**Data during nursery period until 12 days**

V1 height 1

The SAS System 22:29 Wednesday, December 9, 2018 61

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 62

The ANOVA Procedure

Dependent Variable: Height1

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 2.95902500 0.59180500 221.93 <.0001

Error 6 0.01600000 0.00266667

Corrected Total 11 2.97502500

R-Square Coeff Var Root MSE Height1 Mean

0.994622 1.056568 0.051640 4.887500

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 2.95342500 0.98447500 369.18 <.0001

Rep 2 0.00560000 0.00280000 1.05 0.4064

The SAS System 22:29 Wednesday, December 9, 2018 63

The ANOVA Procedure

t Tests (LSD) for Height1

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.002667

Critical Value of t 2.44691

Least Significant Difference 0.1032

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 5.22000 3 4

A

A 5.17000 3 2

A

A 5.13000 3 3

B 4.03000 3 1

V1 height 2

The SAS System 22:29 Wednesday, December 9, 2018 64

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 65

The ANOVA Procedure

Dependent Variable: Height2

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 3.66961667 0.73392333 67.80 <.0001

Error 6 0.06495000 0.01082500

Corrected Total 11 3.73456667

R-Square Coeff Var Root MSE Height2 Mean

0.982608 1.394993 0.104043 7.458333

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 3.63690000 1.21230000 111.99 <.0001

Rep 2 0.03271667 0.01635833 1.51 0.2941

The SAS System 22:29 Wednesday, December 9, 2018 66

The ANOVA Procedure

t Tests (LSD) for Height2

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.010825

Critical Value of t 2.44691

Least Significant Difference 0.2079

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 7.95000 3 4

A

A 7.88333 3 3

B 7.43000 3 2

C 6.57000 3 1

V1 height 3

The SAS System 22:29 Wednesday, December 9, 2018 67

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 68

The ANOVA Procedure

Dependent Variable: Height3

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 2.96694333 0.59338867 27.30 0.0005

Error 6 0.13040467 0.02173411

Corrected Total 11 3.09734800

R-Square Coeff Var Root MSE Height3 Mean

0.957898 1.378190 0.147425 10.69700

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 2.95721733 0.98573911 45.35 0.0002

Rep 2 0.00972600 0.00486300 0.22 0.8059

The SAS System 22:29 Wednesday, December 9, 2018 69

The ANOVA Procedure

t Tests (LSD) for Height3

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.021734

Critical Value of t 2.44691

Least Significant Difference 0.2945

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 11.0747 3 4

A

A 11.0367 3 3

A

A 10.8233 3 2

B 9.8533 3 1

V1 height 4

The SAS System 22:29 Wednesday, December 9, 2018 79

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 80

The ANOVA Procedure

Dependent Variable: Height4

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 1.78435833 0.35687167 29.12 0.0004

Error 6 0.07353333 0.01225556

Corrected Total 11 1.85789167

R-Square Coeff Var Root MSE Height4 Mean

0.960421 0.701737 0.110705 15.77583

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 1.75589167 0.58529722 47.76 0.0001

Rep 2 0.02846667 0.01423333 1.16 0.3747

The SAS System 22:29 Wednesday, December 9, 2018 81

The ANOVA Procedure

t Tests (LSD) for Height4

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.012256

Critical Value of t 2.44691

Least Significant Difference 0.2212

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 16.10333 3 4

A

B A 16.00667 3 3

B

B 15.86333 3 2

C 15.13000 3 1

V2 height 1

The SAS System 18:31 Wednesday, December 17, 2018 100

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 101

The ANOVA Procedure

Dependent Variable: height1

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 1.49116575 0.29823315 116.31 <.0001

