

Lampiran 01 : Data Kualitas air (Suhu, salinitas, pH) pertumbuhan alga coklat

Sargassum crassifolium C. Agardh selama 6 minggu pengamatan.

Minggu ke:	Kualitas Air		
	PH	Suhu (°C)	Salinitas (‰)
I	7	27	28
II	7	27	28
III	7	27	28
IV	7	27	28
V	7	27	28
VI	7	27	28



Lampiran 02 : Data berat awal (hari ke-0) dan akhir (hari ke-36) pertumbuhan alga coklat *Sargassum crassifolium* C. Agardh setelah pemberian pupuk NPK.

PERLAKUAN	BERAT AWAL (GRAM)	BERAT AKHIR (GRAM)
A1	100	118,88
A2	100	116,35
A3	100	118,73
B1	100	131,14
B2	100	117,27
B3	100	117,11
C1	100	121,81
C2	100	139,23
C3	100	122,55
D1	100	139,28
D2	100	129,2
D3	100	137,49
E1	100	150,1
E2	100	159,12
E3	100	152,03

Lampiran 03. : Analisa sidik ragam berat basah (g) alga coklat *Sargassum crassifolium* C. Agardh setelah pemberian pupuk NPK.

PERLAKUAN	ULANGAN			JUMLAH
	I	II	III	
A	118,88	116,35	118,73	353,96
B	131,14	117,27	117,17	365,58
C	121,81	139,23	122,55	383,59
D	139,28	129,2	137,49	405,97
E	150,51	159,12	152,03	461,66
JUMLAH				1970,76

$$\text{Derajat bebas Total} = (\text{perlakuan})(\text{ulangan}) - 1 = (5)(3) - 1 = 14$$

$$\text{Derajat bebas perlakuan} = \text{perlakuan} - 1 = 5 - 1 = 4$$

$$\text{Derajat bebas galat} = \text{perlakuan}(\text{ulangan}-1) = 5(3-1) = 10$$

$$\text{Faktor koreksi} = \frac{\text{Jumlah total}^2}{n.p} = \frac{1970,76^2}{15} = 258926,3318$$

$$\begin{aligned} \text{Jumlah kuadrat Total} &= 118,88^2 + 116,35^2 + \dots + 152,03^2 - 258926,3318 \\ &= 2840,8048 \end{aligned}$$

$$\begin{aligned} \text{Jumlah kuadrat perlakuan} &= \frac{353,96^2 + 365,58^2 + \dots + 461,66^2}{3} - 258916,3316 \\ &= 2413,4357 \end{aligned}$$

$$\begin{aligned}
 \text{Jumlah kuadrat galat} &= \text{JK total} - \text{JK perlakuan} \\
 &= 2840,8048 - 2413,4357 = 427,3691 \\
 \\
 \text{Kuadrat tengah perlakuan} &= \frac{\text{JK perlakuan}}{\text{Db perlakuan}} = \frac{2413,4357}{4} \\
 &= 603,3589 \\
 \\
 \text{Kuadrat tengah galat} &= \frac{\text{JK galat}}{\text{Db galat}} = \frac{427,3691}{10} \\
 &= 42,7369 \\
 \\
 F_{\text{hitung}} &= \frac{\text{KTP}}{\text{KTG}} = \frac{603,3589}{42,7369} \\
 &= 14,1179
 \end{aligned}$$

Tabel ANOVA

SK	Db	JK	KT	F _{hitung}	F _{tabel}	
					5 %	1 %
Perlakuan	4	2413,4357	603,3589	14,1179**	3,48	3,99
Galat	10	427,3691	42,7934			
Total	14	2842,5138				

** : Berbeda nyata pada taraf 1%

Lampiran 04. : Uji lanjut pengaruh dosis pupuk terhadap berat basah alga coklat
Sargassum crassifolium C. Agardh dengan metode Beda Nyata
 Terkecil

$$\text{BNT } 5\% = 2,228 \times \sqrt{2(42,7934)/5} = 9,2179$$

$$\text{BNT } 1\% = 3,169 \times \sqrt{2(42,7934)/5} = 13,1112$$

Nilai tengah perlakuan : A = 117,9867

$$B = 121,86$$

$$C = 127,8633$$

$$D = 135,3232$$

$$E = 153,8867$$

Beda Nilai Tengah

	E	D	C	B	A
A	35,9**	17,3366**	9,8766*	3,8733	0
B	32,0267**	13,4622**	6,0033	0	
C	26,0234**	7,46	0		
D	18,5634	0			
E	0				

A B C D E

Lampiran 05.: Analisa sidik ragam prosentase pertumbuhan harian (%) alga coklat

Sargassum crassifolium C. Agardh setelah pemberian pupuk NPK.

