

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan uraian di atas maka dapat ditarik beberapa kesimpulan sebagai berikut :

1. Pemberian pupuk Fe dalam konsentrasi tertentu berpengaruh positif terhadap kandungan ANR, kadar klorofil a dan b serta morfologi daun dan berpengaruh negatif terhadap tinggi batang sengon.
2. Pada umur 4 minggu ANR daun sengon tertinggi adalah 4.40 mmol NO₂⁻/mg bb daun/jam dengan pemberian 8 ppm Fe-EDTA.
3. Pada umur 8 minggu ANR daun sengon tertinggi adalah 1.46 mmol NO₂⁻/mg bb daun/jam dengan pemberian 8 ppm Fe-EDTA
4. Pada umur 4 minggu kadar klorofil a daun sengon tertinggi 0.51 mg klorofil a/gram bahan dengan pemberian 2 ppm Fe-EDTA
5. Pada umur 8 minggu kadar klorofil a daun sengon tertinggi 1.57 mg klorofil a/gram bahan dengan pemberian 8 ppm Fe-EDTA.
6. Pada umur 4 minggu kadar klorofil b daun sengon tertinggi 0.986 mg klorofil b/gram bahan dengan pemberian 2 ppm Fe-EDTA.
7. Pada umur 8 minggu kadar klorofil b daun sengon tertinggi 1.1 mg klorofil b/gram bahan dengan pemberian 8 ppm Fe-EDTA.

8. Pemberian pupuk Fe berupa Fe-EDTA dan FeSO₄ menunjukkan perbedaan pengaruh terhadap pertumbuhan bibit sengon. Fe-EDTA lebih berpengaruh terhadap peningkatan ANR, kadar klorofil a dan b, sedangkan FeSO₄ memberikan kenampakan morfologi daun yang besar-besar.
9. Pertumbuhan bibit yang baik diperoleh dengan memberikan Fe-EDTA dengan kadar 8 ppm.

B. Saran

Dengan melihat data hasil pengamatan pemberian unsur hara Fe terhadap pertumbuhan bibit sengon terhadap parameter yang diukur maka aplikasi unsur hara Fe di lapangan untuk bibit sengon umur 2 bulan sebaiknya menggunakan Fe-EDTA dengan konsentrasi 8 ppm.

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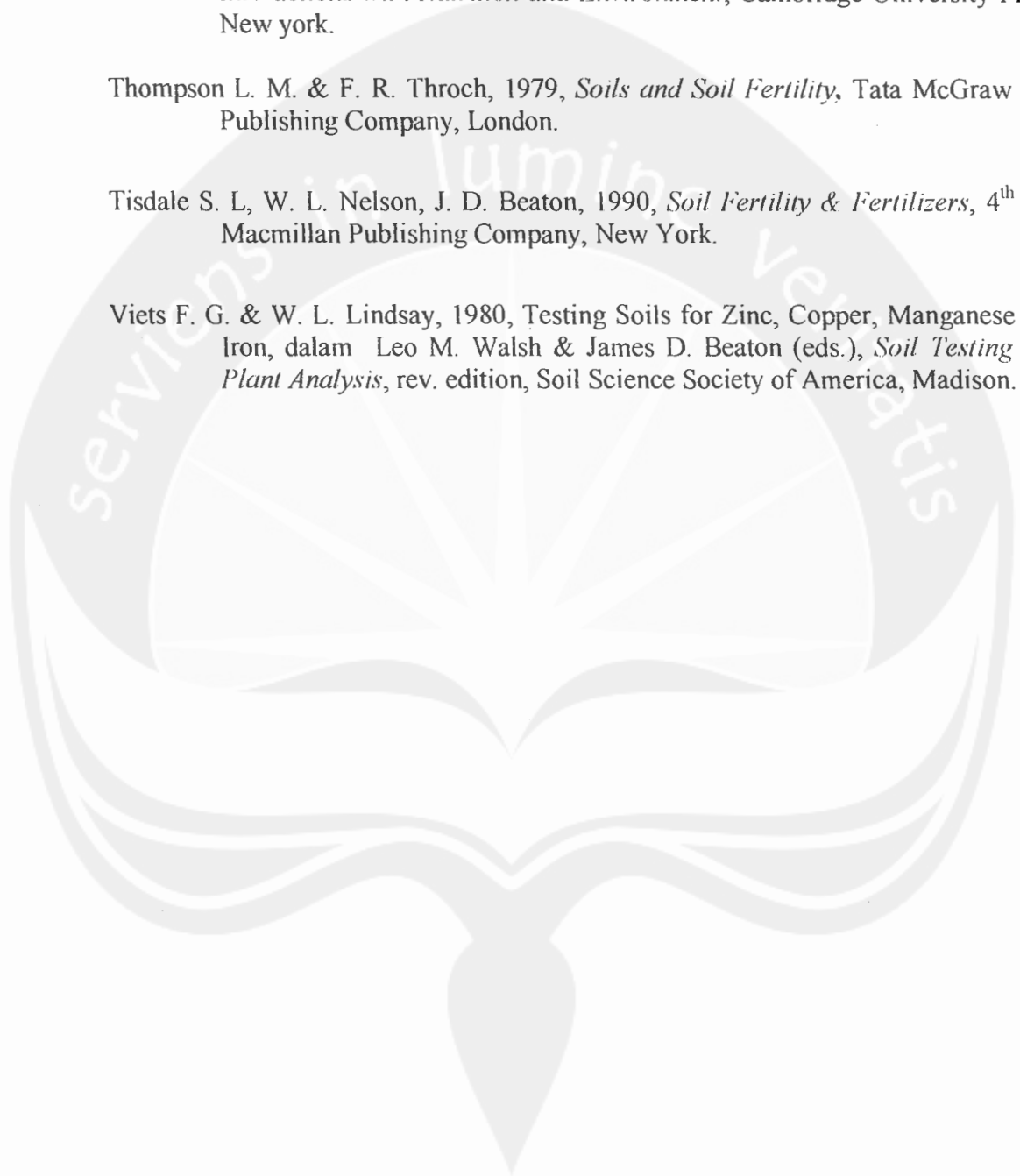
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LAMPIRAN - LAMPIRAN

