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Weeds Pressuring on the Growth and Yield of Soybean Plants By Giving an Acasia Organic Mulch

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ABSTRACT

Soybean is the one of agricultural commodities that wasvery needed in Indonesia, neither as a human food, animal feed nora basic material of industry. In the development of soybean plants, there were some issues that related to the agro-ecosystem during the planting and itmust be overcome, the one of themwas the problem of the weeds management that have not optimum yet.The purpose of this research is to examinedthe effectiveness of a combination of some organic mulchs towarded the weeds suppressing ability on the growth and yield of soybean.In this experiment, it was conducted the effectiveness of acasia organic mulch to suppress the growth of weeds, and also the testing of community coefficient, vegetation analysis (initial SDR value, middle and final), theweeds heavy with broad and narrow leaf types, and kinds of other teki-tekian. Plant's growth (height, dry weight of shoots and roots). The yield components (amount of pods, amountof meaty pods, weight of 100 seeds and the yield of soybean). The experiment was conducted in a Group Randomized Plan. From the results of this study, found that the Acacia mulch is the organic mulch that effective to suppress the growth of weeds, especially in doses of 20 tons per-ha-1 of mulch Acacia.

Key words: Soybean, Weeds, Acacia Organic Mulch.

INTRODUCTION

Soybean (Glycine max (L.) Merrill) is the staple crop after rice and maize. In addition, soybeanis the one of agricultural commodities that was very needed in Indonesia, because it can be consumed in a variety of processed food products, such as soy sauce, tofu, tempeh, milk, and many other processed products. In addition, it can be used for animal feed, and basic material of industry, as well as the fresheners material.

The one effort to increase the soybeanproduction that planted on anultisol land, where it water holding capacity was very low, that is by giving the mulch in a soybean planting area. Mulchwas the substance or material used to cover the land surface or agricultural land, by aims to suppressingthe weed growth and increasing the crop production. There were two types of mulch, namely inorganic and organic mulch. Inorganic mulches were the black and silver plastic mulches and organic mulchwas the mulch derived from the biodegradable natural ingredients, such as crop residues, green manure plant or a waste of agricultural activity, the straw which can be covered the surface of the soil.

The Advantages of Organic mulch, such as easilyobtainable andbiodegradable, so it can be added the organic matter content in the soil. Organic mulch was beneficial in a soil conservation, inhibitedthe weed growth, and has the effect to decreasethe soiltemperature. Besides that, the organic mulch can be formed of the soil cover plant. The used of the soil cover plantas mulch, can suppress the growth of weeds. It also has

the function to protect the soil from the water flow destroyer capacity and improved the absorption of water into the soil (Roslianihan *et al*., 2002).

From the results of this study, can be obtained any information about the effective dose of Acacia organic mulch, so it can be used as an inputs for farmers in the utilization of organic waste, that can be used as a soil cover or mulch. In order to optimize the utilization of organic waste that can be used as a soil cover and can suppress the growth of weeds in soybean fields, so it hopefully will be getting the optimal soybean production.

Kastono research (2005) about the response ofblack soybean's growth and yield of, toward theutilizationed ofan organic fertilizers and biopesticides of Chromolaena odorata (kerinyuh) weed, indicated that the applicationed of a dose of C. Odorata compost about 30 tons / ha, gave the highest soybean yield that was 1.53 tonnes / ha. Research results of Darana (2006) who studied the activity of al elopati's extract of kirinyuh leaves (C. odorata) and salira leaves (Lantana camara) towarded the growth of weeds in the tea plantations, indicated that the extract of kerinyuh and salira leaf, can inhibited the growth of weeds in the tea plantations. The extract of Kerinyuh leaf at a concentrations of 20% or extract of salira leaf at a concentration of 10%, resulted the better weed suppression and significantly different than thesynthetic herbicide treatments.The aplicationed of a grass mulch as much as 6 tons / ha, can be increased the amount of pods perplant, numberof meaty podsand dry weight of seeds per plot's soybean plant (Fahrurrozi *et al*., 2005). The applying of mulch on the potato's crop, can be increase the relative growth rate and tubers production. This was, the application of mulch can suppress the growth of weeds, so the plantswas not completedto utilizingthe sunlight and absorb the nutrients (Umboh, 2000).

