

Nested ANOVA for fecundity
Data simulated from Cronin and Strong (1996)

Obs	site	isoline	wasp	eggs	y	site_jit
1	1	1	1	37	37	0.88012
2	1	1	2	41	41	1.06879
3	1	1	3	46	46	0.97335
4	1	1	4	44	44	1.15068
5	1	1	5	43	43	1.07407
6	1	1	6	41	41	1.00937
7	1	1	7	38	38	1.19929
8	1	1	8	37	37	1.04098
9	1	2	1	37	37	0.77517
10	1	2	2	28	28	1.25115
11	1	2	3	34	34	1.03755
12	1	2	4	37	37	0.95807
13	1	2	5	35	35	1.02387
14	1	2	6	39	39	0.85224
15	1	2	7	36	36	1.10257
16	1	2	8	29	29	1.05605
17	1	3	1	35	35	0.91170
18	1	3	2	37	37	1.11288
19	1	3	3	40	40	1.00330
20	1	3	4	39	39	0.98143
21	1	3	5	37	37	0.98745
22	1	3	6	44	44	1.02164
23	1	3	7	35	35	0.97812
24	1	3	8	38	38	0.85740
25	1	4	1	28	28	1.01057
26	1	4	2	36	36	1.16904
27	1	4	3	31	31	1.10080
28	1	4	4	27	27	0.93037
29	1	4	5	36	36	0.97658
30	1	4	6	33	33	0.92471
31	1	4	7	31	31	1.13136
32	1	4	8	35	35	1.02685
33	1	5	1	34	34	0.98022
34	1	5	2	35	35	0.86729
35	1	5	3	30	30	1.12127
36	1	5	4	39	39	1.00654
37	1	5	5	42	42	1.03332
38	1	5	6	39	39	0.94549
39	1	5	7	38	38	1.14364

40	1	5	8	32	32	0.98187
41	1	6	1	30	30	0.99382
42	1	6	2	32	32	1.02175
43	1	6	3	35	35	0.98338
44	1	6	4	35	35	1.06598
45	1	6	5	32	32	0.92084
46	1	6	6	31	31	1.10340
47	1	6	7	34	34	0.94469
48	1	6	8	30	30	0.93311
49	1	7	1	30	30	0.88511
50	1	7	2	36	36	1.07390
51	1	7	3	37	37	1.16363
52	1	7	4	30	30	1.00917
53	1	7	5	41	41	0.90733
54	1	7	6	35	35	0.99759
55	1	7	7	34	34	1.14924
56	1	7	8	37	37	0.93383
57	1	8	1	25	25	0.93475
58	1	8	2	31	31	1.13796
59	1	8	3	24	24	0.92621
60	1	8	4	26	26	0.99266
61	1	8	5	30	30	0.86678
62	1	8	6	31	31	1.09976
63	1	8	7	25	25	0.90643
64	1	8	8	24	24	1.02210
65	1	9	1	34	34	1.15097
66	1	9	2	35	35	0.88641
67	1	9	3	29	29	0.93292
68	1	9	4	34	34	0.99523
69	1	9	5	34	34	1.07340
70	1	9	6	40	40	0.95332
71	1	9	7	37	37	1.03918
72	1	9	8	37	37	1.02666
73	1	10	1	38	38	0.92648
74	1	10	2	30	30	0.92731
75	1	10	3	33	33	1.06941
76	1	10	4	32	32	1.00396
77	1	10	5	33	33	1.04064
78	1	10	6	34	34	0.93759
79	1	10	7	35	35	0.94308
80	1	10	8	41	41	0.98855
81	1	11	1	36	36	1.07469
82						

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83	1	11	3	36	36	0.94319
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85	1	11	5	37	37	0.90068
86	1	11	6	41	41	1.01912
87	1	11	7	37	37	0.98051
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93	1	12	5	40	40	0.94971
94	1	12	6	34	34	1.08600
95	1	12	7	29	29	0.93965
96	1	12	8	42	42	0.97969
97	1	13	1	33	33	1.08667
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99	1	13	3	33	33	1.07257
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103	1	13	7	34	34	0.76959
104	1	13	8	38	38	1.06002
105	1	14	1	35	35	1.07822
106	1	14	2	33	33	0.88172
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109	1	14	5	29	29	0.94591
110	1	14	6	35	35	1.13569
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113	2	1	1	26	26	2.12391
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123	2	2	3	46	46	2.04282
124						

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132	2	3	4	31	31	2.18213
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166						

