ANALYSIS OF WEED VEGETATION IN TEAK AND SENGON STANDS IN SUMBER GIRISUKO VILLAGE PANGGANG DISTRICT GUNUNGKIDUL REGENCY

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ABSTRACT

Weed vegetation refers to plants that grow in agricultural land, gardens, or other environments that are undesirable to humans. The aim of the research was to analyze weed composition and determine the value of weed diversity in teak plant stands and sengon plant stands. Analysis of weed vegetation on land with the SDR coefficient value of weed species, to see differences in weed composition between two stands using a community index. The research was carried out in Sumber Girisuko Village Panggang District, Gunungkidul Regency. Determining the research location used the purposive sampling method and weed sampling using systematic random sampling, while the analysis method used the quadratic method. The results obtained show that in this study 10 weed species were found from 6 families, namely Passifloraceae, Colchicaeae, Asteraceae, Poaceae, Convolvulaceae, and Verbenaceae. In the land under teak stands, 5 species were found with SDR values of 0.03-0.61, in land under sengon stands there were 8 species with SDR values of 0.02-0.48. The value of the community coefficient for the land under the teak and sengon stands was 16%, meaning that the weeds on the two lands were not uniform. The diversity index (H') value for land under teak stands is 1.10 and for sengon stands is 1.52, which means it is classified as moderate. The Simpson dominance index was found to be 0.40 in land under teak stands, and 0.27 in sengon stands, meaning that weed species were present but did not dominate.

Key words: *vegetation analysis, weeds, diversity index, community coefficient*.

INTRODUCTION

Teak (*Tectona grandis* L.) and sengon (*Paraserianthes falcataria* L.) are two types of plants that have an important role in the forestry industry in Indonesia. Teak plants are a type of quality wood that is widely used in the furniture and construction industries, while sengon is used as raw material in the paper and plywood industries. During their growth, teak and sengon plants often experience competition from weeds. Weeds are wild plants that grow among cultivated plants and can cause a decrease in productivity and quality of the main crop. Therefore, weed control is important in cultivating teak and sengon plants.

Weed vegetation refers to plants that grow in agricultural land, gardens, or other environments that are undesirable to humans. Weeds often compete with cultivated plants for resources such as water, nutrients, sunlight, and growing space. As a result, weeds can cause a decrease in crop yields and harm agricultural sustainability. Analysis of weed vegetation is very important in understanding and controlling effective weeds by requiring an understanding of the composition and structure of weeds present in a cultivated plant.

One method that can be used in weed vegetation is the systematic sampling method. This method makes it possible to collect data on the presence and abundance of weeds and carry out analyzes of existing weed communities. By analyzing the composition and distribution of weeds in an area, farmers, agriculturalists, and researchers can identify dominant weed species, understand weed distribution patterns, and develop appropriate control strategies.

The aim of this research was to analyze weed composition and determine the differences between the diversity of weeds growing in teak stands and sengon stands. Therefore, weed vegetation analysis studies are interesting and relevant research to carry out.

LITERATURE REVIEW

The types of weeds that make up the vegetation in the field generally have different characteristics from one type to another. To make it easier to manage in the field, they are grouped based on similar characteristics. Weeds are grouped based on similarities in life cycle characteristics, morphology, habitat, growth type and stem structure. By carrying out vegetation analysis, you can find out the composition of the types of weeds that make up the vegetation. Based on the composition of these weed types, the dominant weed type groups and their characteristics can be identified so that appropriate weed control can be determined (Mangoensoekarjo, 2015).

Vegetation analysis is a very important activity to carry out in order to know the composition of vegetation so that we can determine actions to control weeds (Saitama, et al., 2016). The aim of vegetation analysis is to determine the relationship between the types of weeds that make up the vegetation and the environmental factors that influence them, the composition of the types of weeds that make up the vegetation, the dominant types of weeds, community diversity and appropriate control.

Weeds in teak plant stands have the potential to disrupt the growth and production of teak plants. Several weed species commonly found in teak stands include Ageratum conyzoides, Chromolaena odorata and Imperata cylindrica. These weeds compete with teak plants for resources such as water, nutrients and sunlight. Weeds that are not controlled properly can reduce the productivity of teak plants and inhibit their growth.

