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Lampiran 1. Penyediaan Dan Setting Wadah Pemeliharaan Juwana Kuda Laut



A. Pengukuran dan Pemotongan Pipa



C. Filter Biologi dan Wadah Penampungan



B. Pemasangan keran, pipa dan pengecekan kondisi wadah



D. Filter Cartridge

Lampiran 2. Desain Tata Letak Wadah Pemeliharaan Sistem Resirkulasi



Lampiran 3. Wadah Pemeliharaan, Pemijahan Induk Serta Pemeliharaan Juwana Kuda Laut

A. Wadah Pemeliharaan Dan Pemijahan Induk



B. Wadah Pemeliharaan Juwana Kuda Laut



#### Lampiran 4. Analisis Kualitas Air



##### A. Pembuatan Larutan Pereaksi



##### B. Pemeriksaan kadar $\text{NH}_3$ , $\text{NO}_2$ dan $\text{NO}_3$ dengan Spektrofotometer



##### C. Pemeriksaan kadar pH dengan pH meter

Lampiran 5. Rata Rata Pertumbuhan Panjang dan Bobot Juwana Kuda Laut Selama Penelitian

| Hari             | Panjang (cm) |              | Bobot (gr)  |              |
|------------------|--------------|--------------|-------------|--------------|
|                  | Resirkulasi  | Konvensional | Resirkulasi | Konvensional |
| 0                | 1            | 1            | 0,01        | 0,01         |
|                  | 1            | 1            | 0,01        | 0,01         |
|                  | 1            | 1            | 0,01        | 0,01         |
| <b>Rata-Rata</b> | <b>1</b>     | <b>1</b>     | <b>0,01</b> | <b>0,01</b>  |
| 7                | 1,8          | 1,4          | 0,02        | 0,01         |
|                  | 1,7          | 1,4          | 0,02        | 0,01         |
|                  | 1,4          | 1,5          | 0,02        | 0,01         |
| <b>Rata-Rata</b> | <b>1,63</b>  | <b>1,43</b>  | <b>0,02</b> | <b>0,01</b>  |
| 14               | 2            | 1,7          | 0,03        | 0,01         |
|                  | 2            | 1,6          | 0,03        | 0,02         |
|                  | 2            | 1,6          | 0,03        | 0,02         |
| <b>Rata-Rata</b> | <b>2</b>     | <b>1,63</b>  | <b>0,03</b> | <b>0,02</b>  |
| 21               | 2,3          | 1,9          | 0,04        | 0,02         |
|                  | 2,3          | 1,9          | 0,04        | 0,02         |
|                  | 2,4          | 1,8          | 0,04        | 0,02         |
| <b>Rata-Rata</b> | <b>2,33</b>  | <b>1,87</b>  | <b>0,04</b> | <b>0,02</b>  |
| 28               | 2,8          | 2            | 0,04        | 0,02         |
|                  | 2,5          | 2            | 0,04        | 0,02         |
|                  | 2,7          | 2            | 0,04        | 0,02         |
| <b>Rata-Rata</b> | <b>2,67</b>  | <b>2</b>     | <b>0,04</b> | <b>0,02</b>  |



## Lampiran 6. Uji T Berpasangan Rata-Rata Pertumbuhan Panjang dan Bobot

Paired Samples Statistics

|        |                      | Mean   | N  | Std. Deviation | Std. Error Mean |
|--------|----------------------|--------|----|----------------|-----------------|
| Pair 1 | Panjang_Resirkulasi  | 2,0692 | 13 | ,51216         | ,14205          |
|        | Panjang_Konvensional | 1,6769 | 13 | ,30043         | ,08332          |

Paired Samples Correlations

|        |                                | N  | Correlation | Sig. |
|--------|--------------------------------|----|-------------|------|
| Pair 1 | Panjang_Resirkulasi & Panjang_ | 13 | ,948        | ,000 |

Paired Samples Test

|        |                                            | Paired Differences |                |                 |                                           | t      | df    | Sig. (2-tailed) |       |
|--------|--------------------------------------------|--------------------|----------------|-----------------|-------------------------------------------|--------|-------|-----------------|-------|
|        |                                            | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |        |       |                 |       |
|        |                                            |                    |                |                 | Lower                                     |        |       |                 | Upper |
| Pair 1 | Panjang_Resirkulasi - Panjang_Konvensional | ,39231             | ,24651         | ,06837          | ,24334                                    | ,54127 | 5,738 | 12              | ,000  |

