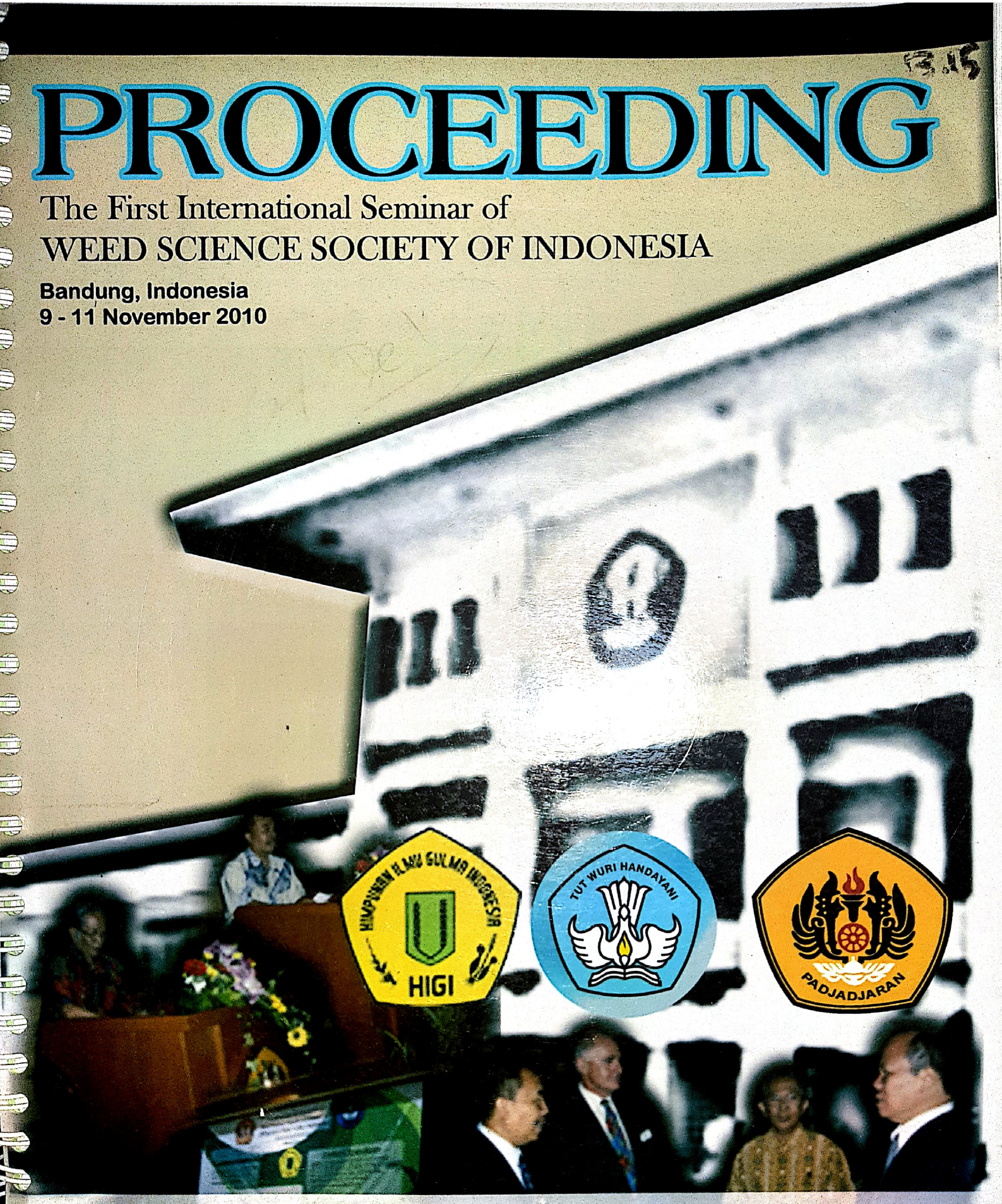
PROCEEDING

The First International Seminar of
WEED SCIENCE SOCIETY OF INDONESIA

Bandung, Indonesia
9 - 11 November 2010



ISBN 978-602-96519-1-1

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SPEECH FROM THE CHAIRMAN OF WEED SCIENCE SOCIETY OF INDONESIA

THE FIRST INTERNATIONAL SEMINAR
WEED SCIENCE SOCIETY OF INDONESIA (WSSI)

UNIVERSITAS PADJADJARAN
November 9th, 2010

PREFACE

Indonesia is an agrarian country and agricultural sector has contributed a substantial amount of income and notably in the employment side where agricultural sector provides approximately 40% of jobs for people in Indonesia helping Indonesia able to avoid world economic crisis lately triggered by banking collapse in the USA. Despite the world economic crisis, the economy of Indonesia was still managed to grow prudently at approximately 4.5% in 2009 and in 2010 the economic growth is estimated to rise to 6.5% the performance of the Indonesian agricultural sectors can still be improved by reducing losses due to pests and in this context is weeds. In the tropic losses due to weeds is greater than that of animal pests or diseases. Weeds are always there, in the field inflicting damages to crops, while animal pests and diseases may attack at a particular time only.

