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ANALYSIS OF WEED VEGETATION ON OIL PALM PRODUCING PLANTS (*Elaeis guineensis* Jacq.) AT PT. PERKEBUNAN NUSANTARA IV UNIT KEBUN BAH JAMBI

ANALISIS VEGETASI GULMA PADA TANAMAN MENGHASILKAN KELAPA SAWIT *(Elaeis guineensis* Jacq.) DI PT. PERKEBUNAN NUSANTARA IV UNIT KEBUN BAH JAMBI

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Abstract

This study aims to determine the type of dominant weeds and the level of weed density that can interfere with the growth of oil palm plants (*Elaeis guineensis* Jacq.) at PT. Perkebunan Nusantara IV Bah Jambi Garden Unit. This study uses the quadrat method used to identify weeds. A plot of research area was made of as many as 2 blocks of oil palm plantation land in the same planting year. Sampling was carried out by direct sampling using a plot size of 1 mx 1 m with 5 sheets thrown on each block. The results of this study indicate that the dominant weeds and the level of weed density can interfere with the growth of oil palm plants at PT. Perkebunan Nusantara IV Unit Kebun Bah Jambi are *Axonopus Compressus.*

Keywords: *Dominance, Weeds, Oil Palm, Pest Plants, Vegetation*

Abstrak

Penelitian ini bertujuan untuk mengetahui jenis gulma dominan dan Tingkat kerapatan gulma yang dapat mengganggu pertumbuhan tanaman kelapa sawit *(Elaeis guineensis* Jacq.) di PT. Perkebunan Nusantara IV Unit Kebun Bah Jambi. Penelitian ini menggunakan metode kuadrat digunakan untuk mengindentifikasi gulma. Dibuat plot areal penelitian sebanyak 2 blok lahan Perkebunan kelapa sawit di tahun tanam yang sama. Pengambilan sampel dilakukan dengan cara pengambilan secara langsung menggunakan plot ukuran 1 m x 1 m dengan jumlah pelemparan 5 lembaran pada masing-masing blok. Hasil penelitian ini menunjukkan bahwa gulma yang dominan dan Tingkat kerapatan gulma yang dapat mengganggu pertumbuhan tanaman kelapa sawit di PT. Perkebunan Nusantara IV Unit Kebun Bah Jambi adalah *Axonopus Compressus.*

Kata kunci : Dominansi, Gulma, Kelapa Sawit, Tanaman Pengganggu, Vegetasi

INTRODUCTION

Oil palm (*Elaeis guinensis* Jacq.) has been planted in Indonesia since 1848 and was planted commercially as a plantation crop in 1911. According to Arfika (2019), the distribution of oil palm plantations, which were originally only in North Sumatra and Aceh, has now developed in several provinces, including West Sumatra, South Sumatra, Jambi, Bengkulu, Riau, Irian Jaya, South Sulawesi, Southeast Sulawesi, North Sulawesi, West Java, West Kalimantan, Central

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Kalimantan, South Kalimantan, and especially East Kalimantan, which is currently in the stage of expanding the area for oil palm cultivation.

Oil palm plantations (*Elaeis guinensis* Jacq.) are an important commodity developed in Indonesia and one of the sources of foreign exchange income from the non-oil and gas sector. According to Perdamean (2017), oil palm is one of the plants that has quite bright prospects in the Indonesian economy. This plant can improve people's welfare and create extensive employment opportunities.

Data from the Directorate General of Plantations of the Ministry of Agriculture (2021), shows that palm oil production reached approximately 48.4 million tons in 2020, where the largest producers were large private plantations with a production of 30.1 million tons or 62% of Indonesia's total palm oil production. Then around 34% or 16.2 million tons were produced by community plantations, while large state-owned plantations produced the remaining 4% or 2.1 million tons. When viewed by province, the largest palm oil producer is Riau Province which reached 20% of the total national production in 2019. Then followed by Central Kalimantan Province at 15% and North Sumatra Province at 14% (Ministry of Agriculture, 2021). Statistical Data from the Directorate General of Plantations (2021), states that Aceh Province has an area of 488,003 hectares of oil palm plantations with a production of 1,113,347 tons.

