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Contents

1. Introduction

Silicon (Si) has become widely accepted as an important element in improving soil fertility condition and plant nutrition programs (Epstein, 1999). Over the past few decades a significant body of knowledge has developed regarding the role of silicon in soil health and increased crop yield and productivity (Agro-power, 2011). Its beneficial effects on crop growth have been reported for a wide variety of crops. The positive effects of Si observed in rice, wheat, barley, etc., have generated interest for research in horticultural crops as well (Cai and Qian, 1995).Plants can only absorb Si in the form of soluble monosilicic acid, a non-charged molecule. Monosilicic acid, or plant available silicon (PAS), is a product of Si-rich mineral dissolution. PAS could be absorbed by roots from the growing medium, but PAS could also be absorbed as a foliar application (Muir, 2001). PAS is absorbed by plants, benefiting the plant through improved growth and resistance to disease and environmental stresses PAS also has a significant effect on soil texture, water holding capacity, adsorption capacity, and soil erosion stability (Matichenkov and Calvert, 2002). The beneficial effect of Si is more evident under stress conditions because Si is able to protect the plant from multiple biotic and abiotic stresses (Ma and Yamaji, 2006). Abiotic stress is the negative effect of non-living factors (e.g. high or low temperatures, drought and flooded conditions) on living organisms and biotic stress concerns the negative effects of living organisms (e.g. pests, weeds, diseases) on other organisms.

Despite decades of research, the potential role of silicon (Si) as an essential element is still frequently being questioned (Jana and Ryong Jeong, 2013). The present study was designed to investigate the effect of foliar application of different concentrations of the silicon product XX from Company A [1]on the growth and yield of shallot and hot pepper grown under lowland and highland conditions in Java, Indonesia.

[1] We agreed with the Si supplier not to disclose the company name and product name.

2. Materials and methods

Both shallot and hot pepper were grown in Cirebon (lowland; 10 m asl) and Lembang (highland; 1200 m. asl). The soil in Cirebon is a heavy clay soil while the soil in Lembang was more sand (Annex 2). The silicon content of soil sin Lembang was a bit lower than in in Cirebon with on average from 522 mg/kg Si in Lembang and 580 mg/kg Si in Cirebon determined with Mehlich III method. The pH of the soil in both Cirebon and Lembang was around 5. The soil in Cirebon contained more phosphorus, potassium, magnesium and calcium than the soil in Lembang. Available nitrogen in the soil at Cirebon and Lembang was 110 and 41 kg/ha, respectively. The experiments were laid out as a complete randomized block design each with four repetitions. Data on yield were analyzed by using the Genstat statistical program (VSN International, 2011).

2.1 Test of Silicon sprays on yield of shallot

Shallots were planted on 2 June 2014 in Cirebon and on 3 June 2014 in Lembang. Size of one plot in Cirebon were 1.3 x 7 m = 9.1 m^2. Each plot was planted with 280 shallot bulbs at a distance of 15 x 20 cm. Size of the plot in Lembang was 1 x 6 m = 6 m^2. Each plot was planted with 240 plants at a distance of 15 x 15 cm.

Local farmers' practice spraying and fertilization schedule were applied (Table 2.1 and 2.2). The spray volume used to apply the XX and the pesticides was 550 l/ha in Cirebon and 400 to 800 l/ha in Lembang.

Shallots in Cirebon were harvested on 26 July 2014 and in Lembang on 1 September 2014. The marketable yield of field dried shallots was measured.

The different treatments in shallot are shown in Table 2.3. The treatments differed in pesticide application frequency (farmers' practice, low application frequency and no pesticide applications) and the timing of Si sprays (interval). In all the SI treatments Si was applied at three moments during the growing season.

Table 2.1. Pesticides used in shallot in Cirebon, rates in ml or g per liter.

Pesticide	Dosage (ml or g/liter)	Type
Larvin	2	Insecticide
Prevathon	2	Insecticide
Triple	1	Sticker / spreader
Ammate	0.5	Insecticide
Tracer	1	Insecticide
Trivia	2	Fungicide
Antracol	2.5	Fungicide
Proclaim	0.33	Insecticide
Cedrik	2	Insecticide

Table 2.2. Pesticides used in shallot in Lembang, rates in ml or g per liter.

