

The Effect Of Giving Supremo Made From Active Glyphosate On The Control Of Banyan Weeds On Oil Palm Plants Produces Using The Root Infusion System

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Abstract.

The internship activity at PT Supra Matra Abadi Kebun Aek Nabara (KAN) in Bilah Hulu District, LabuhanBatu Regency, North Sumatra Province, this activity was carried out for four months, March-July and the method used was a completely randomized design (CRD) with 2 different treatments, namely by concentration of 6% and 7%. Results: Afdilling III PT Supra Matra Abadi controlled banyan weeds using two treatments, namely manually and chemically. The banyan weed is a nuisance plant, because its life clings to or suffocates the oil palm plant. The negative impacts on oil palm plants are pest attacks, competition occurs, humidity increases, making it difficult for the pruning and harvesting processes. The banyan weed population in PT Supra Matra Abadi is in block C87C and block C87G. The purpose of this study was to determine the effective and efficient concentration in the use of the supremo herbicide with the active ingredient glyphosate. Based on the results of research that has been carried out from the two concentrations of the herbicide supremo 480 SL which is effective and efficient for controlling banyan weeds in oil palm plants, namely a concentration of 7%. Because at a concentration of 6% it takes 30 days to see the banyan weed die.

Keywords: Banyan (*ficus sp*), concentration and supremo 480 SL.

I. INTRODUCTION

Oil palm is the main crop of plantations contributing to the country's foreign exchange. Oil palm crops in Indonesia are located in 32 provinces. The average growth rate of oil palm area in Indonesia during 2004-2014 was 7.67% with an area in 2014 reaching 10.9 million/Ha (Directorate General of Plantations, 2014). In addition, oil palm plantations are very developed in Indonesia, especially in West Sumatra. With the development of oil palm plantations, it is inseparable from various threats that interfere with cultivated plants. One of them that is very disturbing to cultivated plants is weeds. Weeds are found in many immature oil palm plants, especially in smallholder plantations. That's due to a lack of knowledge for the control of such weeds. Therefore, in the cultivation of oil palm crops, especially in immature crops, one of the factors that inhibit growth is weeds. The existence of weeds is a problem because it is a plant that interferes with cultivated plants, so it requires continuous costs, labor, and time to control them. Weed control depends on the state of the crop, the purpose of planting, and the cost. Various types of control techniques can be carried out ranging from mechanical, technical, biological, preventive, integrated cultures, to chemical control. Of the various techniques that can be done, chemical control is the most widely applied practice in oil palm plantations because it provides high effectiveness and the results are more profitable or standardized (Pahan, 2007). Weeds have negative effects on oil palm crops such as inhibiting oil palm growth and crop productivity, competition for nutrients, water and sunlight and hindering other work in the field (Wikipedia, 2010). One of the weeds that grows on oil palm plants produces is the banyan tree weed.

This weed has the characteristic woody and creeping weeds. Banyan weeds are very difficult to eradicate or exterminate. Because this banyan weed grows attached to the oil palm plant and the roots of this banyan weed spread between the midribs, so the root is very strong. The presence of banyan weeds planted with oil palm affects harvesters, many of which are stuck, and can even cause fruit losses. Thus this weed must be controlled in growth so that it does not cause losses in the care of plants and harvesters. Banyan weed control can be done by manual and chemical means. Manual control can be done by pruning banyan weeds. If banyan weeds grow on oil palm plants that are already high (aged >16 years) such as those found in PT Supra Matra Abadi (SMA), then the control is serious and endanger the workforce of harvesters. In

addition, manual control requires a lot of labor costs and takes a long time to eradicate. The chemical pengendalian can be done in several ways, namely the smear system and the root infusion system. This is one method used to control banyan weeds by infusing (inserting) herbicides with active ingredients of glyphosate through the roots. However, it is not yet known what is the effective concentration for banyan weed control. Therefore, it is necessary to examine the effective concentration in the use of herbicides made from active glyphosate to control banyan weeds in oil palm plants so as to facilitate harvesting work, avoid getting stuck and minimizing fruit losses.

II. METHOD MATERIALS

This research was conducted at PT. Supra Matra Abadi (SMA) Kebun Aek Nabara, Bilah Hulu District, Labuhanbatu Regency, North Sumatra. This study was conducted for 4 months starting in February - June 2022 and the method used for this study was a complete randomized design (RAL) with 2 treatments with a dose of 6% and a dose of 7%. PT. Supra Matra Abadi Aek Nabara is located in Bilah Hulu District, Labuhan Batu Regency, North Sumatra.

PT. Aek Nabara High School has an area of 4,484 Ha with a composition of 4,304 Ha is a plantable area, 381 ha is an immature plant, 3264 ha is a producing plant, 659 ha is a replanting area and an area for infrastructure covering an area of 128 ha and for areas that cannot be planted protected areas and isolation ditches covering an area of 39 ha. As well as an area for breeding covering an area of 13 ha. PT. Supra Matra Abadi Aek Nabara is divided into 5 (five) Afdeling, with the composition of Afdeling I garden area of 795 ha, Afdeling II covering an area of 817 ha, Afdeling III covering an area of 866 ha, Afdeling IV covering an area of 978 ha, and Afdeling V covering an area of 848 ha. The boundaries of plantations are surrounded by several areas, including:

- North : PTPN III Aek Nabara
- South : Kampung menang sari, Sumber sari and Kampung Suhut
- West : Kampung Kali Bening and Kampung De De
- East : Kampung Branch Two and PTPN III Aek Nabara

Tools And Materials

The tools used in this study were machetes, unused bottles and stationery. The materials used such as glyphosate herbicide, 1/2 kg plastic bag, clean water and unused rubber straps / tires in small scissors.