Palm oil production can continue to increase with the implementation of various appropriate and quality cultivation technical activities, one of the cultivation technical activities related to the production of fruit or palm oil is weed control (Sari *et al*., 2017a). According to Nduru *et al*. (2023), the existence of weeds on plantation coconut palm oil can cause a loss in various matters, like the declined production of fruit, and hinder fluency in activity cultivation like fertilization and harvesting.

Weeds and cultivated plants will compete for nutrients, resulting in oil palm plants not growing optimally and will affect plant productivity (Siregar *et al*., 2021). The presence of weeds in oil palm plantations can trigger losses in various aspects, so it is important to carry out a weed inventory to determine effective and efficient control (Nduru *et al*., 2023).

Common types of weeds found in oil palm plantations include grasses, sedges, and broad *leaves*. Some examples of weeds that can grow in oil palm plantations include *Imperata cylindrica* (alang-alang), *Cynodon dactylon* (grinting), *Ishaemum timorence (*rumput tembagan*), Mimosa pudica (*putri malu), *Borreria alata* (kentangan), *Ageratum conyzoides* (babandotan), and *Cyperus rotundus* (teki berumbi) (Afrianti *et al*., 2014). According to Susanti *et al*. (2021), in TBM oil palm plantations, the dominant weed structure is *Panicum repens* L. with an SDR value of 29.9%, and in TM oil palm plantations, *Ageratum conyzoides* L. with an SDR value of 23.4%.

Yussa *et al*. (2015), stated that before carrying out weed control, one must first know the dominant weeds, cultivated plants, control alternatives, economic impacts, ecology, and parasites. The dominant weed species in an ecosystem can be determined by analyzing weed vegetation. Vegetation can be interpreted as a plant community that occupies an ecosystem. Vegetation composition often changes over time, climate change, and human activity. Vegetation analysis is a way to determine the composition of vegetation types from the most dominant to the least dominant. The vegetation conditions observed are vegetation forms such as grass, low shrubs,

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creepers, herbs, and plants in large areas (Azwar & Afrillah, 2023). Study This aims to identify the dominant types of weeds that grow and know the dominant weeds and the level of weed density that can interfere with the growth of oil palm plants at PT. Perkebunan Nusantara IV Kebun Bah Jambi Unit.

RESEARCH METHODS

Place and Time of Research

The research was conducted at PT. Perkebunan Nusantara IV Bah Jambi Plantation Unit, Moho Village, Jawa Maraja Bah Jambi District, Simalungun Regency, North Sumatra, in May - June 2024.

Tools and Materials

The tools and materials used in this study were: a square observation plot measuring 1 m × 1 m, a camera for documentation, and writing instruments to record the results of observations.

Research Method

This quantitative descriptive research is conducted by collecting data to identify weeds by observing the density, frequency, and absolute and relative dominance of each weed species. The quadrat method is used for sampling with the size of the weed observation sample plot made into a square measuring 1 mx 1 m which is placed on 5 squares per stratum and the location of this study will be taken in a block with an area of 1 Ha.

Research Implementation

1. Preliminary Observation and Site Survey

   Preliminary observation will be conducted visually throughout the plantation situation. The purpose of the preliminary observation and location survey is to find out the general description of the location and condition of the oil palm plantation where the observation is carried out and to ensure the location and block to be studied.
2. Example Plot Layout Settings

   The sample plot will be placed randomly indirectly, namely placing the sample plot randomly in the same planting year with different blocks. The blocks to be observed are 2 blocks and each block is carried out 5 times of sample plot taking.
3. Weed Data Collection
   a. Placing the observation plot by throwing a 1 m × 1 m plot randomly in a block with an area of 1 ha that has been determined from the same planting year with different blocks and the observation plot was placed 5 times.
   b. After placing the observation plots randomly, sampling was carried out by pulling out all types of weeds growing in each observation plot.

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c. Identify weeds and separate all types of weeds by visually observing the morphological form of the weeds in each observation plot and record the results on the observation sheet.
d. Manually count the number of weeds according to their type in each observation plot.
e. From the data obtained, calculations were made regarding the density, frequency, and dominance of each weed species.