Error 6 0.01538517 0.00256419

Corrected Total 11 1.50655092

R-Square Coeff Var Root MSE height1 Mean

0.989788 0.991814 0.050638 5.105583

Source DF Anova SS Mean Square F Value Pr > F

rep 2 0.00977817 0.00488908 1.91 0.2286

trt 3 1.48138758 0.49379586 192.57 <.0001

The SAS System 18:31 Wednesday, December 17, 2018 102

The ANOVA Procedure

t Tests (LSD) for height1

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.002564

Critical Value of t 2.44691

Least Significant Difference 0.1012

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 5.38667 3 2

B 5.26667 3 4

B

B 5.26600 3 3

C 4.50300 3 1

V2 height 2

The SAS System 18:31 Wednesday, December 17, 2018 103

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 104

The ANOVA Procedure

Dependent Variable: height2

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 0.06701667 0.01340333 10.12 0.0069

Error 6 0.00795000 0.00132500

Corrected Total 11 0.07496667

R-Square Coeff Var Root MSE height2 Mean

0.893953 0.435326 0.036401 8.361667

Source DF Anova SS Mean Square F Value Pr > F

rep 2 0.01831667 0.00915833 6.91 0.0277

trt 3 0.04870000 0.01623333 12.25 0.0057

The SAS System 18:31 Wednesday, December 17, 2018 105

The ANOVA Procedure

t Tests (LSD) for height2

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.001325

Critical Value of t 2.44691

Least Significant Difference 0.0727

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 8.45667 3 4

B 8.37000 3 3

B

C B 8.34000 3 1

C

C 8.28000 3 2

V2 height 3

The SAS System 18:31 Wednesday, December 17, 2018 106

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 107

The ANOVA Procedure

Dependent Variable: height3

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 0.04613333 0.00922667 10.00 0.0071

Error 6 0.00553333 0.00092222

Corrected Total 11 0.05166667

R-Square Coeff Var Root MSE height3 Mean

0.892903 0.267718 0.030368 11.34333

Source DF Anova SS Mean Square F Value Pr > F

rep 2 0.00646667 0.00323333 3.51 0.0980

trt 3 0.03966667 0.01322222 14.34 0.0038

The SAS System 18:31 Wednesday, December 17, 2018 108

The ANOVA Procedure

t Tests (LSD) for height3

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.000922

Critical Value of t 2.44691

Least Significant Difference 0.0607

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 11.43667 3 4

B 11.34000 3 1

B

B 11.31333 3 3

B

B 11.28333 3 2

V2 height 4

The SAS System 18:31 Wednesday, December 17, 2018 112

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 113

The ANOVA Procedure

Dependent Variable: height4

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 0.32767500 0.06553500 61.28 <.0001

Error 6 0.00641667 0.00106944

Corrected Total 11 0.33409167

R-Square Coeff Var Root MSE height4 Mean

0.980794 0.191028 0.032702 17.11917

Source DF Anova SS Mean Square F Value Pr > F

rep 2 0.00291667 0.00145833 1.36 0.3250

trt 3 0.32475833 0.10825278 101.22 <.0001

The SAS System 18:31 Wednesday, December 17, 2018 114

The ANOVA Procedure

t Tests (LSD) for height4

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.001069

Critical Value of t 2.44691

Least Significant Difference 0.0653

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 17.34000 3 1

B 17.17000 3 4

C 17.08333 3 3

D 16.88333 3 2

Total root length v1

The SAS System 18:31 Wednesday, December 17, 2018 46

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 47

The ANOVA Procedure

Dependent Variable: trtlenth

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 85258.09406 17051.61881 41.42 0.0001

Error 6 2470.00777 411.66796

Corrected Total 11 87728.10183

R-Square Coeff Var Root MSE trtlenth Mean

0.971845 4.247084 20.28960 477.7302

Source DF Anova SS Mean Square F Value Pr > F

rep 2 8277.64387 4138.82194 10.05 0.0121

trt 3 76980.45018 25660.15006 62.33 <.0001

The SAS System 18:31 Wednesday, December 17, 2018 48

The ANOVA Procedure

t Tests (LSD) for trtlenth

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 411.668

Critical Value of t 2.44691

Least Significant Difference 40.536

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 558.47 3 1

A

A 552.52 3 4

B 426.91 3 3

C 373.01 3 2

Total root length v2

The SAS System 18:31 Wednesday, December 17, 2018 64

The ANOVA Procedure

Class Level Information

Class Levels Values

rep 3 1 2 3

trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 18:31 Wednesday, December 17, 2018 65

