Obs	treat	moisture
1	NaCl	80.5
2	NaCl	79.3
3	NaCl	79.0
4	formicAc	89.1
5	formicAc	75.7
6	formicAc	81.2
7	beetPulp	77.8
8	beetPulp	79.5
9	beetPulp	77.0
10	control	76.7
11	control	77.2
12	control	78.6

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
treat	4	NaCl beetPulp control formicAc

Number of Observations Read	12
Number of Observations Used	12

The GLM Procedure

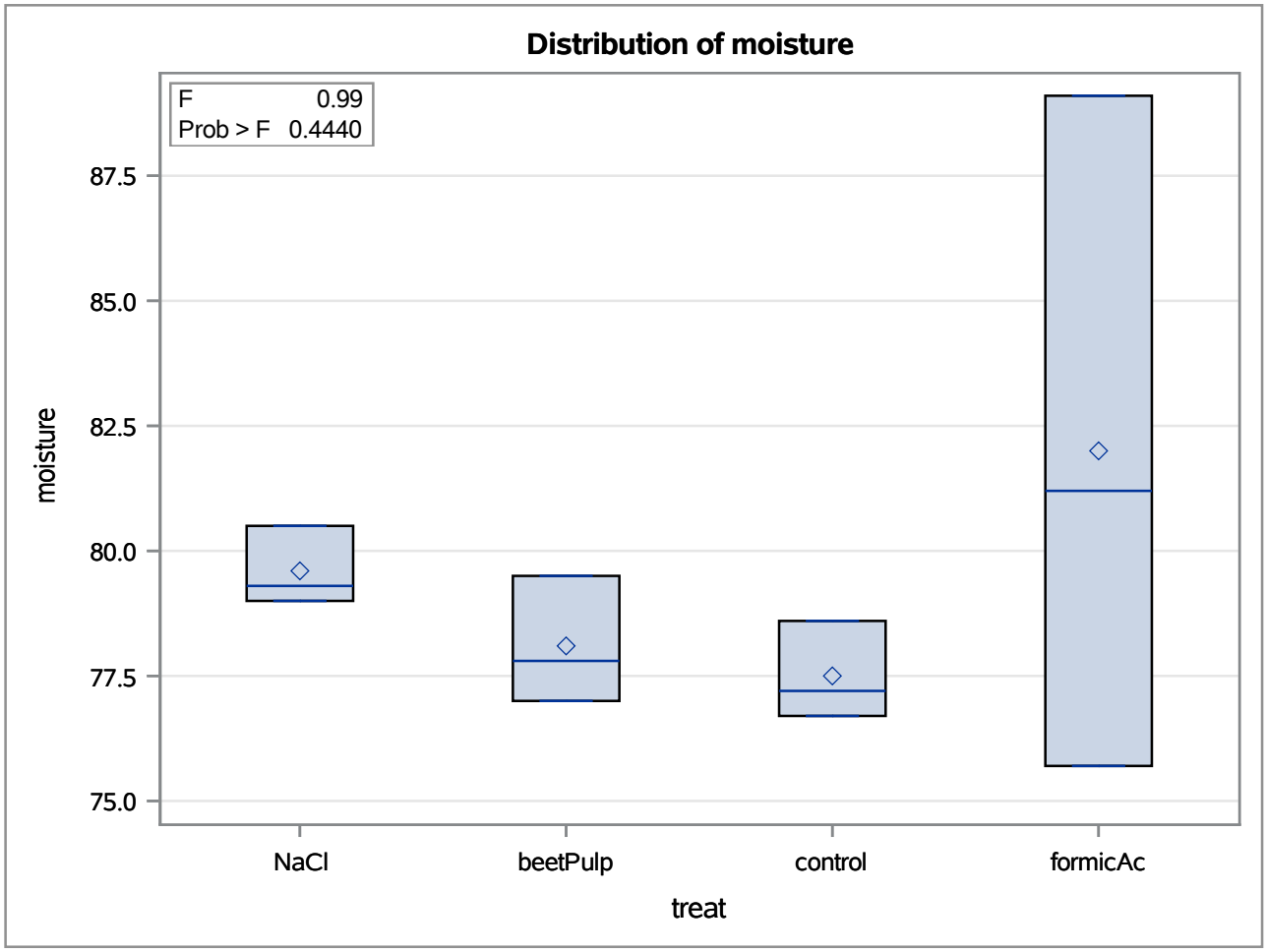
Dependent Variable: moisture

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	36.1800000	12.0600000	0.99	0.4440
Error	8	97.2000000	12.1500000		
Corrected Total	11	133.3800000			

R-Square	Coeff Var	Root MSE	moisture Mean
0.271255	4.395567	3.485685	79.30000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
treat	3	36.18000000	12.06000000	0.99	0.4440

Source	DF	Type III SS	Mean Square	F Value	Pr > F
treat	3	36.18000000	12.06000000	0.99	0.4440