**Paired Samples Statistics**

|        |                    | Mean  | N  | Std. Deviation | Std. Error Mean |
|--------|--------------------|-------|----|----------------|-----------------|
| Pair 1 | Bobot_Resirkulasi  | ,0308 | 13 | ,01038         | ,00288          |
|        | Bobot_Konvensional | ,0162 | 13 | ,00506         | ,00140          |

**Paired Samples Correlations**

|        |                                           | N  | Correlation | Sig. |
|--------|-------------------------------------------|----|-------------|------|
| Pair 1 | Bobot_Resirkulasi &<br>Bobot_Konvensional | 13 | ,854        | ,000 |

**Paired Samples Test**

|        |                                           | Paired Differences |                |                 |                                           | t      | df    | Sig. (2-tailed) |       |
|--------|-------------------------------------------|--------------------|----------------|-----------------|-------------------------------------------|--------|-------|-----------------|-------|
|        |                                           | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |        |       |                 |       |
|        |                                           |                    |                |                 | Lower                                     |        |       |                 | Upper |
| Pair 1 | Bobot_Resirkulasi -<br>Bobot_Konvensional | ,01462             | ,00660         | ,00183          | ,01063                                    | ,01861 | 7,982 | 12              | ,000  |

Lampiran 7. Laju Pertumbuhan Harian (SGR) Juwana Kuda Laut Selama Penelitian

| Hari             | Laju Pertumbuhan Panjang (%) |              | Laju Pertumbuhan Bobot (%) |              |
|------------------|------------------------------|--------------|----------------------------|--------------|
|                  | Resirkulasi                  | Konvensional | Resirkulasi                | Konvensional |
| 0                | 1                            | 1            | 0,01                       | 0,01         |
|                  | 1                            | 1            | 0,01                       | 0,01         |
|                  | 1                            | 1            | 0,01                       | 0,01         |
| <b>Rata-Rata</b> | <b>0</b>                     | <b>0</b>     | <b>0</b>                   | <b>0</b>     |
| 7                | 8,4                          | 4,81         | 9,9                        | 0            |
|                  | 7,58                         | 4,81         | 9,9                        | 9,9          |
|                  | 4,81                         | 5,79         | 9,9                        | 9,9          |
| <b>Rata-Rata</b> | <b>6,93</b>                  | <b>5,14</b>  | <b>9,9</b>                 | <b>6,6</b>   |
| 14               | 4,95                         | 3,79         | 7,85                       | 9,9          |
|                  | 4,95                         | 3,36         | 7,85                       | 4,95         |
|                  | 4,95                         | 3,36         | 7,85                       | 4,95         |
| <b>Rata-Rata</b> | <b>4,95</b>                  | <b>3,5</b>   | <b>7,85</b>                | <b>6,6</b>   |
| 21               | 3,97                         | 3,06         | 6,6                        | 4,95         |
|                  | 3,97                         | 3,06         | 6,6                        | 3,3          |
|                  | 4,17                         | 2,8          | 6,6                        | 3,3          |
| <b>Rata-Rata</b> | <b>4,03</b>                  | <b>2,97</b>  | <b>6,6</b>                 | <b>3,85</b>  |
| 28               | 3,68                         | 2,48         | 4,95                       | 2,48         |
|                  | 3,27                         | 2,48         | 4,95                       | 2,48         |
|                  | 3,55                         | 2,48         | 4,95                       | 2,48         |
| <b>Rata-Rata</b> | <b>3,5</b>                   | <b>2,48</b>  | <b>4,95</b>                | <b>2,43</b>  |

## Lampiran 8. Uji T Berpasangan Laju Pertumbuhan Panjang dan Bobot Harian

**Paired Samples Statistics**

|                                 | Mean   | N  | Std. Deviation | Std. Error Mean |
|---------------------------------|--------|----|----------------|-----------------|
| Panjang_SGR_Resirkulasi         | 4,8542 | 12 | 1,58554        | ,45771          |
| Pair 1 Panjang_SGR_Konvensional | 3,5233 | 12 | 1,07836        | ,31130          |

**Paired Samples Correlations**

|                                                           | N  | Correlation | Sig. |
|-----------------------------------------------------------|----|-------------|------|
| Pair 1 Panjang_SGR_Resirkulasi & Panjang_SGR_Konvensional | 12 | ,719        | ,008 |