3.1 Data analysis

The data measured to estimate different dominant weeds on the plot are density, frequency, and dominance of weeds. The quadratic method formula to estimate the density of weed species is as follows:

To calculate the density of weed species, use the formula:

a. Density (K) $= \frac{\text{The number of individuals of a species}}{\text{Observation Plot Area}}$

b. Relative Density (RD) $= \frac{\text{Density of a Type}}{\text{Density of All Types}} \times 100\%$

c. Frequency (F) $= \frac{\text{Number of Plots Occupied by a Type}}{\text{Sum of All Observation Plots}}$

d. Relative Frequency (RF) $= \frac{\text{Frequency of a Type}}{\text{Frequency of All Types}} \times 100\%$

e. Important Value Index (IVI) = RD + RF, (Kusmana, 2018).

3.6 Research Schedule

Table 1. Research Implementation Schedule

No	Description	Week No.							
		1	2	3	4	5	6	7	8
1	Preparation								
2	Data collection								
3	Data analysis								
4	Report Making								

RESULTS AND DISCUSSION

The results of the vegetation analysis study carried out in May - June 2024 using a 1 meter × 1 meter square. Observations were made in 2 blocks of PT. Perkebunan Nusantara IV Kebun Bah Jambi Unit in the category of Producing Plants (PP) in the 2009 planting year in Block 09E and Block 09F. Each throwing point was observed for the types of weeds found in the observation plot and the number of weeds was counted manually. The results of the observations obtained weed data in the 2009 planting year, Block 09E and Block 09F are presented in Table 2 and Table 4. From the results of these observations, weed density calculations were carried out using the formula which can be seen in Table 3 and Table 5.

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Table 2. Results of Weed Observations on Oil Palm Plants in Planting Year 2009 Block 09E

Weed Name	Number of Weeds/Plot					Amount
	1	2	3	4	5	
Clidemia hirta	2	-	2	-	-	**4**
Lobelia zeylanica	1	-	2	1	-	**4**
Axonopus compressus	31	53	49	46	24	**203**
Oplisemenus hirtellus	5	-	1	-	5	**11**
Cyperus brevifolius	4	-	2	-	-	**6**
Cystopteris tragicis	2	-	-	-	-	**2**
Phyllanthus urinaria	1	-	1	4	2	**8**
Spermacoce exilis	8	-	2	2	-	**12**
Peperomia pellucida	1	-	-	-	5	**6**
Mimosa pudica	1	1	1	4	1	**8**
Theligonum cynocrambe	11	-	-	-	-	**11**
Solanum diphyllum	-	1	1	-	1	**3**
Hydrocotyle sibthorpioides	-	7	-	-	-	**7**
Cynodon dactylon	-	2	1	2	-	**5**
Cyperus rotundus L.	-	1	-	-	13	**14**
Stellaria media	-	2	-	-	-	**2**
Stemodia verticillata	-	2	-	-	-	**2**
Zoysia japonica	-	4	-	-	-	**4**
Cyperus esculentus	-	2	-	-	-	**2**
Mecardonia procumbens	-	3	-	-	2	**5**
Mitracarpis hirtus	-	3	-	-	-	**3**
Carex sylvatica	-	-	1	4	3	**8**
Crassocephalum crepodioides	-	-	1	-	1	**2**
Richardia scabra	-	-	3	-	-	**3**
Oldenlandia corymbosa	-	-	1	-	-	**1**
Euphorbia serpens	-	-	-	4	-	**4**
Sygonium podophyllum	-	-	-	4	-	**4**
Justicia procumbens	-	-	-	2	-	**2**
Exaltation chrysatricha	-	-	-	4	13	**17**
Lygodium japonicum	-	-	-	2	-	**2**
Torenia crustacean	-	-	-	2	-	**2**
Cuphea carthagenensis	-	-	-	-	4	**4**
Ludwigia hysopifolia	-	-	-	-	2	**2**
Fatoua villas	-	-	-	-	3	**3**
Diplazium esculentum	-	-	-	-	4	**4**
Amount	**68**	**83**	**71**	**85**	**88**	**395**

Table 3. Results of Weed Calculations in Oil Palm Plants in the 2009 Planting Year, Block 09E