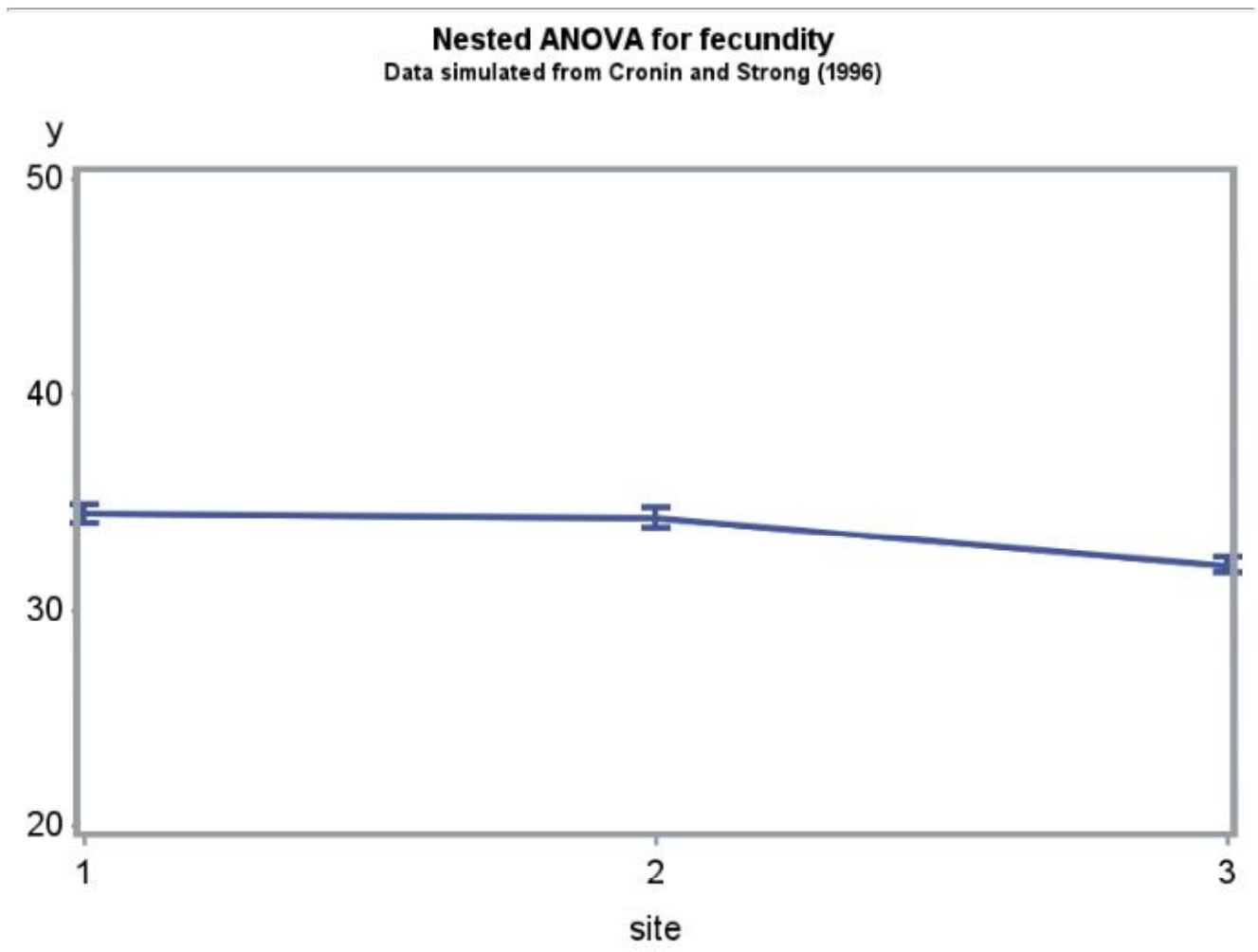
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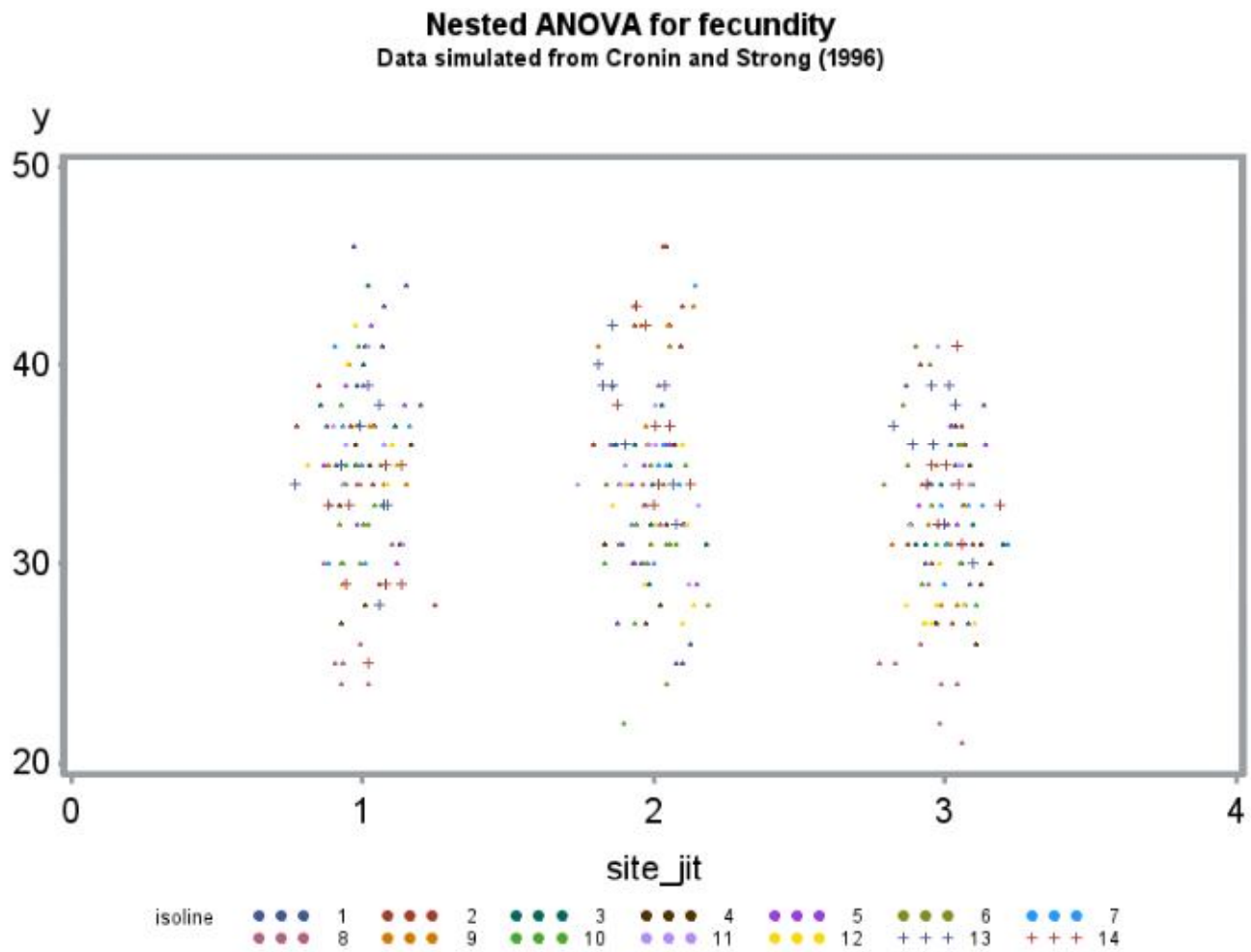
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215	2	13	7	36	36	1.90384
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217	2	14	1	38	38	1.87813
218	2	14	2	42	42	1.97609
219	2	14	3	37	37	2.05463
220	2	14	4	37	37	2.00819
221	2	14	5	34	34	2.12427
222	2	14	6	33	33	1.99923
223	2	14	7	43	43	1.94194
224	2	14	8	34	34	2.01666
225	3	1	1	30	30	2.93249
226	3	1	2	35	35	3.03589
227	3	1	3	36	36	3.01866
228	3	1	4	37	37	3.02032
229	3	1	5	29	29	3.08355
230	3	1	6	27	27	3.07863
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232	3	1	8	38	38	3.13421
233	3	2	1	30	30	2.95281
234	3	2	2	37	37	3.05691
235	3	2	3	30	30	3.05577
236	3	2	4	31	31	2.87285
237	3	2	5	27	27	3.02586
238	3	2	6	31	31	3.09745
239	3	2	7	36	36	3.06699
240	3	2	8	40	40	2.91830
241	3	3	1	27	27	2.96792
242	3	3	2	33	33	3.06547
243	3	3	3	31	31	3.19711
244	3	3	4	32	32	3.09486