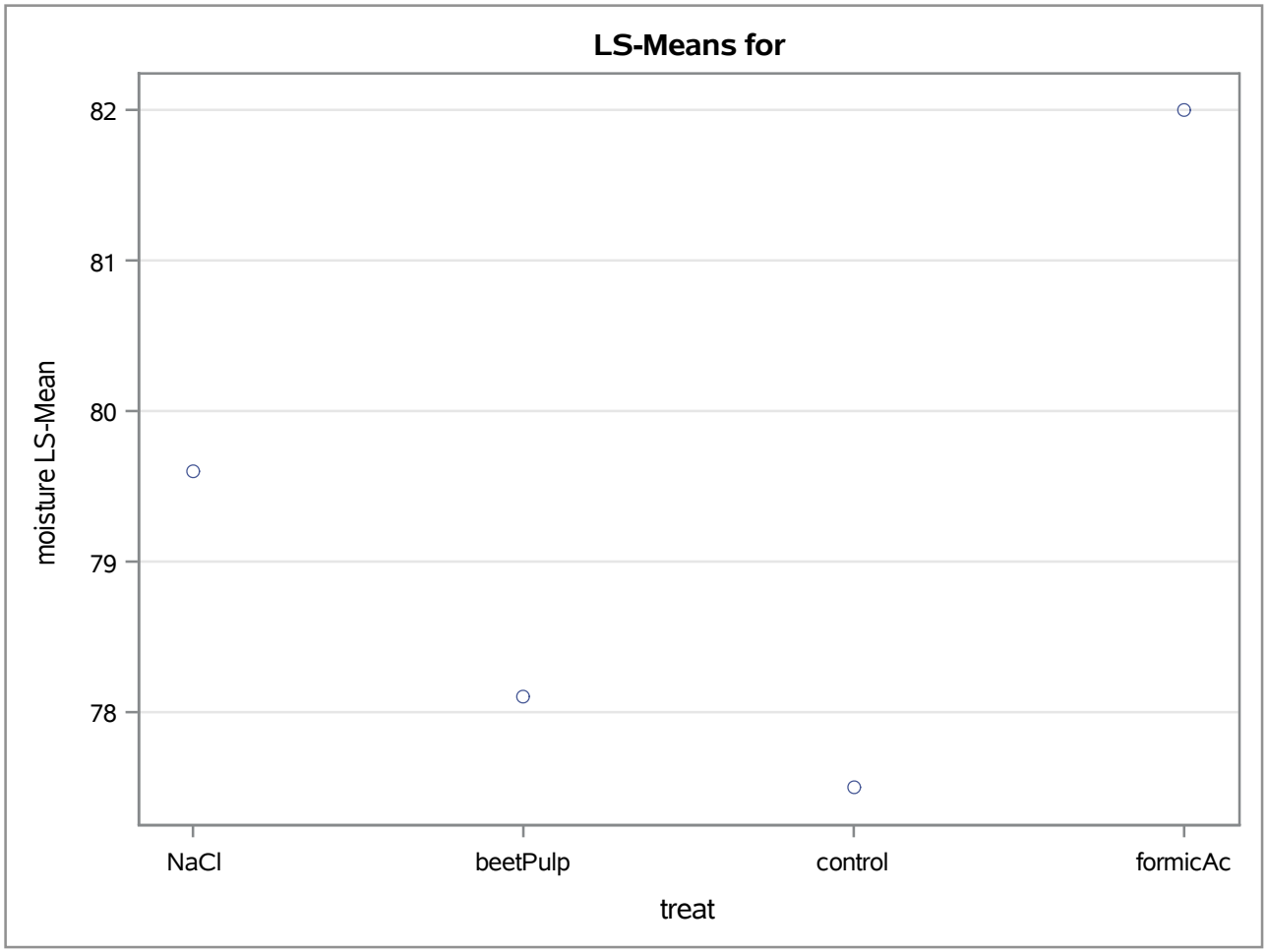
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey

treat	moisture LSMEAN	LSMEAN Number
NaCl	79.6000000	1
beetPulp	78.1000000	2
control	77.5000000	3
formicAc	82.0000000	4

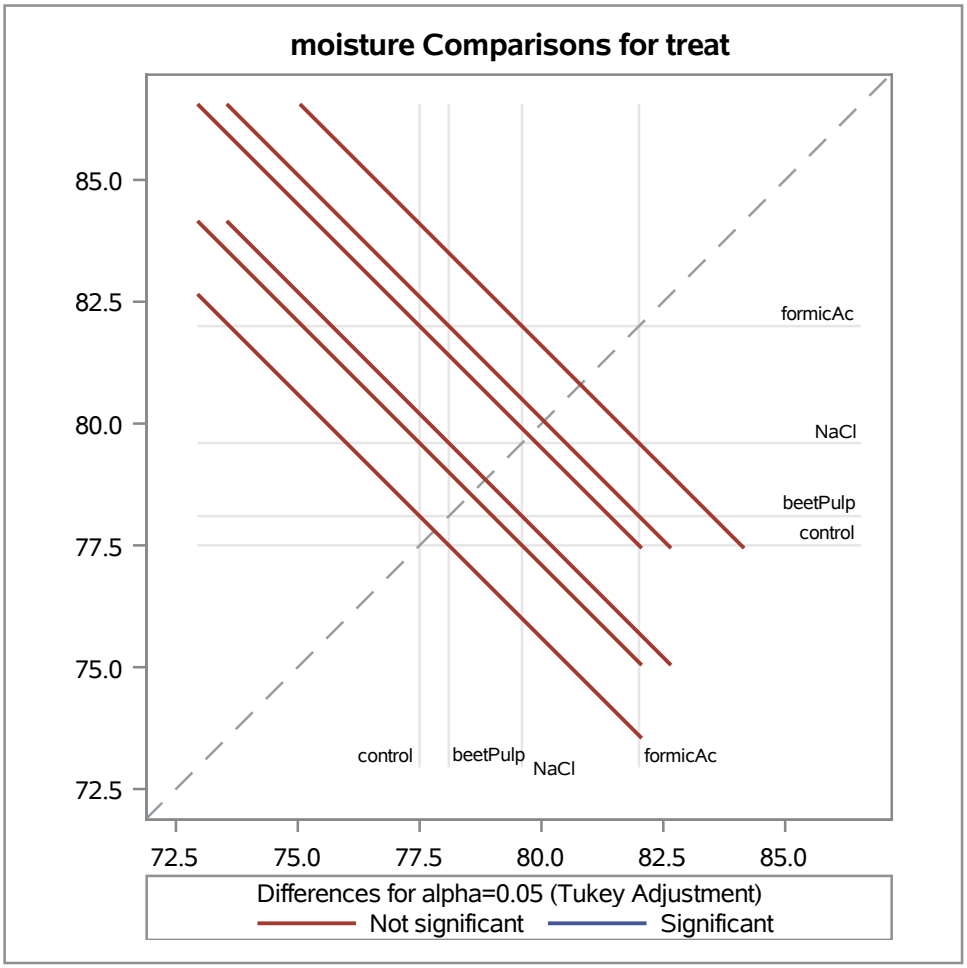
Least Squares Means for effect treat
Pr > |t| for H0: LSMean(i)=LSMean(j)