Lampiran 1

Lampiran 1.a. Data tinggi batang sengon 8 minggu

UMUR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	3.90	4.57	4.56	4.61	5.13	4.07	4.76	4.92	5.39	5.09
2	5.06	5.42	5.39	5.75	5.71	4.75	5.37	5.83	5.93	5.70
3	5.50	5.75	6.15	6.32	6.33	4.85	5.57	5.96	6.00	6.15
4	5.54	6.00	6.47	6.74	6.61	5.12	5.77	6.55	6.65	6.84
5	5.95	6.18	6.65	6.80	6.89	5.20	5.82	6.76	6.72	6.93
6	7.45	6.53	6.70	7.15	7.12	5.67	6.10	6.68	6.85	7.06
7	6.62	7.45	6.80	7.80	8.55	5.90	7.10	7.15	7.40	7.70
8	7.50	8.30	7.95	8.15	9.07	7.12	7.70	8.30	8.75	8.95
Σ	46.12	50.2	50.67	53.32	55.41	42.68	48.19	52.15	53.69	54.42
X	5.80	6.30	6.33	6.70	6.92	5.33	6.02	6.52	6.71	6.80

$$FK = \frac{y^2}{r.a.b} = \frac{(506.85)^2}{8.2.5} = 3211.211531$$

$$JKT = (3.90)^2 + (5.06)^2 + \dots + (8.95)^2 - FK = 3331.1081 - 3211.211531 = 119.896569$$

$$JKP = \frac{(46.12)^2 + \dots + (42.68)^2}{8} - FK = 18.2218815$$

$$JKG = JKT - JKP = 119.896569 - 18.2218815 = 101.6746875$$

$$db \text{ Perlakuan} = a.b - 1 = 2.5 - 1 = 9$$

$$db \text{ Galat} = a.b (r-1) = 2.5 (8-1) = 70$$

$$db \text{ Total} = r.a.b - 1 = 80 - 1 = 79$$

Lampiran 1.b. Total perlakuan

B	A		Total
	A1	A2	
B1	46.12	42.68	88.8
B2	50.2	48.19	98.39
B3	50.67	52.15	102.82
B4	53.32	53.69	107.01
B5	55.41	54.42	109.83
Total	255.72	251.13	506.85

$$JK (A) = \frac{(255.72)^2 + (251.13)^2}{8 \cdot 5} - FK$$

$$= 0.2633515$$

$$JK (B) = \frac{(88.8)^2 + \dots + (109.89)^2}{8 \cdot 2} - FK$$

$$= 8.5112501$$

$$JK (AB) = JKP - JK (A) - JK (B)$$

$$= 18.2218815 - 0.2633515 - 8.5112501$$

$$= 9.4472799 \sim 9.50$$

$$\begin{aligned} \text{db Faktor A} &= a - 1 = 2 - 1 = 1 \\ \text{db Faktor B} &= b - 1 = 5 - 1 = 4 \\ \text{db Faktor AB} &= (a - 1)(b - 1) \\ &= (2 - 1)(5 - 1) = 4 \end{aligned}$$

$$KT (A) = \frac{JK (A)}{a - 1} = \frac{0.2633515}{1} = 0.2633515$$

$$KT (B) = \frac{JK (B)}{b - 1} = \frac{8.5112501}{4} = 2.127812525$$

$$KT (AB) = \frac{JK (AB)}{(a-1)(b-1)} = \frac{9.4472799}{4} = 2.361819975$$

Lampiran 1.c. Analisis varians tinggi batang sengon selama 8 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	18.2218815	-		
A	1	0.2633515	0.2633515	0.1813 TH	3.98
B	4	8.5112501	2.127812525	1.465 TH	2.50
AB	4	9.4472799	2.361819975	1.630 TH	2.50
Galat	70	101.6746875	1.452495536		
Total	79	119.896569			

TH Tidak berbeda nyata pada taraf 95%

Lampiran 1

Lampiran 2.a. Kadar klorofil a daun sengon umur 4 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.45	0.47	0.53	0.50	0.40	0.42	0.42	0.43	0.32	0.41
2	0.50	0.47	0.50	0.34	0.50	0.33	0.50	0.42	0.32	0.41
3	0.48	0.52	0.51	0.41	0.43	0.32	0.46	0.38	0.35	0.45
Σ	1.43	1.46	1.54	1.25	1.33	1.07	1.41	1.23	0.99	1.27
X	0.48	0.49	0.51	0.416	0.44	0.36	0.47	0.41	0.33	0.42

$$FK = \frac{y^2}{r.a.b} = \frac{(12.98)^2}{3.2.5} = 5.616013333$$

$$JKT = (0.45)^2 + (0.50)^2 + \dots + (0.45)^2 - FK = 5.7382 - 5.616013333 = 0.122186666$$

$$JKP = \frac{(1.43)^2 + \dots + (1.27)^2}{3} - FK = 0.09012$$

$$JKG = JKT - JKP = 0.122186666 - 0.09012 = 0.032066666$$

$$db \text{ Perlakuan} = a.b - 1 = 2.5 - 1 = 9$$

$$db \text{ Galat} = a.b (r-1) = 2.5 (3-1) = 20$$

$$db \text{ Total} = r.a.b - 1 = 30 - 1 = 29$$

Lampiran 2.b. Total perlakuan

B	A		Total
	A1	A2	
B1	1.43	1.07	2.5
B2	1.46	1.41	2.87
B3	1.54	1.23	2.77
B4	1.25	0.99	2.24
B5	1.33	1.27	2.6
Total	7.01	5.97	12.98

