

The Mixed Procedure

Model Information

| | |
|---------------------------|---------------------|
| Data Set | WORK.ASPARGUS |
| Dependent Variable | yield |
| Covariance Structure | Variance Components |
| Estimation Method | Type 3 |
| Residual Variance Method | Factor |
| Fixed Effects SE Method | Model-Based |
| Degrees of Freedom Method | Satterthwaite |

Class Level Information

| Class | Levels | Values |
|-------|--------|---------|
| cut | 4 | 1 2 3 4 |
| block | 4 | 1 2 3 4 |
| year | 4 | 0 1 2 3 |

Dimensions

| | |
|-----------------------|----|
| Covariance Parameters | 2 |
| Columns in X | 29 |
| Columns in Z | 16 |
| Subjects | 1 |
| Max Obs Per Subject | 64 |

Number of Observations

| | |
|---------------------------------|----|
| Number of Observations Read | 64 |
| Number of Observations Used | 64 |
| Number of Observations Not Used | 0 |

Type 3 Analysis of Variance

| Source | DF | Sum of Squares | Mean Square |
|-----------|----|----------------|-------------|
| cut | 3 | 241377 | 80459 |
| block | 3 | 30170 | 10057 |
| year | 3 | 518722 | 172907 |
| cut*year | 9 | 51178 | 5686.388889 |
| cut*block | 9 | 21861 | 2428.972222 |
| Residual | 36 | 15487 | 430.184028 |

The Mixed Procedure

Type 3 Analysis of Variance

| Source | Expected Mean Square | Error Term | Error | |
|-----------|---|---------------|-------|---------|
| | | | DF | F Value |
| cut | Var(Residual) + 4 Var(cut*block) + Q(cut,cut*year) | MS(cut*block) | 9 | 33.12 |
| block | Var(Residual) + 4 Var(cut*block) + Q(block) | MS(cut*block) | 9 | 4.14 |
| year | Var(Residual) + Q(year,cut*year) | MS(Residual) | 36 | 401.94 |
| cut*year | Var(Residual) + Q(cut*year) | MS(Residual) | 36 | 13.22 |
| cut*block | Var(Residual) + 4 Var(cut*block) | MS(Residual) | 36 | 5.65 |
| Residual | Var(Residual) | . | . | . |

Type 3 Analysis
of Variance

| Source | Pr > F |
|-----------|--------|
| cut | <.0001 |
| block | 0.0423 |
| year | <.0001 |
| cut*year | <.0001 |
| cut*block | <.0001 |
| Residual | . |

Covariance Parameter
Estimates

| Cov Parm | Estimate |
|-----------|----------|
| cut*block | 499.70 |
| Residual | 430.18 |

Fit Statistics

| | |
|--------------------------|-------|
| -2 Res Log Likelihood | 445.3 |
| AIC (smaller is better) | 449.3 |
| AICC (smaller is better) | 449.6 |
| BIC (smaller is better) | 450.8 |

Type 3 Tests of Fixed Effects

| Effect | Num DF | Den DF | F Value | Pr > F |
|--------|-----------|-----------|---------|--------|
| cut | 3 | 9 | 33.12 | <.0001 |
| block | 3 | 9 | 4.14 | 0.0423 |

Repeated Measures ANOVA in PROC MIXED assuming circularity 3

The Mixed Procedure

Type 3 Tests of Fixed Effects

| Effect | Num DF | Den DF | F Value | Pr > F |
|----------|-----------|-----------|---------|--------|
| year | 3 | 36 | 401.94 | <.0001 |
| cut*year | 9 | 36 | 13.22 | <.0001 |

Contrasts

| Label | Num DF | Den DF | F Value | Pr > F |
|---------------|-----------|-----------|---------|--------|
| linear cut | 1 | 9 | 90.91 | <.0001 |
| nonlinear cut | 2 | 9 | 4.23 | 0.0506 |