$$\text{Angka pertumbuhan harian (G)} = \frac{\ln W_t - W_o}{T_i - T_o} \times 100\%$$

Dimana W_t : Berat akhir tanaman (gram)

W_o : Berat awal tanaman (gram)

$T_i - T_o$: Jumlah hari pengamatan

PERLAKUAN	ULANGAN			JUMLAH
	I	II	III	
A	8,1614	7,7617	8,1392	24,06
B	9,5514	7,914	7,8879	25,35
C	8,5621	10,1929	8,6548	27,41
D	10,1964	9,3727	10,1669	29,73
E	10,8723	11,3321	10,9773	33,18
JUMLAH				139,72

$$\text{Faktor koreksi} = \frac{139,72^2}{15} = 1301,4452$$

$$\begin{aligned} \text{JK total} &= 8,1614^2 + 7,7617^2 + 8,1392^2 + \dots + 10,9773^2 - 1301,4452 \\ &= 21,7206 \end{aligned}$$

$$\begin{aligned} \text{JK perlakuan} &= \frac{24,0623^2 + \dots + 33,1817^2}{3} - 1301,4452 \\ &= 17,5719 \end{aligned}$$

$$\begin{aligned}
 \text{JK galat} &= 21,7206 - 17,5719 \\
 &= 4,1487 \\
 \text{KT perlakuan} &= \frac{17,5719}{4} = 4,3929 \\
 \text{KT galat} &= \frac{4,1487}{10} = 0,41487 \\
 F_{\text{hitung}} &= \frac{4,3929}{0,41487} = 10,5886
 \end{aligned}$$

Tabel ANOVA

SK	Db	JK	KT	F _{hitung}	F _{tabel}	
					5 %	1 %
Perlakuan	4	17,5719	4,3929	10,5886**	3,48	3,99
Galat	10	4,1487	0,41487			
Total	14	21,7206				

** : Berbeda nyata pada taraf 1%

Lampiran 06.: Uji Lanjut pengaruh dosis pupuk terhadap prosentase pertumbuhan harian alga coklat *Sargassum crassifolium* C. Agardh dengan metode Beda Nyata Terkecil (BNT).

$$\text{BNT } 5\% = 2,228 \times \sqrt{2(0,41487)/5} = 0,9076$$

$$\text{BNT } 1\% = 3,169 \times \sqrt{2(0,41487)/5} = 1,291$$

Nilai tengah perlakuan A = 8,0207

B = 8,4511

C = 9,1366

D = 9,8786

E = 11,0606

Beda Nilai Tengah

	E	D	C	B	A
A	3,0399**	1,89**	1,1159**	0,4304	0
B	2,6095**	1,46**	0,6855	0	
C	1,924**	0,78	0		
D	1,15**	0			
E	0				

A B C D E

Lampiran 07 : Analisa sidik ragam berat kering (g) alga coklat *Sargassum crassifolium* C. Agardh setelah pemberian pupuk NPK.

PERLAKUAN	ULANGAN			JUMLAH
	I	II	III	
A	10,221	10,2125	10,1121	30,5546
B	11,0512	11,1104	10,2321	32,3837
C	12,1117	11,5166	12,1228	35,7511
D	12,1673	11,5156	13,2711	36,954
E	14,5956	14,5156	13,9188	43,0311
JUMLAH				178,6745

$$\text{Faktor koreksi} = \frac{178,6745^2}{15} = 2128,3051$$

$$\begin{aligned} \text{JK total} &= 10,221^2 + 10,2125^2 + 10,1121^2 + \dots + 13,9188^2 - 2128,3051 \\ &= 33,3183 \end{aligned}$$

$$\begin{aligned} \text{JK perlakuan} &= \frac{30,5546^2 + 32,3837^2 + \dots + 43,0311^2}{3} - 2128,3051 \\ &= 30,7454 \end{aligned}$$

$$\begin{aligned} \text{JK galat} &= 33,3183 - 30,7454 \\ &= 2,5729 \end{aligned}$$