$$JK (A) = \frac{(7.01)^2 + (5.97)^2}{5} - FK$$

$$= \frac{3 \cdot 5}{3 \cdot 2} = 0.036053333$$

$$JK (B) = \frac{(2.5)^2 + \dots + (2.6)^2}{3 \cdot 2} - FK$$

$$= 0.04022$$

$$JK (AB) = JKP - JK (A) - JK (B)$$

$$= 0.09012 - 0.036053333 - 0.04022$$

$$= 0.013846667$$

$$db \text{ Faktor A} = a - 1 = 2 - 1 = 1$$

$$db \text{ Faktor B} = b - 1 = 5 - 1 = 4$$

$$db \text{ Faktor AB} = (a - 1)(b - 1)$$

$$= (2 - 1)(5 - 1) = 4$$

$$KT (A) = \frac{JK (A)}{a - 1} = \frac{0.03605333}{1} = 0.03605333$$

$$KT (B) = \frac{JK (B)}{b - 1} = \frac{0.04022}{4} = 0.010055$$

$$KT (AB) = \frac{JK (AB)}{(a-1)(b-1)} = \frac{0.013846667}{4} = 0.003461666$$

Tabel lampiran 2.c. Analisis varians kadar klorofil a daun sengon umur 4 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	0.09012	-		
A	1	0.036053333	0.036053333	22.50**	4.35
B	4	0.04022	0.010055	6.30**	2.87
AB	4	0.013846667	0.00341666	2.16 TH	2.87
Galat	20	0.032066666	0.001603333		
Total	29				

** Beda sangat Nyata

Lampiran 2.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	Total
A1	0.48 ^h	0.49 ^h	0.51 ^j	0.416 ^d	0.44 ^t	0.4672 ^x
A2	0.36 ^b	0.47 ^g	0.41 ^c	0.33 ^a	0.42 ^e	0.398 ^x
Total	0.42 ^B	0.48 ^D	0.46 ^C	0.373 ^A	0.43 ^B	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Uji DMRT

$$S_y = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.001603333}{3}}$$

$$= 0.000534444 \sim 0.0005$$

Wilayah nyata terpendek

$$R_p = r_p (0,05) \cdot S_y$$

2	2,95 . 0.0005 = 0.001475
3	3,10 . 0.0005 = 0.00155
4	3,18 . 0.0005 = 0.00159
5	3,25 . 0.0005 = 0.001625
6	3,30 . 0.0005 = 0.00165
7	3,34 . 0.0005 = 0.00167
8	3,36 . 0.0005 = 0.00168
9	3,38 . 0.0005 = 0.00169
10	3,40 . 0.0005 = 0.0017

VS	0.0017 A2B4	0.00169 A2B1	0.00168 A2B3	0.00167 A1B4	0.00165 A2B5	0.00163 A1B5	0.00159 A2B2	0.00155 A1B1	0.00147 A1B2	- A1B3
1.46	0.33	0.36	0.41	0.416	0.42	0.44	0.47	0.48	0.49	0.51
1.35										J
1.2								H		
0.99							G			
0.95						F				
0.87					E					
0.72				D						
0.43			C							
0.34		B								
0.31	A									

Galat Baku

$$S_y a = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.001603333}{10}}$$

$$= 0.012662278 \sim 0.013$$

Wilayah nyata terpendek

$$R_p = r_p (0,05) \cdot S_y$$

$$2 \quad 2,95 \cdot 0.013 = 0.0835$$

VS	0.0835	-
	A2	A1
	0.398	0.4672
0.4672	x	
0.398	x	

$$S_y b = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.001603333}{15}}$$

$$= 0.010338707 \sim 0.01034$$

$$R_p = r_p (0,05) \cdot S_y$$

$$2 \quad 2.95 \times 0.01034 = 0.030503$$

$$3 \quad 3.10 \times 0.01034 = 0.032054$$

$$4 \quad 3.18 \times 0.01034 = 0.0328812$$

$$5 \quad 3.25 \times 0.01034 = 0.033605$$

VS	0.033605	0.0329	0.0320	0.0305	-
	B4	B1	B5	B3	B2
	0.373	0.42	0.43	0.46	0.48
0.48	D				
0.46	C				
0.43	B				
0.42	B				
0.373	A				

Lampiran 3

Lampiran 3.a. Data kadar klorofil a daun sengon umur 8 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.96	1.00	1.13	1.20	1.66	0.81	0.99	1.02	1.00	1.21
2	0.93	1.112	0.98	1.26	1.53	0.80	1.05	1.05	1.10	1.11
3	0.92	1.12	0.97	1.63	1.53	0.80	1.02	1.03	1.10	1.11
Σ	2.81	3.24	3.08	4.09	4.72	2.41	3.06	3.10	3.20	3.43
X	0.94	1.08	1.03	1.36	1.57	0.803	1.02	1.033	1.07	1.143

$$FK = \frac{Y^2}{r.a.b} = \frac{(33.14)^2}{3 \cdot 2 \cdot 5} = 36.60865333$$

$$JKT = (0.96)^2 + (0.93)^2 + \dots + (1.11)^2 - FK = 38.053 - 36.60865333 = 1.444346667$$

$$JKP = \frac{(2.41)^2 + \dots + (3.43)^2}{3} - FK = 1.282413337$$

$$JKG = JKT - JKP = 1.444346667 - 1.282413337 = 0.16193333$$

$$db \text{ Perlakuan} = a.b - 1 = 2.5 - 1 = 9$$

$$db \text{ Galat} = a.b (r-1) = 2.5 (3-1) = 20$$

$$db \text{ Total} = r.a.b - 1 = 30 - 1 = 29$$

Tabel lampiran 3.b. Total perlakuan

B	A		Total
	A1	A2	
B1	2.81	2.41	5.22
B2	3.24	3.06	6.3
B3	3.08	3.10	6.18
B4	4.09	3.20	7.29
B5	4.72	3.43	8.15
Total	17.94	15.2	33.14