A considerable research has been carried out; however reduction of losses due to weeds is only meager. In this opportunity Weed Science Society Indonesia (WSSI) is inviting researches, experts as well as practitioners in the fields of agrochemical companies, marketing pesticides to come and share their experience by presenting papers or posters to formulate **Integrated Weed Management to support sustainable Agricultural Systems in Indonesia.** Experiences from many locations or even other countries will be useful to provide new way of seeing things and formulating problems more accurately.

November 9th, 2010

Organizing Committee
1st International Seminar of Weed Science Society of Indonesia
Bandung - Indonesia

The honorable Ministry of Agriculture Republic of Indonesia, Mr. Kuswono or his representative.

Rector of Universitas Padjadjaran or his representative,

Dean of Agriculture Faculty, Universitas Padjadjaran,

The honorable invited speaker from School of Plant Biology, Institute of Agriculture, University of Western Australia, Prof. Dr. Steve Powles,

Crop Life, Pesticide Commission of Indonesia and Indonesian Quarantine Board,

President of Weed Science Society of Indonesia, Dr. Soekisman,

Head of Departments, Head of Laboratories and Lecturers of Agriculture Faculty, Universitas Padjadjaran,

Distinguished guests, ladies and gentlemen,

Assalamualaikum Wr.Wb.

Thanks to Allah SWT for the great opportunity that given to us for gathering in this memorable event carrying out an International Seminar with the theme" **Integrated Weed Management to support Sustainable Agricultural Systems in Indonesia"** as one of the cooperation activities among Directorate of General Higher Education Department of National Education of Indonesia, Agricultural Faculty Universitas Padjadjaran and the Weed Science Society of Indonesia.

Ladies and Gentlemen,

Actually, one of invited speaker from Pisa University Italy, Prof Dr. Paolo Barbery should present his paper today, but a few days ago he has cancelled his travel to Indonesia due to health problem. Please excuse us for this inconvenient matter.

Through this seminar, we expected that we can develop scientific knowledge and their applications, in the field of weed science and other scientific disciplines related to weed management. We do hope we can also gain an appropriate networking to carry out different

kind of research with other weed scientists from other countries. We hope that weed science in Indonesia can grow faster and can better take part in agricultural development in Indonesia, especially in supporting food security in Indonesia.

Ladies and Gentlemen,

As a part of the international seminar, we also conduct the field trip to Syngenta research station in Cikampek and also trip to Tangkuban Perahu Mountain in Lembang.

Ladies and Gentlemen,

The seminar has been attended by 150 participants from Indonesia and also from other countries. A few foreign participants have cancelled their visit to Bandung due to volcanic eruption.

Ladies and gentleman,

Tonight, we would like to invite all seminar participants to join our welcoming dinner in Saung Angklung Udjo. In this occasion, we would like to announce the best papers that eligible to get two millions Rupiah rewards for each paper writers.

Ladies and gentleman,

On this occasion, I would like to thank:

1. Direktur Penelitian dan Pengabdian Kepada Masyarakat Direktorat Jenderal Pendidikan Tinggi Kementrian Pendidikan Nasional Indonesia for financial assistance to conduct the First International Seminar of Weed Science Society of Indonesia.
2. Rector of Universitas Padjadjaran for providing the seminar rooms and facilities.
3. Dean of the Agricultural Faculty, Universitas Padjadjaran to provide facilities in Jatinangor campus.

4. PT Syngenta Indonesia for financial assistance to invite Prof. Dr. Steve Powles from School of Plant Biology, Institute of Agriculture, University of Western Australia. And to provide a field trip location for seminar participants.
5. Fellow colleagues from agricultural chemical company PT Bayer, PT Branita Sandhini (Monsanto Indonesia), PT Adil Makmur Fajar (PT AMCO), PT CBA Chemical Industry, PT Petrosida Gresik, PT Du Pont and those who have supported the implementation of the First International Seminar of Weed Science Society of Indonesia.

Thank you for your attention and enjoy the seminar.

Wassalamualaikum wr.wb.