Species	Density (D)	Density Relatively (DR) %	Frequency (F)	Relative Frequency (RF)%	INP %
Clidemia hirta	0.8	1.05	0.4	2.99	**4.04**
Lobelia zeylanica	0.8	1.05	0.6	4.48	**5.53**
Axonopus compressus	40.6	53.42	1	7.46	**60.88**
Oplisemenus hirtellus	2.2	2.89	0.6	4.48	**7.37**
Cyperus brevifolius	1.2	1.58	0.4	2.99	**4.56**
Cystopteris tragicis	0.4	0.53	0.2	1.49	**2.02**
Phyllanthus urinaria	1.6	2.11	0.8	5.97	**8.08**
Spermacoce exilis	2.4	3.16	0.8	5.97	**9.13**
Peperomia pellucida	1.2	1.58	0.4	2.99	**4.56**
Mimosa pudica	1.6	2.11	1	7.46	**9.57**
Theligonum cynocrambe	2.2	2.89	0.2	1.49	**4.39**
Solanum diphyllum	0.6	0.79	0.6	4.48	**5.27**
Hydrocotyle sibthorpioides	1.4	1.84	0.2	1.49	**3.33**
Cynodon dactylon	1	1.32	0.6	4.48	**5.79**
Cyperus rotundus L.	2.8	3.68	0.4	2.99	**6.67**
Stellaria media	0.4	0.53	0.2	1.49	**2.02**
Stemodia verticillata	0.4	0.53	0.2	1.49	**2.02**
Zoysia japonica	0.8	1.05	0.2	1.49	**2.55**
Cyperus esculentus	0.4	0.53	0.2	1.49	**2.02**
Mecardonia procumbens	1	1.32	0.4	2.99	**4.30**
Mitracarpis hirtus	0.6	0.79	0.2	1.49	**2.28**
Carex sylvatica	1.6	2.11	0.6	4.48	**6.58**
Crassocephalum crepodioides	0.4	0.53	0.4	2.99	**3.51**
Richardia scabra	0.6	0.79	0.2	1.49	**2.28**
Oldenlandia corymbosa	0.2	0.26	0.2	1.49	**1.76**
Euphorbia serpens	0.8	1.05	0.2	1.49	**2.55**
Sygonium podophyllum	0.8	1.05	0.2	1.49	**2.55**
Justicia procumbens	0.4	0.53	0.2	1.49	**2.02**
Exaltation chrysatricha	3.4	4.47	0.4	2.99	**7.46**
Lygodium japonicum	0.4	0.53	0.2	1.49	**2.02**
Torenia crustacean	0.4	0.53	0.2	1.49	**2.02**
Cuphea carthagenensis	0.8	1.05	0.4	2.99	**4.04**
Ludwigia hysopifolia	0.4	0.53	0.2	1.49	**2.02**
Fatoua villas	0.6	0.79	0.2	1.49	**2.28**
Diplazium esculentum	0.8	1.05	0.2	1.49	**2.55**
Amount	**76**	**100**	**13.40**	**100**	**200**

Table 4. Results of Weed Observations on Oil Palm Plants in the 2009 Planting Year, Block 09F

Weed Name	Number of Weeds/Plot					Amount
	1	2	3	4	5	
Axonopus compressus	42	1	12	46	57	**158**
Zoysia japonica	10	-	-	2	-	**12**
Clidemia hirta	2	1	1	-	1	**5**

