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## **LAMPIRAN**



**Lampran 1. Rata-rata pertumbuhan mutlak rumput laut *K. alvarezii* pada setiap kelompok perlakuan selama penelitian.**

| PERLAKUAN              | KELOMPOK |        |        | TOTAL KELOMPOK | RATA-RATA | STDEV |
|------------------------|----------|--------|--------|----------------|-----------|-------|
|                        | 1        | 2      | 3      |                |           |       |
| A (20 CM)              | 128,78   | 140,16 | 131,88 | 400,82         | 133,61    | 5,88  |
| B (50 CM)              | 150,03   | 156,85 | 164,78 | 471,66         | 157,22    | 7,38  |
| C (80 CM)              | 113,16   | 117,62 | 109,11 | 339,89         | 113,30    | 8,75  |
| <b>TOTAL PERLAKUAN</b> | 391,97   | 401,63 | 418,77 | 1212,37        | 404,123   | 22,01 |
| <b>RATA-RATA</b>       | 130,61   | 133,88 | 139,59 | 404,12         | 134,70    | 7,33  |

**Lampiran 2. Analisis ragam (ANOVA) pertumbuhan mutlak.**

**Two-way Anova.**

| <b>Source of Variation</b> | <b>% of total variation</b> | <b>P value</b> | <b>P value summary</b> | <b>Significant?</b> |
|----------------------------|-----------------------------|----------------|------------------------|---------------------|
| Row Factor                 | 3.802                       | 0.3959         | Ns                     | No                  |
| Column Factor              | 89.75                       | 0.0045         | *                      | Yes                 |

| <b>ANOVA table</b> | <b>SS</b> | <b>DF</b> | <b>MS</b> | <b>F (DFn, DFd)</b> | <b>P value</b> |
|--------------------|-----------|-----------|-----------|---------------------|----------------|
| Row Factor         | 1228150   | 2         | 614075    | F (2, 4) = 1.179    | P=0.3878       |
| Column Factor      | 28993448  | 2         | 14496724  | F (2, 4) = 27.83    | P=0.0173       |
| Residual           | 2083739   | 4         | 520935    |                     |                |

**Lampiran 3. Uji Lanjut Tuckey HSD Pertumbuhan Mutlak.**

| <b>Tukey's multiple comparisons test</b> | <b>Mean Diff,</b> | <b>95,00% CI of diff,</b> | <b>Significant?</b> | <b>Summary</b> | <b>Adjusted P Value</b> |
|--|-------------------|---------------------------|---------------------|----------------|-------------------------|
| A vs. B                                  | -2361             | -4462 to 261.0            | Yes                 | *              | 0.0345                  |
| A vs. C                                  | 2031              | -69.31 to 4131            | Yes                 | *              | 0.0454                  |
| B vs. C                                  | 4392              | 2292 to 6493              | Yes                 | *              | 0.0149                  |

| <b>Test details</b> | <b>Mean 1</b> | <b>Mean 2</b> | <b>Mean Diff,</b> | <b>SE of diff,</b> | <b>N1</b> | <b>N2</b> | <b>q</b> | <b>DF</b> |
|---------------------|---------------|---------------|-------------------|--------------------|-----------|-----------|----------|-----------|
| A vs. B             | 13361         | 15722         | -2361             | 589.3              | 3         | 3         | 5.667    | 4.000     |
| A vs. C             | 13361         | 11330         | 2031              | 589.3              | 3         | 3         | 4.874    | 4.000     |
| B vs. C             | 15722         | 11330         | 4392              | 589.3              | 3         | 3         | 10.54    | 4.000     |

Lampiran 4. Rata-rata laju pertumbuhan harian rumput laut *K. alvarezii* pada setiap kelompok perlakuan selama penelitian.

| PERLAKUAN              | KELOMPOK |      |      | TOTAL KELOMPOK | RATA-RATA | STDEV |
|------------------------|----------|------|------|----------------|-----------|-------|
|                        | 1        | 2    | 3    |                |           |       |
| A (20 CM)              | 3,08     | 3,23 | 3,12 | 9,43           | 3,14      | 0,08  |
| B (50 CM)              | 3,48     | 3,45 | 3,40 | 10,33          | 3,44      | 0,04  |
| C (80 CM)              | 2,94     | 2,86 | 2,93 | 8,73           | 2,91      | 0,04  |
| <b>TOTAL PERLAKUAN</b> | 9,50     | 9,54 | 9,45 | 28,49          | 9,49      | 0,16  |
| <b>RATA-RATA</b>       | 3,17     | 3,18 | 3,15 | 9,50           | 3,16      | 0,05  |

## Lampiran 5. Analisis ragam (ANOVA) Laju Pertumbuhan Harian

### Two-way Anova.

| Source of Variation | % of total variation | P value | P value summary | Significant? |
|---------------------|----------------------|---------|-----------------|--------------|
| Row Factor          | 0.3026               | 0.8633  | Ns              | No           |
| Column Factor       | 95.73                | 0.0116  | *               | Yes          |

| ANOVA table   | SS    | DF | MS    | F (DFn, DFd)      | P value  |
|---------------|-------|----|-------|-------------------|----------|
| Row Factor    | 13.56 | 2  | 6.778 | F (2, 4) = 0.1525 | P=0.8633 |
| Column Factor | 4289  | 2  | 2144  | F (2, 4) = 48.25  | P=0.0116 |
| Residual      | 177.8 | 4  | 44.44 |                   |          |