The impact of weeds on teak growth and production has been studied by several researchers. Research conducted by Rahmawati et al., (2012) shows that the

presence of weeds in teak stands can cause a decrease in teak tree height, trunk diameter and volume of wood produced. Apart from that, weeds can also increase the risk of pest and disease attacks on teak plants. Weed control strategies in teak stands need to be implemented to minimize the negative impact of weeds on teak plants. Weed control can be done through mechanical, chemical or biological methods. Research conducted by Kurniawati, et al., (2018) revealed that a combination of weed control using selective herbicides and mechanical control such as weeding can effectively reduce weeds and increase the growth of teak plants.

Weed pressure on sengon plants is also a similar problem. According to research conducted by Sari (2013), several weed species commonly found in sengon stands are Mikania micrantha, Chromolaena odorata and Imperata cylindrica. According to Putri and Fatimah (2017), the presence of weeds in sengon stands can inhibit the growth and production of sengon plants. Weeds that are not controlled properly can reduce the quality of the wood produced and increase production costs. Therefore, controlling weeds in sengon stands is also important.

The level of weed species richness that grows in the agroforestry plots of teak and sengon plants is classified as low based on the species diversity index. The highest H* value is found in sengon plants and the lowest in teak plants. This illustrates that land planted with sengon plants has a weed composition with a greater number of species than land planted with teak plants (Fitriana, 2014).

RESEARCH METHODS

The research was carried out in Sumber Girisuko Village Panggang District, Gunungkidul Regency, Special Region of Yogyakarta with a height of 273 meters above sea level. The research was conducted in June 2023. The materials used were weeds in a plot of teak plantations covering an area of ± 1 hectare and sengon plantations covering an area of ± 1 hectare. The tools used in this research were machetes, cutter knives, tape measures, cameras, rulers, scissors, label paper, stationery, raffia rope, determination books, wooden stakes and staples.

The research method used includes selecting research locations using the purposive sampling method. Sampling was taken by selecting weed samples using systematic random sampling, while the analysis method used the quadratic method. The research implementation is as follows:

1. Select the research location by determining the area or teak and sengon plantation that will be the research object using the purposive sampling method, to ensure representative conditions of the teak and sengon stands that you want to study.
2. Determine the research plot at the stand location which is divided into 3 blocks. Weed samples were taken using a sample ring measuring 1 m x 1 m which was carried out using systematic random sampling.
3. Collecting vegetation data on each plot carried out an inventory of existing weed vegetation. Record all weed species found and their presence in each block.

4. Species identification is the process of collecting data from weed species observed in research using the Plant Net application.
5. Measuring vegetation parameters, apart from identifying weed species, also measures the dry weight of weeds in each replication in each research sample block to determine the dominance value of each weed.
6. Data analysis uses statistical methods to analyze the weed vegetation data that has been collected. Analysis that can be carried out includes calculating relative abundance, species diversity, relative dominance and weed ecological index.
7. Observation parameters focus on population number, species and dry weight of weeds. According to Widaryanto (2010), the observation data obtained was analyzed using SDR, the parameters for vegetation analysis can be calculated using the following formulas:

   1) Density is the average number of species in each unit area.

$$\text{Absolute Density (KM)} = \frac{\text{Number of species}}{\text{Number of replicate plots}}$$

$$\text{Relative Density (KN)} = \frac{\text{KM species}}{\text{Number of KM for all species}} \times 100\ \%$$

   2) Frequency is a parameter that shows the comparison of the number of appearances with their probability in a sample plot created.

$$\text{Absolute Frequency (FM)} = \frac{\text{The plot containing this species}}{\text{Total number of plots}}$$

$$\text{Relative Frequency (FN)} = \frac{\text{FM species}}{\text{Number of FMs for all species}} \times 100\ \%$$

   3) Dominance is a parameter used to indicate the size of an area grown by a species or an area that is under the influence of a species' community. The absolute dominance value is obtained from the dry weight of each species from each observation plot.

$$\text{Absolute Dominance (DM)} = \frac{\text{Total dry weight of the species}}{\text{The entire area}}$$

$$\text{Relative Dominance (DN)} = \frac{\text{DM the species}}{\text{Total DM of all species}} \times 100\ \%$$