$$JK (A) = \frac{(17.94)^2 + (15.2)^2}{3 \cdot 5} - FK = 0.250253336$$

$$JK (B) = \frac{(5.22)^2 + \dots + (8.15)^2}{3 \cdot 2} - FK$$

$$= 0.840913333$$

$$JK (AB) = JKP - JK (A) - JK (B)$$

$$= 1.282413337 - 0.250253336 - 0.840913333$$

$$= 0.188966644$$

$$db \text{ Faktor A} = a - 1 = 2 - 1 = 1$$

$$db \text{ Faktor B} = b - 1 = 5 - 1 = 4$$

$$db \text{ Faktor AB} = (a - 1)(b - 1)$$

$$= (2 - 1)(5 - 1) = 4$$

$$KT (A) = \frac{JK (A)}{a - 1} = \frac{0.250253336}{1}$$

$$= 0.250253336$$

$$KT (B) = \frac{JK (B)}{b - 1} = \frac{0.840913333}{4}$$

$$= 0.210228333$$

$$KT (AB) = \frac{JK (AB)}{(a-1)(b-1)} = \frac{0.188966644}{4}$$

$$= 0.047241661$$

Tabel lampiran 3.c. Analisis varians kadar klorofil a daun sengon umur 8 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	1.282413337	-		
A	1	0.083213333	0.250253336	31.00**	4.35
B	4	0.840913333	0.210228333	25.96**	2.87
AB	4	0.358286671	0.047241661	5.83**	2.87
Galat	20	0.16193333	0.008096666		
Total	29	1.444346667			

** Beda sangat Nyata
* Beda Nyata

Uji DMRT

Galat Baku

$$s_y = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.008096666}{3}}$$

$$= 0.05190829 \sim 0.052$$

Wilayah nyata terpendek

Rp = rp (0,05). Sy

2	2,95 . 0.052 = 0.1534
3	3,10 . 0.052 = 0.1612
4	3,18 . 0.052 = 0.1654
5	3,25 . 0.052 = 0.169
6	3,30 . 0.052 = 0.1716
7	3,34 . 0.052 = 0.1737
8	3,36 . 0.052 = 0.17472
9	3,38 . 0.052 = 0.1757
10	3,40 . 0.052 = 0.1768

VS	0.1768 A2B1	0.1757 A1B1	0.17472 A2B2	0.1737 A1B3	0.1716 A2B3	0.169 A2B4	0.1654 A2B2	0.1612 A2B5	0.1534 A1B4	- A1B5
	0.803	0.94	1.02	1.03	1.033	1.07	1.08	1.143	1.36	1.57
1.57										C
1.36										B
1.143										
1.08										
1.07										
1.033										
1.03										
1.02										
0.94										
0.803										

Lampiran 3.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	X
A1	0.94 ^a	1.08 ^a	1.03 ^a	1.36 ^b	1.57 ^c	1.196 ^f
A2	0.803 ^a	1.02 ^a	1.033 ^a	1.07 ^b	1.143 ^a	1.014 ^e
X	0.8715 ^A	1.05 ^b	1.0315 ^b	1.215 ^c	1.3565 ^b	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Galat Baku

$$Sy a = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.008096666}{10}}$$

$$= 0.028454641$$

Wilayah nyata terpendek

Rp = rp (0,05). Sy

2 2,95 . 0.02845 = 0.0839275

VS	0.0839275	-
	A2	A1
	1.014	1.196
1.196		Y
1.014	x	

$$s_y b = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.008096666}{15}}$$

$$= 0.023233117$$

$$R_p = r_p(0,05) \cdot s_y$$

- 2 2.95 x = 0.06854
- 3 3.10 x = 0.0720
- 4 3.18 x = 0.0738
- 5 3.25 x = 0.0755

VS	0.0755	0.0738	0.0720	0.0685	-
	B1	B3	B2	B4	B5
	0.8715	1.05	1.0315	1.215	1.3565
1.3565					D
1.215				C	
1.0315					
1.05					
0.8715	A	B			

Lampiran 4

Lampiran 4.a. Data klorofil b daun sengon umur 4 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.98	0.98	0.98	0.98	0.96	0.96	0.95	0.98	0.90	0.87
2	0.97	0.98	0.99	0.94	0.99	0.93	0.93	0.98	0.89	0.93
3	0.98	0.99	0.99	0.97	0.98	0.98	0.94	0.98	0.89	0.93
Σ	2.93	2.95	2.96	2.89	2.92	2.87	2.82	2.94	2.68	2.73
X	0.976	0.983	0.986	0.963	0.973	0.96	0.94	0.98	0.893	0.91

$$FK = \frac{Y^2}{r.a.b}$$

$$= \frac{(28.69)^2}{3.2.5} = 27.43720333$$

$$JKT = (0.98)^2 + (0.97)^2 + \dots + (0.93)^2 - FK$$

$$= 27.4711 - 27.43720333$$

$$= 0.033896667$$

$$JKP = \frac{(2.93)^2 + \dots + (2.73)^2}{3} - FK$$

$$= 0.02803$$

$$JKG = JKT - JKP$$

$$= 0.033896667 - 0.02803$$

$$= 0.005867$$

$$db \text{ Perlakuan} = a.b - 1$$

$$= 2.5 - 1$$

$$= 9$$

$$db \text{ Galat} = a.b (r-1)$$

$$= 2.5 (3-1)$$

$$= 20$$

$$db \text{ Total} = r.a.b - 1$$

$$= 30 - 1$$

$$= 29$$

Lampiran 4.b. Total perlakuan

B	A		Total
	A1	A2	
B1	2.93	2.87	5.8
B2	2.95	2.82	5.77
B3	2.96	2.94	5.9
B4	2.89	2.68	5.57
B5	2.92	2.73	5.65
Total	14.65	14.04	28.69