Dependent Variable: moisture

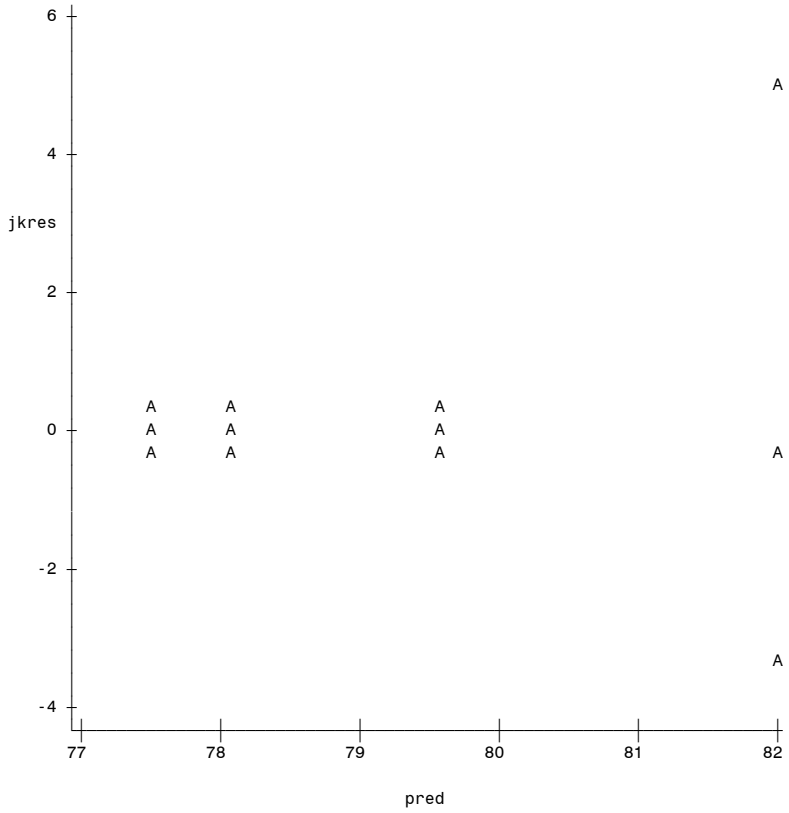
i/j	1	2	3	4
1		0.9501	0.8793	0.8328
2	0.9501		0.9964	0.5490
3	0.8793	0.9964		0.4392
4	0.8328	0.5490	0.4392	



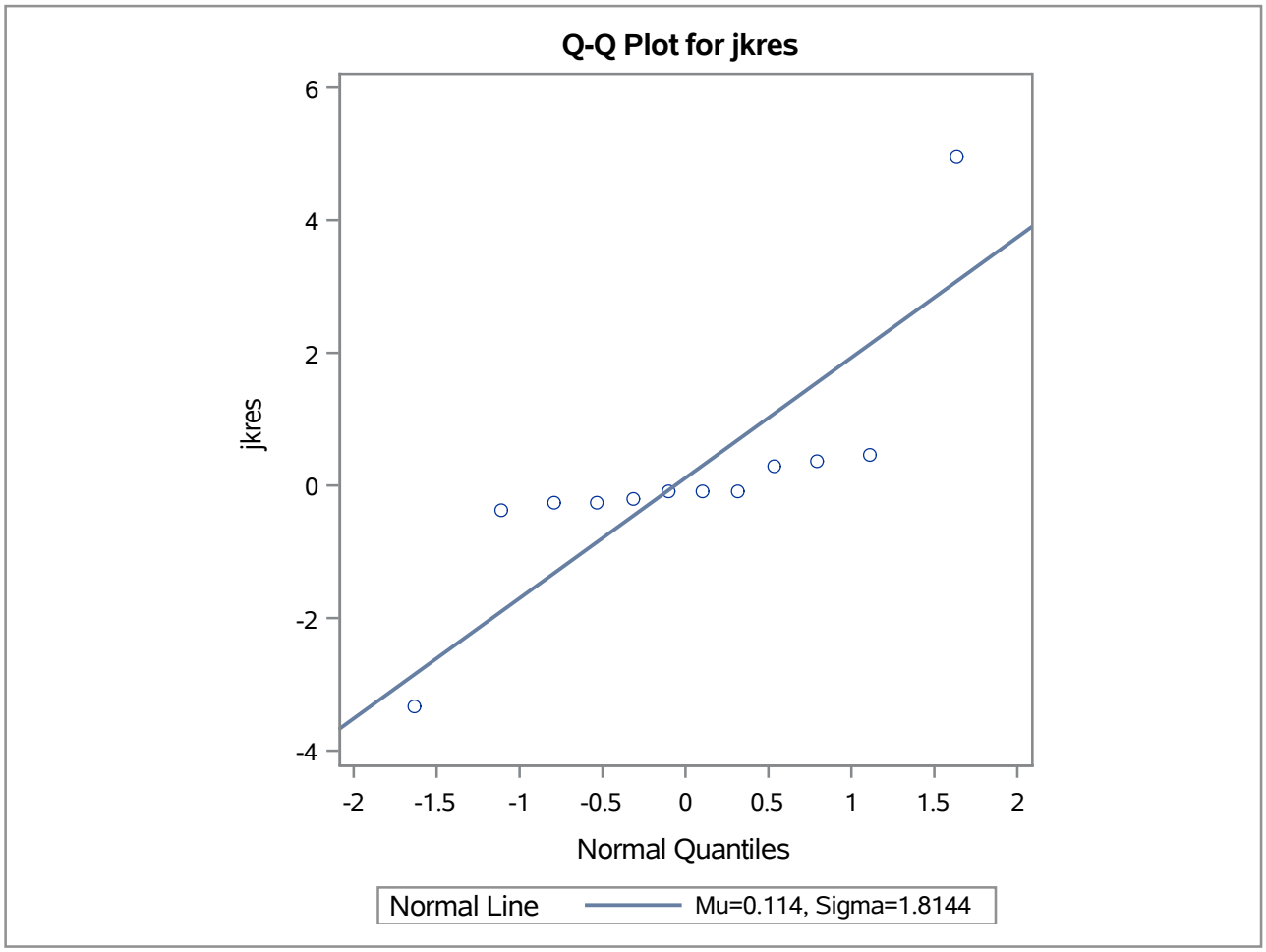
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey



Plot of jkres*pred. Legend: A = 1 obs, B = 2 obs, etc.



The UNIVARIATE Procedure



The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
treat	4	NaCl beetPulp control formicAc

Number of Observations Read	12
Number of Observations Used	12

The GLM Procedure

Dependent Variable: moisture

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	36.1800000	12.0600000	0.99	0.4440
Error	8	97.2000000	12.1500000		
Corrected Total	11	133.3800000			

R-Square	Coeff Var	Root MSE	moisture Mean
0.271255	4.395567	3.485685	79.30000

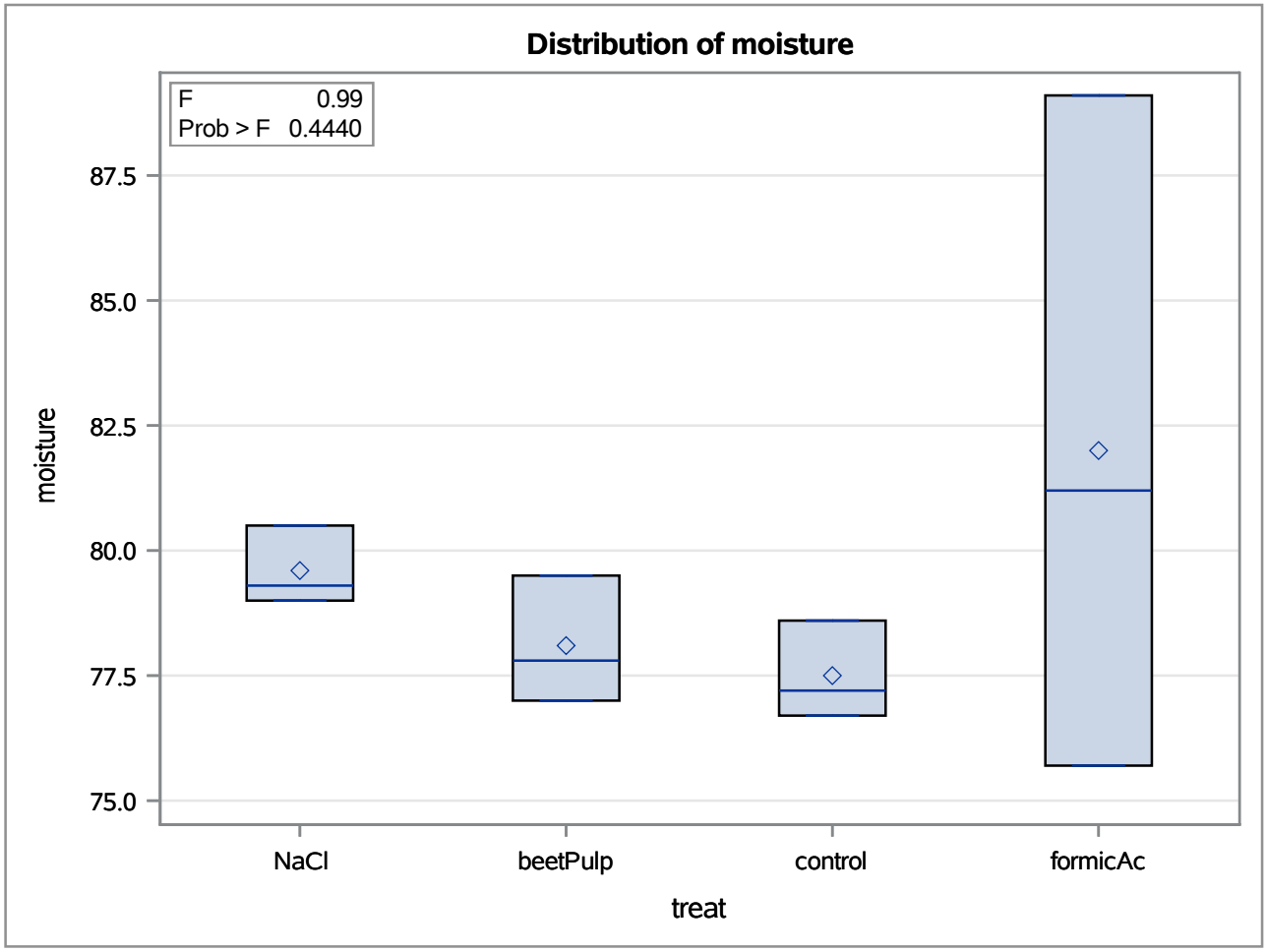
Source	DF	Type I SS	Mean Square	F Value	Pr > F
treat	3	36.18000000	12.06000000	0.99	0.4440