Stages Of Research

This research was conducted through several stages for the following reasons:

1. Prepare the necessary equipment such as: machetes, unused bottles, plastic, rubber ropes / tires that are no longer used and materials needed supremo herbicides made from active glyphosate, and clean water.
2. Conducting a census to determine the existence of banyan weeds in PT. SMA. The results of the banyan weed census can be seen in Table 1.

Table 1. Banyan Weed Census Results

No.	The Existence of Banyan Weeds	Principal Amount
1.	Block A87C	17
2.	Block A87G	13

3. Determine the concentration of herbicides to be tested, namely:
 - a. Concentration of 6% per liter of water (1 liter of water + 60 cc supremo or in 200 cc of water given 12 cc supremo for per principal)
 - b. Concentration of 7% per liter of water (1 liter of water + 70 cc supremo or in 200 cc of water given 14 cc supremo for per principal)
4. Cut the roots that rise to the ground and put the dose in a plastic bag that has been given a herbicide solution, after putting the roots in a plastic bag and tie it using a rubber rope so that rainwater does not enter the plastic bag.
5. Make observations every day (1 – 30 days)

III. RESULTS AND DISCUSSION

Characteristics of Banyan Weeds

Banyan weed is a strangler plant, because according to Indriyanto (2006), it is stated that plants that are famous as strangler plants from plant species members of the genus *Ficus* for example *Ficus rigida*, *Ficus altissima*. A species of *Ficus* member that is in its infancy and still has the status of an epiphyte secretes roots, which look very attractive, as decorations on its host tree. However, over time the hanging roots stick down and when they reach the ground, they begin to do their job of sucking nutrients and organic matter from the soil. Then the roots will develop into a trunk and unite to strangle the mother tree. The mother tree will inevitably be squeezed in the middle. From that moment on the species of members of the *Ficus* completely became stranglers or stranglers.

Kingdom : Plantae

Subkingdom : Tracheobionta

Superdivision : Spermatophyta

Division : Magnoliophyta

Class : Magnoliopsida

Subclass : Hamamelididae

Order : Urticales

Family : Moraceae

Genus : *Ficus*

Species : *Ficus annulata* Bl.

1. Rod

Banyan trunks are tree-rounded, rough surface, have branching and on the trunk or intersect branching in the roots.

2. Leaves

Single-leaved banyan weed, 3-6 cm long, 2-4 cm wide, short-stemmed, pointed tip and short base.

3. Roots

Banyan root is a single root and banyan root is light green.

Observations

Observations were carried out every day for 30 days aimed at determining the change or condition of banyan weeds after being treated using supremo active ingredients of glyphosate.

Negative Impact of Banyan Weeds

1. Against oil palm plants

Oil palm plants that grow banyan weeds will experience several losses, such as:

a. Competition occurs

The presence of weed competition can reduce the ability of plants to produce. Competition or competition between weeds and plants that are cultivated in absorbing nutrients and water from the soil, and the acceptance of sunlight for the process of photosynthesis, gives rise to losses in the production of both quality and quantity (Juliana, 2010).

b. Increased humidity

With the increase in humidity around the canopy of oil palm plants, it will cause diseases caused by fungi.

c. As a pest attack

Lush banyan weeds can cause the presence of pests such as rodents.

2. Against the process of pruning and harvesting

The losses caused by banyan weeds on the stems of oil palm plants are complicating crop taxation activities, disrupting pruning and harvesting activities.

Table 2. The results of observations of root infusion

Day to	Parameters	Consetration (%)	
		6	7
7	Leaf	10% withers	30% withered and part of the leaves

			turn yellowish color
	Trunk	Haven't changed yet	Slightly changed
14	Leaf	30% withers	60% wither and leaves turn yellow
	Trunk	Slightly changed	Start drying
21	Leaf	40% wilted and partially yellowish in color	85% dry and fall off (die)
	Trunk	Start drying	Dry (dead)
30	Leaf	60% withers and changes overall yellowish color	
	Trunk	Partially dry	

IV. DISCUSSION

a. Day 7 after treatment

Based on Table 2, the results of leaf and stem observations have seen changes in concentrations of 6% and 7% after 7 days of treatment.

- At a concentration of 6% the leaves have undergone a change of as much as 10% wilting, while for the stems there has not been a change.
- At a concentration of 7% the leaves have changed by as much as 30% wilting and some of the leaves have changed their yellowish color, while for the stems they have slightly changed their color which was previously light green to slightly brownish.

b. Day 14 after treatment

- At a concentration of 6% the leaves have changed as much as 30% withered, while for the stems slightly changed color to brownish.
- At a concentration of 7% the leaves have already undergone a change of as much as 60% withering, experiencing an overall change in yellow and starting to dry, while for the stem the overall color changes brown and begins to dry.

c. Day 21 after treatment

- At a concentration of 6% the leaves undergo a change of as much as 40% wilting and discoloration of the dau is partly yellowish, while for the stem it experiences a brownish discoloration and part of the stem begins to dry.
- At a concentration of 7% the leaves undergo a change of 90% dry and in the whole leaf fall or fall off, while for the stem it undergoes an overall brown and dry discoloration or has been declared a banyan weed dead.

V. CONCLUSION

Based on the results and discussion above, several things can be concluded:

- 1) Banyan weed is a nuisance plant because this weed is attached or suffocating to oil palm plants.
- 2) The negative impact of banyan weeds on oil palm crops, namely as a pest attack, competition occurs, humidity increases and complicates the pruning and harvesting process.
- 3) Of the 2 treatments of supremo herbicide concentrations made from active glyphosate that are effective and efficient to eradicate banyan weeds in oil palm plants, the concentration is 7%. Because at a concentration of 6% it takes 30 days to see the banyan weed die as a whole.

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