By the efforts of the development and improvement of soybean plantproductivity, through the application of the organic mulch, to suppress the weed growth, so it was expected to increase the national soybean production. In addition, by optimizing the utilization of weeds as mulch, it was also expected to increase the income of farmers.

MATERIAL AND METHOD

This study was conducted from May until September of 2014. This study was the effectiveness examining of Acacia organic mulch, by the various doses toward the weed growth suppression and getting the best dosesin suppressingof the weed growth. In this experiment, it tested the community coefficient, the initial vegetation analysis, the growth and development of weeds and yield of soybean. The study was conducted in the experimental garden, Laboratory of Physiology, Faculty of Agriculture, University of Jambi, Indonesia.

The holding Research was to test the effectiveness of doses various of Acasia mulch, to suppressthe weed growth. The aims of this experiment were obtained an effective dose of acacia organic mulch, that used for suppressing the growth of weeds in a soybean planting area. The experiment used theacacia organic mulch, with the treatment as follows: D0 = without mulch, D1 = 5 tonnes/ha, D2 = 10 tonnes/ha, D3 = 15 tonnes/ha and D4 = 20 tonnes / ha. This research was conducted by using a Group Randomized Plan (RAK), which consisted of 5 treatments with 4 replications.

Variables measured

Observations on weeds

The weed vegetation analysis was conducted before the land preparation and after the soybean harvest. The way of analysis calculation of vegetation, can be expressed as follows (Tjitrosoedirdjo *et al*., 1984).

Absolute density = Number of individuals of a particularweed's type in a sample plot.

$$\text{Relative density} = \frac{\text{Absolute density of certaintypes}}{\text{Total absolute density of all kinds}} \times 100\%$$

$$\text{Absolute frequency} = \frac{\text{Number of sample plots that containing the certaintypes}}{\text{Total oftakingall plots samples}} \times 100\%$$

$$\text{Relative frequency} = \frac{\text{Absolute frequency value of the of certaintypes}}{\text{Total of absolute frequencyvalueof all species}} \times 100\%$$

Absolute dominance: The sum of the kelindungan value, from the type of certain weed, the kelindungan can be calculated by the formula: (d1 X d2/ 4): 3.14. Where: d1 and d2 was the projection diameter of the of certain weed species.

$$\text{Relative dominance} = \frac{\text{Absolute dominance value of certaintypes}}{\text{Total value of all absolute dominance types}} \times 100\%$$

Critical value = relative density + relative frequency + relative dominance

Determining the Ratio Dominance Summed SDR) or Ratio Total Domination (NJD) = significant value/3.

Dry weight of weeds

Dry weight of weeds to be measuredfrom the sample plots at the age of soybean plants about 35 days and 84 days after planting / harvesting

Observations of soybean plants

The observations were conductedon the soybean plant, covering to the growing plant and yield, namely plant height, dry weight of shoots, number of meaty pods, weight of 100 seeds and yield per plot.

RESULTS AND DISCUSSION

Analysis of Weeds' Vegetation

From the result of vegetation analysis, showed that the weed vegetation that growthin plantation areal, before the experiment, there were about nine types of weeds (Table 1). Those growing weeds, consisted ofthree types of weeds, such as teki-tekian weed, narrow-leaf weeds and broad-leaf weeds. The types of weeds that have a NJD value 'up to' 20% i.e teki-tekian weed (NJD = 36.69%). There were three types of weeds that have a value 'up to '10% NJD i.e T. Mudah Patah, T. Tidak Patah and Antingan by each NJD value about 14.83%, 10.92% and 12.54%. Weeds that have a values 'under' 5% NJD were the babadotan, cabean and putri malu, by each NJD value about 4.5%, 4.48% and 2.18%.