Bandung, November 9th, 2010

The Chairman of Weed Science Society of Indonesia,

Prof. Dr. Denny Kurniadie, Ir., MSc

Welcoming Speech

Prof. Dr. Ganjar Kurnia

Rector of Universitas Padjadjaran Bandung

At the Seminar on
INTERNATIONAL SEMINAR ON
INTEGRATED WEED MANAGEMENT SUPORT SUSTAINABLE AGRICULTURAL SYSTEMS IN INDONESIA

Organized by
Weed Science Society of Indonesia
Funded by the
Directorate General of Higher Education
Department of National Education

Bandung, November 9th, 2010

Madam, Excellencies, Distinguished Participants, Ladies and Gentlemen,

At the outset, let me begin by expressing warm welcome to all of you to the "Seminar on Weed Management in Indonesia". I also express my sincere gratitude to all of you for making your time available to join us today.

I am confident that the Weed Science Society Indonesia (WSSI), with their excellent record of achievements and expertise in weed science arena, will fulfill their noble mandate with distinction for making better the agricultural practices prevailing in Indonesia.

I particularly take note of the presence of researches, experts as well as practitioners in the fields, agrochemical companies marketing pesticides to come and share their experience by presenting papers or posters to formulate Integrated Weed Management to support a Sustainable Agricultural Systems in Indonesia. Experiences from many locations or even other countries will be useful to provide new way of seeing things and formulating problems more accurately. I welcome them all and anticipate their contributions to this seminar. I am grateful to all the distinguished representatives from governments, inter-governmental and non-governmental organizations from every corner of the world united in the common interest and goal of promoting respect for weed science.

My thanks also go to the panelists and moderators for their valuable contributions to this seminar.

Distinguished participants, Ladies and Gentlemen,

There is a convincing argument put forward by many scholars that Indonesia is an agrarian country, and agricultural sector has contributed a substantial amount of income and notably in the employment side where agricultural sector provides approximately 40% of jobs for people. Unfortunately, today's the Indonesian agricultural sectors need further improved by reducing losses due pests and in this context is weed. Within this context, a professional organization like WSSI should play major role to develop agenda and step forward to the better condition on to the agricultural sector in Indonesia. Universitas Padjadjaran will do its proper part in this process and today's seminar is a clear demonstration of our strong commitment to this noble mission.

TABEL OF CONTENTS

B. BIOLOGY AND ECOLOGY OF WEED

C. WEED CONTROL TECHNIQUES

A. CHEMICAL WEED CONTROL

EFFECT OF COW MANURE AND APPLICATION OF OXYFLOURFEN HERBICIDE TO SHIFTING WEED GROWTH AND YIELD OF SOYBEAN

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ABSTRACT

The study objective of was to assess the efectiviness of herbicide oxyflourfen application and cow manure to shift the composition of weeds, weed growth, and yield of soybean. The experiment was conducted at the experimental station of Agricultural Faculty UPN "Veteran" Yogyakarta, 17 m altitude above sea level, soil type Regosol, in October 2009 to April 2010. This experiment using soybean cultivar Willis. The experiment was designed in a factorial experiment with completely randomized design by three replications. As the first factor is the dosage of cow manure; D_0: Without cow manure, D_1: Fertilizer cow manure 10 tons /ha, D_2: Fertilizer cow manure 20 ton/ha, D_3: Fertilizer cow manure 30 tons/ha. The second factor is the dosage of herbicide oxyflourfen; D_0: Without herbicides (Dose 0 kg/ha (active ingredient = a.i), D_1: Dosage 1 kg/ha a.i., D_2: The dose of 2 kg/ha a.i, D_3: The dose of 3 kg ha/1 a.i. The observation were characteristics of weeds, herbicide toxicity in plants, weight and number of nodules, growth, yield components and yield of soybean, soybean planting is done by a spacing of 30 cm X 20 cm. Inoculation of soybean seeds by using legin 5g/kg seed. Fertilization is done at planting with Urea, SP 36 and KCl respectively at a dose of 50 kg / ha Urea, 150 kg / ha SP 36 and 75 kg ha / KCl. Results showed that (1) there is diversity of weed species on the result of herbicide oxyflourfen and cow manure application,(2) herbicides oxyflourfen at tested dosage are not effective for controlling weeds *C. rotundus* L., (3) Cow manure and herbicides oxyflourfen does not affect the weight and number of effective nodules and herbicide application until the tested dosage did not toxic in soybean (4) The application of herbicide oxyflourfen and cow manure with a higher dose would increase the yield of soybean.

Keywords: *herbicides oxyflourfen, cow manure, soybean, weeds*

INTRODUCTION

Soybean, *Glycine max* (L.) Merr., is one of important food crop as a source of protein, fat, vitamins and minerals, as well as a raw material for industrial and animal feed. One of the obstacles to meet the demand for soybeans is the growth of weeds around the plant soybeans. Various studies have been reported that weeds can reduce soybean yield (Mercado, 1979; Sabe and Bagun, 1985; Cordes and Bauman, 1984) Further Knott (2002) suggested that the decrease in soybean yield due to weeds is influenced by weed species, weed density, plant spacing, crop cultivars, planting time, how tillage and weed control techniques.

