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Diversity Weeds on Plantation Coconut Palm (Elaeis Guineensis Jacq) in Institute Technology Palm Indonesia

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Abstract. Weeds are annoying plants that can harm the main crop, weeds can grow quickly without being desired and also become obstacles to other activity mechanisms on the same land. The research was carried out in the practical garden of the Indonesian Palm Oil Technology Institute (ITSI), namely the Plantation campus, which has supporting facilities in the form of Oil palm plantation with an area of 6 hectares, this oil palm plantation (Elaeis guineensis Jacq.) has diverse plant vegetation with a height of 25 meters above sea level. This research focuses on exploring weed diversity in oil palm plantations at the Indonesian Palm Oil Technology Institute (Medan). By using field survey methods and vegetation analysis, the data is presented in qualitative descriptive form. This research reveals the types and distribution of weeds present, providing in-depth insight into the diversity of oil palm plantation ecosystems. The findings of this study show variations in weed vegetation and types that influence ecosystem balance. This research provides an important basis for further understanding of weed dynamics in oil palm plantations, creating a foundation for the development of more appropriate and sustainable management strategies.

Keywords: Weeds, Elaeis Guineensis Jacq, Vegetation, Ecosystem

I. INTRODUCTION

Coconut palm (Elaeis guineensis Jacq) is plant Which Already famous for more than 150 years in Indonesia. Plant This is producer oil the main vegetable and useful for cooking And needs other (Bremer et al., 2022). Palm oil becoming increasingly popular in some year final and its use Which widespread has impact positive on economy domestic. Cultivation coconut Palm oil is very dependent on the environment And technique cultivation Which done so that it can produce productivity optimum (Harianja et al., 2024). At the moment this is a frequent problem happen in activity cultivation coconut palm that is existence weed Which hinder process activity like harvesting, fertilization And various activity other (Nandhini et al., 2021).

Weeds are existing plants in an area within a certain time undesirable by humans (Abdi et al., 2018). Existence weed in Plantation coconut palm can trigger loss Which There is on various aspect, for example, reducing fruit production as well disrupt the smooth running of cultivation activities like fertilization And harvesting (Thomas et al., 2018). Presence weed become important for oil palm plantations, so that the area dominated by certain weeds (Qian et al., 2020). Weed yourself refer on plant Which grow in an undesirable or perceived location as disturbance in context agriculture (Latchere et al., 2018), garden or environment Which Still experience (Haque et al., 2021). Characteristics main from weed is his abilities for grow fast, adapt with various condition environment and compete in a way aggressive with plant Which attempted. Weeds often time own cycle life Which short, possible For develop breed with fast And spread wide (Kwadjo et al., 2018).

Vegetation weed can become problem Serious in agriculture Because can consume and seize source important resources such as water, soil nutrients, And light sun Which should intended for plant Which cultivated. Can provide place for pest And disease plant For develop multiply, bother productivity And health plant Which attempted (Senarathne & Udumann, 2021). Weeds have impact Which significant to environment surroundings. They can influence soil properties, cycle water and diversity biological. Understand the weed ecosystem lies in processing sustainable and efficient from the land as well as source Power natural Which involved (Rubiano et al., 2019).

Objective from study This is For know diversity weed vegetation in oil palm plantations in Institute Technology Mustard Indonesia (Lodeiros et al., 2018). A number of type weed Which found in the Institute's oil palm plantation Technology Palm Indonesia (ITSI) Among them are broad -leaved weeds leaves), narrow-leaved (grasses), sedges (sedges) and ferns (Qinghua et al., 2022).

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II. METHOD

This research was conducted in February 2024. The location of the research was in the field practice garden of the Indonesian Palm Oil Technology Institute. The sampling technique used was the random technique (Duan et al., 2023).

Sample Identification and Data Presentation

Sample identification was carried out by matching existing samples from literature on previously identified weeds such as Figures and books (Le Moullac et al., 2018). The tools used for weed identification used a cellphone camera and a reference source for sampling the survey method and analyzing weed diversity (Saravanan et al., 2022). The existing and found weeds were identified by classification and diversity of types. is a book. Reference books that are used literature such as Sri Winarsih, (2020) and Usman Nasution (Barros et al., 2020). The weed data obtained are presented descriptively, namely described based on their classification and diversity (Ruzlan & Hamdani, 2020).