$$\text{KT perlakuan} = \frac{30,7454}{4} = 7,6864$$

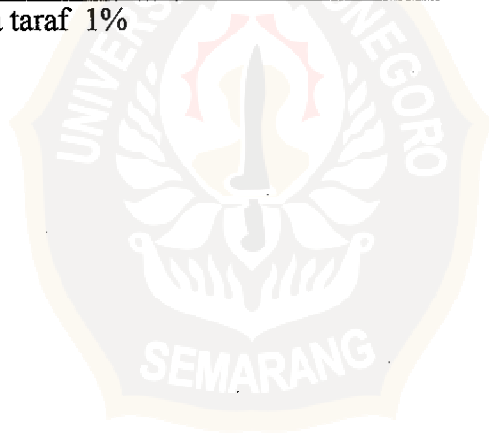
$$KT \text{ galat} = \frac{2,5729}{10} = 0,25729$$

$$F_{hitung} = \frac{7,6864}{0,2573} = 29,8733$$

Tabel ANOVA

SK	Db	JK	KT	F _{hitung}	F _{tabel}	
					5 %	1 %
Perlakuan	4	30,7454	7,6864	29,8733**	3,48	3,99
Galat	10	2,5729	0,2573			
Total	14	33,3183				

** : Berbeda nyata pada taraf 1%



Lampiran 08 : Uji lanjut pengaruh dosis pupuk terhadap berat kering alga coklat

Sargassum crassifolium C. Agardh dengan metode Beda Nyata

Terkecil (BNT).

$$\text{BNT } 5\% = 2,228 \times \sqrt{2(0,2573)/5} = 0,7146$$

$$\text{BNT } 1\% = 3,169 \times \sqrt{2(0,2573)/5} = 1,0165$$

Nilai tengah perlakuan A = 10,1818

B = 10,7945

C = 11,917

D = 12,318

E = 14,3437

Beda Nilai Tengah

	E	D	C	B	A
A	4,1619**	2,136**	1,7352**	0,6127	0
B	3,5492**	1,5235**	1,0025	0	
C	2,4267**	0,4013	0		
D	2,0257**	0			
E	0				

A B C D E

Lampiran 09 : Analisa sidik ragam kandungan alginat (g) alga coklat *Sargassum crassifolium* C. Agardh setelah pemberian pupuk NPK.

PERLAKUAN	ULANGAN			JUMLAH
	I	II	III	
A	2,9891	3,5541	3,469	10,0221
B	3,7256	3,4735	3,5428	10,7419
C	3,5519	3,5194	3,6858	10,7571
D	3,8574	3,6634	3,5882	11,109
E	4,8505	4,4120	4,3232	13,5857
JUMLAH				56,2059

$$\text{Faktor koreksi} = \frac{56,0259}{15} = 210,60688$$

$$\begin{aligned} \text{JK total} &= 2,9891^2 + 3,5541^2 + 3,469^2 + \dots + 4,3232^2 - 210,60688 \\ &= 2,93562 \end{aligned}$$

$$\begin{aligned} \text{JK perlakuan} &= \frac{10,0221^2 + 10,7571^2 + \dots + 13,5857^2}{3} - 210,60688 \\ &= 2,5688 \end{aligned}$$

$$\begin{aligned} \text{JK galat} &= 2,93562 - 2,5688 \\ &= 0,36682 \end{aligned}$$

$$\text{KT perlakuan} = \frac{2,93562}{4} = 0,642205$$

$$\text{KT galat} = \frac{0,36682}{10} = 0,036682$$

$$F_{hitung} = \frac{0,642205}{0,036682} = 17,5074$$

Tabel ANOVA

SK	Db	JK	KT	F _{hitung}	F _{tabel}	
					5 %	1 %
Perlakuan	4	2,5688	0,642205	17,5074**	3,48	3,99
Galat	10	0,36682	0,036682			
Total	14	2,93562				

** : Berbeda nyata pada taraf 1%



Lampiran 10 : Uji lanjut pengaruh dosis pupuk terhadap kandungan alginat alga coklat *Sargassum crasifolium* C. Agardh dengan metode Beda Nyata terkecil (BNT)

$$\text{BNT } 5\% = 2,228 \times \sqrt{2(0,036882)/5} = 0,26987$$

$$\text{BNT } 1\% = 3,169 \times \sqrt{2(0,036882)/5} = 0,38366$$

Nilai tengah perlakuan A = 3,3374

B = 3,5806

C = 3,5857

D = 3,703

E = 4,5286

Beda Nilai Tengah

	E	D	C	B	A
A	1,1912**	0,3656**	0,2483	0,2432	0
B	0,948**	0,1224	0,0051	0	
C	0,9429**	0,1173	0		
D	0,8256**	0			
E	0				

A B C D E

—————
—————
—————