Herbicides are one of the means of production to cope with various problems of weeds and enhance the efficiency of crop production. However, the use of herbicides should be taken into account possible negative impact on the environment, not the target organisms and weed resistance to herbicides. To control weeds, herbicides must be in the ground, so it can be translocated or controlling weeds. Some factors that influence herbicide persistence in soil; 1) soil factors including; moisture, temperature, organic matter, soil mineralogy, pH, potential redox and soil structure, 2) herbicide factors including; the concentration and chemical properties, 3) and microorganisms in the soil (Hager and Sprague, 2002).

Organic matter is an integral part of land that can improve soil properties, physical properties, chemical and biological soil (Stevenson, 1994). Organic materials are absolutely necessary and maintained in order to maintain ecological functions in the soil, sustainability of production and environmental sustainability. Adiningsih and Rochyati (1996) reported that the lands in Indonesia who labored intensively to have low organic matter content. This research was conducted with the aim to assess the shift in the composition of weed, weed growth and yield of soybean due to Oxyflourfen herbicide and cow manure application.

MATERIAL AND METHODE

The experiment was conducted at the experimental station at Agricultural Faculty UPN "Veteran" Yogyakarta, with 17 m altitude above sea level, soil type Regosol, from October 2009 until April 2010. This experiment used cow manure and tested herbicides, oxyflourfen. Seeds of plants used Willis cultivars. Fertilization used urea (45% N), SP 36 (36% P2O5), and KCl (50%

$$\text{Value of Total Dominance} = \frac{Critical\ value}{3}$$

Soybean planting is done by a distance of 30 cm X 20 cm, 2 seeds per hole. To increase the inoculums, the soil inoculated with Rhizobium (legin) as much as 5 g/kg seed. Fertilization is done at planting with the use of Urea, SP 36 and KCl respectively at a dose of 50 kg/ha urea, 150 kg/ ha SP 36 and 75 kg/ha KCl.

RESULTS AND DISCUSSION

1. Composition of Weeds before Treatment

Based on the results of weed vegetation analysis before treatment (Table 1), there is five species of broadleaf weeds, four species weed grasses, and one Cyperaceae. *Cyperus rotundus* (57.01%) dominated the area of experiment.

Table 1. Weed species and Value Total Domination (VTD) on each replication before Trial

No	Weeds Species	NJD
	Broadleaf weeds	
1	*Alternanthera sessilis* (L.)*DC.*	8,18
2	*Sorgun halepensis* (L), *Press*	4,61
3	*Eclipta prostata* (L.) L.	3,59
4	*Phylantus niruri* L.	4,70
5	*Melochia corchorifolia* L.	5,13
	Grass weeds	
1	*Cynodon dactylon* (L.) Pers.	4,55
2	*Digitaria sanguinalis* auct.Non.(L.)Scop.	2,03
3	*Panicum repens* L.	2,02
4	*Paspalum conjugatum* Berg..	8,18
	Cyperaceae.	
1	*Cyperus rotondus* (L)	57,01

Note: * calculated from all replications (15 plots sampled)

The test results of the similarity index (CI) obtained between CI-II = 76.99%, CI-III = 77.89% and CII-III = 82.18%. Based on the value of CI, the weed populations are difference among replicates, this can be said no different (similarity index> 75%), so it can qualify for the study of herbicide application.

K2O). To improve soil inoculums used Rizhobium (legin) and to prevent pests and diseases are used a Dursban 1 PE (chlorpyrifos 1%), Match 50 EC (lefenuron 50 g L-1), Matador 25 EC (LAMDA sihalotrin 25 g L-1) and Decis 2.5 EC (deltamethrin 25 g L-1) were applied according to the pest in the field in turn. Herbicide application tool used is the knapsack sprayer with flat fan nozzle 8002.

The experiment was designed in a factorial experiment with completely randomized design by three replications. As the first factor is the dose of cow manure, consisting of four levels; D_o: Without cow manure. D_1: 10 tons/ha of cow manure, D_2: 20 tons/ha of cow manure, D_3: 30 tons/ha of cow manure. The Second factor is the dose of herbicide oxyflourfen, consists of three levels; D_0: Without herbicides (Dose 0 kg/ha a.i.), D_1: The dose of 1 kg/h a.i., D_2: The dose of 2 kg/ha a.i..D_3: The dose of 3 kg/ha a.i.