The ANOVA Procedure

Dependent Variable: trtlenth

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 128708.0652 25741.6130 51.34 <.0001

Error 6 3008.3240 501.3873

Corrected Total 11 131716.3893

R-Square Coeff Var Root MSE trtlenth Mean

0.977161 5.065558 22.39168 442.0378

Source DF Anova SS Mean Square F Value Pr > F

rep 2 330.6184 165.3092 0.33 0.7314

trt 3 128377.4468 42792.4823 85.35 <.0001

The SAS System 18:31 Wednesday, December 17, 2018 66

The ANOVA Procedure

t Tests (LSD) for trtlenth

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 501.3873

Critical Value of t 2.44691

Least Significant Difference 44.736

Means with the same letter are not significantly different.

t Grouping Mean N trt

A 549.69 3 1

A

A 539.13 3 4

B 359.87 3 3

B

B 319.46 3 2

**Dry weight v1**

The SAS System 22:29 Wednesday, December 9, 2018 130

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 131

The ANOVA Procedure

Dependent Variable: Drywgt

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 0.00124189 0.00024838 5.06 0.0366

Error 6 0.00029443 0.00004907

Corrected Total 11 0.00153632

R-Square Coeff Var Root MSE Drywgt Mean

0.808353 5.941592 0.007005 0.117900

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 0.00122609 0.00040870 8.33 0.0147

Rep 2 0.00001580 0.00000790 0.16 0.8549

The SAS System 22:29 Wednesday, December 9, 2018 132

The ANOVA Procedure

t Tests (LSD) for Drywgt

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.000049

Critical Value of t 2.44691

Least Significant Difference 0.014

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 0.132133 3 1

A

B A 0.122733 3 4

B

B C 0.109067 3 2

C

C 0.107667 3 3

**Dry weight v2**

The SAS System 22:29 Wednesday, December 9, 2018 136

The ANOVA Procedure

Class Level Information

Class Levels Values

Trt 4 1 2 3 4

Rep 3 1 2 3

Number of Observations Read 12

Number of Observations Used 12

The SAS System 22:29 Wednesday, December 9, 2018 137

The ANOVA Procedure

Dependent Variable: Drywgt

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 0.08333696 0.01666739 27.92 0.0004