Source	DF	Type III SS	Mean Square	F Value	Pr > F
treat	3	36.18000000	12.06000000	0.99	0.4440

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Salt vs control	2.10000000	2.84604989	0.74	0.4817
Pulp vs control	0.60000000	2.84604989	0.21	0.8383
Acid vs control	4.50000000	2.84604989	1.58	0.1525

The GLM Procedure

Dependent Variable: moisture



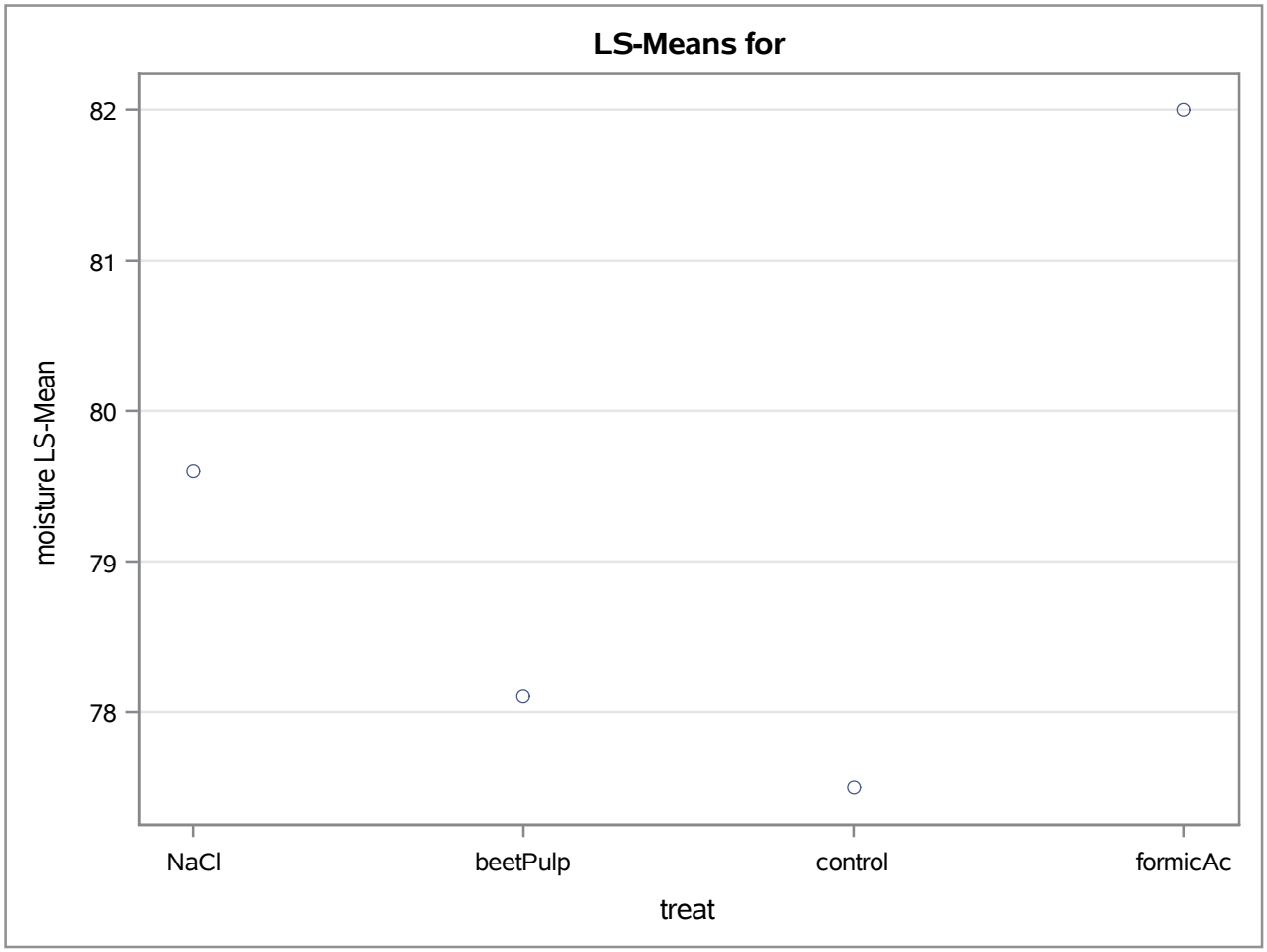
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Dunnett

treat	moisture LSMEAN	H0:LSMean=Control
		Pr > |t|
NaCl	79.6000000	0.8048
beetPulp	78.1000000	0.9930
control	77.5000000	
formicAc	82.0000000	0.3264

