

# Weeds Identification On Sago Palm Plant In The Banana-Based Reclamation Area With Natural Sago Palm Area As Comparison

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**Abstract:** The objective of this research was to know the various kinds of weed in banana-based reclamation area of sago palm and in natural sago palm forest. The square method was used to analysis weed vegetation. The results of the research. of predominating weeds found in the sago palm reclamation area were *Sida apcuta*, *Centrosema pubicens*, *Mimosa invisa*, *Gallingsoga parviviflora*, and *Commelina diffusa*. These weeds are from the broad leaf group. Also, there were *Phaspalum konjugatum*, *Digitaria violancens*, *Axonopus compresus*, and *Bractiarva paspoloides*. These weeds are from grasses group. While from the sead jeas group there are *Cyperus killyngia*, *Cyperus iia* and *Cyperus phylosous*. The predominating weeds found in the natural sago palm area were *Althenantera sessilis*, *Commelina difusa*, *Melastoma affine*, *Centrosema pubicens*, *Ficus septica*, *Sehismatogolotis cypta*, and *Xanthomonas violaceum* which are from broad leaf group. *Aneielma spiratum*, *Axonopus comperesus* are from grasses group. *Cyclocorus aridus*, *Selagineella sp* and *Stenochlea palustris* are from fern group were found in the natural sago palm area but was not found in the reclamation area. *Commelina diffusa* weed which is from broad leaf group spread and dominated in 4 columns of sago palm reclamation area, while in the natural sago palm area there is only 1 column. Sead jeas group was not found in the natural sago palm area, while fern group was found in sago palm reclamation area the ecology of these two areas were different.

**Index Terms:** Weed on Sago Palm Reclamation area and Natural Sago Palm area as Comparison

## 1. INTRODUCTION

In Maluku, sago palm has never been cultivated, but grows in a wild natural environment and forms a natural sago palm forest. In the effort to obtain optimal benefits of the natural sago palm forest and to increase the local prosperity, natural sago palm forest should be processed optimally. However, it has to be notice that we have to maintain the basic characteristic of sago palm and its natural environment. Also it is forbidden to change its basic function as conservative forest palm forest region or area can be made as a research site to develop knowledge and produce genetic engineering to improve social welfare [1]. Sago palm reclamation between the banana plant, besides it can be a biological commodity and economic commodity, it will impact to vegetation growth which lives around the reclamation. This condition, if it has to be compare with the natural sago palm forest, it will impact to the number and kinds of different vegetation. This is because every area which has a high cultivation will impact to the various vegetation which is higher.

This kind of environmental change can increase the possibility of weeds vegetation change. Therefore, there is a weed which can survive through this condition and there also weed which cannot survive. It is also possible that there will be a new kind of weed vegetation depend on the various kind and crowd level of the growing population and the association between the vegetation itself. Besides that, the combination of the cultivation with the certain density is expected to press a certain population in order to obtain cultivation efficiency [2]. Nowadays, there is no a scientific research information about weeds in the sago palm reclamation area and in the natural sago palm forest. Therefore, information about sago palm in the various areasis needed to help the development of technology and knowledge related to sago palm. The existence of weeds in the banana-based reclamation area of sago palm and in the natural sago palm area can give a positive impact, but also can give many harm effect to the sago palm growth, quality of the harvest. The existence of weeds around the cultivated plant cannot be avoided, especially if the weeds around the plant did not controlled well. The existence of weeds cannot be avoided because the growing requirement of both plant and weeds are the same. In order to avoid the negative effect of weeds, it is needed to hold a research about weeds around the cultivated sago palm and banana tree. The weeds are identified and analyzed through a research. Therefore we can understand the disseminating of the weeds. The result of the research will be used to control the weeds. The best method to use for this matter is vegetation analysis. Vegetation is a mix of different types of vegetation in an area or areas [3]. A type of vegetation is formed by the dominant plant communities. Community is formed by a collection of populations, and populations are a collection of individuals of the same type and occupy a particular environment or habitat. Communities can be formed from several up to an infinite number and type. Vegetation can be formed from different types of grazing fields and others. Form of vegetation is the interaction of environmental factors (soil, climate, topography) of organisms and time. Interactions and environmental factors

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can be used as an indicator of the environment or nature of the probe components of the environment. Analysis of vegetation is important to know that there are weeds in detail both in terms of variety of species, number and weight of each species and its frequency. In the analysis of vegetation there are two values that can be observed that the economic and biological. The economic value of the vegetation can be judged from its potential to bring income. While the biological value of the vegetation can be assessed from the role of vegetation such as climate control, water flow regulator and indicator elements of earth and others. This study aims to identify the types of weeds that grow and spread at the banana based reclamation area and natural areas. It is expected that the results of this study can be useful to give information to sago palm and banana plant cultivator (*Sago Metroxylon L*) in an effort to increase production.