Error 6 0.00358181 0.00059697

Corrected Total 11 0.08691877

R-Square Coeff Var Root MSE Drywgt Mean

0.958791 11.40083 0.024433 0.214308

Source DF Anova SS Mean Square F Value Pr > F

Trt 3 0.08245871 0.02748624 46.04 0.0002

Rep 2 0.00087825 0.00043913 0.74 0.5179

The SAS System 22:29 Wednesday, December 9, 2018 138

The ANOVA Procedure

t Tests (LSD) for Drywgt

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.000597

Critical Value of t 2.44691

Least Significant Difference 0.0488

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 0.30163 3 1

A

A 0.29177 3 4

B 0.14383 3 3

B

B 0.12000 3 2

**Core relation v1**

The SAS System 05:41 Thursday, December 22, 2018 1

The CORR Procedure

5 Variables: dwgt trl height12 height42DAS GC

Simple Statistics

Variable N Mean Std Dev Sum Minimum Maximum

dwgt 12 0.11790 0.01182 1.41480 0.10530 0.13850

trl 12 473.06358 93.86506 5677 331.86470 594.79730

height12 12 16.03250 0.12520 192.39000 15.80000 16.19000

height42DAS 12 71.79074 4.67993 861.48889 68.16667 80.00000

GC 12 92.91667 5.62395 1115 82.50000 100.00000

Pearson Correlation Coefficients, N = 12

Prob > |r| under H0: Rho=0

dwgt trl height12 height42DAS GC

dwgt 1.00000 0.76432 0.75327 0.78870 0.63363

0.0038 0.0047 0.0023 0.0269

trl 0.76432 1.00000 0.84659 0.68634 0.45028

0.0038 0.0005 0.0137 0.1419

height12 0.75327 0.84659 1.00000 0.71793 0.61166

0.0047 0.0005 0.0086 0.0346

height42DAS 0.78870 0.68634 0.71793 1.00000 0.74278

0.0023 0.0137 0.0086 0.0056

GC 0.63363 0.45028 0.61166 0.74278 1.00000

0.0269 0.1419 0.0346 0.0056

**Core relation v2**

The SAS System 05:41 Thursday, December 22, 2018 2

The CORR Procedure

5 Variables: dwgt trl height12 height42DAS GC

Simple Statistics

Variable N Mean Std Dev Sum Minimum Maximum

dwgt 12 0.21473 0.08929 2.57670 0.11050 0.30800

trl 12 442.03775 109.42677 5304 296.85490 563.34520

height12 12 17.11917 0.17428 205.43000 16.86000 17.39000

height42DAS 12 82.97475 4.48151 995.69701 78.66667 90.30000

GC 12 86.66667 10.57083 1040 70.00000 100.00000

Pearson Correlation Coefficients, N = 12

Prob > |r| under H0: Rho=0

dwgt trl height12 height42DAS GC

dwgt 1.00000 0.96249 0.84978 0.81412 0.28880

<.0001 0.0005 0.0013 0.3626

trl 0.96249 1.00000 0.85424 0.82458 0.21145

<.0001 0.0004 0.0010 0.5094

height12 0.84978 0.85424 1.00000 0.89288 0.32775

0.0005 0.0004 <.0001 0.2983

height42DAS 0.81412 0.82458 0.89288 1.00000 0.60462

0.0013 0.0010 <.0001 0.0373

GC 0.28880 0.21145 0.32775 0.60462 1.00000

0.3626 0.5094 0.2983 0.0373

**Data after field establishment**

Height1 V1

The SAS System 17:45 Wednesday, December 20, 2018 4

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 17:45 Wednesday, December 20, 2018 5

The ANOVA Procedure

Dependent Variable: PHeight1

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 58.00800431 11.60160086 341.02 <.0001

Error 6 0.20412455 0.03402076

Corrected Total 11 58.21212886

R-Square Coeff Var Root MSE PHeight1 Mean

0.996493 0.677980 0.184447 27.20539

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.10502270 0.05251135 1.54 0.2879

Trt 3 57.90298161 19.30099387 567.33 <.0001

The SAS System 17:45 Wednesday, December 20, 2018 6

The ANOVA Procedure

t Tests (LSD) for PHeight1

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.034021

Critical Value of t 2.44691

Least Significant Difference 0.3685

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 30.3595 3 1

B 28.1593 3 4

C 25.2000 3 3

C

C 25.1028 3 2

Height2 V1

The SAS System 17:45 Wednesday, December 20, 2018 7

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 17:45 Wednesday, December 20, 2018 8

The ANOVA Procedure

Dependent Variable: PHeight2

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 283.6712935 56.7342587 394.77 <.0001

Error 6 0.8622979 0.1437163

Corrected Total 11 284.5335913

R-Square Coeff Var Root MSE PHeight2 Mean

0.996969 1.063411 0.379099 35.64937

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.0120749 0.0060374 0.04 0.9591

Trt 3 283.6592186 94.5530729 657.91 <.0001

The SAS System 17:45 Wednesday, December 20, 2018 9

The ANOVA Procedure

t Tests (LSD) for PHeight2

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.143716

Critical Value of t 2.44691

Least Significant Difference 0.7574

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 43.6694 3 1

B 35.3952 3 4

C 31.8439 3 3

C

C 31.6889 3 2

Height3 V1

The SAS System 03:21 Thursday, December 21, 2018 4

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 03:21 Thursday, December 21, 2018 5