From the result of vegetation analysis, seen that had no happened any changingof weeds composition and dominance, either'before'or'during' the experiment. This matterwas presumably due to the condition of the land, that had no any changing of land condition at 'before' and 'during' the experiment to be being, where the land in the form of dry land and weed that grown, tended to remaining in the form of dry land weeds. In this vegetation analysis, it was also shown that the weed can be classified into the three types of weeds, such as teki-tekian weed, narrow-leaf weed and broad-leaf weed. The analysis of weed vegetation before the research can be seen in Table 1 below.

Dry weights of Weeds

The growth of weeds, at the area of soybean plant was classified into 3 groups, each group of weeds was examinedthe dry weight at the age of 35 days (initial analysis) and at harvest time (the final analysis). The average of weeds' dry weight for each group of weeds, on the two observation time (35 days after planting and harvesting) can be seen in the following table.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 2 showed that the Acacia mulch treatment at doses of D3 (15tones ha-1) gave a dry weight of the lowest teki-tekian weedat the age of 35 hstthat significantly different from other treatments.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 3 above indicated, that theapplying of Acacia mulch on the dose of D4 (20 tonnes ha-1) showed the lowest weight of dry mulch was 0.00 grams, that were not significantly different from D2 and D3, while the D0 and D1 of dry weight of teki-tekian weed, upon the harvest was significantly different. The dry weight of narrow-leaf weed at 35 hst, on the each organic mulch doses can be seen in Table 4 below

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 4 above indicated that all doses given of Acacia organic mulch showed a similar tendency toward the growth of narrow-leaf weeds at the age of 35 hst. The treatment of D1, D2, D3 and D4 were not different each other, but it showed the significant

effect on the treatment of D0 or without mulch on all types of mulchesthat had given. The dry weight of the narrow-leaf weed at the time of harvest, on each dose of organic mulch, can be seen in Table 5 below.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 5 above indicatethat the applying of acacia organic mulch, given the significant effect tothe dry weight of narrow-leaf weeds at the time of harvest, if compared with itwithout mulch. But among the treatment of D1, D2 and D3 and D4 were not significantly different from each other

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

The applying of Acacia mulch, was no gave the significant effect on a dry weight of broad-leaf weed at 35 days after planting (Table 6).

Table. 1: The analysis of weed vegetation before the research

No	Weeds Species	Classification	NDJ (SDR) %
1	Teki SP	Teki	36.69
2	Babadotan	Broad-leaves	4.5
3	A (Broad-leaves)	Broad-leaves	7.04
4	T. Mudah Patah	Narrow-leaves	14.83
5	T. Tidak Patah	Narrow-leaves	10.92
6	Bayaman	Broad-leaves	6.76
7	Antingan	Narrow-leaves	12.54
8	Cabean	Broad-leaves	4.48
9	Tall Putri Malu	Broad-leaves	2.18
Total			99.94

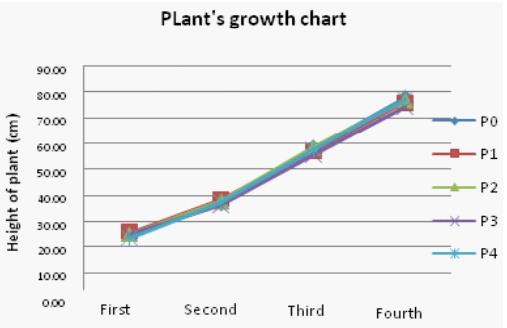

Fig. 1: The rate of soybean plants' height from the first week untilthe fourth week, by applying of acacia organic mulch

Table. 2: Summed Dominance Ratio (SDR) of weeds at the moment of maximum soybean vegetative

