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Composition of Planting Media on Growth Banana Seeds (*Musa paradiciaca*)

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Abstract:- The composition of planting media on the growth of banana seedlings (*Musa paradiciaca*). The yellow *Musa paradiciaca* banana has now been developed in East Kutai by the Department of Agriculture Food and Horticulture (DAFH) under the name banana grecek which means good and attractive. This greek banana is a typical plant or germplasm from East Kalimantan in accordance with the Decree of the Minister of Agriculture. Conventional seed development by growing buds on the hump is what is done to multiply the banana seeds. The planting medium greatly affects the growth of shoots on the banana hump to prepare banana seeds

The purpose of this study was to obtain a suitable planting medium for the growth of kepok banana seedlings and to obtain healthy banana seedlings from banana weevil. The expected results from the Urgency of Research are: Increase knowledge about banana weevil as a banana plant seed material, Obtain suitable growing media for the growth of banana seedlings, research results can be used as reference material when teaching or used as material for reference books and provide information to the public in particular banana farmers how to multiply banana seeds with weeds and suitable media for banana seedlings.

The research was carried out in the demonstration garden laboratory of Plantation Cultivation of the Samarinda State Agricultural Polytechnic and was carried out for 4 months. In this study, a non-factorial completely randomized design method was used with the treatment of the composition of the growing media on the banana weevil. The composition of the media in the treatment are: Mo = Soil: Sand (2: 1), M1 = Soil: Sand: Compost (2: 1: 1), M2 = Soil: Sand: Burnt husk (2:1:1), M3 = Soil :Sand : Compost : Burnt Husk (2:1:0.5:0.5).

The results of this study can be concluded the fastest number of days for shoots to appear on the hump was in the treatment M3 = soil: sand: compost: roasted husk (2:1:0.5:5) for 36.37 days, M2 = soil: sand: husk (2:1:1) for 43.33 days, M1 = soil: sand: compost (2:1:1) for 45 days and M0 = soil: sand (2:1) for 60 days. The best percentage of shoot emergence on M2 and M3 was 75% followed by M1 treatment of 625% and M0 of 50% the percentage of shoot emergence was still below the SNI standard, which was good 85%.

Keywords:- *Planting media, banana weevil, banana .*

I. INTRODUCTION

Bananas are a horticultural fruit that are widely available in the country and are popular with the public. In addition to the nutritional and vitamin content, bananas have a high enough potential to be managed to meet the needs of the human body. In 2018, bananas were the highest fruit produced by Indonesia, reaching 7,264,833 tons, but in 2020 banana production was very low. So efforts to increase banana production again are needed (Badan Pusat Statistik, 2019).

Musa paradiciaca bananas are typical plants or germplasm from East Kalimantan in accordance with the Decree of the Minister of Agriculture. Kepok gerecek banana means good and attractive, this banana is bright yellow with dense flesh and tastes sweeter. Compared to white kepok bananas. Currently, the cultivation of *Musa paradiciaca* bananas is still being developed in East Kutai with a total planted area of 1,700 ha, and there is still potential for up to 500 ha of land for the development of banana commodities in East Kutai which is likely to be allocated in the fiscal year. 2022. The Head of the Horticultural Food Crops Service (DPTPH) wants the *Musa paradiciaca* banana plant to be developed throughout the East Kalimantan region and to become a center for the development of *Musa paradiciaca* bananas (Samarinda.com, 2020).

The lack of availability of healthy and quality seeds is one of the constraints in banana cultivation for conventional farmers because banana plants are very difficult to breed generatively. Usually farmers use seedlings to plant fields, this is the cause of the large amount of land that is not planted because the main tree in a year only produces 5-10 seeds (Suparya, and Ketut. I. 2003).

According Suyanti and Supriyadi (2008) Propagation of seeds in large numbers can be done by means of tissue culture, but this propagation really requires special skills. To overcome the problem of seeds, there are other ways and can be done by conventional farmers, namely splitting the tubers of banana plants according to the number of buds that exist. Buds on banana weevils require suitable planting media for their growth because the media is a place to grow and a source of food for seedlings.