Pesticide	Month			Type
	June	July	Aug	
Dithane		1.5-3	1.5	Fungicide
Antracol	1.25			Fungicide
Daconil		1-4	1-2	Fungicide
Score		1		Fungicide
Calicron/Curacron	1	2	2	Insecticide
Voliam		1	1	Insecticide
Apsa		1	1	Sticker / Spreader
Amistar Top			1-2	Fungicide
Demolish			1	Insecticide

Table 2.3. Experimental treatments in shallot, Lembang and Cirebon, 2014.

		Silicon XX code	Pesticide description
A	standard farmers practice of pesticide spraying schedule with standard interval between sprays	0	Frequent
B	standard farmers practice of pesticide spraying schedule with a double interval as in A between sprays	0	Low
C	A + Silicon spray XX 9 days after planting A + Silicon spray XX 27 days after planting A + Silicon spray XX 45 days after planting	1	Frequent
D	B+ Silicon spray XX 9 days after planting B + Silicon spray XX 27 days after planting B + Silicon spray XX 45 days after planting	1	Low
E	A + Silicon spray XX 10 days after planting A + Silicon spray XX 25 days after planting A + Silicon spray XX 40 days after planting	2	Frequent
F	B + Silicon spray XX 10 days after planting B + Silicon spray XX 25 days after planting B + Silicon spray XX 45 days after planting	2	Low
G	no pesticides + Silicon spray XX 9 days after planting no pesticides + Silicon spray XX 27 days after planting no pesticides + Silicon spray XX 45 days after planting	1	No
H	no pesticides + Silicon spray XX 10 days after planting no pesticides + Silicon spray XX 25 days after planting no pesticides + Silicon spray XX 40 days after planting	2	No
I	no pesticides+ no Silicon	0	No

2.2 Test of Silicon sprays on yield of hot pepper

Hot pepper was planted on 21 May 2014 in Cirebon and on 3 June 2014 in Lembang. The plot size in Cirebon was 1.3 x 7 m = 9.1 m^2. Each plot was planted with 68 plants at a distance of 50 x 50 cm. The plot size in Lembang was 1 x 6 m = 6 m^2. Each plot was planted with 22 plants at a distance of 50 x 50 cm.

Crop protection and fertilization were carried out according to local farmers' practices (Table 2.4 and 2.5). Harvest dates of hot pepper in Cirebon were 5, 19 July, 2, 16, 30 August and 13, 27 September 2014. Harvest dates of hot pepper in Lembang were 19 and 26 September, 1, 6, 13, 20, and 27 October, 3, 11 and 24 November 2014. Total yield was calculated in kg per hectare by adding up all yield data.

Table 2.4. Pesticides used in hot pepper in Cirebon, rates in ml or g per liter.

Pesticide	Dosage (ml or g/liter)	Type
Alferde	1	Insecticide
Antracol	2.5	Fungicide
Demolish	0.5	Insecticide
Confidor	0.5	Insecticide
Bigest	28 (drops)	Growth regulator
Tripl X	1	Spreader / Sticker
Bentan	2	Molluscicide

Table 2.5 Pesticides used in hot pepper in Lembang, rates in ml or g per liter.

Pesticide	Month					Type
	June	July	Aug	Sept	Oct	
Dithane		1.5-3	1.5	1	1	Fungicide
Antracol	1.25			1.5	2	Fungicide
Daconil		1-4	1-2	3		Fungicide
Score		1				Fungicide
Calicron/Curacron	1	2	2	2		Insecticide
Voliam		1	1	1		Insecticide
Apsa		1	1	1	1	Sticker / Spreader
Amistar Top			1-2	1-2		Fungicide
Demolish			1	1	1	Insecticide
Endure				1		Insecticide
Abenz				2	2	Insecticide

The different treatments in hot pepper are shown in Table 2.6. The treatments differed in pesticide application frequency (farmers' practice, low application frequency and no pesticide applications) and the timing of Si sprays (interval). In all the Silicon treatments Si was applied at four moments during the growing season. The Si concentration of spray differed among spray moments, and also among treatments.

Table 2.6 Experimental treatments in hot pepper, Cirebon and Lembang, 2014.