No	Weeds' type	Acacia (tonnes/ha)				
		0	5	10	15	20
1	R. Mudah Patah	20.65	11.13	13.28	13.83	9.64
2	Teki	27.05	39.96	41.99	34.1	8.56
3	Babdotan	6.9	6.65	8.22	2.93	0
4	Spinach	5.85	3.32	1.96	2.37	0
5	R. Antingan	5.67	8.73	4.99	8.2	0
6	Cleome	3.08	0	0	0	0
7	Kreman	5.94	3.32	0	2.57	0
8	Boreria	7.37	7.73	7.08	7.33	16.06
9	Star fruit	6.67	1.54	6.84	7.12	3.47
10	R. Tulangan	10.66	7.34	3.02	2.72	10.71
11	Putri malu	0	4.87	1.96	0	7.13
12	Rice	0	5.33	10.58	18.65	44.55
Total		99.84	99.92	99.92	99.82	100.12

From Table 7 above, indicated that Acacia mulch had no given any significant effect on the dry weight of broad-leaf weed atthe time of harvest. Here, it can be seen that the broad-leaf weedwas not affected by the applying of the mulch at all doses.

Table. 3: Summed Dominance Ratio (SDR) at The Moment Of Soybean Maximum Harvesting

No	Weeds' type	Acacia (tonnes/ha)				
		0	5	10	15	20
1	Tall Putri Malu	1.61	1.48	3.98	2.72	0
2	R. Mudah Patah	9.62	7.37	7.73	0	0
3	Boreria	9.93	7.49	8.53	8.28	13.33
4	Teki	25.32	39.47	38.91	16.53	22.93
5	R. Gajah	11.46	9.7	0	0	0
6	R. Tulangan	16.1	10.44	11.43	5.9	4.24
7	Babadotan	9.82	6.81	8.45	8.29	4.04
8	R. Antingan	10.99	5.71	7.24	3.73	0
9	Spinach	3.28	4.59	1.86	5.22	4.04
10	Coarse grass	1.82	5.26	0	0	0
11	Rice	0	1.59	11.81	49.3	51.38
Total		99.95	99.91	99.94	99.97	99.96

Table. 4: The Dry Weight Average Of Teki-Tekian Weed At 35 Days After Planting, By Applying Of Some Doses Of AcaciaMulch

Treatment	The dry weight of teki-tekian weed at 35 hst (g)
D0 (0 tonnes ha^{-1})	23.02 a
D1 (5 tonnes ha^{-1})	13.11 a
D2 (10 tonnes ha^{-1})	18.85 a
D3 (15 tonnes ha^{-1})	2.55 b
D4 (20 tonnes ha^{-1})	24.00 a

Table. 5: The Dry Weight Average Of Teki-Tekian Weed At The Time Of Harvest, By Applying Of Some Doses Of AcaciaMulch

Treatment	The dry weight of teki-tekian weed at the time of harvest (g)
D0 (0 tonnes ha^{-1})	10.18 a
D1 (5 tonnes ha^{-1})	7.04 ab
D2 (10 tonnes ha^{-1})	0.90 c
D3 (15 tonnes ha^{-1})	2.92 bc
D4 (20 tonnes ha^{-1})	0.00 c

Table. 6: The Dry Weight Average Of Narrow-Leaf Weed At 35 Days After Harvest, By Applying Of Some Doses Of Acacia Mulch

Treatment	The dry weight of narrow-leaf weed at 35 hst (g)
D0 (0 tonnes ha^{-1})	127.43 a
D1 (5 tonnes ha^{-1})	16.13 b
D2 (10 tonnes ha^{-1})	26.65 b
D3 (15 tonnes ha^{-1})	29.02 b
D4 (20 tonnes ha^{-1})	9.77 b

Table. 7: The Dry Weight Average Of The Narrow-Leaf Weeds At Harvest, By Giving Some Doses Of Acacia Mulch

Treatment	The dry weight of the narrow-leaf weed at the time of harvest (g)
D0 (0 tonnes ha^{-1})	52.58 a
D1 (5 tonnes ha^{-1})	12.22 b
D2 (10 tonnes ha^{-1})	7.20 b
D3 (15 tonnes ha^{-1})	8.97 b
D4 (20 tonnes ha^{-1})	7.02 b

Growth and Yield of Soybean Plants by used of several dosesof Acacia Organic Mulch
Heightof plant

The results of variance analysis showed that the treatment doses of Acacia mulch had no any significant effect towarded the soybean plant's height. The average height of soybean plants, after it was conducted the further testing of BNT at a level 5 %, can be shown in Table 8.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 8 indicated that the dose treatment of Acacia mulch had no given any significant differences, among of dose treatment of mulch organic that was given toward the plant's height. The growth rate of height's plant, from the first week until the fourth week of observation, can be seen in the following charts:

On the picture above, indicated that the growth of soybean plants, bygiving of acacia mulch's dose showed the heightof plants that relatively similar form, from thefisrt week until fourth week, for all doses given of Acacia organic mulch.

