

Final_Project_Code

2024-12-06

```
library(tidyr)
data <- read.csv("Final_Project_Crab_Data - Data for Two-Way Anova.csv")
print(data)
```

##	Trial	Individual	Tank_Type	Coverage_Percentage	Temperature
## 1	Trial 1	1.1	Algae Tank	38.23	54.5
## 2	Trial 1	2.1	Algae Tank	36.67	55.4
## 3	Trial 1	3.1	Algae Tank	41.77	55.2
## 4	Trial 1	4.1	Algae Tank	39.88	56.0
## 5	Trial 2	1.2	Algae Tank	16.53	58.2
## 6	Trial 2	2.2	Algae Tank	15.12	57.6
## 7	Trial 2	3.2	Algae Tank	17.94	57.3
## 8	Trial 2	4.2	Algae Tank	16.45	58.4
## 9	Trial 3	1.3	Algae Tank	55.82	57.1
## 10	Trial 3	2.3	Algae Tank	50.37	55.9
## 11	Trial 3	3.3	Algae Tank	53.94	56.6
## 12	Trial 3	4.3	Algae Tank	52.36	55.7
## 13	Trial 1	1.1	Mixed Tank	24.43	54.5
## 14	Trial 1	2.1	Mixed Tank	27.34	55.4
## 15	Trial 1	3.1	Mixed Tank	25.82	55.2
## 16	Trial 1	4.1	Mixed Tank	22.21	56.0
## 17	Trial 2	1.2	Mixed Tank	9.53	58.2
## 18	Trial 2	2.2	Mixed Tank	14.37	57.6
## 19	Trial 2	3.2	Mixed Tank	10.49	57.3
## 20	Trial 2	4.2	Mixed Tank	13.96	58.4
## 21	Trial 3	1.3	Mixed Tank	55.50	57.1
## 22	Trial 3	2.3	Mixed Tank	58.44	55.9
## 23	Trial 3	3.3	Mixed Tank	59.71	56.6
## 24	Trial 3	4.3	Mixed Tank	62.44	55.7
## 25	Trial 1	1.1	Sponge/Bryozoan Tank	55.75	54.5
## 26	Trial 1	2.1	Sponge/Bryozoan Tank	48.93	55.4
## 27	Trial 1	3.1	Sponge/Bryozoan Tank	61.22	55.2
## 28	Trial 1	4.1	Sponge/Bryozoan Tank	53.92	56.0
## 29	Trial 2	1.2	Sponge/Bryozoan Tank	8.91	58.2
## 30	Trial 2	2.2	Sponge/Bryozoan Tank	12.90	57.6
## 31	Trial 2	3.2	Sponge/Bryozoan Tank	9.54	57.3
## 32	Trial 2	4.2	Sponge/Bryozoan Tank	10.74	58.4
## 33	Trial 3	1.3	Sponge/Bryozoan Tank	12.77	57.1
## 34	Trial 3	2.3	Sponge/Bryozoan Tank	15.43	55.9
## 35	Trial 3	3.3	Sponge/Bryozoan Tank	17.45	56.6
## 36	Trial 3	4.3	Sponge/Bryozoan Tank	14.52	55.7

```
aov.res <- aov(formula = data$Coverage_Percentage ~ data$Temperature, data=data)
print(aov.res)
```

Call:

```
## aov(formula = data$Coverage_Percentage ~ data$Temperature, data = data)
##
## Terms:
##          data$Temperature Residuals
## Sum of Squares      4051.285  8891.895
## Deg. of Freedom           1      34
##
## Residual standard error: 16.17178
## Estimated effects may be unbalanced
```

```
summary(aov.res)
```

```
##          Df Sum Sq Mean Sq F value    Pr(>F)
## data$Temperature  1   4051     4051  15.49 0.000389 ***
## Residuals       34   8892      262
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
aov.res_1 <- aov(formula = data$Coverage_Percentage ~ data$Trial, data=data)
print(aov.res_1)
```

```
## Call:
## aov(formula = data$Coverage_Percentage ~ data$Trial, data = data)
##
## Terms:
##          data$Trial Residuals
## Sum of Squares    6315.481 6627.699
## Deg. of Freedom      2      33
##
## Residual standard error: 14.17178
## Estimated effects may be unbalanced
```

```
summary(aov.res_1)
```

```
##          Df Sum Sq Mean Sq F value    Pr(>F)
## data$Trial   2   6315   3157.7   15.72 1.6e-05 ***
## Residuals   33   6628    200.8
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```