Code	Description	Silicon XX code	Pesticide description
A	standard farmers practice spraying schedule with standard interval between sprays	0	Frequent
B	standard farmers practice spraying schedule with double interval as with A	0	Low
C	A + Silicon spray (1st spray: 10 days after planting; 1 ml/l) A + Silicon spray (2nd spray: 20 days after 1st spray; 1.5 ml/l) A + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) A + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	1	Frequent
D	B + Silicon spray (1st spray: 10 days after planting; 1 ml/l) B + Silicon spray (2nd spray: 20 days after 1st spray; 1.5 ml/l) B + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) B + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	1	Low
E	A + Silicon spray (1st spray: 8 - 14 days after planting; 2 ml/l) A + Silicon spray (2nd spray: 20 days after 1st spray; 2 ml/l) A + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) A + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	2	Frequent
F	B + Silicon spray (1st spray: 8 - 14 days after planting; 2 ml/l) B + Silicon spray (2nd spray: 20 days after 1st spray; 2 ml/l) B + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) B + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	2	Low
G	no pesticides + Silicon spray (1st spray: 10 days after planting; 1 ml/l) no pesticides + Silicon spray (2nd spray: 20 days after 1st spray; 1.5 ml/l) no pesticides + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) no pesticides + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	1	No
H	no pesticides + Silicon spray (1st spray: 8 - 14 days after planting; 2 ml/l) no pesticides + Silicon spray (2nd spray: 20 days after 1st spray; 2 ml/l) no pesticides + Silicon spray (3rd spray: 20 days after 2nd spray; 2 ml/l) no pesticides + Silicon spray (4th spray: 30 days after 3rd spray; 1 ml/l)	2	No
I	no pesticides + no Silicon	0	No

3. Results and discussion

3.1 Shallot

Results of variance analysis for shallot (Table 3.1) showed that three parameters (location; pesticide; location x pesticide) were statistically significant (F > 0.05) affecting the dried weight/ha of shallot. The other four parameters (silicon interval; location x interval; interval x pesticide; and location x pesticide x interval) did not show any significant effect on shallot yield (F < 0.05). This means that we could not determine a significant effect of XX or XX combined with pesticides on the yield of shallot in both experiments in Lembang and Cirebon.

Table 3. 1 Analysis of variance for shallot yields in the Si experiments in Cirebon and Lembang.

Parameter	Significance (Fprob)
Location	<.001
Silicon XX treatment	0.26
Pesticide use	<.001
Location x Silicon XX treatment	0.40
Location x Pesticide use	0.004
Interval x Pesticide use	0.30
Location x Silicon XX treatment x Pesticide use	0.66

Table 3.2. Effect of location, Silicon XX and pesticide application on field dried shallot yield (kg/ha).

	Pesticide use		
Location	Farmers'practice	Low	No
Cirebon	9562 c	9626 c	4073 b
Lembang	3939 b	1760 a	220 a

Fprob=0.004; LSD = 1629

Silicon XX Treatment	0	1	2
Yield (kg/ha)	4549	4630	5411

Fprob = 0.26

		Pesticide use		
Location	Silicon XX treatment	Frequent	Low	No
Cirebon	0	8786	8761	3846
	1	9561	7996	4604
	2	10339	12121	3768
Lembang	0	4071	1611	221
	1	4111	1368	139
	2	3636	2300	300

Fprob = 0.66

The yield (dried weight/ha) of shallot in Cirebon was significantly higher than that in Lembang (Table 3.2 and 3.3). No use of pesticide yielded significantly lower than the crop treated with pesticides. However, the use of pesticide with low interval (6 days) was not statistically different with high interval (3 days) of spraying (farmers' practice). This result suggests that farmers may be able to reduce the frequency of pesticide spraying without a yield loss. However, this only applies for Cirebon, as in Lembang the low frequency of spraying resulted in significant lower yields.

Table 3.3 The least significant differences of means (5% level) for shallot.

	Location	Silicon XX	Pesticide	Location silicon XX	Location Pesticide	Silicon XX Pesticide	Location Silicon XX Pesticide
rep.	36	24	24	12	12	8	4
d.f.	51	51	51	51	51	51	51
l.s.d.	940.5	1151.8	1151.8	1628.9	1628.9	1995	2821.4

3.2 Hot pepper

Results of variance analysis for hot pepper (Table 3.4) showed that only one parameter (location) was statistically significant (F< 0.05) affecting the total yield t/ha of hot pepper. The other six parameters did not show any significant effect on the hot pepper total yield t/ha (F >0.05). This result implies that Silicon XX alone or applied in combination with pesticides did affect the fruit yield of hot pepper in both Cirebon and Lembang.