**Lampiran 6. Uji Lanjut Tuckey HSD Laju Pertumbuhan Harian.**

| <b>Tukey's multiple comparisons test</b> | <b>Mean Diff,</b> | <b>95,00% CI of diff,</b> | <b>Significant?</b> | <b>Summary</b> | <b>Adjusted P Value</b> |
|--|-------------------|---------------------------|---------------------|----------------|-------------------------|
| A vs. B                                  | -30.00            | -49.40 to -10.60          | Yes                 | *              | 0.0116                  |
| A vs. C                                  | 23.33             | 3.933 to 42.73            | Yes                 | *              | 0.0276                  |
| B vs. C                                  | 53.33             | 33.93 to 72.73            | Yes                 | *              | 0.0281                  |

| <b>Test details</b> | <b>Mean 1</b> | <b>Mean 2</b> | <b>Mean Diff,</b> | <b>SE of diff,</b> | <b>N1</b> | <b>N2</b> | <b>q</b> | <b>DF</b> |
|---------------------|---------------|---------------|-------------------|--------------------|-----------|-----------|----------|-----------|
| A vs. B             | 314.3         | 344.3         | -30.00            | 5.443              | 3         | 3         | 7.794    | 4.000     |
| A vs. C             | 314.3         | 291.0         | 23.33             | 5.443              | 3         | 3         | 6.062    | 4.000     |
| B vs. C             | 314.3         | 291.0         | 53.33             | 5.443              | 3         | 3         | 8.616    | 4.000     |

Lampiran 7. Rata-rata Inilai produksi basah rumput laut *K. alvarezii* pada setiap kelompok perlakuan selama penelitian.

| PERLAKUAN              | KELOMPOK |         |         | TOTAL KELOMPOK | RATA-RATA | STDEV |
|------------------------|----------|---------|---------|----------------|-----------|-------|
|                        | 1        | 2       | 3       |                |           |       |
| A (20 CM)              | 652,90   | 685,80  | 665,40  | 2004,10        | 668,03    | 16,61 |
| B (50 CM)              | 800,15   | 784,25  | 773,90  | 2358,30        | 786,10    | 13,22 |
| C (80 CM)              | 600,80   | 564,15  | 587,55  | 1752,50        | 584,17    | 18,56 |
| <b>TOTAL PERLAKUAN</b> | 2053,85  | 2034,20 | 2026,85 | 6114,90        | 2038,30   | 48,39 |
| <b>RATA-RATA</b>       | 684,62   | 678,07  | 675,62  | 2038,30        | 679,43    | 16,13 |

**Lampiran 8. Analisis ragam (ANOVA) Produksi Basah Rumput Laut *K. alvarezii*  
Two-way Anova.**

| Source of Variation | % of total variation | P value | P value summary | Significant? |
|---------------------|----------------------|---------|-----------------|--------------|
| Row Factor          | 0.2051               | 0.4830  | Ns              | No           |
| Column Factor       | 97.49                | 0.0101  | *               | Yes          |

| ANOVA table   | SS        | DF | MS        | F (DFn, DFd)      | P value  |
|---------------|-----------|----|-----------|-------------------|----------|
| Row Factor    | 30314939  | 2  | 649525    | F (2, 4) = 0.1779 | P=0.4830 |
| Column Factor | 619411822 | 2  | 308752133 | F (2, 4) = 84.58  | P=0.0101 |
| Residual      | 69081594  | 4  | 3650371   |                   |          |



**Lampiran 9. Uji Lanjut Tuckey HSD Produksi Basah Rumput Laut *K. alvarezii***

| <b>Tukey's multiple comparisons test</b> | <b>Mean Diff,</b> | <b>95,00% CI of diff,</b> | <b>Significant?</b> | <b>Summary</b> | <b>Adjusted P Value</b> |
|--|-------------------|---------------------------|---------------------|----------------|-------------------------|
| A vs. B                                  | -11807            | -17366 to 6247            | Yes                 | *              | 0.0338                  |
| A vs. C                                  | 8420              | 2827 to 13946             | Yes                 | *              | 0.0138                  |
| B vs. C                                  | 20227             | 14634 to 25753            | Yes                 | *              | 0.0126                  |

| <b>Test details</b> | <b>Mean 1</b> | <b>Mean 2</b> | <b>Mean Diff,</b> | <b>SE of diff,</b> | <b>N1</b> | <b>N2</b> | <b>q</b> | <b>DF</b> |
|---------------------|---------------|---------------|-------------------|--------------------|-----------|-----------|----------|-----------|
| A vs. B             | 66803         | 78610         | -11807            | 1560               | 3         | 3         | 4.921    | 4.000     |
| A vs. C             | 66803         | 58417         | 8387              | 1560               | 3         | 3         | 3.509    | 4.000     |
| B vs. C             | 78610         | 58417         | 20193             | 1560               | 3         | 3         | 8.430    | 4.000     |