III. RESULTS AND DISCUSSION

Results observation about type Weeds in Plantation Coconut Palm in Garden Practice Field Indonesian Palm Oil Technology Institute can seen on following table:

Table 1. Types Of Weeds in Oil Palm Plantations on the Palm Oil Institute Campus Indonesia, Medan

Family	Genus	Species	Morphology
Araceae	Alocasia	*Alocasia odora* (Lodd.) G.Don	Broad leaves
Asteraceae	Ageratum	*Ageratum conyzoides* L.	Broad leaves
	Mikania	*Mikania micrantha* Kunth	Broad leaves
	Andrographis	*Andrographis paniculata,* Nees	Broad leaves
Acanthaceae	Ruellia	*Ruellia tuberosa* L.	Broad leaves
Boraginaceae	Helioptropium	*Heliotropium indicum* L.	Broad leaves
Commelinaceae	Commelina	*C. diffusa*	Grasses
Convolvulaceae	Merremia	*Meremmia peltata* (L.)Merr.	Broad leaves
Cyparaceae	Chicken	*Chicken brevifolia* Rottb.	Sadges
Davalliaceae	Davallia	D.canariensis	Fern
Euphorbiceae	Macaranga	*Macaranga tanarius* (L.)Mull. Arg	Broad leaves
	Euphorbia	*Euphorbia dentate* Michx.	Broad leaves
Lamiaceae	Salvia	*Salvia misella* Kunth	Broad leaves
Moraceae	Ficus	*Ficus binjamina* L.	Broad leaves
	Ficus	*Ficus ribes* Reinw	Broad leaves
Onagraceae	Ludwigia	*Ludwigia octovalvis* (Jacq.) P.H. Raven	Broad leaves
Orchidaceae	*Cymbidium*	*C. bicolor*	Grasses
Oxalidaceae	Oxalis	*Oxalis corniculata* L.	Broad leaves
Papilionaceae	Dalbergia	*Dalbergia latifolia* Roxb	Broad leaves
	Imperata	*I. cylindrica*	Grasses
	Dichanthelium	*D. clandestinum*	Grasses
Poaceae	*Setaria*	*S. barbata*	Grasses
	Elausine	*Elausine indica* (L.) Gaertn.	Sadges
Rubiaceae	Rubia	*Rubia cordifolia* L.	Broad leaves
Thelypteridaceae	Thelypteris	T *helypteris* Kunthii (Desv.)Morton	Fern

The climate of the research area on the Indonesian Palm Oil Institute's practice land has Type A climate is characterized by a long wet month period of more than 9 months, which on average average rainfall >100 mm. This determination is based on the Schmidt- ferguson (Ragas et al., 2019).

The condition of the research land in oil palm is overgrown with many types of weeds cover the entire garden area. The most common weed in oil palm plantations in Institute Technology Palm Indonesia is from family poaceae and from its morphology found in the morphology of broad leaves (Plucknett, 2019). There are 24 species of weeds obtained from gardens where weed the diversity and distribution very even. As for characteristics Which has succeed found in garden campus Institute Palm Technology Indonesia are as follows:

1. Alocasia odora (Lodd.) G. Don

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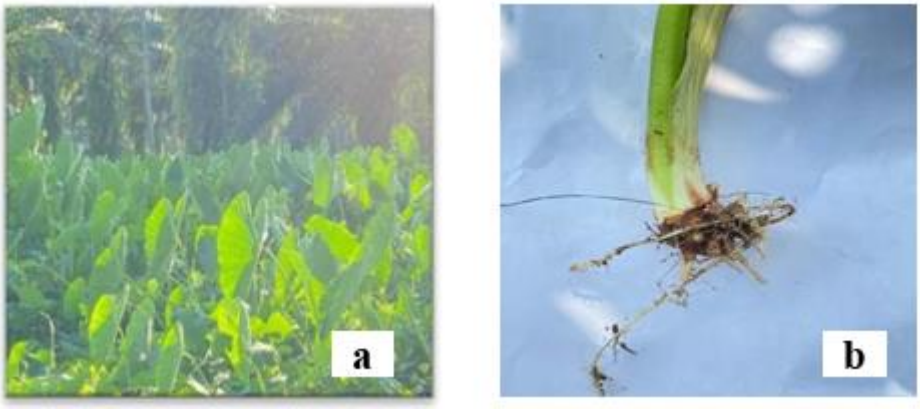

Figure 1. (A) Leaf Alocasia Odara And (B) Root Alocasia Odara

Alocasia odora (Lodd.) G. Don has wider leaves than other weeds with a leaf surface area of 20 cm, has a waxy layer which can reduce transpiration This plant has long stems and growing fibrous roots on the ground. Usually found in moist soil habitats. This weed can be controlled done with a number of method among them retraction manual, use mulch, processing land as well control use chemical material.