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According Acquaah (2002) in Susilawati 2007 Adding the characteristics of a good planting medium is that it contains lots of nutrients, area and good drainage, The pH is in accordance with the plants and the media has the ability to retain water. It is this planting medium that determines whether the growth of banana seeds from the weevil is good or bad, so that later the composition of the planting media that is right and suitable for the growth of banana seeds will be obtained.

This study aims to obtain suitable planting media for the growth of *Musa paradiciaca* banana seedlings and obtain healthy banana seeds from banana weevils.

II. RESEARCH METHODS

A. Time and Place

➢ *Research time*

The research was carried out for 4 months starting from site preparation, materials and tools, planting hump shards, data collection, data processing and report preparation.

➢ *Research Place*

The research site is located in the production laboratory of Plantation Cultivation at the Samarinda State Agricultural Polytechnic

B. Tools and Materials

The tools used are hoes, machetes, hammers, scales, tape measure, pans, basins, filters, stationery and documentation tools. The materials used are sand, soil, roasted husks, compost, planter bag, banana weevil, planter bag, fungicide, water, gas, paranet, wood.

C. Rancangan Penelitian

The composition of the growing media in the treatment is written with the symbol as follows :

- M0 = Soil : Sand (2 : 1)
- M1 = Soil : Sand : Compost (2 : 1 : 1)
- M2 = Soil : Sand : Burnt husks (2 : 1 : 1)
- M3 = Soil : Sand : Compost : Burnt husks (2 : 1 : 0.5 : 0.5)

For each treatment repeated as many times 8 times to get 32 plants

D. RESEARCH PROCEDURE

- Find a flat location and clear the area to set up a shadow booth where the research will be carried out
- Prepare tools and materials used for research
- Weigh all media materials according to each treatment.
- Mix the media according to the treatment and put the media composition into the planter bag
- Look for banana cob material, clean and split the cob based on the presence of buds, soak the banana cob halves with warm water mixed with a little fungicide.
- Arranging planter bags on the shade booths, and labeling and planting the parts of the banana weevil
- Perform maintenance such as watering, weeding etc.

E. Observation Parameters

- Speed of growing buds.
  Observation of the speed of growth of buds by checking every day 4 weeks after planting.

- The percentage grows
  The percentage of bud growth was carried out after the last observation of the growth rate of shoots. on buds at the end of the study in order to find out the criteria

F. Data Processing

➢ *The average day of shoot growth rate*

To calculate the speed of shoot growth days can be calculated using the formula:

$$\text{Average day} = \frac{(N1 \times T1) + (N2 \times T2) + (Ni \times Ti)}{N1 + N2 + Ni}$$

Where :
N = The number of weevils that grew shoots on day –
T = Day – in the proess of growing shoots

➢ *Percentage of growing shoots*

To calculate the percentage of shoot growth at the end of the observation is calculated using the formula:

Percentage of growing shoots on the hump:

$$\frac{n}{\sum X} \times 100\%$$

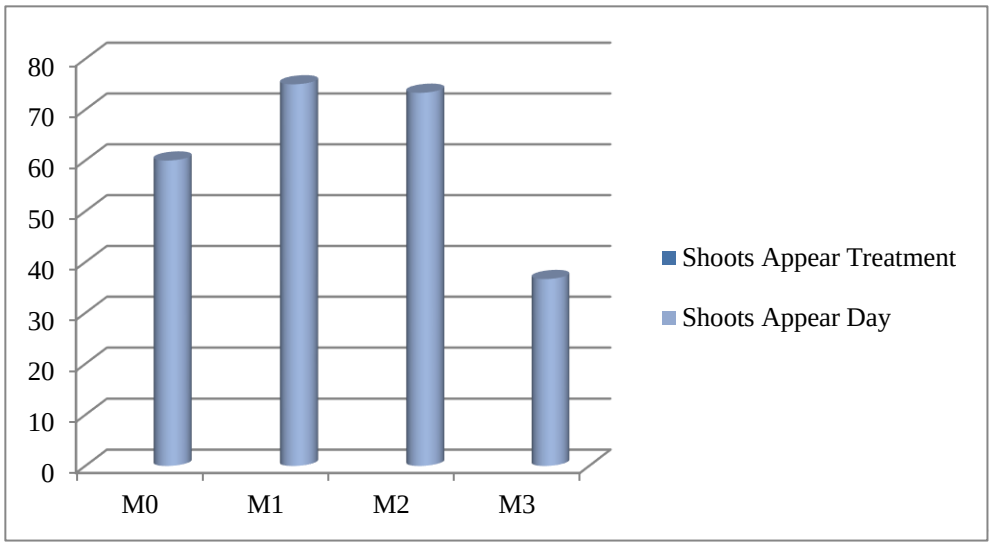
Where:
n = The number of weevils that sprout
$\sum X$ = The number of stump planted