## 2. MATERIALS AND METHODS

This research was conducted in banana based reclamation area of sago palm and natural sago palm area at Tawiri village, Ambon island. This field research then continued in the BPPT Laboratory of Ambon. This research was conducted in November 2009 until March 2010. The tools used in this research are plastic bag, rope, and various size of envelopes. Besides that various stationery are used. There is also frame which made form iron. The dimension of this frame is 0.5 x 0.5 cm. In order to support this research, a gauge, electrical oven, and analytic scale are used. The broad of the banana based reclamation area of sago palm and natural sago palm area is 1.0 ha and divided into 6 line or block. Each block has dimension of 100m length and 15 m wide. Every block was placed in 8 swath randomly with iron frame. Every weeds placed in the swath were revoked and then put into plastic bag that have been coded. The research was conducted in the study area, and then continued at the Laboratory of BPPT. Any weed identified in accordance with the scientific name. Once identified, the weeds are cut into small pieces and put into envelopes which have been coded according to the observation path. Weeds that have been incorporated into the envelope is then dried using the oven at a temperature of 100-110 °C for 24 hours. The oven is then weighed to obtain a constant dry weight. The Obtained data is used to calculate the absolute density and relative density, the absolute frequency and relative frequency, dominance and dominance of relative and absolute value of the SDR. To compare the two vegetation communities at each observation path, it is needed a community coefficient formula. Index of similarity between the two communities was compared, the difference in distance can be determined from the two communities. Based on the distance between the two communities, weed community grouping can be done using the single linkage method, or minimum distance method.

## 3. RESULTS AND DISCUSSION

### State of Cultivation

Farming systems used by farmers in the Tawiri Village is intercropping farming systems. Tawiri village is the area of cultivation in Maluku with sago cultivation area of 30ha, where the main activity is reclamation and new planting [4].

The new planting was hold in areas that have been planted with bananas. Spacing is placed regularly in 15 x 5 meters, where the distance between rows of crops in a row spacing of 15 m and 5 m. In the area of sampling, there were 59 sago seeds, but the reality in the field at the time of the study showed that 23 sago seeds are dead and 36 others are still alive. Average age of the sago plants was planted is 8-9 months. Banana plants are maintained at the study site using a spacing of 4 m x 4 m. In each family there is a 2-8 tree/grass. The total number of banana plants are planted 380 trees/ha with an average age of 5-6 months and the types of bananas are grown are Kapuk banana. While in the area of natural sago, there are approximately 100 trees sago plant. Sago palms in the area consists of phases 1-5 trees/groves, the phase of seedling 5-9 trees/clumps, sapling phase 1-10 trees/groves, the phase of stands 1-6 trees/clumps.

### Weeds Species and Grouping

Results of analysis of weed vegetation in accordance with the lines shown in Table1 shows the dominance of the type as shown in the following table:

**Table1.** Dominant weeds based on the group of SDR from line 1 – 6 at Banana Based Reclamation Area of Sago Palm.

Weed Grouping and Species	Founded In The Line					
	1	2	3	4	5	6
<b>A. Broad Leaf Group</b>						
1. Cammelina Diffusa	*	*	x	*	*	x
2. Sida Acuta	*	*	x	x	*	*
3. Centrosema Pubecens	*	*	x	x	*	*
4. Mimosa Invisa	*	*	*	x	*	x
5. Galingsoga Pariflora	x	x	x	x	x	*
<b>B. Grasses Group</b>						
1. Axonopus Compresusu	*	*	x	*	x	x
2. Digitaria Vilansece Link	*	x	x	*	*	*
3. Brastiarva Paspoloiedes	*	x	*	*	-	-
4. Phaspalum Conjugatum	-	-	-	x	*	*
<b>C. SeadJeas Group</b>						
1. Cyperus Kyllngia	-	*	x	-	-	x
2. Cyperusiria	-	*	x	*	-	-
3. Cyperuspyllsous	-	*	x	-	-	-

Note: \* = Kind of dominant, x = not dominant but found, - = not found

Table1 show that of 43 species found on the sixth line of reclamation area of sago plant, there are only 12 types that

have the highest value of SDR and dominate. Here is the classification types based on the results of the analysis: Broad leaf group is *commelina diffusa* dominated the line of 1,2,3,4,5,6, *sida acuta* dominated in line 1-3, *centrosema pubicens* dominated line 1,2,5 and 6, *mimosa invisa* dominated the line 2,3,5 and *galingsoga parviflora* only dominated the line 2 and 6. Grasses group are *axonopus compresus* which dominated in line 1 – 4, *digitaria violoncens link* dominated line 1,4 and 6. Seed jeas group are *cyperus kyllingia* dominated line 2,3,4, *cyperus iria* dominated line 2,3 and 4, *cyperus philosus* only dominated in line 2, *bractiarva paspoloiedes* dominated in line 3 and 4, *phaspalum konjugatum* dominated in line 4,5 and 6.