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Weed Name	Number of Weeds/Plot					Amount
Coprosma robusta	4	-	-	-	-	**4**
Drymaria cordata	1	-	-	-	1	**2**
Ludwigia palustris	5	-	-	-	-	**5**
Cissus verticillata	2	-	-	-	-	**2**
Amorphophallus konjac	1	-	-	-	-	**1**
Nicotiana rustica	2	-	-	-	-	**2**
Leea indica	1	-	-	-	-	**1**
Deparia petersenii	1	1	-	-	-	**2**
Geophila repens	2	-	-	-	-	**2**
Oplismenus hirtellus	4	-	3	-	-	**7**
Breynia desticha	1	-	-	1	-	**2**
Nertera granadensis	2	-	-	-	-	**2**
Vinca minor	2	-	-	2	-	**4**
Hexasepalum granadensis	1	-	-	-	-	**1**
Chrysopogon aciculatus	2	-	-	-	-	**2**
Murdannia nudiflora	1	-	2	-	-	**3**
Syngonium podophyllum	1	3	-	-	-	**4**
Dichondra micrantha	2	-	-	-	-	**2**
Lindernia procumbens	1	-	-	-	-	**1**
Mimosa pudica	1	-	1	3	3	**8**
Melastoma malabathricum	-	1	1	-	-	**2**
Cenchrus clandestinus	-	22	3	1	4	**30**
Mentha aquatica	-	5	-	-	-	**5**
Cireaeaster agrestis	-	1	-	-	-	**1**
Torenia crustacean	-	1	-	2	-	**3**
Phyllanthus urinaria	-	2	1	1	-	**4**
Spermacoce alata	-	6	-	-	-	**6**
Axonopus fissifolius	-	24	34	-	-	**58**
Spermacoce exilis	-	4	-	-	1	**5**
Desmodium triflorum	-	12	13	-	-	**25**
Polygonum aviculari	-	2	-	-	-	**2**
Urena lobata	-	2	-	-	-	**2**
Plectranthus verticillatus	-	-	2	-	-	**2**
Viola labradorica	-	-	5	-	-	**5**
Mecardonia procumbens	-	-	5	1	-	**6**
Mallotus philippensis	-	-	1	-	-	**1**
Veronica serpyllifolia	-	-	4	-	-	**4**
Cyperus mindorensis	-	-	3	-	-	**3**
Callisia repens	-	-	2	-	-	**2**
Solanum diphyllum	-	-	1	-	-	**1**
Theligonum cynocrambe	-	-	4	1	-	**5**
Galium odoratum	-	-	-	3	-	**3**
Solanum torvum	-	-	-	4	-	**4**
Plectranthus neochilus	-	-	-	3	-	**3**
Luzula sylvatica	-	-	-	4	-	**4**
Edrastima uniflora	-	-	-	3	-	**3**

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Weed Name			Number of Weeds/Plot			Amount
Diffuse justice	-	-	-	6	-	**6**
Cyperus rotundus L.	-	-	-	-	23	**23**
Amaranthus albus	-	-	-	-	2	**2**
Spermacoce alata	-	-	-	-	4	**4**
Exaltation chrysotrica	-	-	-	-	3	**3**
Amount	**92**	**90**	**101**	**87**	**104**	**474**

Table 5. Results of Weed Calculations in Oil Palm Plants in the 2009 Planting Year, Block 09F

Weed Name	Density (D)	Density Relatively (DR)%	Frequency (F)	Relative Frequency (RF)%	INP %
Axonopus compressus	31.6	34.42	1	5.88	**40.31**
Zoysia japonica	2.4	2.61	0.4	2.35	**4.97**
Clidemia hirta	1	1.09	0.8	4.71	**5.80**
Coprosma robusta	0.8	0.87	0.2	1.18	**2.05**
Drymaria cordata	0.4	0.44	0.4	2.35	**2.79**
Ludwigia palustris	1	1.09	0.2	1.18	**2.27**
Cissus verticillata	0.4	0.44	0.2	1.18	**1.61**
Amorphophallus konjac	0.2	0.22	0.2	1.18	**1.39**
Nicotiana rustica	0.4	0.44	0.2	1.18	**1.61**
Leea indica	0.2	0.22	0.2	1.18	**1.39**
Deparia petersenii	0.4	0.44	0.4	2.35	**2.79**
Geophila repens	0.4	0.44	0.2	1.18	**1.61**
Oplismenus hirtellus	1.4	1.53	0.4	2.35	**3.88**
Breynia desticha	0.4	0.44	0.4	2.35	**2.79**
Nertera granadensis	0.4	0.44	0.2	1.18	**1.61**
Vinca minor	0.8	0.87	0.4	2.35	**3.22**
Hexasepalum teres	0.2	0.22	0.2	1.18	**1.39**
Chrysopogon aciculatus	0.4	0.44	0.2	1.18	**1.61**
Murdannia nudiflora	0.6	0.65	0.4	2.35	**3.01**
Syngonium podophyllum	0.8	0.87	0.4	2.35	**3.22**
Dichondra micrantha	0.4	0.44	0.2	1.18	**1.61**
Lindernia procumbens	0.2	0.22	0.2	1.18	**1.39**
Mimosa pudica	1.6	1.74	1	5.88	**7.63**
Melastoma malabathricum	0.4	0.44	0.4	2.35	**2.79**
Cenchrus clandestinus	6	6.54	0.8	4.71	**11.24**
Mentha aquatica	1	1.09	0.2	1.18	**2.27**
Cireaeaster agrestis	0.2	0.22	0.2	1.18	**1.39**
Torenia crustacean	0.6	0.65	0.4	2.35	**3.01**
Phyllanthus urinaria	0.8	0.87	0.6	3.53	**4.40**
Spermacoce alata	1.2	1.31	0.2	1.18	**2.48**
Axonopus fissifolius	11.6	12.64	0.4	2.35	**14.99**
Spermacoce exilis	1	1.09	0.4	2.35	**3.44**
Desmodium triflorum	5	5.45	0.4	2.35	**7.80**
Polygonum aviculari	0.4	0.44	0.2	1.18	**1.61**
Urena lobata	0.4	0.44	0.2	1.18	**1.61**
Plectranthus verticillatus	0.4	0.44	0.2	1.18	**1.61**
Viola labradorica	1	1.09	0.2	1.18	**2.27**
Mecardonia procumbens	1.2	1.31	0.4	2.35	**3.66**
Mallotus philippensis	0.2	0.22	0.2	1.18	**1.39**
Veronica serpyllifolia	0.8	0.87	0.2	1.18	**2.05**
Cyperus mindorensis	0.6	0.65	0.2	1.18	**1.83**

