

**Changes in Seedling height according to the seed rate**

**Bg 374**

**Days after sowing**

**Seedling height v1**

**Dry weight - Bg 360**

The SAS System 20:26 Wednesday, December 8, 2018

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

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The ANOVA Procedure

Dependent Variable: Drywgt

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 0.00436798 0.00145599 69.07 <.0001

Error 8 0.00016865 0.00002108

Corrected Total 11 0.00453663

R-Square Coeff Var Root MSE Drywgt Mean

0.962824 5.557260 0.004591 0.082621

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 0.00436798 0.00145599 69.07 <.0001

The SAS System 20:26 Wednesday, December 8, 2018

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The ANOVA Procedure

t Tests (LSD) for Drywgt

NOTE: This test controls the Type I comparison wise error rate, not the experiment wise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 0.000021

Critical Value of t 2.30600

Least Significant Difference 0.0086

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 0.102283 3 1

A

A 0.101000 3 2

B 0.065600 3 3

B

B 0.061600 3 4

**Dry weight - Bg 374**

The SAS System 20:26 Wednesday, December 8, 2018

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

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The ANOVA Procedure

Dependent Variable: Drywgt

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 0.00468366 0.00156122 10.76 0.0035

Error 8 0.00116086 0.00014511

Corrected Total 11 0.00584452

R-Square Coeff Var Root MSE Drywgt Mean

0.801377 10.38011 0.012046 0.116049

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 0.00468366 0.00156122 10.76 0.0035

The SAS System 20:26 Wednesday, December 8, 2018

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The ANOVA Procedure

t Tests (LSD) for Drywgt

NOTE: This test controls the Type I comparison wise error rate, not the experiment wise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 0.000145

Critical Value of t 2.30600

Least Significant Difference 0.0227

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 0.141167 3 1

A

B A 0.119600 3 2

B

B 0.117633 3 3

C 0.085797 3 4

**Chlorophyll content Bg 360**

The SAS System 20:26 Wednesday, December 8, 2018

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

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The ANOVA Procedure

Dependent Variable: Chrphl

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 2.51333333 0.83777778 0.25 0.8611

Error 8 27.11333333 3.38916667

Corrected Total 11 29.62666667

R-Square Coeff Var Root MSE Chrphl Mean

0.084833 5.869189 1.840969 31.36667

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 2.51333333 0.83777778 0.25 0.8611

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The ANOVA Procedure

t Tests (LSD) for Chrphl

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 3.389167

Critical Value of t 2.30600

Least Significant Difference 3.4663

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 31.900 3 2

A

A 31.733 3 1

A

A 31.000 3 4

A

A 30.833 3 3

**Chlorophyll content Bg 374**

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

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The ANOVA Procedure

Dependent Variable: Chrphl

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 17.01583333 5.67194444 2.47 0.1364

Error 8 18.37333333 2.29666667

Corrected Total 11 35.38916667

R-Square Coeff Var Root MSE Chrphl Mean

0.480820 4.774405 1.515476 31.74167

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 17.01583333 5.67194444 2.47 0.1364

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The ANOVA Procedure

t Tests (LSD) for Chrphl

NOTE: This test controls the Type I comparison wise error rate, not the experiment wise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 2.296667

Critical Value of t 2.30600

Least Significant Difference 2.8534

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 33.333 3 4

A

B A 32.333 3 1

B A

B A 31.100 3 2

B

B 30.200 3 3

**Root length V1**

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 20:26 Wednesday, December 8, 2018 2

The ANOVA Procedure

Dependent Variable: Rootlength

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 26294.51752 8764.83917 5.98 0.0193

Error 8 11717.38520 1464.67315

Corrected Total 11 38011.90271

R-Square Coeff Var Root MSE Rootlength Mean

0.691744 16.77760 38.27105 228.1080

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 26294.51752 8764.83917 5.98 0.0193

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The ANOVA Procedure

t Tests (LSD) for Rootlength

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 1464.673

Critical Value of t 2.30600

Least Significant Difference 72.058

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 274.63 3 1

A

A 272.84 3 2

B 197.23 3 3

B

B 167.72 3 4

**Root length V2**

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 20:26 Wednesday, December 8, 2018 47

The ANOVA Procedure

Dependent Variable: Rootlength

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 8795.56212 2931.85404 6.11 0.0182

Error 8 3837.02239 479.62780

Corrected Total 11 12632.58451

R-Square Coeff Var Root MSE Rootlength Mean

0.696260 6.552229 21.90041 334.2436

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 8795.562116 2931.854039 6.11 0.0182

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The ANOVA Procedure

t Tests (LSD) for Rootlength

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 479.6278

Critical Value of t 2.30600

Least Significant Difference 41.235

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 368.49 3 1

A

A 339.01 3 3

A

A 336.83 3 2

B 292.65 3 4

**Number of seedlings per 25cm2 v1**

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The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

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The ANOVA Procedure

Dependent Variable: numberofseedlings

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 38.00594005 12.66864668 254.98 <.0001

Error 8 0.39747860 0.04968483

Corrected Total 11 38.40341865

R-Square Coeff Var Root MSE numberofseedlings Mean

0.989650 2.048647 0.222901 10.88040

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 38.00594005 12.66864668 254.98 <.0001

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The ANOVA Procedure

t Tests (LSD) for numberofseedlings

NOTE: This test controls the Type I comparison wise error rate, not the experiment wise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 0.049685

Critical Value of t 2.30600

Least Significant Difference 0.4197

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 13.3021 3 4

B 11.6885 3 3

C 9.9493 3 2

D 8.5817 3 1

**Number of seedlings per 25cm2 v2**

The SAS System 20:26 Wednesday, December 8, 2018 109

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 20:26 Wednesday, December 8, 2018 110

The ANOVA Procedure

Dependent Variable: numberofseedlings

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 3 32.90740560 10.96913520 257.02 <.0001

Error 8 0.34142260 0.04267783

Corrected Total 11 33.24882820

R-Square Coeff Var Root MSE numberofseedlings Mean

0.989731 2.255437 0.206586 9.159472

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 32.90740560 10.96913520 257.02 <.0001

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The ANOVA Procedure

t Tests (LSD) for numberofseedlings

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha 0.05

Error Degrees of Freedom 8

Error Mean Square 0.042678

Critical Value of t 2.30600

Least Significant Difference 0.389

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 11.2960 3 4

B 10.1323 3 3

C 8.1631 3 2

D 7.0464 3 1