Variables measured were the characteristics of weeds, poison plants, weight and number of nodules, soybean plant growth, and yield components and yield, to determine the characteristics of weeds is using the value of total domination weed (VTD) as follows:

Absolute density = number of individual species in sample plot

$$\text{Relative Density} = \frac{absolute\ densityu\ of\ species\ that}{Absolute\ number\ density\ of\ all\ species} x100\%$$

$$\text{Absolute Frequency} = \frac{The\ Number\ of\ sample\ plot\ that\ contain\ species\ that}{Number\ of\ plot\ sample\ taken}$$

$$\text{Relative Frequency} = \frac{The\ absolute\ frequency\ of\ the\ species}{Total\ Value\ of\ the\ absolute\ frequency\ of\ all\ species} x100\%$$

Absolute Dominance = dry weight (biomass) of each type of weed

$$\text{Absolute Dominance} = \frac{Absolutedo\,min\,ance\ of\ the\ species}{Total\ value\ do\,min\,ance\ of\ all\ species} x100\%$$

Critical value = KR + FR + DR

(RH = Relative Density, FR = Frequency Absolute, DR = Relative dominance)

2. Composition Weeds

Shifting the composition of weeds due to herbicide application treatment oxyflourfen and various dosage of cow manure are presented in Table 2 and Table 3. At 20 DAA (Days after Application) on land without herbicide application and no cow manure is dominated by *C. rotundus*, *C. benghalensis*. *E. indica, C dactylon*, Oxyflourfen herbicide application effectively suppress the growth of broadleaf weeds *D. trifollium P. oleraceae*, but not effectively suppress the growth of weeds *C. Rotundus* and *C. dactylon*. On 40 DAA, an additional weeds species at broadleaf weeds and grass weeds. But it has not been able to shift the dominance of weeds *C. rotundus*, *C.benghalensis*. The emergence of new weeds *P. conjugatum* showed that the herbicide oxyflourfen not effectively suppress the growth of these weeds. It is seen that the weeds can be found in all plots treated either at 40 DAA and weeds dominate the whole plot treatment.

Cow manure fertilization caused by an additional type of weed, because more dosage, it's potential to bring weed seeds is still viable. The dose of herbicide is critical herbicide activity, while the sensitivity of weeds to herbicides is different from the one type of weed with other weeds. The effectiveness of herbicides applied through the soil is influenced by the persistence of these herbicides. In early applications, the herbicide in the soil is still relatively large for controlling weeds, the longer the time from application of herbicides are less active and their effects on weeds becoming smaller and other weeds will appear.

Table 2. Weed species and Value Total domination Weeds (20 DAA).

NO	Weeds species	Treatment															
		00	01	02	03	10	11	12	13	20	21	22	23	30	31	32	33
	Grass weeds	..... percent															
1	*Cynodon dactylon* (L.)Pers	11	27.3	25	19.3	13	25.1	30.7	57.8	10.2	10	25.8	19	15.6	14.6	25.2	27
2	*Eleusine indica* (L.)	12	12.2	0	0	10.1	7.5	3.88	0	5.13	2.48	12.3	3.1	2	5.21	2.8	0
3	*Echinochloa colonum* (L.)Link.	1.2	0	0	0	9.4	3.1	0	0	3.2	0	4.2	0	5.29	3.1	0	0
	Broadleaf weeds	..... percent															
1	*Comelina benghalenssis* (L.)	16	16.5	10	11	15	10	16	0	7.17	12	7.72	12.9	10.4	10.1	0	0
2	*Desmodium triflorum* (L.)DC	12	0	0	0	3.5	5	5	0	7.3	0	0	0	8.4	10.1	0	0
3	*Portulaca oleraceae* (L.)	4	2	0	0	0	4.5	2	0	10.2	0	0	1	0.3	0	0	0
	Cyperaceae	..... percent															
1	*Cyperus rotundus* L.	43	43	65	70	49	49	42	42.8	67	53	50	65	56	67	72	73
	Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 3. Weed species and Value Total domination Weeds (40 DAA)