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Weed Name	Density (D)	Density Relatively (DR)%	Frequency (F)	Relative Frequency (RF)%	INP %
Callisia repens	0.4	0.44	0.2	1.18	**1.61**
Solanum diphyllum	0.2	0.22	0.2	1.18	**1.39**
Theligonum cynocrambe	1	1.09	0.4	2.35	**3.44**
Galium odoratum	0.6	0.65	0.2	1.18	**1.83**
Solanum torvum	0.8	0.87	0.2	1.18	**2.05**
Plectranthus neochilus	0.6	0.65	0.2	1.18	**1.83**
Luzula sylvatica	0.8	0.87	0.2	1.18	**2.05**
Edrastima uniflora	0.6	0.65	0.2	1.18	**1.83**
Diffuse justice	1.2	1.31	0.2	1.18	**2.48**
Cyperus rotundus	4.6	5.01	0.2	1.18	**6.19**
Amaranthus albus	0.4	0.44	0.2	1.18	**1.61**
Spermacoce alata	0.8	0.87	0.2	1.18	**2.05**
Exaltation chrysotrica	0.6	0.65	0.2	1.18	**1.83**
Amount	**91.80**	**100**	**17**	**100**	**200**

Table 6. Recapitulation of Total Number of Weeds

Weed Name	Block 09E		Block 09F		Total plots found	Total number of weeds
	Number of plots found	Number of weeds	Number of plots found	Number of weeds		
Axonopus compressus	5	203	5	158	10	361
Zoysia japonica	1	4	2	12	3	16
Clidemia hirta	2	4	4	5	6	9
Coprosma robusta	0	0	1	4	1	4
Drymaria cordata	0	0	2	2	2	2
Ludwigia palustris	0	0	1	5	1	5
Cissus verticillata	0	0	1	2	1	2
Amorphophallus konjac	0	0	1	1	1	1
Nicotiana rustica	0	0	1	2	1	2
Leea indica	0	0	2	2	2	2
Deparia petersenii	0	0	2	2	2	2
Geophila repens	0	0	1	2	1	2
Oplismenus hirtellus	3	11	2	8	5	19
Breynia desticha	0	0	2	2	2	2
Nertera granadensis	0	0	1	2	1	2
Vinca minor	0	0	2	4	2	4
Hexasepalum teres	0	0	1	1	1	1
Chrysopogon aciculatus	0	0	1	2	1	2
Murdannia nudiflora	0	0	2	3	2	3
Syngonium podophyllum	1	4	2	4	3	8
Dichondra micrantha	0	0	1	2	1	2
Lindernia procumbens	0	0	1	1	1	1
Mimosa pudica	5	9	4	8	9	17
Melastoma malabathricum	0	0	2	2	2	2
Cenchrus clandestinus	0	0	4	30	4	30