2. Ageratum conyzoides L.

Figure 2. (a) Ageratum leaves conyzoides and (b) root Ageratum conyzoides

Ageratum conyzoides L. This plant can grow in various types of habitat, especially in garden ITSI campus Medan and from land Which open until areas land which shady.

Control of this weed can be done by several methods including management land, control biological as well as use herbicide Which capable reduce spread from weeds this.

***3. Mikania micrantha* Kunth**

Figure 3. (A) Leaves Mikania Micrantha And (B) Roots Mikania Micrantha

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Mikania micrantha Kunth is type weed Which own ability very fast growth and able to cover large areas very quickly. *Mikania micrantha* Kunth very widely found in campus garden ITSI Medan especially in open garden land. Control of this weed can be done using several methods including *mowing* can also be done with use of herbicides (Nuwarapaksha et al., 2022).

***4. Andrographis paniculata,* Nees**

Figure 4. (A) Daun Andrographis Paniculata Dan (B) Akar Andrographis Paniculata

Andrographis paniculata which is also known as "sampiloto" or "earth's hemp" is one of the weeds found in the ITSI campus garden, usually this plant own tall around 30 until 110 cm, the leaves shaped oval with end tapered, has a rough texture and has a dark green color. For the flowers themselves white or pale purple in color and usually grows in clusters, the fruit is solitary It is in the form of a capsule and the habitat of this weed grows wild in tropical and subtropical areas (Ngawit & Farida, 2022). This weed can controlled.

5. *Ruellia tuberous* L.

Figure 5. (A) Ruellia Leaves Tuberous And (B) Root Ruellia Tuberous

Ruellia tuberosa L, is a weed whose habitat grows wildly, especially in several regions which exist in Indonesia. This weed has a height of about 30 to 60 cm, the leaves are oval or oblong with wavy and arranged edges in a way contradictory in throughout the stem, the flowers shaped trumpet with five petals are purple or pink. This weed can be controlled by using herbicide systemic or contact.

***6. Heliotrope Indicator* L.**

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Figure 6. (A) Daun Heliotrope Indicator Give (B) Akar Heliotrope Indicator

Heliotropium indicum L usually has a height of approx 30 to 60 cm, the leaves shaped oval or oval with edge Which jagged or wavy, flower his small in size and growing at the ends of stems or branches, this weed can be controlled with method manually or using herbicides.

7. *C. diffusa*

Figure 7. C leaves. diffuse

C. diffusa usually has a height of 5 to 10 cm, the leaves are composed from 3 to 7 strands arranged in an odd number. You can control this weed by: manually namely removal or the use of herbicides (Ramos Hernández et al., 2018).

8. Meremmia peltata (L.) Merr.

Figure 8. Meremmia Peltata

Meremmia peltata (L.) is a weed that is often found in plantations, especially palm, the leaves are heart-shaped with a blunt tip, surface on green dark and the lower surface is yellowish green, the stems are creeping or creeping. The flowers are usually white or pale purple, developing in the leaf axils or tips stems, this method of controlling weeds can use mechanical, biological and other methods Also use herbicide (Tanasale et al., 2023).

***9. Kyllinga brevifolia* Rottb.**

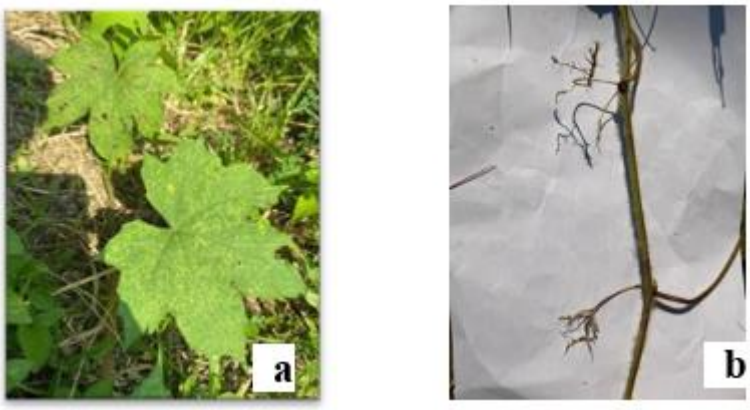

Figure 9. (a) Kyllinga leaves brevifolia and (b) root Kyllinga brevifolia

Kyllinga brevifolia Rott *b* has green stems with a round or round shape almost triangular, the leaves are thread-like with a pointed tip, the roots are shaped fiber and grow in surface land, as well as flower his small colored white. Method Control of this weed can be done mechanically, namely uprooting or manually by hand however can too use herbicide.