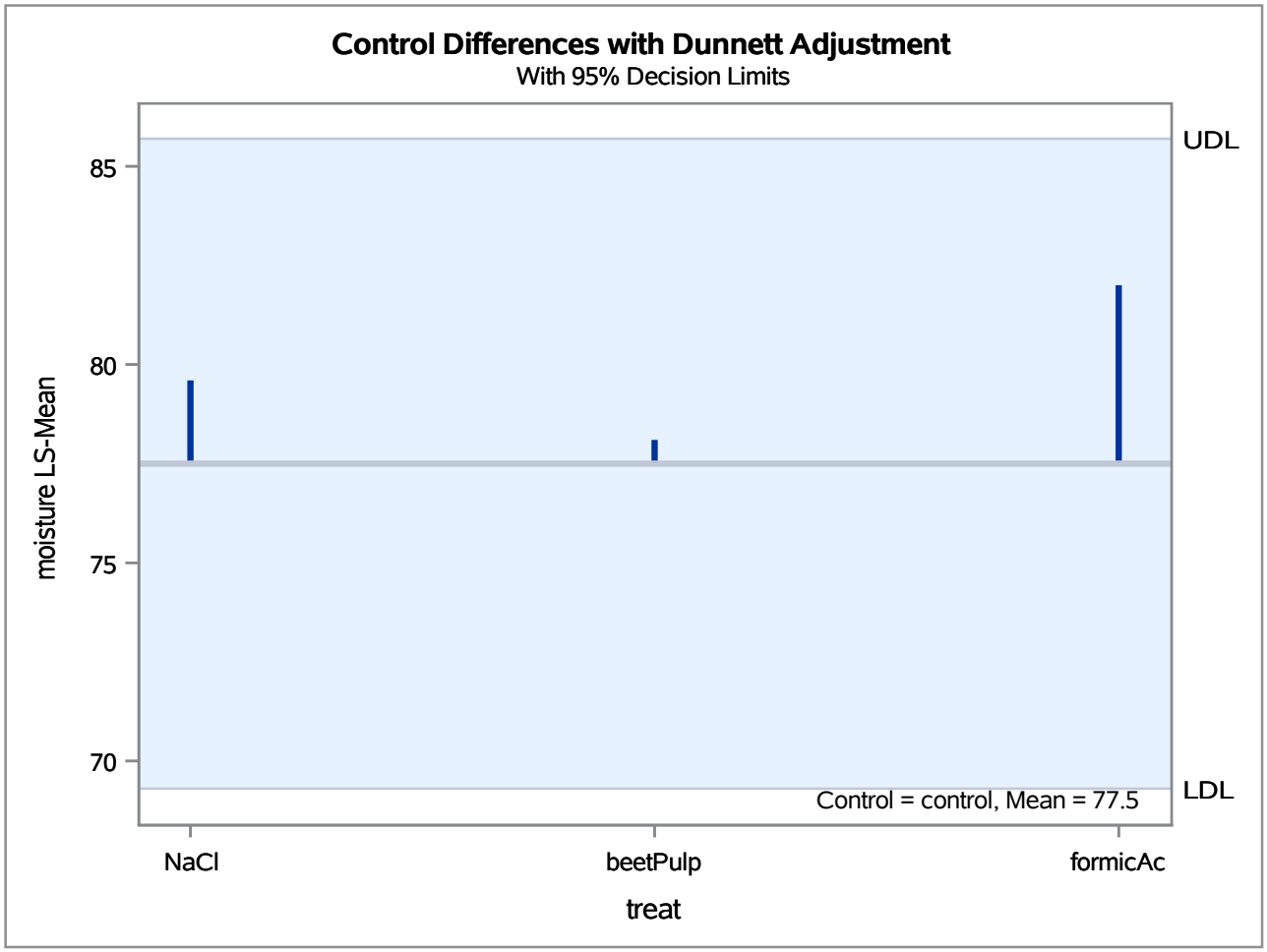
treat	moisture LSMEAN	95% Confidence Limits	
NaCl	79.600000	74.959256	84.240744
beetPulp	78.100000	73.459256	82.740744
control	77.500000	72.859256	82.140744
formicAc	82.000000	77.359256	86.640744

Least Squares Means for Effect treat				
i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
1	3	2.100000	-6.095679	10.295679
2	3	0.600000	-7.595679	8.795679
4	3	4.500000	-3.695679	12.695679

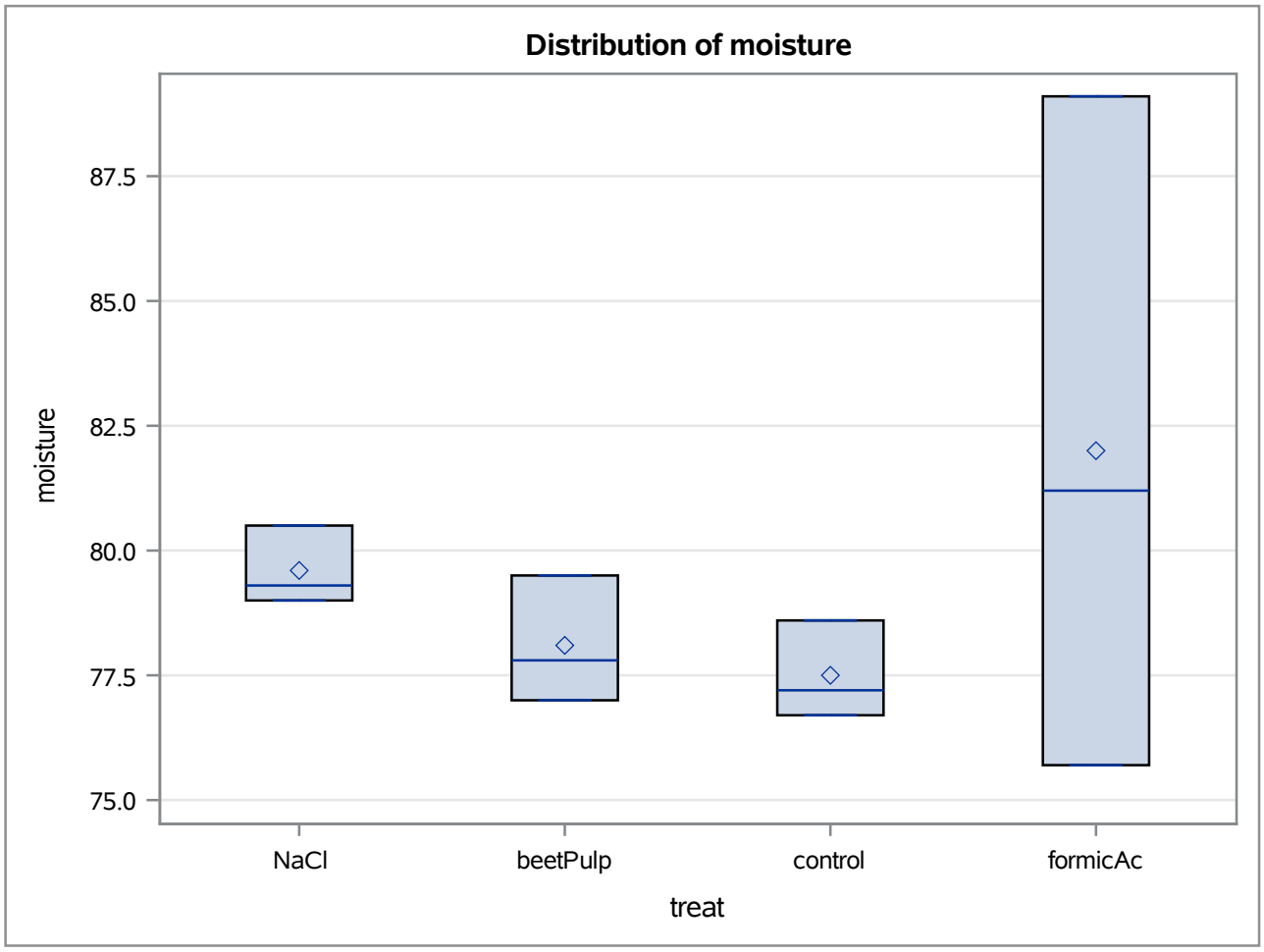
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Dunnett