No	Weeds spesies	Treatment															
		0 0	0 1	0 2	0 3	10	11	12	13	20	21	22	23	30	31	32	33
	Grasses weeds	..... percent															
1	*Paspalum Conjugatum Berg.*	12	13.4	23.5	12.3	13.5	12.2	14.5	13.4	12.8	17.1	12.8	13	4.54	13.2	18.6	5.4
2	*Cynodon dactylon* (L.) Pers.C.	9.14	17	13.2	20.3	0	0	12	0	5.94	5.94	5.88	19.2	0	25.2	0	15.5
3	*Echinochloa colonum* (L.) Link.	0	0	0	0	2.76	0	0	0	3.1	3.1	0	11.4	2.32	0	0	5
4	*Eleusine indica* (L.) Gaertn.	0	0	0	0	0	11.5	0	0	3.79	3.79	5.02	0	0	0	0	0
	Broadleaf weeds	..... persen															
1	*Althernantera sessilis* (L.)DC	8.92	0	0	0	25.2	23.2	0	0	5.17	0	0	0	17.2	9.6	0	0
2	*Amaranthus spinosus* L.	5.1	17.8	19.4	21.1	2.76	0	0	0	0	0	0	5.7	10.2	0	0	0
3	*Commelina benghalensis* L.	16.8	0	0	0	0	10.8	23.5	27.3	10.5	13.7	17.1	3.36	0	0	10.4	1.91
4	*Desmodium triflorum* (L.).DC.	0	0	0	0	0	0	0	0	8.23	13.7	4.4	0	9.01	0	0	0
5	*Ipomoea triloba* L	0	8.79	4.2	1.32	2.79	0	5	0	0	0	0	0	0	0	0	5
6	*Phylanthus niruri auct*. Non L.	0	0	9.44	0	2.56	0	0	0	9.01	8.32	2.1	0	2.71	0	0	0
	Grasses	..... persen															
1	*Cyperus rotundu*s L.	48	43	30.2	45	50.5	42	45	54	52	48	52	47	54	52	71	67
	Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

This showed that there are changes in composition of weed that grows in soil with the addition of cow manure and different dosage of herbicide application. Herbicide application resulted in changes in the composition of weed, the changes are influenced by the respective herbicide selectivity and sensitivity of each weed. Changes in weed species composition will occur in each weed control. Control weeds with herbicides can cause the emergence of weeds from other groups because of changes in environmental factors.

3. Weed Growth

a. Percentage of weed cover

Table 4. Percentage of weeds cover (%) 20 DAA and 40 DAA in soybean with oxyflourfen herbicide application and cow manure

Treatment	20 DAA				40 DAA			
Observation	Dose kg/ha a.i.							
	0	1	2	3	0	1	2	3
Without cow manure	10.6C a	7,3B B	2.7 A C		46,5 A A	19,4 A b	13,4 A C	9.4 A c
Cow manure10 ton/ha	20,4A a	14,3A B	5,3 A C	1,7 A c	56,5 A A	21,1 A b	16,0 A C	16,0 B c
Cow manure20 ton/ha	17.3B a	10,7 A B	2,1 A C	1,2 A c	53,7 A A	21,1 A b	13.4 A C	9,4 A c
Cow manure30 ton/ha	15,4B A	10,3A B	4,4 A c	1,7 A c	54,5 A a	21,0 A b	15.8 A C	12,3 B c

Note: Average followed by same lowercase letters horizontal direction and vertical direction of the same magnitude in each time-tested observation did not differ according to LSD at 5% significance level. Data is transformed

Table 4 showed that the cover of weeds 20 DAA was ranging from 1.2% to 20.4%. Oxyflourfen herbicide application with a dose of 1 kg/ha a.i on various dose of cow manure has reduced the percentage of weed cover, this indicates that at the dose of herbicide have been able to suppress weed growth. In a variety of cow manure, the higher dose of herbicide, the lower the percentage of weeds.

Weed populations

In the treatment of cow manure, increasing dosage of herbicides, will suppress weed populations (Table 5). This phenomenon indicates that the higher dose of herbicide, the more

herbicide is absorbed by the weeds, so weed death more rapidly than low dosage. In the treatment of cow manure will increase the amount of weed populations, especially the use of cow manure.

Table 5. Weed populations in soybean (20 DAA and 40 DAA)

Treatment	20 DAA				40 DAA			
	Dose kg/ha a.i.							
Observation	0	1	2	3	0	1	2	3
Without cow manure	7,4 A a	4.3 B b	4,0 A C	3,7 B C	20,0 B a	7,3 B B	6,0 B bc	5,3 B C
Cow manure 10 ton/ha	9.4 A a	7.4 B b	3.1 B C	3.7 B C	27,5 A a	13.1 B B	12,4A b	9,4 B C
Cow manure 20 ton/ha	11.4 A a	6,3 B b	4.1 B C	3,7 B C	37,1 A a	19,3 A B	16,2 B c	14,0 B D
Cow manure 30 ton/ha	9,3 A A	5,3 B b	3,0 B C	2.8 B C	21,3 A a	16,3 B b	6,8 B c	.33 B C

Note: Average followed by same lowercase letters horizontal direction and vertical direction of the same magnitude in each time-tested observation did not differ according to LSD at 5% significance level. Data is transformed

c. Weed Dry Weight

Table 6. Showed that observation 20 DAA was the interaction between cow manure fertilizer and herbicides that influenced the weed dry weight, while at 40 DAA only influenced by the dose of herbicide. Decreasing dry weight of weeds on land that was given organic material and herbicide application oxyflourfen occur starting dose of 2 kg/ha a.i. In the treatment of oxyflourfen herbicide application, decreasing weed dry weight in without cow manure occurred from a dose of 1 kg/ha a.i.