Table 3.4 Analysis of variance for hot pepper fruit yield (kg/ha).

Parameter	Significance (F prob)
Silicon XX treatment	0.7
Pesticide use x Silicon XX treatment	0.58
Location	< 0.001
Silicon XX treatment x Pesticide use	0.73
Silicon XX treatment x Location	0.61
Pesticide use x Location	0.17
Silicon XX treatment x Pesticide use x Location	0.90

Table 3.5 and 3.6 show that the yield of hot pepper in Lembang was significantly higher than in Cirebon. Furthermore, the two tables confirm that Silicon XX and pesticides did not affect the yield of hot pepper in both locations.

Table 3.5 Effect of Silicon XX, location and pesticide use on hot pepper yield (kg/ha).

Silicon XX treatment	0	1	2
Yield (kg/ha)	16296	15458	16038

F = 0.7

Location	Cirebon	Lembang
Yield (kg/ha)	7072	24789

		Pesticide use		
Location	Silicon XX treatment	Frequent	Low	No
Cirebon	0	8786	8761	3846
	1	9561	7996	4604
	2	10339	12121	3768
Lembang	0	4071	1611	221
	1	4111	1368	139
	2	3636	2300	300

F = 0.9

Table 3.6 The least significant differences of means (5% level) for hot pepper

	Si_Interval	Pesticide-Interval	Location	Si_Interval x Pest_Interval	Si-Interval x Location	Pesticide-Inter x Location	Si_Interval x Pesticide_Interval x Location
rep.	24	24	36	8	12	12	4
d.f.	51	51	51	51	51	51	51
l.s.d.	2032.6	2032.6	1659.6	3520.5	2874.5	2874.5	4978.8

Yield differences between Cirebon and Lembang can be explained by differences in climate, but also by differences in variety, especially for hot pepper. The shallot variety used in both locations was the same, i.e. Bima Curut, which is commonly used by farmers in Cirebon. This variety is considered more suitable for the lowland areas. However, hot pepper varieties used in the two locations were different. The trial in Cirebon used local variety Tit Segitiga, while in Lembang Cosmos F1 hybrid was used. Within the context of these trials, climate conditions in the lowland were more favorable for shallot, while the highland conditions favored hot pepper yields.

The trials could not confirm the yield benefits of Silicon XX in both shallot and hot pepper in Cirebon and Lembang. Because we did not observe crop growth and other development characteristics we cannot explain the lack of any yield effect of Silicon XX in our trials.

4. Conclusions

In the trials carried out in Cirebon and Lembang we could not determine an effect of the application of Silicon XX on the yield of shallot and hot pepper. Statistically, none of the Silicon XX treatments showed significant effects on the yield of shallot and hot pepper. Replication of the trials with more observed parameters (not only yield but also crop growth and development) is recommended. Shallot and hot pepper was chosen since they are priority crops in the national research program of Indonesia, but also the testing of Silicon XX in other vegetable crops, such as bitter gourd and cucumber is recommended.

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ANNEX 1: Spraying schedules applied in shallot and hot pepper in Cirebon and Lembang, 2014.

Silicon (S) and pesticide use (P) in the shallot experiment Cirebon: planting date 2 June 2014

Water volume used with spraying: 550 l/ha

	Treatment							
Days after planting	A	B	C	D	E	F	G	H
7	P	P	P	P	P	P		
9			S	S			S	
10					S	S		S
13	P	P	P	P	P	P		
16					P	P		P
19	P	P	P	P	P	P		
22					P	P		P
25	P	P	P	P	P, S	P, S		S
27			S	S			S	
28					P	P		P
31	P	P	P	P	P	P		
34					P	P		P
37	P	P	P	P	P	P		
40					P, S	P, S		P, S
43	P	P	P	P	P	P		
45			S	S			S	
46					P	P		P

Shallot experiment Lembang: planting date 3 June 2014

Water volume used with spraying: 400 - 800 l/ha

Silicon (S) and fungicide use (F), insecticide use (I) or both as mentioned in Table 2.