4) Determine Importance Value = IV) = NP

NP = KN + FN + DN

5) Determine the Sammed Dominance Ratio (SDR)

$$\text{Summed Dominance Ratio (SDR)} = \frac{N.P}{3}$$

6) Community Coefficient (C)
Community coefficients are used to compare two communities or two types of vegetation from two different areas. The community coefficient can be calculated using the following formula:

$$\text{Community Coefficient (C)} = 2 \frac{W}{A+B} \times 100\ \%$$

Information :
W = Sum of the two lowest densities for the type of community.
A= The sum of all densities in the first community.
B= The sum of all densities in the second community.

If the C value is > 75%, it means that the observed weed community has no significant differences or the weed community is uniform. On the other hand, if the C value is <75%, it means that the weed community is not uniform (Sudarma et al., 2012).

Data analysis carried out after carrying out vegetation analysis calculations is quantitative analysis. Quantitative analysis was used to determine the Diversity Index (H*) based on Shannon-Wiener and the weed dominance index was calculated using the Simpson index. Data in SDR calculations can be analyzed using the following formulas:

1. Shannon-Wiener Diversity Index (H*)
Species diversity is a very useful parameter for comparing two communities, especially for studying the influence of biotic disturbances, to determine the level of succession or stability of a community. Species diversity is determined using the Shannon-Wiener Diversity Index formula:

$$H^* = -\sum_{i=1}^{n} (ni/N)\ (\ln ni/N)$$

Information :
H* = Diversity Index
ni = Number of individuals of the species caught
N = Total number of species caught
ln = Natural logarithm (natural number)

A value of H* < 1 indicates that species diversity is relatively low, H*= 1 – 3.322 indicates moderate, H* > 3.322 indicates high species diversity.

2. Weed Dominance Index (D)
   The weed dominance index is used to determine the richness of weed species and the balance of the number of individuals of each species in the ecosystem. To determine the weed species dominance index on the research land, data were analyzed using the Simpson Index using the following formula:

$$D = \sum_{i=1}^{s} Pi\ 2$$

   Information :
   D = Simpson index
   S = Number of species
   P = ni/N, namely the proportion of weed type i and all weeds (ni = the number of important values of weed type i, N = total number of important values of weeds)

   The dominance index ranges from 0 – 1. D = 0, meaning there are no species that dominate other species or the community structure is in a stable state. D = 1, meaning there is a species that dominates other species, or the community structure is unstable due to ecological pressure (Kurniadie, et al., 2018).

RESULTS AND DISCUSSION

Observation of the weed vegetation found in teak plant stands and sengon plant stands by taking weeds growing in each replicate plot for the types of weed species, families and local names can be seen in Tables 1 and 2.

Table 1. List of Weed Species in Teak and Sengon Plant Stands

No.	Spesies	Local Name
1.	*Arthraxon hispidus*	Small Carpet Grass
2.	*Chromolaena odorata L.*	Kirinyuh
3.	*Cynodon dactylon*	Grinding Grass
4.	*Digitaria sanguinalis L*	Finger Grass
5.	*Echinochloa colona*	Duck Grass
6.	*Gloriosa superba L.*	Breech Flower
7.	*Imperata cylindrica*	Reeds
8.	*Ipomoea obscura L.*	*Morning Glory*
9.	*Lantana camara*	Swelling
10.	*Passiflora foetida*	Rambusa

Table 2. List of Weed Species Based on Family in Teak and Sengon Plant Stands

No	Family	Weed Teak Stand	Weed Sengon Stand
1.	Asteraceae	*Chromolaena odorata L.*	*Chromolaena odorata L.*
2.	Colchicaeae	*Gloriosa superba L.*	*Gloriosa superba L*
3.	Convolvulaceae	-	*Ipomoea obscura L.*
4.	Passifloracea	*Passiflora foetida*	-
5.	Poaceae	*Cynodon dactylon*	*Arthraxon hispidus*
6.		*Imperata cylindrica*	*Digitaria sanguinalis L.*
7.		-	*Echinochloa colona*
8.		-	*Imperata cylindrica*
9	Verbenaceae	-	*Lantana camara*