245	3	3	5	34	34	2.98834
246	3	3	6	31	31	2.93079
247	3	3	7	31	31	2.90019
248	3	3	8	31	31	3.00629
249	3	4	1	26	26	3.10603
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253	3	4	5	29	29	3.12294
254	3	4	6	35	35	3.08607
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262	3	5	6	34	34	2.94327
263	3	5	7	33	33	2.91253
264	3	5	8	32	32	3.03984
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269	3	6	5	36	36	3.04766
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271	3	6	7	41	41	2.89886
272	3	6	8	34	34	2.78931
273	3	7	1	31	31	3.00105
274	3	7	2	33	33	3.12867
275	3	7	3	31	31	3.21616
276	3	7	4	34	34	2.95226
277	3	7	5	29	29	2.99724
278	3	7	6	33	33	3.07774
279	3	7	7	28	28	3.07067
280	3	7	8	33	33	2.98789
281	3	8	1	22	22	2.98358
282	3	8	2	25	25	2.77454
283	3	8	3	29	29	2.94581
284	3	8	4	24	24	3.04210
285	3	8	5	24	24	2.98968
286	3	8	6	26	26	2.91900
287	3	8	7	25	25	2.82780
288	3	8	8	21	21	3.05803
289	3	9	1	32	32	2.94266
290	3	9	2	31	31	2.81686
291	3	9	3	28	28	3.04032
292						