Dry Weight of Shoots

The results of variance analysis showed that the treatment of Acacia organic mulch had no any significant effect on the shoot's dry weight of soybean plants. The average of the shoot's dry weight of soybean plants in a dose varieties of organic mulch that given, after it was conducted the further test can be seen in Table 9

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 9 indicated that thedose treatment of Acacia organic mulch had no given a significant difference toward the dry weight of the shoot's plant.

Table. 8: TheDry Weight Average Of Broad-Leaf Weed At 35 Days After Planting, By Applying The Several Doses Of AcaciaMulch

Treatment	The dry weight of borad-leaf weed at 35 hst (g)
D0 (0 tonnes ha^{-1})	17.85 a
D1 (5 tonnes ha^{-1})	24.96 a
D2 (10 tonnes ha^{-1})	7.47 a
D3 (15 tonnes ha^{-1})	16.58 a
D4 (20 tonnes ha^{-1})	6.20 a

Table. 9: The Dry Weight Average Of Broad-Leaf Weed At The Time Of Harvest, By Applying Of Several Doses Of AcaciaMulch

Treatment	The dry weight of - broad leaf weed at time of harvest (g)
D0 (0 tonnes ha^{-1})	52.58 a
D1 (5 tonnes ha^{-1})	12.22 a
D2 (10 tonnes ha^{-1})	7.20 a
D3 (15 tonnes ha^{-1})	8.97 a
D4 (20 tonnes ha^{-1})	7.02 a

Table. 10: The Average Height Of Soybean Plants By Giving The AcaciaOrganic Mulch At Various Doses

Treatment	Plants' Height (cm)
D0 (0 tonnes ha^{-1})	40.20 a
D1 (5 tonnes ha^{-1})	39.20 a
D2 (10 tonnes ha^{-1})	39.57 a
D3 (15 tonnes ha^{-1})	38.38 a
D4 (20 tonnes ha^{-1})	39.90 a

Table. 11: The Dry Weight Average Of Shoot's Soybean Plants, By Giving A Dose Variety Of Acacia Organic Mulch

Treatment	Dry weight of shoots (g)
D0 (0 tonnes ha^{-1})	24.71 a
D1 (5 tonnes ha^{-1})	32.38 a
D2 (10 tonnes ha^{-1})	32.67 a
D3 (15 tonnes ha^{-1})	30.25 a
D4 (20 tonnes ha^{-1})	34.41 a

The Total of Meaty Pods per Plant

The results of variance analysis indicated that the dose treatment of Acacia mulch has any significantly affectedtowardthe numberof meaty pods per soybean plant. The average of number of meaty pods per soybeans plant, at the applying of various doses of Acacia organic mulch that attempted after it was conducted the further testing can be seen in Table 10.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 10 indicated that the dose treatment of Acacia mulch has any significant effect on the number of meaty pods per plant. The treatment of D4 had given the number of meaty pods per highest plant thathad no any different with D3, D2, but it was provided a significant difference with the treatment D0 and D1.

Weight of 100 grains

The results of variance analysis of indicated that the Acacia mulch showed the significant differences on the weight of 100 grains soybean plants. The weight average of 100 grains of soybean plants after it was conductedthe further testing of LSD in level 5%, was shown in Table 11.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 11 above showed that the dose treatment of Acacia mulch had been providing the highest weight of 100 grains on the treatment of D3 that had no any significant differences from the D4, D2 and D1, but it had anysignificant differences with D0.