Tables 1 and 2 show that the results of observations of weed vegetation in teak plant stands and sengon plant stands in Sumber Girisuko Village, Panggang District, Gunungkidul Regency found 10 (ten) weed species from 6 (six) families, namely *Chromolaena odorata* L from Asteraceae family, *Gloriosa superba* L from the Colchicaeae family, *Ipomoea obscura* L from the Convolvulaceae family, *Passiflora foetida* from the Passifloraceae family, *Cynodon dactylon*, *Arthraxon hispidus*, *Digitaria sanguinalis* L, *Echinochloa colona*, *Imperata cylindrica* from the Poaceae family, and *Lantana camara* from the Verbenaceae family from all over the world. These weed types are reclassified based on morphology, namely broad-leaf and grass, shown in Table 3.

Table 3. List of Weed Species Based on Morphology in Teak and Sengon Plant Stands

Weed Morphology	Teak Stand Weeds	Sengon Stand Weeds
Broad Leaf	*1. Passiflora foetida* 2. *Gloriosa superba L.* 3. *Chromolaena odorata L*	1. *Gloriosa superba L.* 2. *Chromolaena odorata L* 3. *Ipomoea obscura L.* 4. *Lantana camara*
Grasses	1. *Imperata cylindrica* 2. *Cynodon dactylon*	*1. Arthraxon hispidus* 2. *Echinochloa colona.* 3. *Digitaria sanguinalis L* 4. *Imperata cylindrica*

Table 3 shows that the results of research observing weed vegetation in teak stands and sengon stands yielded 10 (ten) species which were divided into 6 (six) families which were then further differentiated into 2 types of weeds based on morphology, namely broad leaf weeds. and grass weeds (grasses). The weeds found in the teak stands were *Passiflora foetida*, *Gloriosa superba* L, *Chromolaena odorata* L which belonged to the broad-leaf weed morphology, and *Imperata cylindrica* and *Cynodon dactylon* which belonged to the grass weed morphology. When observing the weeds found in the sengon plant stands, 8 (eight) species of weeds were found. The weeds found in the sengon plant stands are *Gloriosa superba* L, *Chromolaena odorata* L, *Ipomoea obscura* L, and *Lantana camara* which are classified as broad-

leaf weeds, while the weed species *Arthraxon hispidus*, *Echinochloa c*olona, *Digitaria sanguinalis* L, and *Imperata cylindrica* are classified as on the morphology of grass weeds.

Tables 4 and 5 show the results of observations regarding the type and number of weeds as well as the dry weight of weeds growing in teak plantation stands. From all the replicate plots, the results obtained were 5 (five) types of weed species found in teak stands. The weeds observed were *Chromolaena odorata* L numbering 55 plants with a dry weight of 748 grams, *Cynodon dactylon* totaling 39 plants with a dry weight of 145 grams, *Gloriosa superba* L totaling 5 plants with a dry weight of 82 grams, *Imperata cylindrica* totaling 7 plants with a dry weight wind 20 grams, and *Passiflora foetida* totaling 2 plants with a dry weight of 21 grams, so the total number of weeds found in the teak plant stand was 108 plants with a dry weight of 1,016 grams.

Table 4 Types and Number of Weeds in Teak Plant Stands

Weed Species	**Block 1**					**Block 2**					**Block 3**					**Total**
	Replay Plot															
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
A. hispidus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. odorata	4	2	2	5	6	2	1	3	7	3	3	8	5	2	2	55
C. dactylon	-	-	-	-	3	-	6	-	6	6	11	-	-	7	-	39
D. sanguinalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E. colona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G. superba	1	-	-	-	-	-	-	4	-	-	-	-	-	-	-	5
I. cylindrica	-	-	4	-	-	1	-	-	-	-	-	-	-	2	-	7
I. obscura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. camara	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. foetida	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
						Total Number										108