$$JK (A) = \frac{(14.65)^2 + (14.04)^2}{3.5} - FK$$

$$= 0.012403333$$

$$JK (B) = \frac{(5.8)^2 + \dots + (5.65)^2}{3 \cdot 2} - FK$$

$$= 0.01118$$

$$JK (AB) = JKP - JK (A) - JK (B)$$

$$= 0.02803 - 0.012403333 - 0.01118$$

$$= 0.004446667$$

db Faktor A = a - 1 = 2 - 1 = 1
 db Faktor B = b - 1 = 5 - 1 = 4
 db Faktor AB = (a - 1)(b - 1) = (2 - 1)(5 - 1) = 4

$$KT (A) = \frac{JK (A)}{a - 1} = \frac{0.012403333}{1} = 0.012403333$$

$$KT (B) = \frac{JK (B)}{b - 1} = \frac{0.01118}{4} = 0.002795$$

$$KT (AB) = \frac{JK (AB)}{(a-1)(b-1)} = \frac{0.004446667}{4} = 0.001116667$$

Lampiran 4.c. Analisis varians kadar klorofil daun sengon umur 4 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	0.02803	-		
A	1	0.012403333	0.012403333	42.30**	4.35
B	4	0.01118	0.002795	9.53**	2.87
AB	4	0.004446667	0.001112	3.80**	2.87
Galat	20	0.005867	0.00029335		
Total	29	0.033896667			

** Beda sangat Nyata
 * Beda Nyata

Uji DMRT

Galat Baku

$$s_y = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.00029335}{3}}$$

$$= 0.009888545 \sim 0.010$$

Wilayah nyata terpendek

Rp = rp (0,05) . Sy

2	2,95 . 0.010 = 0.0295
3	3,10 . 0.010 = 0.0310
4	3,18 . 0.010 = 0.0318
5	3,25 . 0.010 = 0.0325
6	3,30 . 0.010 = 0.0330
7	3,34 . 0.010 = 0.0334
8	3,36 . 0.010 = 0.0336
9	3,38 . 0.010 = 0.0338
10	3,40 . 0.010 = 0.0340

VS	0.0340 A2B4	0.0338 A2B5	0.0336 A2B2	0.0334 A2B1	0.0330 A1B4	0.0325 A1B5	0.0318 A1B1	0.0310 A2B3	0.0295 A1B2	- A1B3
	0.893	0.91	0.94	0.957	0.963	0.973	0.976	0.98	0.983	0.986
0.986	_____ A									
0.983	_____ A									
0.98	_____ A									
0.976	_____ A									
0.973	_____ A									
0.963	_____ A									
0.957	_____ A									
0.94	_____ A									
0.91	_____ A									
0.893	_____ A									

Lampiran 4.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	X
A1	0.976 ^a	0.983 ^a	0.986 ^a	0.963 ^a	0.973 ^a	0.9762 ^f
A2	0.96 ^a	0.94 ^a	0.98 ^a	0.893 ^a	0.91 ^a	0.936 ^x
X	0.968 ^b	0.9615 ^b	0.983 ^c	0.928 ^A	0.9415 ^A	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Galat Baku

$$Sy a = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.00029335}{10}}$$

$$= 0.00542$$

Wilayah nyata terpendek

Rp = rp (0,05) . Sy

2 2,95 . 0.00542 = 0.0044223

VS	0.0044223	-
	A2	A1
	0.936	0.9762
0.9762		Y
0.936	x	

$$s_y b = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.00029335}{15}}$$

$$= 0.0044223$$

$$R_p = r_p (0,05) \cdot s_y$$

- 2 2.95 x 0.0044223 = 0.0130
- 3 3.10 x 0.0044223 = 0.0137
- 4 3.18 x 0.0044223 = 0.0141
- 5 3.25 x 0.0044223 = 0.0144

VS	0.0144	0.0141	0.0137	0.0130	-
	B4	B5	B2	B1	B3
	0.928	0.9415	0.9615	0.9665	0.983
0.983					C
0.9665				B	
0.9615					
0.9415					
0.928	A				

Lampiran 5

Lampiran 5.a. Data kadar klorofil b daun sengon umur 8 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.56	1.07	1.08	0.80	1.20	0.83	0.66	0.64	0.98	0.99
2	0.69	1.01	1.11	0.98	1.05	0.38	0.72	0.74	0.99	1.10
3	0.82	1.01	1.03	1.22	1.05	0.78	0.71	0.74	0.98	1.02
Σ	2.07	3.09	3.22	3.00	3.3	1.99	2.09	2.12	2.95	3.11
X	0.69	1.03	1.07	1.00	1.1	0.663	0.697	0.71	0.983	1.04

$$FK = \frac{Y^2}{r.a.b}$$

$$= \frac{(26.94)^2}{3 \cdot 2 \cdot 5} = 24.19212$$

$$JKT = (0.56)^2 + (0.69)^2 + \dots + (3.11)^2 - FK$$

$$= 1.18428$$

$$JKP = \frac{(2.07)^2 + \dots + (3.11)^2}{3} - FK$$

$$= 0.90408$$

$$JKG = JKT - JKP$$

$$= 1.18428 - 0.90408$$

$$= 0.2802$$

$$db \text{ Perlakuan} = a.b - 1$$

$$= 2.5 - 1$$

$$= 9$$

$$db \text{ Galat} = a.b (r-1)$$

$$= 2.5 (3-1)$$

$$= 20$$

$$db \text{ Total} = r \cdot a \cdot b - 1$$

$$= 30 - 1$$

$$= 29$$

Lampiran 5.b. Total perlakuan

B	A		Total
	A1	A2	
B1	2.07	1.99	4.06
B2	3.09	2.09	5.18
B3	3.22	2.12	5.34
B4	3.00	2.95	5.95
B5	3.3	3.11	6.41
Total	14.68	12.26	26.94