	3	9	4	28	28	2.98626
293	3	9	5	35	35	2.97271
294	3	9	6	34	34	2.91951
295	3	9	7	33	33	3.06668
296	3	9	8	31	31	3.01963
297	3	10	1	31	31	3.04530
298	3	10	2	32	32	2.88515
299	3	10	3	29	29	2.91948
300	3	10	4	30	30	3.05379
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303	3	10	7	28	28	2.97094
304	3	10	8	36	36	3.05730
305	3	11	1	32	32	2.87777
306	3	11	2	31	31	3.04473
307	3	11	3	34	34	3.08371
308	3	11	4	35	35	3.04771
309	3	11	5	35	35	3.05735
310	3	11	6	31	31	3.06989
311	3	11	7	41	41	2.97406
312	3	11	8	34	34	3.02581
313	3	12	1	28	28	2.96934
314	3	12	2	27	27	3.10184
315	3	12	3	27	27	2.92880
316	3	12	4	27	27	2.95478
317	3	12	5	27	27	2.93443
318	3	12	6	30	30	2.97953
319	3	12	7	28	28	3.06279
320	3	12	8	28	28	2.86679
321	3	13	1	36	36	2.95760
322	3	13	2	39	39	2.95417
323	3	13	3	36	36	2.88688
324	3	13	4	30	30	3.09829
325	3	13	5	37	37	2.82271
326	3	13	6	32	32	2.99953
327	3	13	7	38	38	3.03592
328	3	13	8	39	39	3.01222
329	3	14	1	32	32	2.97849
330	3	14	2	34	34	3.04468
331	3	14	3	41	41	3.04395
332	3	14	4	33	33	3.18811
333	3	14	5	35	35	3.00110
334						