The ANOVA Procedure

Dependent Variable: PHeight3

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 144.4630845 28.8926169 1652.65 <.0001

Error 6 0.1048958 0.0174826

Corrected Total 11 144.5679803

R-Square Coeff Var Root MSE PHeight3 Mean

0.999274 0.304830 0.132222 43.37569

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.3162616 0.1581308 9.05 0.0155

Trt 3 144.1468229 48.0489410 2748.38 <.0001

The SAS System 03:21 Thursday, December 21, 2018 6

The ANOVA Procedure

t Tests (LSD) for PHeight3

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.017483

Critical Value of t 2.44691

Least Significant Difference 0.2642

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 48.3333 3 1

B 44.9111 3 4

C 40.2583 3 3

C

C 40.0000 3 2

Height4 V1

The SAS System 03:21 Thursday, December 21, 2018 7

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 03:21 Thursday, December 21, 2018 8

The ANOVA Procedure

Dependent Variable: PHeight4

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 161.4625138 32.2925028 645.53 <.0001

Error 6 0.3001509 0.0500252

Corrected Total 11 161.7626647

R-Square Coeff Var Root MSE PHeight4 Mean

0.998144 0.438880 0.223663 50.96220

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.0437011 0.0218506 0.44 0.6651

Trt 3 161.4188127 53.8062709 1075.58 <.0001

The SAS System 03:21 Thursday, December 21, 2018 9

The ANOVA Procedure

t Tests (LSD) for PHeight4

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.050025

Critical Value of t 2.44691

Least Significant Difference 0.4469

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 56.7571 3 1

B 51.4667 3 4

C 48.0667 3 3

D 47.5583 3 2

Height5 V1

The SAS System 03:21 Thursday, December 21, 2018

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 03:21 Thursday, December 21, 2018 11

The ANOVA Procedure

Dependent Variable: PHeight5

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 242.4217243 48.4843449 1726.99 <.0001

Error 6 0.1684469 0.0280745

Corrected Total 11 242.5901712

R-Square Coeff Var Root MSE PHeight5 Mean

0.999306 0.274568 0.167554 61.02481

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.4862230 0.2431115 8.66 0.0170

Trt 3 241.9355013 80.6451671 2872.54 <.0001

The SAS System 03:21 Thursday, December 21, 2018 12

The ANOVA Procedure

t Tests (LSD) for PHeight5

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.028074

Critical Value of t 2.44691

Least Significant Difference 0.3348

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 68.5993 3 1

B 60.0667 3 4

C 58.2000 3 3

D 57.2333 3 2

Height6 V1

The SAS System 03:21 Thursday, December 21, 2018 16

The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 03:21 Thursday, December 21, 2018 17

The ANOVA Procedure

Dependent Variable: PHeight6

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 240.4102674 48.0820535 566.56 <.0001

Error 6 0.5091975 0.0848663

Corrected Total 11 240.9194650

R-Square Coeff Var Root MSE PHeight6 Mean

0.997886 0.405788 0.291318 71.79074

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.1896502 0.0948251 1.12 0.3868

Trt 3 240.2206172 80.0735391 943.53 <.0001

The SAS System 03:21 Thursday, December 21, 2018 18

The ANOVA Procedure

t Tests (LSD) for PHeight6

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.084866

Critical Value of t 2.44691

Least Significant Difference 0.582

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 79.4074 3 1

B 70.5000 3 4

C 69.0667 3 3

D 68.1889 3 2

Height1 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

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: PHeight1

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 114.3342883 22.8668577 153.88 <.0001

Error 6 0.8916119 0.1486020

Corrected Total 11 115.2259002

R-Square Coeff Var Root MSE PHeight1 Mean

0.992262 1.106379 0.385489 34.84244

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 1.0296945 0.5148473 3.46 0.0999