10. *Canariensis*

Figure 10. (a) D leaves. canariensis and (b) root D. canariensis

D.canariensis is often found in oil palm plantations and usually lives on the surface soil and also on oil palm trunks, this plant likes humidity conditions Which tall, Because its growth very fast, control weed This usually can done in a way mechanical, manually even can Also use herbicide if its growth on ground level (Hilwan & Santosa, 2019).

11. *Macaranga tanarius* (L.) Mull. Arg

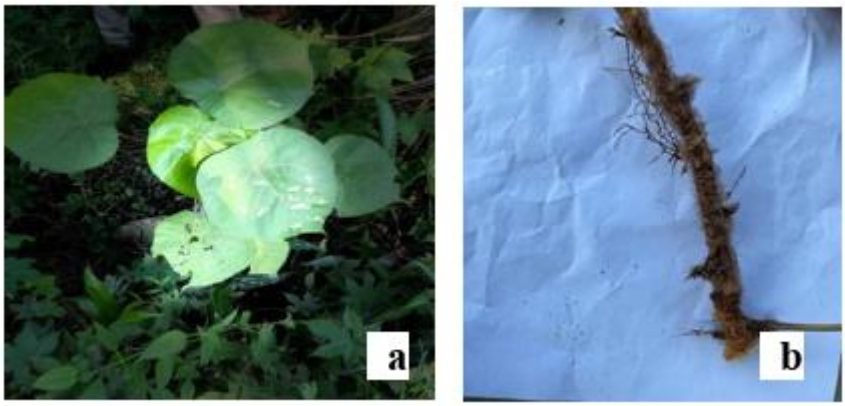

Figure 11. (a) leaf Macaranga tanarius and (b) root Macaranga tanarius

Macaranga tanarius (L.) Mull. Arg is a weed that is one of the problems in Plantations or other open areas. This weed has erect and tall stems. Habitats from weed This very easy found especially in Plantation. Method control this

weed can done in a number of method that is like control mechanical as well as control using herbicides (Ranjini et al., 2020).

***12. Euphorbia Dentate* Michx.**

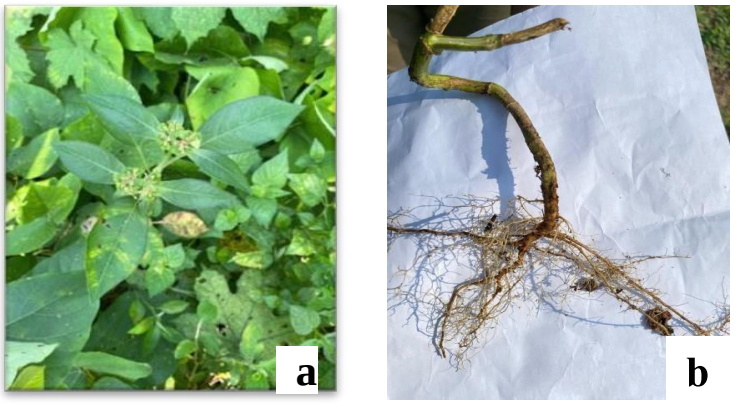

Figure 12. (A) Leaf Euphorbia Dentate And (B) Root Euphorbia Dentate

Euphorbia dentate Michx is a weed that has erect stems with leaves which grow in the opposite direction, are oval or shaped like teeth with edges jagged. Control weed This can done with method manually that is with pull it out and you can also use herbicides

***13. Sage misella* Kunth**

Figure 13. Down Sage Misell

Salvia mycella Kunth plant Which Actually it's not weed However Because its growth is very fast and interferes with the development of the main plant and the crop This called plant weed. Weeds This own stem Which spread or creeping, The leaves have wavy edges and a rough leaf surface. Control weed this can be done in a way mechanical and can Also using herbicides.

***14. Ficus binjamina* L.**

Figures 14. (a) leaves Ficus binjamina and (b) Ficus root binjamina

Ficus binjamina L has shiny green leaves and is oval in shape stacked at the ends of branches, this plant grows on oil palm trunks and can become nuisance to the main crop. Control of this plant can be done by: mechanical that is, it is pulled out by the roots.

***15. Ficus ribes* Reinw**

Figure 15. leaf Ficus riber

Ficus ribes Reinw has bright green leaves and is oval in shape, this plant grow in stem coconut palm And can become competitors nutrition on plant main. Control of this weed can be done mechanically by pulling it up the roots (Mariuzza et al., 2022).

16. *Ludwigia octovalvis* (Jacq.) P.H. Raven

Figure 16 daun Ludwigia octovalvis

Ludwigia octovalvis (Jacq.) PH Raven is a weed who is in ITSI campus garden, this plant has oval leaves and colored flowers bright yellow, this plant lives in places with high soil moisture levels. Can controlled with method mechanical and herbicides (Syeda et al., 2022).