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Weed Name	Block 09E		Block 09F		Total	Total
Mentha aquatica	0	0	1	5	1	5
Cireaeaster agrestis	0	0	1	1	1	1
Torenia crustacean	1	2	2	3	3	5
Phyllanthus urinaria	4	8	3	4	7	12
Spermacoce alata	0	0	1	6	1	6
Axonopus fissifolius	0	0	2	57	2	57
Spermacoce exilis	4	12	1	4	5	16
Desmodium triflorum	0	0	2	35	2	35
Polygonum aviculari	0	0	1	2	1	2
Urena lobata	0	0	1	2	1	2
Plectranthus verticillatus	0	0	1	2	1	2
Viola labradorica	0	0	1	5	1	5
Mecardonia procumbens	2	5	1	6	3	11
Mallotus philippensis	0	0	1	1	1	1
Veronica serpyllifolia	0	0	1	4	1	4
Cyperus mindorensis	0	0	1	3	1	3
Callisia repens	0	0	1	2	1	2
Solanum diphyllum	3	3	1	1	4	4
Theligonum cynocrambe	1	11	2	5	3	16
Galium odoratum	0	0	1	3	1	3
Solanum torvum	0	0	1	4	1	4
Plectranthus neochilus	0	0	1	3	1	3
Luzula sylvatica	0	0	1	4	1	4
Edrastima uniflora	0	0	1	3	1	3
Diffuse justice	0	0	1	6	1	6
Cyperus rotundus L.	2	14	1	23	3	37
Amaranthus albus	0	0	1	2	1	2
Spermacoce alata	0	0	1	4	1	4
Exaltation chrysotrica	2	17	1	3	3	20
Lobelia zeylanica	3	4	0	0	3	4
Cyperus brevifolius	2	6	0	0	2	6
Cystopteris tragicis	1	2	0	0	1	2
Peperomia pellucida	2	6	0	0	2	6
Hydrocotyle sibthorpioides	1	7	0	0	1	7
Cynodon dactylon	3	5	0	0	3	5
Sellaria media	1	2	0	0	1	2
Stemodia verticillata	1	2	0	0	1	2
Cyperus esculentus	1	2	0	0	1	2
Mitracarpis hirtus	1	3	0	0	1	3
Carex syltavica	3	8	0	0	3	8
Crassocephalum crepodioides	2	2	0	0	2	2
Richardia srabra	1	3	0	0	1	3
Oldenlandia corymbosa	1	1	0	0	1	1

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Weed Name	Block 09E		Block 09F		Total	Total
Euphorbia serpens	1	4	0	0	1	4
Justice procumbens	1	2	0	0	1	2
Lygodium japonicum	1	2	0	0	1	2
Cuphea carthagenensis	1	4	0	0	1	4
Hudwigia hysopifolia	1	2	0	0	1	2
Fatoua villosa	1	3	0	0	1	3
Diplazium esculentum	1	4	0	0	1	4

a. Density (D) *of Clidemia hirta*:

$$= \frac{4}{1\text{ m} \times 1\text{ m} \times 5} = \frac{4}{5} = 0{,}8$$

b. Relative Density (RD) *of Clidemia hirta*:

$$= \frac{0{,}8}{76{,}00} \times 100\% = 1{,}05\%$$

c. Frequency (F) *Clidemia hirta*:

$$= \frac{2}{5} = 0{,}4$$

d. Relative Frequency (RF) *of Clidemia hirta*:

$$= \frac{0{,}4}{13{,}40} \times 100\% = 2{,}99\%$$

e. Important Value Index (INP) *of Clidemia hirta*:

$$= \text{RD} + \text{RF} = 1{,}05\% + 2{,}99\% = 4.04\ \%$$

Table 7. Total Results of Calculation

No	Block	Density (D)	Density Relative (DR)%	Frequency (F)	Relative Frequency (RF)%	INP%
1	09E	76	100	13.40	100	200
2	09F	91.80	100	17	100	200

From the calculation results using the formula in Table 3, it is obtained that in Block 09E the total number of Density (D) is 76; Relative Density (RD) is 100%; Frequency (F) is 13.40; Relative Frequency (RF) is 100%; and *Important Value Index* (IVI) is 200% and in attachment 4 block 09F the total number of Density (D) is 91.80; Relative Density (RD) is 100%; Frequency (F) is 17; Relative Frequency (RFR) is 100%; and *Important Value Index* (IVI) is 200%.