III. RESULTS AND DISCUSSION

A. Results

➢ *The day of emergence of shoots*

The results of observations made every day in the study of media treatment on the speed of the emergence of buds on *Musa paradiciaca* banana shoots in each treatment, namely: M0, M1, M2 and M3 can be seen in diagram 1 below:



➢ *Percentage of emergence of shoots on the Musa paradiciaca banana weevil*
The percentage of shoot emergence on banana shoots using media treatment can be seen in diagram 2 below:

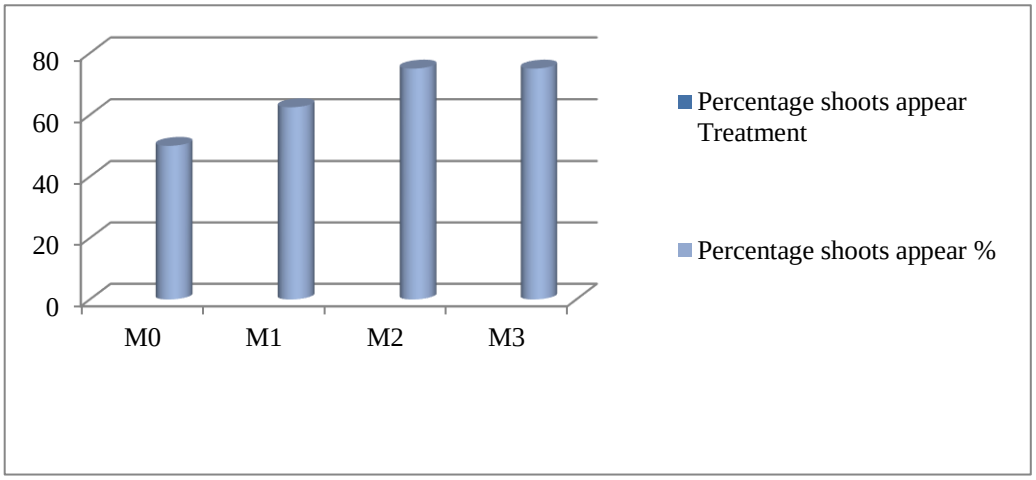


Fig. 2: Diagram of the percentage of bud emergence on banana buds

B. Discussion

➢ *Day of Emergence Shoots*
The results showed the length of days the emergence of shoots in each treatment was as follows: M3 for 36.37 days, M2 for 43.33 days, M1 for 45 days and M0 for 60 days.

The length of days for shoots to appear in each treatment showed that the media consisting of a mixture of soil and other materials showed that the days for shoots to appear were shorter than the treatment which only consisted of soil and sand. According to Fangohoi, L (2019), the planting medium is the main component when farming. The planting media that will be used must be adjusted to the type of plant you want to plant, besides that we must have an understanding of the characteristics of the different planting media for each type.

Planting media using organic materials is far superior to using inorganic materials because organic planting media is able to provide nutrients for plants and has macro and micro pores that are almost balanced so that the resulting air circulation is quite good and has high water absorption. . In addition to the planting medium, the growth of the buds on the banana weevil can be influenced by internal factors found in the seeds, seedlings or the plant itself.