Least Squares Means

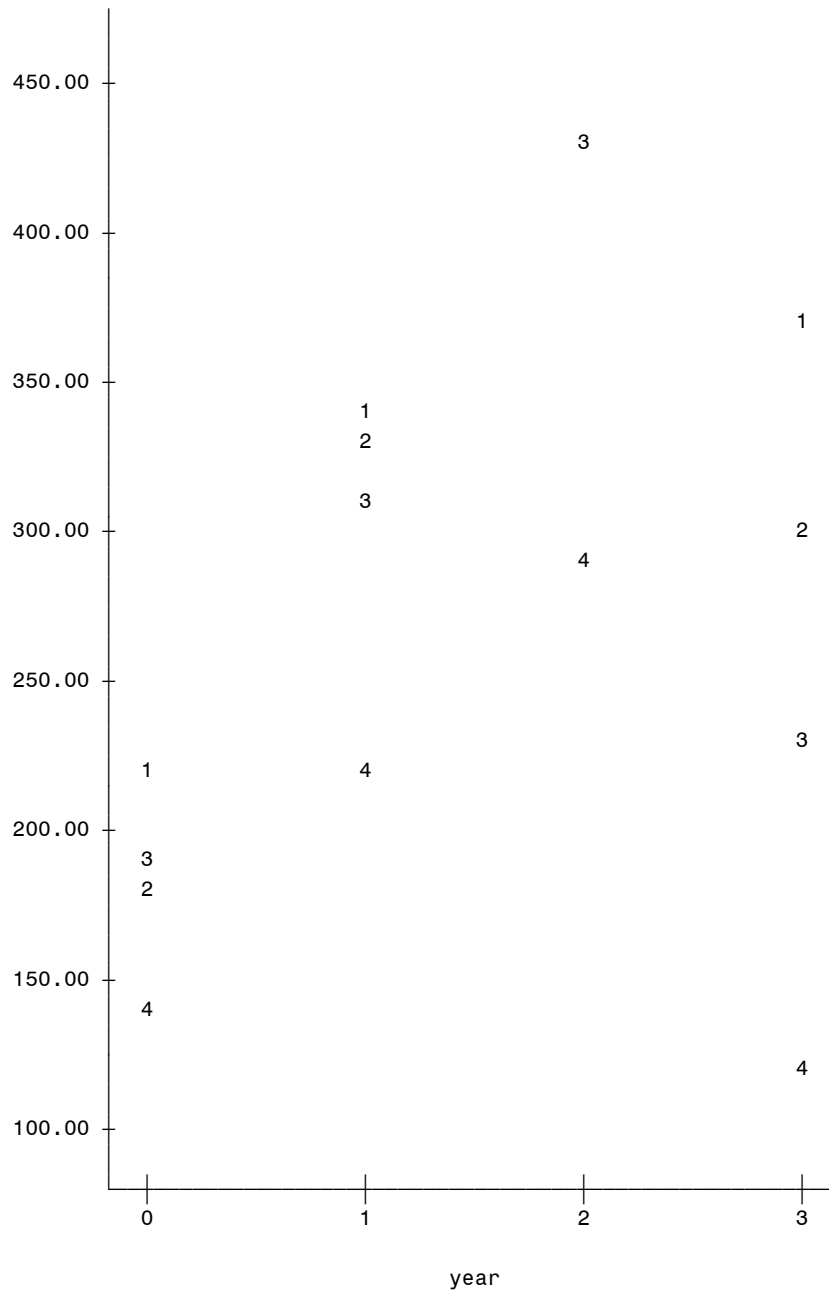
| Effect | cut | year | Estimate | Standard Error | DF | t Value | Pr > t |
|----------|-----|------|----------|-------------------|------|---------|---------|
| cut | 1 | | 356.62 | 12.3212 | 9 | 28.94 | <.0001 |
| cut | 2 | | 322.88 | 12.3212 | 9 | 26.20 | <.0001 |
| cut | 3 | | 290.81 | 12.3212 | 9 | 23.60 | <.0001 |
| cut | 4 | | 192.19 | 12.3212 | 9 | 15.60 | <.0001 |
| year | | 0 | 179.50 | 7.6235 | 19.7 | 23.55 | <.0001 |
| year | | 1 | 299.44 | 7.6235 | 19.7 | 39.28 | <.0001 |
| year | | 2 | 427.69 | 7.6235 | 19.7 | 56.10 | <.0001 |
| year | | 3 | 255.88 | 7.6235 | 19.7 | 33.56 | <.0001 |
| cut*year | 1 | 0 | 216.25 | 15.2470 | 19.7 | 14.18 | <.0001 |
| cut*year | 1 | 1 | 340.00 | 15.2470 | 19.7 | 22.30 | <.0001 |
| cut*year | 1 | 2 | 499.00 | 15.2470 | 19.7 | 32.73 | <.0001 |
| cut*year | 1 | 3 | 371.25 | 15.2470 | 19.7 | 24.35 | <.0001 |
| cut*year | 2 | 0 | 175.75 | 15.2470 | 19.7 | 11.53 | <.0001 |
| cut*year | 2 | 1 | 331.25 | 15.2470 | 19.7 | 21.73 | <.0001 |
| cut*year | 2 | 2 | 484.75 | 15.2470 | 19.7 | 31.79 | <.0001 |
| cut*year | 2 | 3 | 299.75 | 15.2470 | 19.7 | 19.66 | <.0001 |
| cut*year | 3 | 0 | 188.75 | 15.2470 | 19.7 | 12.38 | <.0001 |
| cut*year | 3 | 1 | 310.25 | 15.2470 | 19.7 | 20.35 | <.0001 |
| cut*year | 3 | 2 | 433.00 | 15.2470 | 19.7 | 28.40 | <.0001 |
| cut*year | 3 | 3 | 231.25 | 15.2470 | 19.7 | 15.17 | <.0001 |
| cut*year | 4 | 0 | 137.25 | 15.2470 | 19.7 | 9.00 | <.0001 |
| cut*year | 4 | 1 | 216.25 | 15.2470 | 19.7 | 14.18 | <.0001 |
| cut*year | 4 | 2 | 294.00 | 15.2470 | 19.7 | 19.28 | <.0001 |
| cut*year | 4 | 3 | 121.25 | 15.2470 | 19.7 | 7.95 | <.0001 |