Table 6. Weed dry weight (g) 20 DAA and 40 DAA

Treatment	20 DAA				40 DAA				
	Dose kg/ha a.i.								
Observation	0	1	2	3	0	1	2	3	Average
Without cow manure	5,65A a	1,10B b	0,45B B	0,41B B	9,01	10,78	7,49	7,49	8,69A
Cow manure 10 ton/ha	5,64A a	3,26A a	0,44B B	0,46B B	9,27	5,11	8,87	6,89	7,53B
Cow manure 20 ton/ha	5,08A a	3,75A a	0,71B B	30,61B B	9,21	5,73	5,50	7,50	6,98C
Cow manure 30 ton/ha	5,59A A	3,27A b	0,14A B	0,16B B	9,36	5,78	5,49	5,92	6,63C

Note: Average followed by same lowercase letters horizontal direction and vertical direction of the same magnitude in each time-tested observation did not differ according to LSD at 5% significance level. Data is transformed

The data above suggested that the growth of weeds on land that was given cow manure is better than no cow manure. Several studies have reported that the addition of organic matter will make a better environment for plant growth, as well as encourage the growth of weeds. While the weeds suppression effect of herbicide application is influenced by the type and dose (Tharp and Kells, 2000), and soil fertility. Herbicide application on soil with high organic matter content, more herbicide was absorbed by soil minerals and organic materials, so it is not available to the target organism. Wolf (1996) reported that increasing soil organic matter content increased dosage used. The low dry weight of weeds illustrates that the higher the level of weed seedling mortality, which in turn affects the dry weight of weeds. The low dry weight of weeds was also in line with the low percentage of weeds (Table 4).

Dry weight of weeds influenced by the dose of herbicide application (40 DAA). The higher dosage of herbicides used more and suppresses weed growth. At the beginning of the application of herbicide in the soil is still in an amount sufficient to control weeds and decreases with increasing length of time. Number of active herbicide in the soil affects the absorption of herbicide by the weeds, the longer the time of herbicide application for weed control, the effect on the smaller.

4. Soybean Growth

a. The weight and number of effective nodules (g)

Table 7 showed that the treatment of various dosage of cow manure to increase the weight and number of effective nodules, but the various dosages of cow dung showed the same effect.

Table 7. The weight and number of effective nodules (g) on (20 DAT and 40 DAT

Treatment	The weight of effective nodules		The number of effective nodules	
	20DAA	40DAA	20DAA	40DAA
Cow Manure				
Without cow manure	0,67 b	1,50 b	3,9 a	51,2 b
Cow manure 10 ton/ha	0,79 a	1,71 a	4,0 a	51,4 a
Cow manure 20 ton/ha	0,78 a	1,78 a	4,1 a	54,8 a
Cow manure 30 ton/ha	0,81 a	1,80 a	4,5 a	54,1 a
Herbicides				
Without herbicides	0,79 a	1,73 a	4,4 a	49,1 a
The dose of 1 kg/h a.i	0.78 a	1,74 a	4,5 a	51,2 a
The dose of 1 kg/h a.i	0,79 a	1,67 a	3,8 a	55,8 a
The dose of 1 kg/h a.i	0.78 a	1.68 a	3,9 a	56,4 a

Note: Figures followed by the same in one column each observation time-tested did not differ according to LSD at 5% significance level

This reinforces the opinion that the herbicide dose given in accordance with the recommended dosage does not cause disturbance to the soil microorganisms.

b. Phytoxicity level

Based on visual observations of soybean plants ranging from age 10 until 20 days after herbicide application did not indicate any toxicity oxyflourfen herbicides on soybean plants that were given varying dosage of cow manure. This phenomenon indicates that oxyflourfen applied dose up to 3 kg/ha a.i. Not cause toxicity in soybean plants.

5. Components of Yield

a. Component of yield

The results showed that the percentage of empty pods and 100 seed weight was not influenced by cow manure and herbicide dosage. Somaatmadja (1991) reported that 100 seed weight describes the homogeneity of the volume and weight of seeds. Seed size and seed weight was influenced by the composition of plant genetic and environmental factors.

Table 8. The percentage of empty pods, 100 seed weight, number of pods cropping, the amount of seed planting.