The non-uniformity or the length of days the emergence of shoots on the kepok banana weevil in the study was suspected to be the banana weevil used old banana weevil or banana plants that have been harvested.

According to Sugito (2012), banana weevils that have been fruitful/harvested have thick skin, this causes a slow process of bud formation, this is a problem in banana plant nurseries using weevils and added by Supriana A.K.I. et al (2015) the cause of the long emergence of shoots on fruiting tubers is caused by old banana tubers, apart from having a thick skin, they also have low apical dominance.

Jati (2013) argues that the thickness of the skin on the tubers on old plants, the cytokinin content in old plants is also low, this causes dormancy of the shoots so that the formation of buds on the humps is hampered. The content of cytokinins

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in plants is able to encourage plant physiological processes so that they can encourage cell division (Lakitan, 2013).

➢ *Percentage of emergence of shoots on banana Musa paradiciaca weevils.*

The percentage of shoot emergence in each treatment was in the treatment of M0 by 50%, M1 by 62.5%, M2 by 75% and M3 by 75%. This is not in accordance with the 1995 SNI standard that the percentage of good shoots to emerge is above 85%, while the highest percentage of shoots on weevils is 75% in the M2 and M3 treatments, still below the standard SNI.

External factors are factors that are outside of seeds, seedlings or plants, one of which is the planting medium. A good planting medium is able to provide water and nutrients in sufficient quantities for plant growth, with the characteristics of the media having good air and water management, having stable aggregates, having good water holding ability and space for sufficient roots (Gardner and Mitchell , 1991).

Asmarawati. M and Ahmad Bahrun (2011) in their research using soil media mixed with sand and husks was not significantly different from using soil planting media mixed with sand and cow manure.

However the two treatments were significantly different from the use of soil growing media at banana plant height by administering growth regulators. Based on the porosity test of the soil + sand + husk growing media, the porosity of the soil + sand + cow manure planting medium was smaller, while the porosity of the soil planting medium was smaller than the two growing media.

This shows that the addition of sand, husks, and cow manure can increase the porosity of the soil so that the pore holes that can be used for water and air circulation become larger. Such conditions will make it easier for roots to carry out respiration and penetration in absorbing nutrients. Good root penetration and proper respiration will allow plants to absorb nutrients optimally.

Asmarawati (2010) adds to media that has balanced micro and macro pores so that air and water can be available for the weevil to carry out respiration smoothly in forming roots and shoots. According to Sutopo (2010) the process of emergence of shoots starts with absorption of water which functions to soften the skin on the hump, while in the second stage cell and enzyme activities occur which can result in cell division and can penetrate the skin on the hump. Then the decomposition stage of materials such as carbohydrates, proteins and fats forms a solution and is translocated to the growing points. It is continued at the assimilation stage where the materials are broken down into meristematics to produce energy for the activity of forming components and the growth of new cells. The final stage is the growth of shoots through the process of division, enlargement and division of cells to the point of growth.

IV. CONCLUSION AND SUGGESTION

A. *Conclusion*

- The fastest length of days for tuna to appear on the hump was in the treatment M3 = soil : sand : compost : burnt husks (2:1:0.5:5) for 36.37 days, M2 = soil : sand : husks (2:1:1) for 43.33 days, M1 = soil : sand : compost (2:1:1) for 45 days and M0 = soil : sand (2:1) for 60 days
- The best percentage of shoots appearing on M2 and M3 was 75%, followed by treatment M1 of 625% and M0 of 50%, the percentage of shoots appearing was still below the SNI standard, namely a good 85%.

B. *Suggestion*

- To speed up the emergence of shoots on plant stump, to propagate banana plants from stump, it is better to use stump from young plants (saplings of banana plants), besides the skin on the stump is not thick/hard, there are also lots of cytokinins in the stump of young plants.
- To speed up the emergence of shoots on weevils from old plants (already harvested)) treatment using media has not been able to accelerate the emergence of shoots, other treatments such as growth regulators (ZPT) should be added

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