Days after planting	A	B	C	D	E	F	G	H
6	F, I	F, I	F, I	F, I	F, I	F, I		
9	F, I		F, I, S	S	F, I		S	
11		F, I		F, I	S	F, I, S		S
12	F, I		F, I		F, I			
15	F, I		F, I		F, I			
16		F, I		F, I		F, I		
18	F, I		F, I		F, I			
21	F, I	F, I	F, I	F, I	F, I	F, I		
24	F, I		F, I		F, I			
25					S	S		S
26		F, I		F, I		F, I		
27	F, I		F, I, S	S	F, I		S	
30	F, I		F, I		F, I			
31		F, I		F, I		F, I		
33	F, I		F, I		F, I			
36								
39	F, I		F, I		F, I			
40					S	S		S
41		F, I		F, I		F, I		
42	F, I		F, I		F, I			
45	F, I		F, I, S	S	F, I		S	
46		F, I		F, I		F, I		
48	F, I		F, I		F, I			
51	F, I	F, I	F, I	F, I	F, I	F, I		
54	F, I		F, I		F, I			
56		F, I		F, I		F, I		
57	F, I		F, I		F, I			
60	F, I		F, I		F, I			
61		F, I		F, I		F, I		
63	F, I		F, I		F, I			
66	F, I	F, I	F, I	F, I	F, I	F, I		
69	F, I		F, I		F, I			
71		F, I		F, I		F, I		
72	F, I		F, I		F, I			
75	F, I		F, I		F, I			
76		F, I		F, I		F, I		
78	F, I		F, I		F, I			
81	F, I	F, I	F, I	F, I	F, I	F, I		

Silicon (S) and pesticide use (P) in the hot pepper experiment Cirebon: planting date 21 May 2014

Water volume used with spraying: 660 l/ha

	Treatment							
Days after planting	A	B	C	D	E	F	G	H
33	P		P		P			
34					S	S		S
36	P	P	P	P	P	P		
39	P		P		P			
42	P	P	P	P	P	P		
45	P		P		P			
48	P	P	P	P	P	P		
50			S	S			S	
51	P		P		P			
54	P	P	P	P	P, S	P, S		S
57	P		P		P			
60	P	P	P	P	P	P		
63	P		P		P			
66	P	P	P	P	P	P		
69	P		P		P			
72	P	P	P	P	P	P		
75	P		P		P			
78	P	P	P	P	P	P		
80			S	S			S	
81	P		P		P			
84	P	P	P	P	P, S	P, S		S
87	P		P		P			
90	P	P	P	P	P	P		

Hot pepper experiment Lembang: planting date 3 June 2014

Water volume used with spraying: 400 - 800 l/ha

Silicon (S) and fungicide use (F), insecticide use (I) or both as mentioned in Table 5.

Days after planting	A	B	C	D	E	F	G	H
6	F, I	F, I	F, I	F, I	F, I	F, I		
8					S	S		S
9	F, I		F, I		F, I, S	S		S
10			S	S	S	S	S	S
11		F, I		F, I	S	F, I, S		S
12	F, I		F, I		F, I, S	S		S
13					S	S		S
14					S	S		S
15	F, I		F, I		F, I			
16		F, I		F, I		F, I		
18	F, I		F, I		F, I			
21	F, I	F, I	F, I	F, I	F, I	F, I		
24	F, I		F, I		F, I			
25								
26		F, I		F, I		F, I		
27	F, I		F, I		F, I			
30	F, I		F, I, S	S	F, I		S	
31		F, I		F, I		F, I		
33	F, I		F, I		F, I			
34					S	S		S
39	F, I		F, I		F, I			
40								
41		F, I		F, I		F, I		
42	F, I		F, I		F, I			
45	F, I		F, I		F, I			
46		F, I		F, I		F, I		
48	F, I		F, I		F, I			
50			S	S			S	
51	F, I	F, I	F, I	F, I	F, I	F, I		
54	F, I		F, I		F, I, S	S		S
56		F, I		F, I		F, I		
57	F, I		F, I		F, I			
60	F, I		F, I		F, I			
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66	F, I	F, I	F, I	F, I	F, I	F, I		
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72	F, I		F, I		F, I			
75	F, I		F, I		F, I			
76		F, I		F, I		F, I		
78	F, I		F, I		F, I			
80			S	S			S	
81	F, I	F, I	F, I	F, I	F, I	F, I		