17. C. bicolor

Figure 17. (a) leaf C. bicolor and (b) root C. bicolor

C. bicolor is plant Which life in stem coconut palm. Plant This is houseplants, however if it grows without treatment then can become weed on plant coconut palm Because his life Which hitchhiking. Control weed This can done in a way mechanical with method unplug until the roots.

1. *Oxalis corniculata* L.

Figure 18. (A) From Oxalis

Oxalis corniculata L is plant Which easy grow in areas Plantation, The leaves are dark green with oval leaves and yellow flowers. Control plants can be done with mechanical and herbicide.

***19. Dalbergia latifolia* Roxb**

Figure 19. Leaf Dalbergia Latifolia

Dalbergia latifolia Roxb is a plant that lives in which plantation area if its growth very fast can become weed for plant mainly. Weeds This weed has green leaves and is small oval in shape, the flowers of this weed are yellow bright. Control weed This can done with use herbicide or manually.

20. Imperata cylindrica

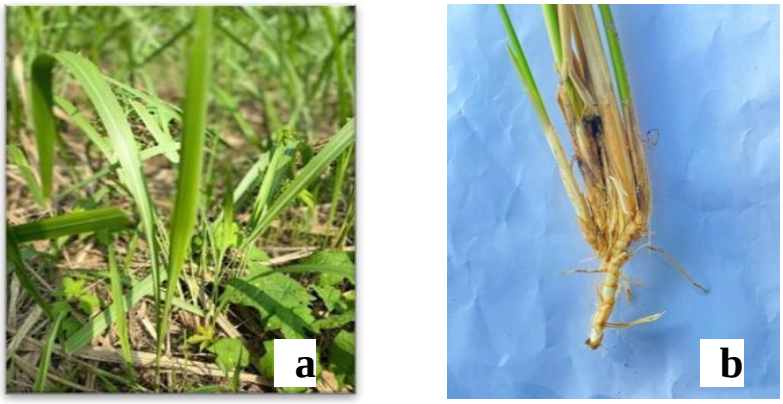

Figure 20. (a) leaf Imperata cylindrica And (b) root Imperata cylindrica

Imprata cylindrica has a long and flat shape, the edges of the leaves sharp ones can also be plants that are able to compete for nutrients in plants main. Control this weed can be used with mechanical way namely hoeing until the roots and also control using herbicide.

21. D. clandestinum

Figure 21. (a) D leaves. clandestinum and (b) root D. clandestinum

D. clandestinum is a plant that has a green color and flat leaves thin leaves and thrives with fast growth in high humidity. This plant live above ground level, with smooth and sharp leaf edges. Weed control this can be done with herbicides

22. S. barbata

Figure 22. (a) S leaves. barbata and (b) root S. barbata

S.barbata has long, oval leaves with a rough leaf surface, The sharp edges of the leaves and their fast growth make them a weeds, especially in plantations. It can be controlled with mechanical way and herbicide.

23. Elausine indicates (THE.) Gaertn.

Figure 23. daun Elausine indicates

Elausine indica (L.) Gaertn has long stems about 10 to 30 cm, the leaves Which long And colored green, own flower Which colored white yellowish. The control can be done with method manual, mechanical or herbicide.

***24. Blonde cordifolia* L.**

Figure 24. Daun Rubia Cordifolia

Rubia cordifolia L has leaves that are dark green in color and oval in shape edge leaf wavy. Weeds This grow fast in areas land Which moist. The control can done properly mechanical, manually or herbicide.

25. T *helicopteris* Kunthii (Dev.) Morton

Figure 25. Daun Thelypteris Kunthii

Thelypteris Kunthii (Desv.) Morton has long, parallel leaves on each the stems, leaves are light green and able to survive in the area extreme, the roots spread over a distance of 0.5 to 1 meter. T *helypteris* Kunthii (Desv.) growing quickly in damp areas. The control itself can be done mechanically, manually and control with herbicide (Lake-Thompson, 2018).

Weeds are one of the challenges for farmer Which own garden, specifically oil palm plantation. In an oil palm plantation Alone Lots found weed with type Which diverse variety, so that farmer must more Good guard And Manage your garden area from moisture Because Lots from weed Which found growth his fast in areas Which the humidity tall (Ghodszad et al., 2022).

IV. CONCLUSION

Many types of weeds were found in the ITSI field practice garden, many of which were broad leaves. Surveys and grouping of weed types in the ITSI garden need to be carried out with a long observation duration and not in a short time to better understand the types of weeds found and to easily control them.

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