**Paired Samples Test**

|                                                           | Paired Differences |                |                 |                                           |         | t     | df | Sig. (2-tailed) |
|-----------------------------------------------------------|--------------------|----------------|-----------------|-------------------------------------------|---------|-------|----|-----------------|
|                                                           | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |         |       |    |                 |
|                                                           |                    |                |                 | Lower                                     | Upper   |       |    |                 |
| Pair 1 Panjang_SGR_Resirkulasi - Panjang_SGR_Konvensional | 1,33083            | 1,10420        | ,31876          | ,62926                                    | 2,03241 | 4,175 | 11 | ,002            |

**Paired Samples Statistics**

|        |                        | Mean   | N  | Std. Deviation | Std. Error Mean |
|--------|------------------------|--------|----|----------------|-----------------|
| Pair 1 | Bobot_SGR_Resirkulasi  | 7,3250 | 12 | 1,88818        | ,54507          |
|        | Bobot_SGR_Konvensional | 4,8825 | 12 | 3,32625        | ,96020          |

**Paired Samples Correlations**

|        |                                                   | N  | Correlation | Sig. |
|--------|---------------------------------------------------|----|-------------|------|
| Pair 1 | Bobot_SGR_Resirkulasi &<br>Bobot_SGR_Konvensional | 12 | ,511        | ,089 |

**Paired Samples Test**

|        |                                                   | Paired Differences |                |                 |                                           | t       | df    | Sig. (2-tailed) |       |
|--------|---------------------------------------------------|--------------------|----------------|-----------------|-------------------------------------------|---------|-------|-----------------|-------|
|        |                                                   | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |         |       |                 |       |
|        |                                                   |                    |                |                 | Lower                                     |         |       |                 | Upper |
| Pair 1 | Bobot_SGR_Resirkulasi -<br>Bobot_SGR_Konvensional | 2,44250            | 2,86433        | ,82686          | ,62259                                    | 4,26241 | 2,954 | 11              | ,013  |

## Lampiran 9. Sintasan Juwana Kuda Laut Selama Penelitian

| Hari ke             | Resirkulasi |           |           |           | Rata-Rata |
|---------------------|-------------|-----------|-----------|-----------|-----------|
|                     | A1          | A2        | A3        | A4        |           |
| 0                   | 10          | 10        | 10        | 10        |           |
| 7                   | 10          | 10        | 10        | 10        |           |
| 14                  | 10          | 10        | 8         | 8         |           |
| 21                  | 6           | 4         | 3         | 4         |           |
| 28                  | 5           | 2         | 2         | 3         |           |
| <b>Sintasan (%)</b> | <b>50</b>   | <b>20</b> | <b>20</b> | <b>30</b> | <b>30</b> |

  

| Hari ke             | Konvensional |          |          |          | Rata-Rata  |
|---------------------|--------------|----------|----------|----------|------------|
|                     | B1           | B2       | B3       | B4       |            |
| 0                   | 10           | 10       | 10       | 10       |            |
| 7                   | 8            | 8        | 7        | 7        |            |
| 14                  | 6            | 4        | 4        | 5        |            |
| 21                  | 4            | 1        | 0        | 0        |            |
| 28                  | 3            | 0        | 0        | 0        |            |
| <b>Sintasan (%)</b> | <b>30</b>    | <b>0</b> | <b>0</b> | <b>0</b> | <b>7,5</b> |

## Lampiran 10. Uji T Berpasangan Sintasan Juwana Kuda Laut

Paired Samples Statistics

|        |            | Mean   | N  | Std. Deviation | Std. Error Mean |
|--------|------------|--------|----|----------------|-----------------|
| Pair 1 | Sintasan_R | 7,2500 | 20 | 3,20977        | ,71773          |
|        | Sintasan_K | 4,8500 | 20 | 3,80132        | ,85000          |

Paired Samples Correlations

|        |                         | N  | Correlation | Sig. |
|--------|-------------------------|----|-------------|------|
| Pair 1 | Sintasan_R & Sintasan_K | 20 | ,913        | ,000 |

Paired Samples Test

|        |                         | Paired Differences |                |                 |                                           | t       | df    | Sig. (2-tailed) |       |
|--------|-------------------------|--------------------|----------------|-----------------|-------------------------------------------|---------|-------|-----------------|-------|
|        |                         | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |         |       |                 |       |
|        |                         |                    |                |                 | Lower                                     |         |       |                 | Upper |
| Pair 1 | Sintasan_R - Sintasan_K | 2,40000            | 1,56945        | ,35094          | 1,66548                                   | 3,13452 | 6,839 | 19              | ,000  |