Results per plot

The results of variance analysis showed that the dose of Acacia mulch had given any effect toward the soybean plant's yield. The average yield of soybean, after it was conducted the further testing BNT in level of 5% can be seen in Table 12.

Explanation: The numbers that followed by similar small letter on the coloum means that it does not authentically different accordance to BNT tested about 5%

Table 12 indicated that the dose treatment of highest result of Acacia mulch had been obtained form the treatment of D2 which had no any significantly different from the treatment of D1, D3 and D4, but it has any significantly different from D0.

Table. 12: The number average of meaty pods of soybean plants by applying the dose various of acacia organic mulch

Treatment	Amount of meaty pods per plant (pods)
D0 (0 tonnes ha^{-1})	40.89 a
D1 (5 tonnes ha^{-1})	65.46 a
D2 (10 tonnes ha^{-1})	118.50 b
D3 (15 tonnes ha^{-1})	131.86 b
D4 (20 tonnes ha^{-1})	134.36 b

Table. 13: The weight average of 100 grains of soybean plants, by the giving of doses various of Acacia organic mulch

Treatment	Weight of 100 grains (g)
D0 (0 tonnes ha^{-1})	9.59 a
D1 (5 tonnes ha^{-1})	12.13 b
D2 (10 tonnes ha^{-1})	12.50 b
D3 (15 tonnes ha^{-1})	13.74 b
D4 (20 tonnes ha^{-1})	13.65 b

Table. 14: The Average of soybean plant's yield, by applying the dose various of Acacia organic mulch

Treatment	Result (g/plots)
D0 (0 tonnes ha^{-1})	138.45 a
D1 (5 tonnes ha^{-1})	247.85 ab
D2 (10 tonnes ha^{-1})	314.69 bc
D3 (15 tonnes ha^{-1})	409.29 c
D4 (20 tonnes ha^{-1})	306.48b c

DISCUSSION

The one effort to increase the soybean production that planted on an ultisol land, where it water holding capacity was very low, that is by giving the mulch in this soybean planting area. In this study, the mulch used, was the Acacia organic mulch. The advantages of this Organic mulch such as easy to obtain, can be decomposed, adding the content of organic matter in the soil. From the variance analysis result, showed that the mulch dose treatment that was applied, had no any significant effect on the plant's height and shoot dry weight of soybean plants (Table 8 and Table 9) . This conditionwas alleged that the growth of the soybean plant is still in the vegetative growth period, meanwhile the growth of weeds was also still relatively undeveloped, so it can be suppressed by mulching given.

When it viewed from the weed growth that was observed at the age of 35 hst, neither the teki-tekian weed, narrow-leaf weednor broad-leaf weedindicated that had no any significant difference, among the mulch dose that given, but it was significantly different from the control. On the teki-tekian weed age 35 and narrow- leaf weed age of 35 days, showed the difference with the control (without mulch). Meanwhile the dry weight of broad-leaf weed age of 35 days, it was only on the rice straw mulch, showed the significant difference with the treatment without rice straw mulch, on the Putihan mulch treatment, Reed and Acacia, had no any significant effect, by without any mulch treatment. According to Mercado (1979), that the soybean plant was very sensitive by weed competition, especially on the initial period (first month /0-45 hst) from the time of growth. By the invisible of the competition on thisinitial days, it was on the height growth and shoot dry weight, indicated that the applying of mulch, on the initialperiod of growth, can be suppressed the weed growth, so it wasinvisible the effect on the initial growth / vegetative soybean.

It was seen from the results of this study, was not consistent with the opinion of Mercado (1979), because it was not visible theinfluence of weedson the soybean plants, at the initial growth. This was presumably, because the applying mulch cansuppressedthe weed growth at the initial growth of the soybean.

The condition above can be seen in Table 2, 4 and 6, that at all applyingmulch dose, had nogiven any significantly different between the treatment, except the control. This meant that all applying doses mulch, had given any equal emphasis to the weeds at the age of 35 hst, except to the 'without' mulch (D0) that shown the a significant difference.

