine and the number of books on bamboo cuttings with descriptions of 3 books and 4 times of soaking in cow urine.

2.4 Sampling Locations

The sample used in this study was bamboo with a number of nodes on the bamboo and soaked in cow urine and saw changes in the bamboo.

2.5 Time and Place of Research

This research was started from January to April 2006 and was carried out at the Training Center for the Development and Training of Overseas Workers (BLK PPTKLN), Mondoroko Village, Singosari District, Malang, with an altitude of 487 m above sea level, the average daytime temperature is between 26 - 30° C, the average nighttime temperature is 25° C, the rainfall is 2,279 mm/year, and the RH is 70%.

2.6 Tools and materials

The tools and materials used include hoes, sickles, knives, tape measure, calipers, tubs, rulers, stationery, millimeter paper, cameras, scales, ovens, cow urine, bamboo sticks, manure, straw mulch and raffia rope.

2.7 Research procedure

The research begins with tillage by hoeing the soil and destroying it so that the soil becomes loose which will become a planting medium then the cow urine is collected then the previously prepared bamboo material/stems are soaked in 100 liters of cow urine and mixed with water with a ratio of 1:5 in a size 1 hole m x 2 m with a depth of 1 m covered with plastic, for each long soaking treatment, namely control (without soaking) then planting, maintenance and observation is carried out when the bamboo culms break or sprout.

2.8 Data analysis

Data were analyzed using analysis of variance (F count) and differences between treatments were tested by BNT test with a significant level of 5%. obtained from the observations were

analyzed for variance (F test), if significantly different it was continued with the BNJ test at the α level of 5%.

3. RESULTS AND DISCUSSION

3.1 Research result

3.1.1 When the bud breaks (Ratoon)

The results of the analysis of variance showed that the type of growing media had a significant effect on the number of conidia V. Carbohydrates are a source of carbon which is needed in large quantities as a source of energy for metabolic processes and as a constituent of cell walls, therefore about half of the dry weight of fungal cells consists of carbon, which means This shows that carbon compounds have an important role in fungal cells. In addition, the water content in KH media affects the process of cell metabolism, where water is needed in the growth process.

Table 1. The average time of bud break due to long soaking for each number of nodes

Treatment	When breaking buds
Number of Books (B)	
1 Book (B1)	24,414
2 Books (B1)	25,753
3 Books (B1)	24.136
BNT 5%	mr
Immersion Time (R)	
No Immersion (R0)	25,007
12 Hours Immersion (R1)	24,484
24 Hours Immersion (R2)	24,492
36 Hours of Immersion (R3)	25,088
BNT 5%	mr

Information : Numbers accompanied by the same letter in the same column are not significantly different in the BNT 5 Test

3.1.2 Shoot length and number of roots

The results of the analysis of variance showed that there was no interaction between the treatment of the number of nodes and the length of immersion in cow urine on the shoot length variable, and had no significant effect separately. in cow urine to changes in the number of roots Separately the average number of roots due to long soaking treatment.

Table 2. Analysis of Conidia Conidia Number V. lecanii per gram of Treatment Media at 7 HSI

SK	DB	JK	KT	F Count
Treatment	10	1.1895	0.1189	3.6895**
Error	22	0.7093	0.793	
Total	32	1.8988		

Information :

** = Very significantly different in the F test with a significance level of 0.05 and 0.01

3.1.3 Plant Weight

Development of Entomopathogenic Fungus V. lecanii Colonies in Various The type of media used started from observing the color of V. lecanii fungal colonies on PDA media as a control with natural media. On PDA media, V. lecanii colonies were whiter in color than natural media. On natural media KH, BB, BM, and JG the fungal colonies were white like cotton which gradually became thicker. On KK media, the fungus colonies were slightly yellowish white, while on KM natural media, KTM colonies were white, slightly gray in color. On KT, KTP and KP media the fungal colonies are white and thicken over time.

The results of the analysis of variance showed that there was no interaction between the treatment of the number of books and the length of immersion in cow urine on changes in fresh weight of roots at the age of observation 44 - 54 days after observation, but at the age of observation 77 - 100 days. The treatment showed a significant difference in dry weight of shoots, fresh weight shoots

3.1.4 Percentage of live cuttings

The success of bamboo cuttings is indicated by the percentage of living cuttings. The results of the analysis of variance showed that there was no interaction between the treatment of the number of nodes and the length of immersion in cow urine on the percentage of live cuttings. The treatment

of the number of books had a significant effect on the percentage of live cuttings, where the average percentage was live cuttings.

Table 3. Average percentage of live cuttings due to long soaking for each number of nodes

Treatment	When breaking buds
Number of Books (B)	
1 Book (B1)	3.889a
2 Books (B1)	27.222b
3 Books (B1)	19.444b
BNT 5%	12.06
Immersion Time (R)	
No Immersion (R0)	16,296
12 Hours Immersion (R1)	23,704
24 Hours Immersion (R2)	11,852
36 Hours of Immersion (R3)	15,556
BNT 5%	mr

Information :
Numbers accompanied by the same letters are not significantly different in the Test BNT 5% and analysis of variance is the result of the square root transformation ((x + 0.5)1/2).

3.2 Discussion

Plant growth is a process in plant life that results in changes in plant size, volume and dry weight caused by cell division. Cell division requires a lot of carbohydrates, while cell enlargement requires sufficient hormones and water, both of these processes require protein synthesis and are processes that reverse cannot occur. Plant growth will be optimal if internal and external factors that support growth are met, such as the use of cuttings and the use of natural auxin providers obtained from cow urine. Study The effect of soaking time of cutting material in cow urine on all growth variables (shoot break time, shoot length, fresh and dry weight of shoots, number of roots, fresh and dry weight of roots and percentage of live cuttings) of bamboo cuttings was not different.

The number of nodes on a bamboo plant is identical to the number of buds and the availability of food reserves. The number of books used in this study were 1 book, 2 books and 3 books, with the assumption that the longer the planting material, the greater the food reserves and the more buds that can increase the percentage of living cuttings.

Observations that were not significantly different from the treatment of the number of nodes on shoot growth could be due to factors such as food reserves, the origin of the planting material (top, middle and bottom of the main tree), bamboo physiology, auxin content in the stems and also possibly due to the influence of root growth as a provider. food and as a nutrient transport medium. This research was not based on the part of the main tree but on the diameter of the stem, due to the limited planting material that can be taken from one mother tree, where in one parent tree there are only a few segments that meet the requirements as planting material. Observations root growth including the number of roots, Root fresh weight and root dry weight were carried out to determine the success of cuttings and the percentage of living cuttings and is very important considering the purpose of bamboo cuttings is the emergence of roots.

4. CONCLUSION

In the study between bamboo and cow urine, there was no interaction between soaking time in cow urine and number of branches on the growth of tabah bamboo seedlings. Soaking time in cow urine with an auxin concentration of 57.75 ppm. No effect on seedling growth Using 2 nodes cuttings resulted in a higher percentage of living cuttings, number of roots, fresh root weight and root dry weight than using 1 node and 3 nodes cuttings.

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For tabah bamboo nurseries, you can use 2-book cuttings and there is no need to soak them in cow urine.

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