**Lampiran 10. Rata-rata kandungan karaginan rumput laut *K. alvarezii* pada setiap kelompok perlakuan selama penelitian.**

| PERLAKUAN              | KELOMPOK |        |        | TOTAL KELOMPOK | RATA-RATA | STDEV |
|------------------------|----------|--------|--------|----------------|-----------|-------|
|                        | 1        | 2      | 3      |                |           |       |
| A (20 CM)              | 51,78    | 43,96  | 47,02  | 142,76         | 47,59     | 3,94  |
| B (50 CM)              | 50,93    | 46,77  | 50,31  | 148,01         | 49,34     | 2,24  |
| C (80 CM)              | 49,09    | 46,14  | 48,84  | 144,07         | 48,02     | 1,64  |
| <b>TOTAL PERLAKUAN</b> | 151,80   | 136,87 | 146,17 | 434,84         | 144,95    | 7,82  |
| <b>RATA-RATA</b>       | 50,6     | 45,62  | 48,72  | 144,95         | 48,32     | 2,61  |

**Lampiran 11. Analisis ragam (ANOVA) kandungan karaginan Rumput Laut *K. alvarezii***

**Two-way Anova.**

| Source of Variation | % of total variation | P value | P value summary | Significant? |
|---------------------|----------------------|---------|-----------------|--------------|
| Row Factor          | 73.65                | 0.9810  | *               | Yes          |
| Column Factor       | 9.673                | 0.0024  | ns              | No           |

| ANOVA table   | SS     | DF | MS     | F (DFn, DFd)     | P value  |
|---------------|--------|----|--------|------------------|----------|
| Row Factor    | 378991 | 2  | 189495 | F (2, 4) = 8,830 | P=0.0341 |
| Column Factor | 49780  | 2  | 24890  | F (2, 4) = 1,160 | P=0.4006 |
| Residual      | 85843  | 4  | 21461  |                  |          |

**Lampiran 12. Uji Lanjut Tuckey HSD Kandungan Karaginan Rumput Laut *K. alvarezii***

| <b>Tukey's multiple comparisons test</b> | <b>Mean Diff,</b> | <b>95,00% CI of diff,</b> | <b>Significant?</b> | <b>Summary</b> | <b>Adjusted P Value</b> |
|--|-------------------|---------------------------|---------------------|----------------|-------------------------|
| A vs. B                                  | -175              | -601.3 to 251.3           | No                  | ns             | 0.3967                  |
| A vs. C                                  | -43.67            | -470.0 to 382,6           | No                  | ns             | 0.9304                  |
| B vs. C                                  | 131.3             | -295.0 to 557.6           | No                  | ns             | 0.5641                  |

**Lampiran 13. Nilai Viskositas Rumput Laut *K. alvarezii***

| No. | Kode Sampel | Hasil   |     |      |                 |                           |
|-----|-------------|---------|-----|------|-----------------|---------------------------|
|     |             | Spindel | Rpm | Suhu | Viskositas (cP) | Viskositas Rata-rata (cP) |
| 1   | Sampel 1    | L1      | 6   | 75   | 94,39           | 94,07                     |
|     |             | L1      | 6   | 75   | 94,63           |                           |
|     |             | L1      | 6   | 75   | 93,18           |                           |
| 2   | Sampel 2    | L1      | 6   | 75   | 77,14           | 77,09                     |
|     |             | L1      | 6   | 75   | 77,04           |                           |
|     |             | L1      | 6   | 75   | 77,10           |                           |
| 3   | Sampel 3    | L1      | 10  | 75   | 51,00           | 52,01                     |
|     |             | L1      | 10  | 75   | 52,01           |                           |
|     |             | L1      | 10  | 75   | 52,01           |                           |

**Lampiran 14. Nilai Kekuatan Gel Rumput Laut *K. alvarezii***

| <b>No</b> | <b>Nama Sampel</b> | <b>Gel strength (g/cm<sup>2</sup>)</b> |
|-----------|--------------------|--|
| 1         | 20 cm              | 441,33                                 |
| 2         | 50 cm              | 837,96                                 |
| 3         | 80 cm              | 669,67                                 |

**Lampiran 15. Nilai Kandungan Klorofil-a dan Karotenoid.**

| <b>No</b> | <b>Kode Sampel</b> | <b>Parameter</b>         |                           |   |
|-----------|--------------------|--------------------------|---------------------------|---|
|           |                    | <b>Klorofil a (mg/g)</b> | <b>Klorofil b (mg/gr)</b> | <b>Karatenoid (<math>\mu\text{g/gr}</math>)</b> |
| 1         | A20                | 0,72                     | 0,00720                   | 0,022   |
| 2         | A50                | 0,70                     | 0,00669                   | 0,024   |
| 3         | A80                | 0,73                     | 0,00734                   | 0,029   |