Treatment	empty pod (%)	100 seeds (g)	pods/crop (pods)	Seed/crop (seeds)
Cow manure				
Cow Manure				
Without cow manure	2,87 a	9,42 a	113,43 c	261,89 b
Cow manure 10 ton/ha	3,11 a	9,66 a	123,43 b	273,43 a
Cow manure 20 ton/ha	2,97 a	9,53 a	127,45 a	279,88 a
Cow manure 30 ton/ha	2,83 a	9,39 a	130.42 a	279,00 a
Dosage of herbicides				
0 kg/ha a.i.	3,12 a	9,31 a	114,33 a	268,46 c
1 kg/ha a.i.	2,98 a	9,41 a	127,73 b	274,46 b
2 kg/ha a.i.	2,85 a	9,16 a	126,43 b	297,33 a
3 kg/ha a.i.	3,03 a	9,48 a	161,44 b	295,75 a

Note: Average is followed by the same letter are not significantly different with LSD 5%.

Observation of pods per plant, application of cow manure will increase the number of pods per plant, but at a dose of 20 tons/ha and 30 tons/ha did not show any improvement. Herbicide application will increase the number of pods per plant, but increasing dose did not

provide any improving pods per plan. Observation of seeds per plant, cow manure fertilizer would increase the amount of seed per plant, but increasing dose did not provide any improvement. Herbicide application would increase the amount of seed per plant, but at a dose of 2 kg/ha a.i.. And 3 kg/ha a.i. did not show any improvement. In connection with the diversity of seed weight per plant, Wicks et al. (1994) suggested that the increase in crop yields is a reflection of decreased levels of competition with weeds, so that the soybean plants grew better utilizing the existing growth factor. A good crop growth allows the increased activity of plant metabolism and increasing the supply fotosintat to the giddy as the seed

b. Soybean yield

In the treatment without cow manure and with cow manure, herbicide application dose of 1 kg/ha a.i. had increased the yield of soybean. Without cow manure and with cow manure dose of 10 tones / ha, increasing dosage of herbicide application did not increase soybean yields, but at dosage of cow manure 20 tons/ha and 30 tons/ha higher dosage of herbicide application further improve soybean yields, but on herbicide dose 2 kg/ha and 3 kg/ha showed no significant differences (Table 9). The results from an application of herbicide due to the suppression of weeds that the competition between weeds and soybean to obtain resources to grow to be reduced. This is in line with the decrease in percentage of dry weight of weeds and weed on herbicide treatment with higher dosage (Table 5 and Table 6).

In the treatment of various dosage of herbicides, cow dung manure dose of 20 tons/ha showed no significant in without cow manure and with cow manure dose of 10 tons/ha, while the dose of cow manure 20 tons/ha and 30 ton/ha showed no difference. The low yield of soybean without herbicide application due to the competition between soybean crops with weeds. Some research reported that decreasing in soybean yields are cultured without weeding (Sabe and Bagun, 1985). Suhartatik et al. (1977) reported that organic matter can increase soil pH and improve the growth and root system of soybean plants that increased nutrient uptake.

Table 9. Grain yield per hectare of soybean plants are fertilized with cow dung and herbicide application varies oxyflourfen dose.

Cow manure	Dosage of herbicide kg/ha a.i.			
	0	1	2	3
	..... ton ha^{-1}			
Without cow manure	1,34 B B	1,63 B A	1,51 B A	1,50 C A
Cow manure 10 ton/ha	1,46 B B	1,60 B A	1,78 B A	1,76 B A
Cow manure 20 ton/ha	1,68 A C	1,72A B	1,83 A A	1,95 A A
Cow manure 30 ton/ha	1,65 A B	1,67 A B	1,80 A A	1,82 A A

Note: Average followed by same lowercase letters horizontal direction and vertical direction of the same magnitude in each time-tested observation did not differ according to LSD at 5% significance level. Data is transformed

CONCLUSION

There is a shift in weed species on various land by giving varies dosage of cow manure.
Oxyflourfen herbicide tested at dosage that is ineffective for controlling weeds *C. rotundus.* which is the dominant weeds on land that is tested
Cow manure and dose of herbicide oxyflourfen shows the effect on the growth of weeds. While the higher dose oxyflourfen applications, the lower the percentage cover of weeds and weed population.
Cow manure and dose of herbicides oxyflourfen not affect the weight or the number of effective nodules. Herbicide application until the dosage tested did not poison the soybean crop.
Cow manure fertilization and herbicide oxyflourfen application with the higher dose would increase the yield of soybean

ACKNOWLEDGEMENTS

Thank you to LPPM Universitas Pembangunan National "Veteran" Yogyakarta who has given grants for this research.

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