Low-res profile plot

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Plot of Estimate*year. Symbol is value of cut.





Repeated measures ANOVA in PROC GLM
 Model includes a block*year interaction

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The GLM Procedure

Class Level Information

| Class | Levels | Values |
|-------|--------|---------|
| block | 4 | 1 2 3 4 |
| cut | 4 | 1 2 3 4 |

Number of Observations Read 16
 Number of Observations Used 16

Repeated measures ANOVA in PROC GLM
 Model includes a block*year interaction

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The GLM Procedure
 Repeated Measures Analysis of Variance

Repeated Measures Level Information

| Dependent Variable | year1 | year2 | year3 | year4 |
|--------------------|-------|-------|-------|-------|
| Level of year | 1 | 2 | 3 | 4 |

Partial Correlation Coefficients from the Error SSCP Matrix / Prob > |r|

| DF = 9 | year1 | year2 | year3 | year4 |
|--------|--------------------|--------------------|--------------------|--------------------|
| year1 | 1.000000 | 0.417434 0.2300 | 0.422711 0.2236 | 0.722943 0.0182 |
| year2 | 0.417434 0.2300 | 1.000000 | 0.788309 0.0067 | 0.519964 0.1234 |
| year3 | 0.422711 0.2236 | 0.788309 0.0067 | 1.000000 | 0.627575 0.0521 |
| year4 | 0.722943 0.0182 | 0.519964 0.1234 | 0.627575 0.0521 | 1.000000 |

E = Error SSCP Matrix

year_N represents the contrast between the nth level of year and the last

| | year_1 | year_2 | year_3 |
|--------|---------|---------|---------|
| year_1 | 3552.25 | 1778.37 | 435.87 |
| year_2 | 1778.37 | 7596.56 | 5329.06 |
| year_3 | 435.87 | 5329.06 | 7739.56 |

Partial Correlation Coefficients from the Error SSCP Matrix of the
 Variables Defined by the Specified Transformation / Prob > |r|

| DF = 9 | year_1 | year_2 | year_3 |
|--------|--------------------|--------------------|--------------------|
| year_1 | 1.000000 | 0.342344 0.3329 | 0.083129 0.8194 |
| year_2 | 0.342344 0.3329 | 1.000000 | 0.694999 0.0257 |
| year_3 | 0.083129 | 0.694999 | 1.000000 |

Profile plot of estimated joint treatment means