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Table 8. Dominant Weed Types

No	Block	Species	Density (D)	Relative Density (RD)%	Frequency (F)	Relative Frequency (RF)%	INP%
1	09E	*Axonopus compressus*	40.6	53.42	1	7.46	60.88
2	09F	*Axonopus compressus*	31.6	34.42	1	5.88	40.31

To find out the dominant type of vegetation in a location, you can see by knowing the highest value of the Important Value Index (IVI). The results of the calculation of weeds planted with oil palm in block 09E in the 2009 planting year, show that the Important Value Index The highest (IVI) is *Axonopus compressus* with a value of 60.88% and in block 09F in the 2009 planting year, it shows that the highest *Important Value Index* (IVI) is *Axonopus compressus* with a value of 40.31%.

Figure 1. *Axonopus compressus* (Paitan Grass)

From the recapitulation results of the total number of weeds in Table 6, the dominant weed species is *Axonopus compressus* with a total number of 374 weeds from 10 plots, while for the lowest species, there are several types, namely the species *Amorphophallus konjac, Leea indica, Hexasepalum granadensis, Lindernia procuubens, Cireaeaster agrestis,* and *Malllotus philippensis* with a total of 1 individual from each species from a total of 1 plot.

4.3 Discussion

The dominant type of weed in oil palm plantations in the 2009 planting year in blocks 09E and 09F is *Axonopus compressus* with the common name Paitan Grass based on the Important Value Index (IVI) obtained in block 09E 60.88% and in block 09F 42.96%. *Axonopus compressus* (Paitan Grass) is an annual weed, reproducing vegetatively with stolons and generatively with seeds. *Axonopus compressus* (Paitan Grass) can live from lowlands to highlands. This weed, which is included in the grass group, can also live in places with sufficient or less sunlight (Sari *et al*., 2017b). The leaves of *Axonopus compressus* (Paitan Grass) are 15-20

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cm high, 4-18 mm wide, and 2-16 cm long. *Axonopus compressus* (Paitan Grass) flowers consist of 2-3 panicles and contain grains measuring 2.0-3.5 mm in length.

The variety of IVI values of each type of weed indicates that weeds have environmentally tolerant characteristics, fast germination, and rapid regeneration processes, making weeds very easy to reproduce and of course difficult to control. Weeds have a high adaptability compared to cultivated plants due to the natural selection process (Patel *et al*., 2017 *in* Widaryanto *et al*., 2021). The presence of dominant weed species at the observation location is an indicator that the community is in a suitable habitat and supports its growth. Therefore, control measures need to be taken so as not to inhibit the productivity of oil palm plants.

A comparison of the number of weeds from observations made in the same planting year in different blocks shows that in the oil palm plantation area in block 09E, 35 weed species were obtained. Meanwhile, weeds in the oil palm plantation area in block 09F obtained more species, namely 54 weed species.

Based on the results of the recapitulation of the total number of weeds in Appendix 5, there are 75 species and the dominant weed is *Axonopus compressus* from 10 plots with a total number of weeds of 374 individuals. Meanwhile, the lowest type of weeds are several types, namely the species *Amorphophallus konjac, Hexasepalum granadensis, Lindernia procumbens, Cireaeaster agrestis, Malllotus philippensis, and oldenlandia corymbosa* from 1 plot with a total number of weeds of 1 individual.

CONCLUSION

From the results of the research that has been conducted on the analysis of weed vegetation at PT. Perkebunan Nusantara IV Unit Kebun Bah Jambi in the area of oil palm plantations there are 75 types of weeds, the dominant weed species that has a high-density level is *Axonopus compressus* (Paitan Grass). This weed is included in the C group weed which means it must be controlled properly and efficiently because the rate of spread is relatively fast so it can interfere with and inhibit the growth of the main plant. In the same planting year in different blocks, there are different levels of density and diversity of weed types.

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