84	F, I		F, I		F, I, S	S		S
86		F, I		F, I		F, I		
87	F, I		F, I		F, I			
90	F, I		F, I		F, I			
91		F, I		F, I		F, I		
93	F, I		F, I		F, I			
96	F, I	F, I	F, I	F, I	F, I	F, I		
99	F, I		F, I		F, I			
101		F, I		F, I		F, I		
102	F, I		F, I		F, I			
105	F, I		F, I		F, I			
106		F, I		F, I		F, I		
108	F, I		F, I		F, I			
111	F, I	F, I	F, I	F, I	F, I	F, I		
114	F, I		F, I		F, I			
116		F, I		F, I		F, I		
117	F, I		F, I		F, I			
120	F, I		F, I		F, I			
121		F, I		F, I		F, I		
123	F, I		F, I		F, I			
126	F, I	F, I	F, I	F, I	F, I	F, I		
129	F, I		F, I		F, I			
131		F, I		F, I		F, I		
135	F, I		F, I		F, I			
136		F, I		F, I		F, I		

ANNEX 2: Results of laboratory soil analysis

Lab No	Description	pH (KCl)	PBray1	K	Na	Ca	Mg
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
21914	Shallot Field in Lembang (High-land)	5.05	7	215	17	1222	112
21915	Hot Pepper field in Lembang (High-Land)	5.05	7	279	25	1457	155
21916	Shallot Field in Cirebon (Low-land)	5.29	10	440	188	6196	1593
21917	Hot Pepper field in Cirebon (Low-land)	5.01	14	426	177	6242	1572

Lab No	Description	OutH+	%Ca	%Mg	%K	%Na
		cmol(+)/kg	%	%	%	%
21914	Shallot Field in Lembang (High-land)	0.00	79.83	12.01	7.17	0.98
21915	Hot Pepper field in Lembang (High-Land)	0.00	77.67	13.54	7.61	1.17
21916	Shallot Field in Cirebon (Low-land)	0.00	67.37	28.40	2.45	1.78
21917	Hot Pepper field in Cirebon (Low-land)	0.00	67.91	28.04	2.37	1.68

Lab No	Description	SUUR.V	Ca:Mg	(Ca+Mg)/K
		%	1.5-4.5	10.0-20.0
21914	Shallot Field in Lembang (High-land)	0.00	6.65	12.81
21915	Hot Pepper field in Lembang (High-Land)	0.00	5.74	11.99
21916	Shallot Field in Cirebon (Low-land)	0.00	2.37	39.09
21917	Hot Pepper field in Cirebon (Low-land)	0.00	2.42	40.45

Lab No	Description	Mg:K	S-value	Na:K	T	Density
		3.0 - 4.0	cmol(+)/kg		cmol(+)/kg	g/cm3
21914	Shallot Field in Lembang (High-land)	1.67	7.66	0.14	7.66	0.66
21915	Hot Pepper field in Lembang (High-Land)	1.78	9.38	0.15	9.38	0.65
21916	Shallot Field in Cirebon (Low-land)	11.59	45.98	0.73	45.98	1.15
21917	Hot Pepper field in Cirebon (Low-land)	11.82	45.95	0.71	45.95	1.07

Lab No	Description	S AmAc	Fe	Mn	Cu	Zn
		mg/kg	HCl mg/kg			
21914	Shallot Field in Lembang (High-land)	614.14	8.24	41.17	3.07	13.86
21915	Hot Pepper field in Lembang (High-Land)	419.82	8.19	41.98	3.91	13.38
21916	Shallot Field in Cirebon (Low-land)	244.05	8.52	80.10	2.98	3.43
21917	Hot Pepper field in Cirebon (Low-land)	265.72	9.65	103.72	2.94	2.98

		0.005 M H_2SO_4	Mehlich III			
Lab No	Description	Si	Si	NO_3-N	NH_4-N	C
		mg/kg	mg/kg	mg/kg		%
21914	Shallot Field in Lembang (High-land)	336	481	41.3	16.68	0.26
21915	Hot Pepper field in Lembang (High-Land)	338	564			0.22
21916	Shallot Field in Cirebon (Low-land)	327	649	110.3	10.6	0.32
21917	Hot Pepper field in Cirebon (Low-land)	383	510			0.30

Lab No	Description	Clay	Silt	Sand
		%	%	%
21914	Shallot Field in Lembang (High-land)	10	17	73
21915	Hot Pepper field in Lembang (High-Land)	8	23	69
21916	Shallot Field in Cirebon (Low-land)	56	35	10
21917	Hot Pepper field in Cirebon (Low-land)	30	64	6