**DATA** CRUZADO;

INPUT

CULTIVAR$ ADUBO$ REP RESP;

CARDS;

A X 1 100

A Y 1 120

A Z 1 140

B X 1 70

B Y 1 80

B Z 1 90

C X 1 140

C Y 1 150

C Z 1 160

D X 1 120

D Y 1 130

D Z 1 140

A X 2 105

A Y 2 110

A Z 2 120

B X 2 80

B Y 2 90

B Z 2 95

C X 2 145

C Y 2 160

C Z 2 170

D X 2 130

D Y 2 135

D Z 2 150

;

**PROC** **GLM**;

CLASS CULTIVAR ADUBO;

MODEL RESP = CULTIVAR ADUBO CULTIVAR\*ADUBO;

MEANS CULTIVAR ADUBO/ T LINES;

LSMEANS CULTIVAR\*ADUBO/SLICE= CULTIVAR;

LSMEANS CULTIVAR\*ADUBO/ADJUST=T LINES;

**RUN**;

Class Levels Values

CULTIVAR 4 A B C D

ADUBO 3 X Y Z

Number of Observations Read 24

Number of Observations Used 24

Dependent Variable: RESP

Sum oF

Source DF Squares Mean Square F Value Pr > F

Model 11 17895.83333 1626.89394 32.54 <.0001

Error 12 600.00000 50.00000

Corrected Total 23 18495.83333

R-Square Coeff Var Root MSE RESP Mean

0.967560 5.792001 7.071068 122.0833

Source DF Type I SS Mean Square F Value Pr > F

CULTIVAR 3 15912.50000 5304.16667 106.08 <.0001

ADUBO 2 1914.58333 957.29167 19.15 0.0002

CULTIVAR\*ADUBO 6 68.75000 11.45833 0.23 0.9591

Source DF Type III SS Mean Square F Value Pr > F

CULTIVAR 3 15912.50000 5304.16667 106.08 <.0001

ADUBO 2 1914.58333 957.29167 19.15 0.0002

CULTIVAR\*ADUBO 6 68.75000 11.45833 0.23 0.9591

The SAS System 12:47 Sunday, February 21, 2016 24

t Tests (LSD) for RESP

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

Alpha 0.05

Error Degrees of Freedom 12

Error Mean Square 50

Critical Value of t 2.17881

Least Significant Difference 8.895

Means with the same letter are not significantly different.

t Grouping Mean N CULTIVAR

A 154.167 6 C

B 134.167 6 D

C 115.833 6 A

D 84.167 6 B

t Tests (LSD) for RESP

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

Alpha 0.05

Error Degrees of Freedom 12

Error Mean Square 50

Critical Value of t 2.17881

Least Significant Difference 7.7033

Means with the same letter are not significantly different.

t Grouping Mean N ADUBO

A 133.125 8 Z

B 121.875 8 Y

C 111.250 8 X

CULTIVAR ADUBO RESP LSMEAN

A X 102.500000

A Y 115.000000

A Z 130.000000

B X 75.000000

B Y 85.000000

B Z 92.500000

C X 142.500000

C Y 155.000000

C Z 165.000000

D X 125.000000

D Y 132.500000

CULTIVAR\*ADUBO Effect Sliced by CULTIVAR for RESP

Sum of

CULTIVAR DF Squares Mean Square F Value Pr > F

A 2 758.333333 379.166667 7.58 0.0074

B 2 308.333333 154.166667 3.08 0.0831

C 2 508.333333 254.166667 5.08 0.0252

D 2 408.333333 204.166667 4.08 0.0444

T Comparison Lines for Least Squares Means of CULTIVAR\*ADUBO

LS-means with the same letter are not significantly different.

RESP LSMEAN

LSMEAN CULTIVAR ADUBO Number

A 165.0 C Z 9

A

B A 155.0 C Y 8

B

B C 145.0 D Z 12

B C

B C 142.5 C X 7

C

D C 132.5 D Y 11

D C

D C E 130.0 A Z 3

D E

D E 125.0 D X 10

E

F E 115.0 A Y 2

F

G F 102.5 A X 1

G

G H 92.5 B Z 6

H

I H 85.0 B Y 5

I

I 75.0 B X 4

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.