	3	14	6	35	35	2.95465
335	3	14	7	34	34	2.93665
336	3	14	8	31	31	3.05965





Nested ANOVA for fecundity Data simulated from Cronin and Strong (1996)

The Mixed Procedure

Model Information	
Data Set	WORK.ANAGRUS
Dependent Variable	y
Covariance Structure	Variance Components
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
site	3	1 2 3
isoline	14	1 2 3 4 5 6 7 8 9 10 11 12 13 14

Dimensions	
Covariance Parameters	2
Columns in X	4
Columns in Z	42
Subjects	1
Max Obs per Subject	336

Number of Observations	
Number of Observations Read	336
Number of Observations Used	336
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1965.68443676	
1	1	1841.14730382	0.00000000

Convergence criteria met.

Covariance Parameter Estimates				
Cov Parm	Estimate	Alpha	Lower	Upper
isoline(site)	10.1664	0.05	6.5003	18.1260
Residual	11.0187	0.05	9.4338	13.0417

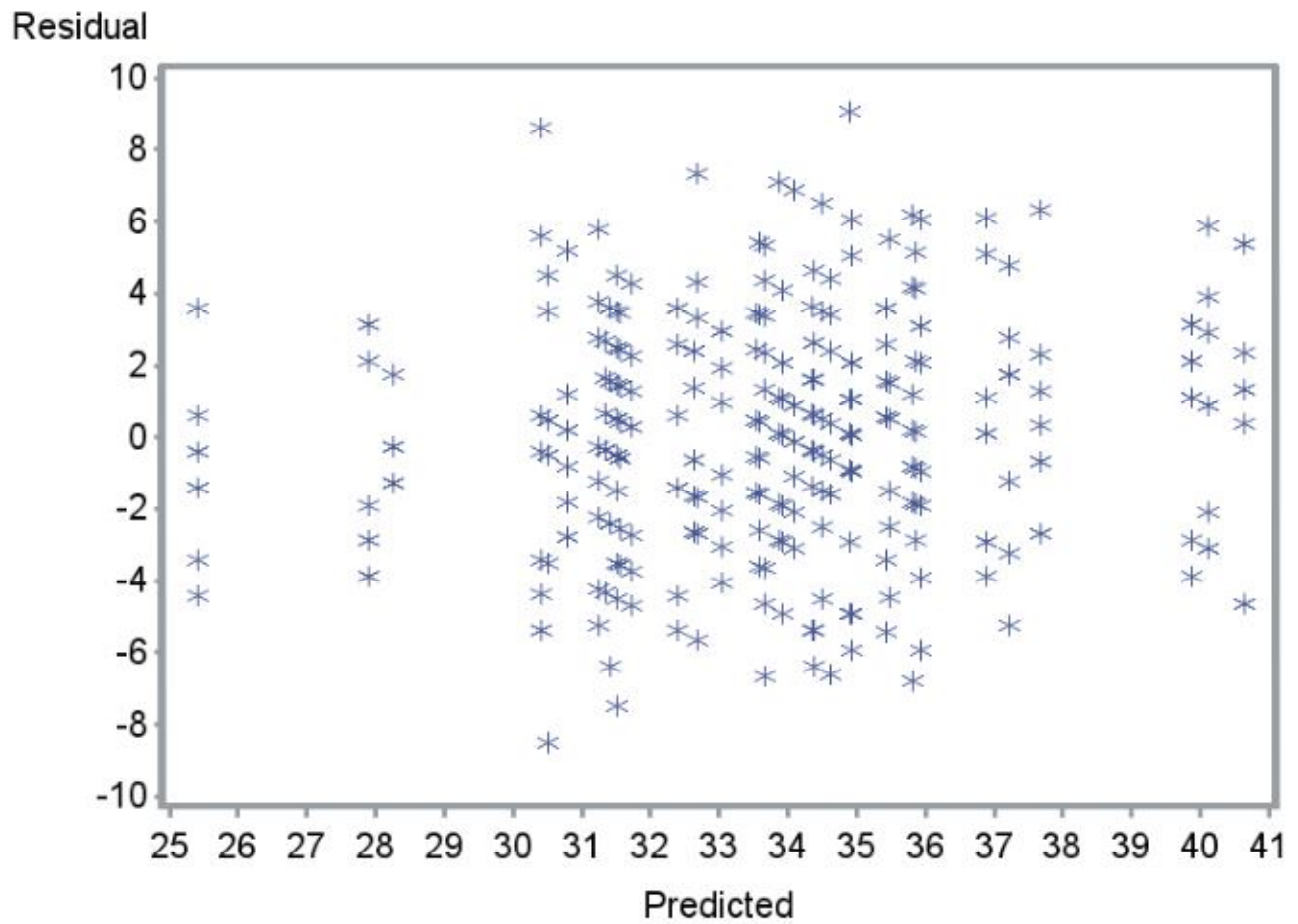
Fit Statistics	
-2 Res Log Likelihood	1841.1
AIC (Smaller is Better)	1845.1

AICC (Smaller is Better)	1845.2
BIC (Smaller is Better)	1848.6

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
site	2	39	2.13	0.1323

Least Squares Means									
Effect	site	Estimate	Standard Error	DF	t Value	Pr > t	Alpha	Lower	Upper
site	1	34.4821	0.9081	39	37.97	<.0001	0.05	32.6454	36.3188
site	2	34.2946	0.9081	39	37.77	<.0001	0.05	32.4579	36.1313
site	3	32.0982	0.9081	39	35.35	<.0001	0.05	30.2615	33.9349

Differences of Least Squares Means														
Effect	site	_site	Estimate	Standard Error	DF	t Value	Pr > t	Adjustment	Adj P	Alpha	Lower	Upper	Adj Lower	Adj Upper
site	1	2	0.1875	1.2842	39	0.15	0.8847	Tukey	0.9883	0.05	-2.4100	2.7850	-2.9411	3.3161
site	1	3	2.3839	1.2842	39	1.86	0.0710	Tukey	0.1651	0.05	-0.2136	4.9814	-0.7447	5.5126
site	2	3	2.1964	1.2842	39	1.71	0.0951	Tukey	0.2142	0.05	-0.4011	4.7939	-0.9322	5.3251

Diagnostic plots to check ANOVA assumptions

The UNIVARIATE Procedure

Diagnostic plots to check ANOVA assumptions

