

The Mixed Procedure

Model Information	
Data Set	WORK.REDWING
Dependent Variable	oil
Covariance Structure	Variance Components
Estimation Method	Type 3
Residual Variance Method	Factor
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information		
Class	Levels	Values
block	4	1 2 3 4
treat	6	a b c d e f

Dimensions	
Covariance Parameters	2
Columns in X	7
Columns in Z	4
Subjects	1
Max Obs Per Subject	24

Number of Observations	
Number of Observations Read	24
Number of Observations Used	24
Number of Observations Not Used	0

Type 3 Analysis of Variance								
Source	DF	Sum of Squares	Mean Square	Expected Mean Square	Error Term	Error DF	F Value	Pr > F
treat	5	31.652083	6.330417	Var(Residual) + Q(treat)	MS(Residual)	15	4.82	0.0080
block	3	3.141250	1.047083	Var(Residual) + 6 Var(block)	MS(Residual)	15	0.80	0.5147
Residual	15	19.716250	1.314417	Var(Residual)

The Mixed Procedure

Covariance Parameter Estimates	
Cov Parm	Estimate
block	-0.04456
Residual	1.3144

Fit Statistics	
-2 Res Log Likelihood	63.6
AIC (smaller is better)	67.6
AICC (smaller is better)	68.4
BIC (smaller is better)	66.4

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
treat	5	15	4.82	0.0080

Estimates					
Label	Estimate	Standard Error	DF	t Value	Pr > t
treat vs. control	-1.7950	0.6280	15	-2.86	0.0120
control mean	37.0250	0.5634	15	65.71	<.0001

Contrasts				
Label	Num DF	Den DF	F Value	Pr > F
treat vs. control	1	15	8.17	0.0120
Inoculation timing	4	15	3.98	0.0215

The Mixed Procedure

Least Squares Means						
Effect	treat	Estimate	Standard Error	DF	t Value	Pr > t
treat	a	35.1000	0.5634	15	62.30	<.0001
treat	b	34.3000	0.5634	15	60.88	<.0001
treat	c	34.0000	0.5634	15	60.34	<.0001
treat	d	36.7000	0.5634	15	65.14	<.0001
treat	e	36.0500	0.5634	15	63.98	<.0001
treat	f	37.0250	0.5634	15	65.71	<.0001

***RCB Model with Blocks Random, Fit with PROC GLM
GLM not designed for mixed models & gives some wrong answers***

The GLM Procedure

Class Level Information		
Class	Levels	Values
block	4	1 2 3 4
treat	6	a b c d e f

Number of Observations Read	24
Number of Observations Used	24

**RCB Model with Blocks Random, Fit with PROC GLM
GLM not designed for mixed models & gives some wrong answers**

The GLM Procedure

Dependent Variable: oil

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	34.79333333	4.34916667	3.31	0.0219
Error	15	19.71625000	1.31441667		
Corrected Total	23	54.50958333			

R-Square	Coeff Var	Root MSE	oil Mean
0.638298	3.226870	1.146480	35.52917

Source	DF	Type I SS	Mean Square	F Value	Pr > F
treat	5	31.65208333	6.33041667	4.82	0.0080
block	3	3.14125000	1.04708333	0.80	0.5147

Source	DF	Type III SS	Mean Square	F Value	Pr > F
treat	5	31.65208333	6.33041667	4.82	0.0080
block	3	3.14125000	1.04708333	0.80	0.5147

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The GLM Procedure

Source	Type III Expected Mean Square
treat	Var(Error) + Q(treat)
block	Var(Error) + 6 Var(block)

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***The GLM Procedure
Tests of Hypotheses for Mixed Model Analysis of Variance***

Dependent Variable: oil

Source	DF	Type III SS	Mean Square	F Value	Pr > F
treat	5	31.652083	6.330417	4.82	0.0080
block	3	3.141250	1.047083	0.80	0.5147
Error: MS(Error)	15	19.716250	1.314417		

Least Squares Means

treat	oil LSMEAN	Standard Error	Pr > t
a	35.1000000	0.5732401	<.0001
b	34.3000000	0.5732401	<.0001
c	34.0000000	0.5732401	<.0001
d	36.7000000	0.5732401	<.0001
e	36.0500000	0.5732401	<.0001
f	37.0250000	0.5732401	<.0001

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Dependent Variable: oil

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
treat vs. control	1	10.74008333	10.74008333	8.17	0.0120
Inoculation timing	4	20.91200000	5.22800000	3.98	0.0215

Parameter	Estimate	Standard Error	t Value	Pr > t
treat vs. control	-1.7950000	0.62795302	-2.86	0.0120
control mean	37.0250000	0.57324006	64.59	<.0001