$$JK (A) = \frac{(14.68)^2 + (12.26)^2}{3 \cdot 5} - FK$$

$$= 0.195213333$$

$$JK (B) = \frac{(4.06)^2 + \dots + (6.41)^2}{3 \cdot 2} - FK$$

$$= 0.528246666$$

$$JK (AB) = JKP - JK (A) - JK (B)$$

$$= 0.90408 - 0.195213333 - 0.528246666$$

$$= 0.18062$$

$$db \text{ Faktor A} = a - 1 = 2 - 1 = 1$$

$$db \text{ Faktor B} = b - 1 = 5 - 1 = 4$$

$$db \text{ Faktor AB} = (a - 1)(b - 1)$$

$$= (2 - 1)(5 - 1) = 4$$

$$KT (A) = \frac{JK (A)}{a - 1} = \frac{0.195213333}{1}$$

$$= 0.167253333$$

$$KT (B) = \frac{JK (B)}{b - 1} = \frac{0.528246666}{4}$$

$$= 0.132061666$$

$$KT (AB) = \frac{JK (AB)}{(a-1)(b-1)} = \frac{0.18062}{4}$$

$$= 0.045155$$

Lampiran 5.c. Analisis varians kadar klorofil b daun sengon umur 8 minggu

Sumber Keragaman	Db	JK	KT	F Hit	F tabel (5%)	
Perlakuan	9	0.90408	-			
	A	1	0.167253	0.167253333	11.94**	4.35
	B	4	0.50188	0.13206166	9.43**	2.87
	AB	4	0.2349467	0.045155	3.22**	2.87
Galat	20	0.2802	0.01401			
Total	29	1.18428				

** Beda sangat Nyata

Uji DMRT

Galat Baku

$$Sy = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.01401}{3}}$$

$$= 0.06834 \sim 0.070$$

Wilayah nyata terpendek

$$Rp = rp (0,05) \cdot Sy$$

2	2,95 . 0.070 = 0.2065
3	3,10 . 0.070 = 0.217
4	3,18 . 0.070 = 0.226
5	3,25 . 0.070 = 0.2275
6	3,30 . 0.070 = 0.231
7	3,34 . 0.070 = 0.2338
8	3,36 . 0.070 = 0.2352
9	3,38 . 0.070 = 0.2366
10	3,40 . 0.070 = 0.238

VS	0.238 A2B1	0.2366 A1B1	0.2352 A2B2	0.2338 A2B3	0.231 A2B4	0.2275 A1B4	0.226 A1B2	0.217 A2B5	0.2065 A1B3	- A1B5
1.1	0.663	0.69	0.697	0.71	0.983	1.00	1.03	1.04	1.07	1.1
1.07										B
1.04										B
1.03										B
1.00										B
0.983										B
0.71										A
0.697										A
0.69										A
0.663										A

Lampiran 5.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	Total
A1	0.69 ^a	1.03 ^b	1.07 ^b	1.00 ^b	1.1 ^b	0.978 ^y
A2	0.663 ^d	0.697 ^a	0.71 ^a	0.983 ^b	1.04 ^b	0.8186 ^x
Total	0.6765 ^A	0.8635 ^B	0.89 ^C	0.9915 ^D	1.07 ^b	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Galat Baku

$$\begin{aligned}
 Sy_a &= \sqrt{\frac{KTG}{r}} \\
 &= \sqrt{\frac{0.01401}{10}} \\
 &= 0.037429934 \sim 0.040
 \end{aligned}$$

Wilayah nyata terpendek

$$\begin{aligned}
 Rp &= rp(0,05) \cdot Sy \\
 2 & \quad 2,95 \cdot 0.040 = 0.118
 \end{aligned}$$

	0.118	-
VS	A1	A2
	0.8186	0.978
0.8186		Y
0.978	X	

$$s_y b = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.01401}{15}}$$

$$= 0.0310$$

Rp = rp (0,05). sy

- 2 2.95 x 0.0310 = 0.09145
- 3 3.10 x 0.0310 = 0.0961
- 4 3.18 x 0.0310 = 0.0986
- 5 3.25 x 0.0310 = 0.10075

	0.10075	0.0986	0.0961	0.0914	-
VS	B1	B2	B3	B4	B5
	0.6765	0.8635	0.89	0.9915	1.07
1.07					D
0.9915				D	
0.89			C		
0.8635		B			
0.6765	A				

Lampiran 6

Lampiran 6.a. ANR daun sengon umur 4 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.75	1.14	1.14	2.71	4.30	0.61	0.93	1.25	1.78	2.50
2	1.03	1.40	2.53	2.53	4.45	0.61	1.35	1.75	2.40	2.82
3	1.14	2.21	3.50	2.90	4.46	0.82	2.10	2.50	2.82	2.99
Σ	2.92	4.75	7.17	8.14	13.2	2.04	5.78	5.5	7.0	8.31
X	0.97	1.58	2.39	2.71	4.40	0.68	1.93	1.83	2.33	2.77

$$FK = \frac{y^2}{r.a.b} = \frac{(64.82)^2}{3.2.5} = 140.054133$$

$$JKT = (0.75)^2 + (1.14)^2 + \dots + (2.99)^2 - FK = 170.7686 - 140.054133 = 30.71418667$$