Trt 3 113.3045938 37.7681979 254.16 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight1

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.148602

Critical Value of t 2.44691

Least Significant Difference 0.7702

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 39.9933 3 1

B 34.3242 3 4

C 32.8704 3 3

C

C 32.1818 3 2

Height2 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

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: PHeight2

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 134.6116667 26.9223333 98.80 <.0001

Error 6 1.6350000 0.2725000

Corrected Total 11 136.2466667

R-Square Coeff Var Root MSE PHeight2 Mean

0.988000 1.199116 0.522015 43.53333

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.1116667 0.0558333 0.20 0.8202

Trt 3 134.5000000 44.8333333 164.53 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight2

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.2725

Critical Value of t 2.44691

Least Significant Difference 1.0429

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 49.0333 3 1

B 43.2000 3 4

C 41.7000 3 3

D 40.2000 3 2

Height3 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

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: PHeight3

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 149.7001286 29.9400257 250.56 <.0001

Error 6 0.7169481 0.1194913

Corrected Total 11 150.4170767

R-Square Coeff Var Root MSE PHeight3 Mean

0.995234 0.648953 0.345675 53.26658

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.0502532 0.0251266 0.21 0.8161

Trt 3 149.6498754 49.8832918 417.46 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight3

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.119491

Critical Value of t 2.44691

Least Significant Difference 0.6906

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 58.0976 3 1

B 55.1502 3 4

C 50.3852 3 3

D 49.4333 3 2

Height4 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

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: PHeight4

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 78.03470199 15.60694040 87.50 <.0001

Error 6 1.07023722 0.17837287

Corrected Total 11 79.10493921

R-Square Coeff Var Root MSE PHeight4 Mean

0.986471 0.672118 0.422342 62.83746

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.30104802 0.15052401 0.84 0.4754

Trt 3 77.73365397 25.91121799 145.26 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight4

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.178373

Critical Value of t 2.44691

Least Significant Difference 0.8438

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 66.6630 3 1

B 63.5333 3 4

C 61.1111 3 3

D 60.0424 3 2

Height5 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

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: PHeight5

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 112.5293590 22.5058718 181.77 <.0001

Error 6 0.7428748 0.1238125

Corrected Total 11 113.2722338

R-Square Coeff Var Root MSE PHeight5 Mean

0.993442 0.479538 0.351870 73.37692

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.1445795 0.0722898 0.58 0.5866

Trt 3 112.3847795 37.4615932 302.57 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight5

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.123812

Critical Value of t 2.44691

Least Significant Difference 0.703

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 78.3000 3 1

B 73.5318 3 4

C 71.2304 3 3

D 70.4455 3 2

Height6 V2

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The ANOVA Procedure

Class Level Information

Class Levels Values

Rep 3 1 2 3

Trt 4 1 2 3 4

Number of Observations Read 12

Number of Observations Used 12

The SAS System 03:59 Thursday, December 21, 2018 41

The ANOVA Procedure

Dependent Variable: PHeight6

Sum of

Source DF Squares Mean Square F Value Pr > F

Model 5 219.9655187 43.9931037 275.48 <.0001

Error 6 0.9581649 0.1596941

Corrected Total 11 220.9236836

R-Square Coeff Var Root MSE PHeight6 Mean

0.995663 0.481613 0.399617 82.97475

Source DF Anova SS Mean Square F Value Pr > F

Rep 2 0.7773614 0.3886807 2.43 0.1683

Trt 3 219.1881573 73.0627191 457.52 <.0001

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The ANOVA Procedure

t Tests (LSD) for PHeight6

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

Alpha 0.05

Error Degrees of Freedom 6

Error Mean Square 0.159694

Critical Value of t 2.44691

Least Significant Difference 0.7984

Means with the same letter are not significantly different.

t Grouping Mean N Trt

A 89.9417 3 1

B 82.9571 3 4

C 79.9352 3 3

D 79.0651 3 2