**Table 2.** Dominated weeds based on SDR from line 1 – 6 on natural sago palm area.

Weed Grouping and Species	Founded In The Line					
	1	2	3	4	5	6
<b>A. Broad Leaf Group</b>						
1. Cammelina Diffusa	*	*	*	x	*	x
2. Melastona Affine	*	*	*	x	x	x
3. Altenatera Sessilis	*	-	x	x	*	-
4. Centricema Pubencens	*	x	x	x	x	-
5. HyptisCapitat	x	*	-	x	x	x
6. FicusSeptica Burn	x	*	*	*	-	x
7. SehismatogolotisCyptas	x	*	*	*	*	*
8. XanthomonasCypta	x	x	*	*	-	-
<b>B. Grasses Group</b>						
1. Aneilema Spiratum	x	*	*	*	*	*
2. Axonopus Compresus	-	*	-	*	-	-
<b>C. Fern Group</b>						
1. Cyclorus Aridus	*	x	x	*	x	x
2. Salagenellasp	*	*	*	*	*	-
3. Stenochoena Palustris	x	*	x	x	-	x

Note: \* = Kind of dominant, x = not dominant but found, - = not found

Table 2 shows that there are 32 species founded on these 6 lines and on the natural sago palm area there are only 13 species which have higher SDR value and dominated. The following is the grouping: Broad leaf group are *commelina diffusa* dominated in line 1,2,3 and 5, *melastoma affine* dominated line 1-4, *altenantera sessilis* dominated line 1 and 5, *centrosema pubicens*, and *hyptis capitata* only dominated line 1 and 2, *Ficusseptica burn* dominated line 2,3,4, *sehismatologolotis cyptaroxb* dominated in line 2-6, *xanthomonas volaceum shott* dominated line 3 and 4. The

grasses group are *aneilema spiratum* dominated in line 1-4 and 6, while *axonopus compresus* dominated line 2 and 4. Fern group are *cyclocorus aridus* dominated in line 1-4, *sellginell asp* dominated in line 1-5, and *stenocloena palustris* only dominated in line 2. Silarity Index Value (SIV) in the banana based reclamation area of sago palm and natural sago palm area. Community coefficient for each of the six lines in the area of banana based reclamation area of sago palm and natural sago forest was compared by calculating the value of the SDR. SIV between the two community was calculated by using Czekanowski method. Table 3 shows that weeds community between the compared line was not the same of different. The SIV value which less than 75% was not the same and if SIV is more that 75% it can be stated the same [5]. Similarity Index between two communities which compared in the reclamation area and natural sago palm area can be seen in Table 4. Similarity index values were compared between the two communities in the reclamation area and the area of natural sago ranged from 1.48-12.75 %. From the similarity range value between the community which compared, the higher value were in the line 1:2 (12.75%), and 2:2 (10.80%), whereas the lowest value is in line 3:5 (1.48%).

**Table 3:** Similarity Index or coefficient in the reclamation area and natural sago palm area.

Compared Community	Similarity Level	Difference Level
1:1	7.55	92.55
1:2	12.75	87.25
1:3	9.83	90.17
1:4	9.58	90.42
1:5	9.61	90.39
1:6	8.58	91.42
2:2	10.80	89.20
2:3	7.39	92.61
2:4	8.24	91.76
2:5	8.03	91.97
2:6	7.38	92.62
3:3	2.21	97.79
3:4	3.84	96.16
3:5	1.48	98.52
3:6	2.84	97.16
4:4	6.60	93.40
4:5	5.14	94.86
4:6	6.71	93.29
5:5	8.32	91.68
5:6	10.06	89.94
6:6	6.82	93.18

**Table 4:** Similarity Index between two communities which compared in the reclamation area and natural sago palm area

Line	1	2	3	4	5	6
1	7.75	12.75	9.83	9.58	9.61	8.58
2		10.80	7.39	8.24	8.02	7.38
3			2.21	3.84	1.48	2.84
4				6.60	5.14	6.71
5					8.32	10.06
6						6.82

#### 4. CONCLUSION

Based on the explanation of the obtained data, it can be concluded. There were found 43 kinds of weeds from various group or species in the reclamation area. While in the natural sago palm area only found 31 kind of weeds from various species. Some of the broad leaf species, grasses species and seadjeas species dominated in the banana based reclamation area of sago palm. However they are also found in the natural sago palm area. In banana based reclamation area of sago palm, there were found 3 kind of weeds from seadjeas species, while in the natural sago palm area was not found the seadjeas species, but only found three kinds of fern weeds which cannot be found in the reclamation area.

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