$$JKP = \frac{(2.92)^2 + \dots + (8.31)^2}{3} - FK = 169.7125333 - 140.054133 = 29.65812$$

$$JKG = JKT - JKP = 30.71418667 - 29.65812 = 1.05606667$$

$$db \text{ Perlakuan} = a.b - 1 = 2.5 - 1 = 9$$

$$db \text{ Galat} = a.b (r-1) = 2.5 (3-1) = 20$$

$$db \text{ Total} = r.a.b - 1 = 30 - 1 = 29$$

Lampiran 6.b. Total perlakuan

B	A		Total
	A1	A2	
B1	2.92	2.04	4.96
B2	4.75	5.78	10.53
B3	7.17	5.5	12.67
B4	8.14	7.0	15.14
B5	13.2	8.31	21.51
Total	36.18	28.63	64.82

$$\text{JK (A)} = \frac{(36.18)^2 + (28.63)^2}{3 \cdot 5} - \text{FK}$$

$$= 1.86$$

$$\text{JK (B)} = \frac{(4.96)^2 + \dots + (21.51)^2}{3 \cdot 2} - \text{FK}$$

$$= 24.6$$

$$\text{JK (AB)} = \text{JKP} - \text{JK (A)} - \text{JK (B)}$$

$$= 29.65812 - 1.86 - 24.6$$

$$= 3.20$$

$$\text{db Faktor A} = a - 1 = 2 - 1 = 1$$

$$\text{db Faktor B} = b - 1 = 5 - 1 = 4$$

$$\text{db Faktor AB} = (a - 1)(b - 1)$$

$$= (2 - 1)(5 - 1) = 4$$

$$\text{KT (A)} = \frac{\text{JK (A)}}{a - 1} = \frac{1.86}{1} = 1.86$$

$$\text{KT (B)} = \frac{\text{JK (B)}}{b - 1} = \frac{24.6}{4} = 6.15$$

$$\text{KT (AB)} = \frac{\text{JK (AB)}}{(a-1)(b-1)} = \frac{3.20}{4} = 0.8$$

Lampiran 6.c. Analisis varians ANR daun sengon umur 4 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	29.65812	-		
A	1	0.243	1.86	35.23**	4.35
B	4	18.98245333	6.15	116.45**	2.87
AB	4	10.43266667	0.8	15.15**	2.87
Galat	20	1.05606667	0.0528		
Total	29	30.71448667			

** Beda sangat Nyata

* Beda Nyata

Uji DMRT

Galat Baku

$$\begin{aligned}
 S_y &= \sqrt{\frac{KTG}{r}} \\
 &= \sqrt{\frac{0.05280333}{3}} \\
 &= 0.132669179 \sim 0.133
 \end{aligned}$$

Wilayah nyata terpendek

$$R_p = r_p (0,05) \cdot S_y$$

2	2,95 . 0.133 = 0.39235
3	3,10 . 0.133 = 0.4123
4	3,18 . 0.133 = 0.42294
5	3,25 . 0.133 = 0.43225
6	3,30 . 0.133 = 0.4389
7	3,34 . 0.133 = 0.44422
8	3,36 . 0.133 = 0.44688
9	3,38 . 0.133 = 0.44954
10	3,40 . 0.133 = 0.4522

VS	0.4522 A2B1	0.4495 A1B1	0.44688 A1B2	0.4442 A2B3	0.4389 A2B2	0.4322 A2B4	0.4229 A1B3	0.4123 A1B4	0.3923 A2B5	- A1B5
	0.68	0.97	1.58	1.83	1.93	2.33	2.39	2.71	2.77	4.40
4.40										
2.77										
2.71										
2.39										
2.33										
1.93										
1.83										
1.58										
0.97										
0.68										

Lampiran 6.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	Total
A1	0.97 ^a	1.58 ^b	2.39 ^b	2.71 ^b	4.40 ^c	2.41 ^y
A2	0.68 ^a	1.93 ^b	1.83 ^b	2.33 ^b	2.77 ^b	1.908 ^x
Total	0.825 ^A	1.755 ^B	2.11 ^C	2.52 ^D	3.585 ^E	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Galat Baku

$$\begin{aligned}
 S_y a &= \sqrt{\frac{KTG}{r}} \\
 &= \sqrt{\frac{0.052803333}{10}} \\
 &= 0.072665901
 \end{aligned}$$

Wilayah nyata terpendek

$$\begin{aligned}
 R_p &= r_p (0,05) \cdot S_y \\
 2 \quad 2,95 \cdot 0.072665901 &= 0.21436441
 \end{aligned}$$

	0.2144	-
VS	A2	A1
	1.908	2.41
2.41		y
1.908	x	

$$\begin{aligned}
 S_y b &= \sqrt{\frac{KTG}{r}} \\
 &= \sqrt{\frac{0.052803333}{15}} \\
 &= 0.05933146 \sim 0.06
 \end{aligned}$$

$$\begin{aligned}
 R_p &= r_p (0,05) \cdot S_y \\
 2 \quad 2.95 \times 0.06 &= 0.177 \\
 3 \quad 3.10 \times 0.06 &= 0.186 \\
 4 \quad 3.18 \times 0.06 &= 0.191 \\
 5 \quad 3.25 \times 0.06 &= 0.195
 \end{aligned}$$

	0.195	0.191	0.186	0.177	-
VS	B1	B2	B3	B4	B5
	0.825	1.755	2.11	2.52	3.585
3.585					E
2.52				D	
2.11			C		
1.755		B			
1.255	A				