Table 5. Types and Dry Weight of Weeds in Teak Plant Stands

Weed Species	**Block 1**					**Block 2**					**Block 3**					**Total**
	Dry Weight (g)															
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
A.hispidus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. odorata	54	36	22	64	71	19	11	43	107	39	37	107	82	34	22	748
C. dactylon	-	-	-	-	13	-	20	-	21	22	44	-	-	25	-	145
D.sanguinalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E. colona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
G. superba	7	-	-	-	-	-	-	75	-	-	-	-	-	-	-	82
I. cylindrica	-	-	12	-	-	3	-	-	-	-	-	-	-	5	-	20
I. obscura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. camara	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. foetida	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
						Total Number										1.016

Tables 6 and 7 show that the results of observations regarding the type and number of weeds as well as the dry weight of weeds growing in the sengon plant stands. From all the replicate plots, results were obtained for 8 (eight) types of weed

species found in teak stands. The weeds observed were *Arthraxon hispidus* totaling 64 plants with a wind dry weight of 354 grams, *Chromolaena odorata* L totaling 105 plants with a wind dry weight of 946 grams. *Digitaria sanguinalis* L numbered 21 plants with a dry weight of 55 grams, *Echinochloa colona* numbered 32 plants with a dry weight of 135 grams, *Gloriosa superba* L numbered 1 plant with a dry weight of 11 grams, *Imperata cylindrica* numbered 4 plants with a dry weight of 40 grams, There are 3 plants of *Ipomoea obscura* L with a wind dry weight of 51 grams, and 19 plants of *Lantana camara* with a wind dry weight of 97 grams, so the total number of weeds found in the teak stands is 249 plants with a wind dry weight of 1,689 grams.

Table 6. Types and Number of Weeds in Sengon Plant Stands

	Block 1					**Block 2**					**Block 3**					
Weed Species						**Replay Plot**										**Total**
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
A.hispidus	-	4	1	9	-	3	-	-	-	-	-	-	-	47	-	64
C. odorata	16	-	-	-	2	6	11	13	17	2	8	23	7	-	-	105
C. dactylon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D. sanguinalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	21
E. colona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	32
G. superba	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
I. cylindrica	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4
I. obscura	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3
L. camara	-	-	-	-	-	-	-	-	-	10	-	-	9	-	-	19
P. foetida	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
						Total Number										249

Table 7. Types and Dry Weight of Weeds in Sengon Plant Stands

	Block 1					**Block 2**					**Block 3**					
Weed Species						**Dry Weight (g)**										**Total**
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
A.hispidus	-	75	10	109	-	11	-	-	-	-	-	-	-	149	-	354
C. odorata	200	-	-	-	22	77	65	109	121	23	110	162	57	-	-	946
C. dactylon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D.sanguinalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	55
E. colona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	135	135
G. superba	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	11
I. cylindrica	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	40
I. obscura	-	-	51	-	-	-	-	-	-	-	-	-	-	-	-	51
L. camara	-	-	-	-	-	-	-	-	-	56	-	-	41	-	-	97
P. foetida	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
						Total Number										1.689

Data analysis is a data processing process with the aim of finding useful information that can be used as a basis for decision making to solve a problem. Data from observations of weed vegetation analysis in teak and sengon stands are shown in Table 8 and Table 9.

Table 8. Vegetation Analysis of Teak Plant Stands

SPECIES	ADS	RDS	AF	RF	AD	RD	IV	SDR	H'	Simpson
A.hispidus	-	-	-	-	-	-	-	-	-	-
C. odorata	3,67	0,51	1,00	0,58	0,07	0,74	1,82	0,61	0,34	0,26
C. dactylon	2,60	0,36	0,40	0,23	0,01	0,14	0,73	0,24	0,37	0,13
D.sanguinalis	-	-	-	-	-	-	-	-	-	-
E. colona	-	-	-	-	-	-	-	-	-	-
G. superba	0,33	0,05	0,13	0,08	0,01	0,08	0,20	0,07	0,14	0,002
I. cylindrica	0,47	0,06	0,13	0,08	0,002	0,02	0,16	0,05	0,18	0,004
I. obscura	-	-	-	-	-	-	-	-	-	-
L. camara	-	-	-	-	-	-	-	-	-	-
P. foetida	0,13	0,02	0,07	0,04	0,002	0,02	0,08	0,03	0,07	0,0003
Total	7,20	1,00	1,73	1,00	0,10	1,00	3,00	1,00	1,10	0,40

Information: ADS= Absolute Density, RDS= Relative Density, AF= Absolute Frequency, RF= Relative Frequency, AD= Absolute Dominance, DN= Relative Dominance, IV= Importance Value, SDR= Summed Dominance Ratio, H'= Shannon-Wiener Index.