At the Acacia mulch, the highest number of meaty pods on the treatment of D4 (20 tons ha -1) that was not significantly different with D 2 and D 3. According to Moenandir (1993), the broad-leaf weedwas more absorbedthe water and nitrogen elements that required for vegetative growth. In Table 6 seen that the broad-leaf weed at the age of 35 hst, can be suppressed by using of Acacia mulch.

The same trendedwith the number of meaty pods contain, can also seen on the weight of 100 grains, where theapplying of Acacia mulch, by doses of D3 and D4 (15 tonnes ha-1 and 20 tonnes ha-1) had given any significant effect toward the yield per plot. This situation gave the fact, that theapplying of Acacia mulch with a dose of 15 tonnes ha-1 and 20 tonnes ha-1, can suppressed the weeds and gavethe yield per plot of soybean plant that high. When itwas viewed from the trend above, it can be said that the applying of Acacia mulch at doses of D3 and D4, can suppressed the weed growth on a generative phase, so it can give a high yield of soybean.

When it viewed from the observation of the dry weight of weeds that grow, neither thteki-tekian weed, broad-leaf weed and narrow-leaf weeds that were observed at the harvest showed, that the growth of weeds at harvest, by the dose treatment of Acacia mulch showed the different and the lowest weight of weed dryseen in the treatment of D4 that had no anydifferent between the D3 and D2.

According to Roslianihan *et al*., (2002), that the organic mulch was beneficial in the soil conservation, inhibited the weed growth, and has the effect to decrease the temperature of the soil. In addition, the ground cover plants have functioned to protect the soil, against the destructive power of water flow and improved the absorption of water into the soil. Thus, it can be said that the generative growth of soybean plants can be affected by the growth of weeds, until the time of harvest, either

by teki-tekian weed, narrow-leaf weed and broad-leaf weed. Here, the major dose had given the suppression was the dose of D3 (15 tonnes ha-1) and D4 (20 tonnes ha -1).

In this study generally, as higher asthe dose mulch given, indicated the greatest pressure by the mulch on the growth of weeds. This was presumably due to the competition of weeds and soybean plant that getting smaller, by the greater of the mulch dose, so the competition againstthe nutrient elements had also tobe smaller. Likewise, the competition to the acquisition of light for photosynthesis activity. As more available that nutrient and adequated the light, as the faster of carbohydrates that produced in photosynthesis. The availability of plant nutrients , was depended on the availability of nutrients in the soil.

In this study, assumed that the nutrients availability in the soil of all treatments weresame, because the dose fertilizer that applied was same too. Thus, the nutrients in a soybean plant and weeds were determined by the competition of the two species. Therefore, the interaction between light, water and competition between weeds with plant, will affected to the rate of photosynthesis, so that the accumulation of carbohydrates for the results was also influenced by all these three factors. The application of mulch as much as 15 tonnes ha -1 (D3) and 20 tonnes ha -1 (D4), produced the percentage of light that received was greater, so the rate of fotosinteiswas also higher and photosynthate accumulation was also increased.

CONCLUSION

From the results of this study concluded, that the dominant weeds in a soybean growing areawas teki-tekian weed species, by greatest percentage about 36, 69%, then the narrow-leaf weedthat was a type of T mudah patah about 14, 83%, Antingan about 12.54% and T tidak patah about 10, 92%. The application of Acacia organic mulch that effective in suppressing the weed growth was at a dose of 15 tons/ha^{-1}((D3) and 20 tons/ha^{-1}((D4). Itwas shown by the results that obtained in the soybean plant, that the highest yields for the dose of mulch that applied, indicated that dose tended to give the higher yields, than the other doses, especially if it compared by the control that was without application of organic mulch.

Suggestion

To further enhance of the soybean plant's yield, through the application of acacia organic mulch, it is advisable to conduct the further research, by applying the Acacia mulch with a dose of 15 tons/ha^{-1} (D3) and 20 ton ha^{-1} and it also advised to use the Acacia organic mulch, to be used as a compost that can suppressing the weed growth And it also suggested by applying the different varieties of soybean crop.

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