Lampiran 7

Lampiran 7.a. ANR daun sengon umur 8 minggu

ANR	A1					A2				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1	0.36	0.90	1.40	1.40	1.53	0.40	1.07	0.18	1.40	0.61
2	0.60	0.80	0.99	1.90	0.90	0.43	0.70	0.25	0.60	2.41
3	0.32	0.92	0.60	0.75	1.96	0.18	0.40	0.50	0.85	0.85
Σ	1.28	2.62	2.99	4.05	4.39	1.01	2.17	0.93	2.85	3.6
X	0.43	0.87	0.99	1.35	1.46	0.34	0.72	0.31	0.95	1.2

$$FK = \frac{Y^2}{r.a.b}$$

$$= \frac{(25.89)^2}{3 \cdot 2 \cdot 5} = 22.34307$$

$$JKT = (0.90)^2 + (0.80)^2 + \dots + (0.85)^2 - FK$$

$$= 30.5472 - 22.34307$$

$$= 8.20423$$

$$JKP = \frac{(2.62)^2 + \dots + (3.6)^2}{3} - FK$$

$$= 4.58823$$

$$JKG = JKT - JKP$$

$$= 8.20423 - 4.58823$$

$$= 3.616$$

$$db \text{ Perlakuan} = a.b - 1$$

$$= 2.5 - 1$$

$$= 9$$

$$db \text{ Galat} = a.b (r-1)$$

$$= 2.5 (3-1)$$

$$= 20$$

$$db \text{ Total} = r.a.b - 1$$

$$= 30 - 1$$

$$= 29$$

Lampiran 7.b. Total perlakuan

B	A		Total
	A1	A2	
B1	1.28	1.01	2.29
B2	2.62	2.17	4.79
B3	2.99	0.93	3.92
B4	4.05	2.85	6.9
B5	4.39	3.6	7.99
Total	15.33	10.56	25.89

$$JK(A) = \frac{(15.33)^2 + (10.56)^2}{3 \cdot 5} - FK$$

$$= 0.75843$$

$$\text{JK (B)} = \frac{(2.29)^2 + \dots + (7.99)^2}{3 \cdot 2} - \text{FK}$$

$$= 3.491046666$$

$$\text{JK (AB)} = \text{JKP} - \text{JK (A)} - \text{JK (B)}$$

$$= 4.58823 - 0.75843 - 3.491046666$$

$$= 0.33875334$$

$$\text{db Faktor A} = a - 1 = 2 - 1 = 1$$

$$\text{db Faktor B} = b - 1 = 5 - 1 = 4$$

$$\text{db Faktor AB} = (a - 1)(b - 1)$$

$$= (2 - 1)(5 - 1) = 4$$

$$\text{KT (A)} = \frac{\text{JK (A)}}{a - 1} = \frac{0.75843}{1}$$

$$= 0.75843$$

$$\text{KT (B)} = \frac{\text{JK (B)}}{b - 1} = \frac{3.491046666}{4}$$

$$= 0.872761666$$

$$\text{KT (AB)} = \frac{\text{JK (AB)}}{(a-1)(b-1)} = \frac{0.33875334}{4}$$

$$= 0.084688333$$

Lampiran 7.c. Analisis varians ANR daun sengon umur 8 minggu

Sumber Keragaman	db	JK	KT	F Hit	F tabel (5%)
Perlakuan	9	4.58823	-		
A	1	0.75843	0.75843	4.20 ^{Ln}	4.35
B	4	3.491046666	0.872761666	4.83**	2.87
AB	4	0.33875334	0.084688333	0.470 ^{Ln}	2.87
Galat	20	3.616	0.1808		
Total	29	8.20423			

** Beda sangat Nyata

Uji DMRT

Galat Baku

$$S_y = \sqrt{\frac{KTG}{r}}$$

$$= \sqrt{\frac{0.1808}{3}}$$

$$= 0.060266666 \sim 0.0602$$

Wilayah nyata terpendek

Rp = rp (0,05). Sy

2	2,95 . 0.0602 = 0.17759
3	3,10 . 0.0602 = 0.18662
4	3,18 . 0.0602 = 0.19144
5	3,25 . 0.0602 = 0.19565
6	3,30 . 0.0602 = 0.19866
7	3,34 . 0.0602 = 0.20107
8	3,36 . 0.0602 = 0.20227
9	3,38 . 0.0602 = 0.20348
10	3,40 . 0.0602 = 0.20468

VS	0.2047 A2B3	0.2034 A2B1	0.2023 A1B1	0.2010 A2B2	0.1987 A1B2	0.1957 A2B4	0.1914 A1B3	0.1866 A2B5	0.1776 A1B4	- A1B5
	0.31	0.34	0.43	0.72	0.87	0.95	0.99	1.2	1.35	1.46
1.46										C
1.35										C
1.2										C
0.99										B
0.95										B
0.87										B
0.72										B
0.43										A
0.34										A
0.31										A

Lampiran 7.d. Rerata Perlakuan

	B1	B2	B3	B4	B5	X
A1	0.43 ^a	0.87 ^b	0.99 ^c	1.35 ^d	1.46 ^e	1.02 ^a
A2	0.34 ^a	0.72 ^b	0.31 ^a	0.95 ^b	1.2 ^c	0.704 ^a
X	0.385 ^A	0.795 ^A	0.65 ^A	1.15 ^B	1.33 ^B	

Huruf-huruf yang berbeda menunjukkan beda nyata pada taraf 5%

Galat baku

$$s_y b = \sqrt{\frac{KTG}{r}} = \sqrt{\frac{0.1808}{15}}$$

$$= 0.109787673 \sim 0.110$$

Rp = rp (0,05). Sy

2	2.95 x 0.110 = 0.3245
3	3.10 x 0.110 = 0.341
4	3.18 x 0.110 = 0.3498
5	3.25 x 0.110 = 0.3575

VS	0.3575 B2	0.3498 B3	0.341 B1	0.3245 B5	- B4	
	0.385	0.65	0.795	1.15	1.33	
1.33						B
1.15						B
0.795						A
0.65						A
0.385						A