Table 8 shows the results of the weed vegetation analysis on the teak land, there are 5 (five) types of weed species from 15 (fifteen) replicate plots which are divided into 3 (three) observation sample blocks, the types of species with the calculation of the analysis results in total from all weeds found on land with teak stands are *Chromolaena odorata* L, *Cynodon dactylon*, *Gloriosa superba* L, *Imperata cylindrica*, and *Passiflora foetida*. Has a total value of ADS= 7.20, RDS= 1.00, AF= 1.73, RF= 1.00, AD= 0.10, RD= 1.00, IV= 3.00, SDR= 1.00, H'= 1.10, and Simpson= 0.40.

Table 9. Vegetation Analysis in Sengon Plant Stands

SPECIES	ADS	RDS	AF	RF	AD	RD	IV	SDR	H'	Simpson
A.hispidus	4,27	0,26	0,33	0,23	0,04	0,21	0,69	0,23	0,35	0,07
C. odorata	7,00	0,42	0,67	0,45	0,09	0,56	1,44	0,48	0,36	0,18
C. dactylon	-	-	-	-	-	-	-	-	-	-
D.sanguinalis	1,40	0,08	0,07	0,05	0,01	0,03	0,16	0,05	0,21	0,01
E. colona	2,13	0,13	0,07	0,05	0,01	0,08	0,25	0,08	0,26	0,02
G. superba	0,07	0,004	0,07	0,05	0,001	0,01	0,06	0,02	0,02	0,00002
I. cylindrica	0,27	0,02	0,07	0,05	0,004	0,02	0,09	0,03	0,07	0,0003
I. obscura	0,20	0,01	0,07	0,05	0,01	0,03	0,09	0,03	0,05	0,0001
L. camara	1,27	0,08	0,13	0,09	0,01	0,06	0,22	0,07	0,20	0,01
P. foetida	-	-	-	-	-	-	-	-	-	-
Total	16,60	1,00	1,47	1,00	0,17	1,00	3,00	1,00	1,52	0,27

Information: ADS= Absolute Density, RDS= Relative Density, AF= Absolute Frequency, RF= Relative Frequency, AD= Absolute Dominance, RD= Relative Dominance, IV: Importance Value, SDR= Summed Dominance Ratio, H'= Shannon Index- Wiener.

Table 9 shows that in the analysis of weed vegetation on the sengon land, there were 8 (eight) types of weed species from 15 (fifteen) replicate plots which were divided into 3 (three) observation sample blocks, the types of species calculated from the results of the analysis in total from all weeds found on land with sengon stands are *Arthraxon hispidus*, *Chromolaena odorata* L, *Digitaria sanguinalis* L, *Echinochloa colona*, *Gloriosa superba* L, *Imperata cylindrica*, *Ipomoea obscura* L, and *Lantana camara*. Has a total value of ADS= 16.60, RDS= 1.00, AF= 1.47, RF= 1.00, AD= 0.17, RD= 1.00, IV= 3.00, SDR= 1.00, H'= 1.52, and Simpson= 0.27.

The total value from these calculations is then used to calculate the community coefficient between sample blocks in teak and sengon stands to determine the level of uniformity based on the density of weeds growing in each replicate plot in each block. The observation results can be seen in Table 10.

Table 10. Comparison of Community Coefficient Values in Stands of Teak and Sengon Plants

Teak Stand Weed Species	**SDR**	**Sengon Stand Weed Species**	**SDR**
Arthraxon hispidus	-	*Arthraxon hispidus*	0,23
Chromolaena odorata L.	0,61	*Chromolaena odorata L.*	0,48
Cynodon dactylon	0,24	*Cynodon dactylon*	-
Digitaria sanguinalis L.	-	*Digitaria sanguinalis L.*	0,05
Echinochloa colona	-	*Echinochloa colona*	0,08
Gloriosa superba L.	0,07	*Gloriosa superba L.*	0,02
Imperata cylindrica	0,05	*Imperata cylindrica*	0,03
Ipomoea obscura L.	-	*Ipomoea obscura L.*	0,03
Lantana camara	-	*Lantana camara*	0,07
Passiflora foetida	0,03	*Passiflora foetida*	-
Total	1	**Total**	1

$$\text{Community Coefficient (C)} = 2 \frac{W}{A+B} \times 100\%$$

Information :

W = sum of the two lowest densities for the type of community
A = the sum of all densities in the first community
B = the sum of all densities in the second community
A (ΣADS-1) = 1,00
B (ΣADS-2) = 1,00

$$W = 0,03+0,05+0,02+0,03+0,03 = 0,16$$

$$C = 2 \frac{0,16}{1,00+1,00} \times 100\% = 16\%$$

A comparison of the community coefficient values between teak stands and sengon stands calculated based on the absolute density value of each weed species shows that the community coefficient value is 16%, which means that the density of weeds in teak stands and sengon stands is not similar or uniform. Because in accordance with applicable regulations, if the community coefficient value shows more than 75% then the comparison between locations does not show differences or is uniform. If the community coefficient value shows less than 75%, then the comparison between locations is different or not uniform. The vegetation composition in this study was calculated using the community coefficient formula, where this formula functions to compare the differences and similarities in vegetation composition at two different locations, thus the ratio of weeds in teak

and sengon stands can be said to be different if the community coefficient value is calculated based on SDR value.

Based on the research results, it shows that the observation location on the land under the stands of teak and sengon plants in Sumber Girisuko Village did not contain weed species that were classified as high diversity or the value of the observation results was classified as moderate. The diversity index value (H') at the observation location on land under teak stands is 1.10, and the diversity index value (H') at the observation location on land under sengon stands is 1.52. The diversity index can be interpreted as a systematic depiction that depicts community structure and can facilitate the process of analyzing information about the types and numbers of organisms. Apart from that, the diversity and uniformity of biota in a location is very dependent on the number of species in the community. The more species found, the greater the diversity, although this value is very dependent on the number of individuals of each species (Saitama et al., 2016).

The Simpson dominance index (D) at both research locations was found to be 0.40 on land under teak stands, and 0.27 on land under sengon stands. Based on the results of the calculations that have been carried out, the ecological conditions are in a state where there are species but they do not dominate. The research land is in a balanced position when viewed from the calculated Simpson dominance index value. This is in accordance with the statement of Kurniadie et al., (2018), the dominance index ranges between 0 – 1. If the D value = 0, it means that there are no species that dominate other species or the community structure is in a stable state. If the D value = 1, it means that the existing species dominates other species or the community structure is unstable due to ecological pressure.

CONCLUSION

1. In the analysis of weed vegetation there are 10 weed species from 6 families, namely *Chromolaena odorata* L from the Asteraceae family, *Gloriosa superba* L from the Colchicaeae family, *Ipomoea obscura* L from the Convolvulaceae family, *Passiflora foetida* from the Passifloraceae family, *Cynodon dactylon*, *Arthraxon hispidus*, *Digitaria sanguinalis* L, *Echinochloa colona*, *Imperata cylindrica* from the Poaceae family, and *Lantana camara* from the Verbenaceae family.
2. Based on the morphology of the weeds under the teak stands, 3 broad-leaf species and 2 grass species were found, while in the weeds under the sengon stands, 4 broad-leaf species and 4 grass species were found. In the land under teak stands, 5 species were found with SDR values of 0.03-0.61, in land under sengon stands there were 8 species with SDR values of 0.02-0.48.
3. The results of calculating the community coefficient (C) between the land under the teak plant stand and the sengon plant stand obtained a value of 16%, which means that the weeds in the two observation areas are not uniform,
4. Based on the results of the diversity index (H*) calculation, it shows that the observation location on land under stands of teak plants has a value of 1.10 and sengon has a value of 1.52, indicating that this value is classified as moderate.

The Simpson dominance index (D) was found to be 0.40 on land under teak stands, and 0.27 on land under sengon stands. Based on the results of the calculations that have been carried out, the ecological condition is that there are weed vegetation species but they do not dominate.

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