The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Dunnett



The GLM Procedure



The GLM Procedure

Dunnett's t Tests for moisture

Note: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	8
Error Mean Square	12.15
Critical Value of Dunnett's t	2.87967
Minimum Significant Difference	8.1957

Comparisons significant at the 0.05 level are indicated by *.**

treat Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
formicAc - control	4.500	-3.696	12.696	
NaCl - control	2.100	-6.096	10.296	
beetPulp - control	0.600	-7.596	8.796	

Obs	treat	pctBluestem	nitrogen
1	1-non	97	1
2	1-irr	83	1
3	2-non	85	2
4	3-non	64	3
5	4-non	52	4
6	4-irr	48	4
7	1-non	96	1
8	1-irr	87	1
9	2-non	84	2
10	3-non	72	3
11	4-non	56	4
12	4-irr	58	4
13	1-non	92	1
14	1-irr	78	1
15	2-non	78	2
16	3-non	63	3
17	4-non	44	4
18	4-irr	49	4
19	1-non	95	1
20	1-irr	81	1
21	2-non	79	2
22	3-non	74	3
23	4-non	50	4
24	4-irr	53	4

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
treat	6	1-irr 1-non 2-non 3-non 4-irr 4-non

Number of Observations Read	24
Number of Observations Used	24

The GLM Procedure

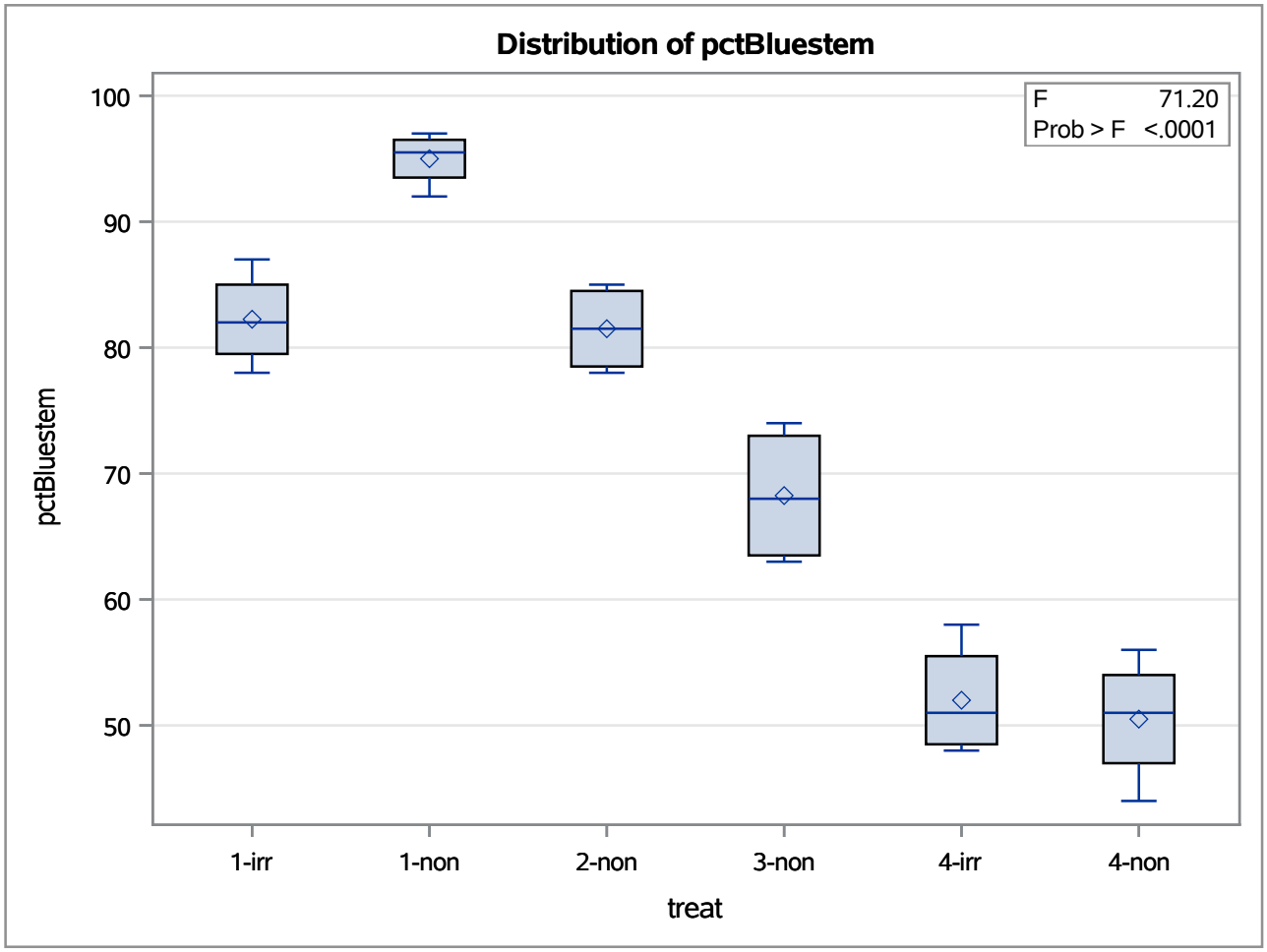
Dependent Variable: pctBluestem

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6398.333333	1279.666667	71.20	<.0001
Error	18	323.500000	17.972222		
Corrected Total	23	6721.833333			

R-Square	Coeff Var	Root MSE	pctBluestem Mean
0.951873	5.922280	4.239366	71.58333

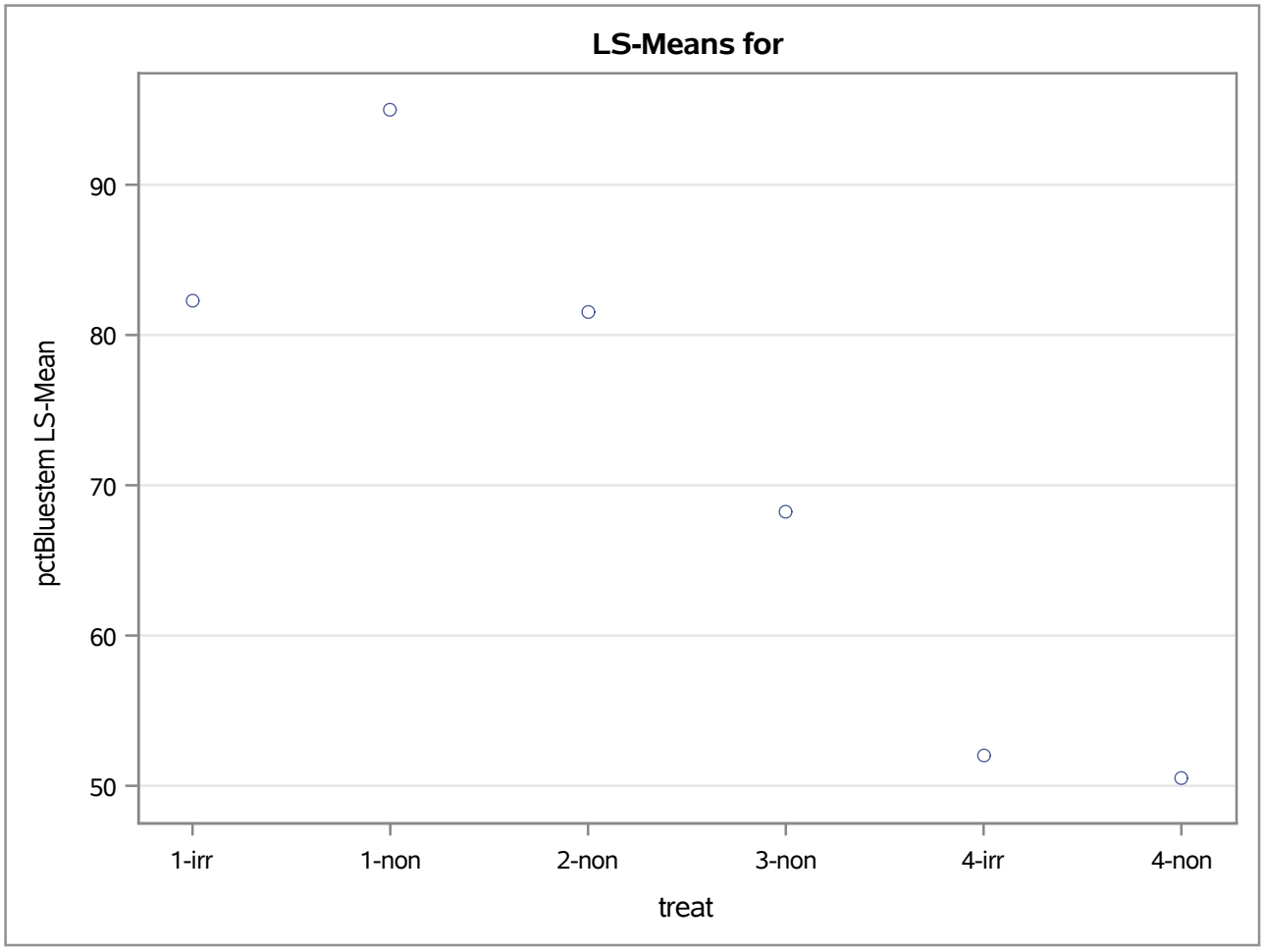
Source	DF	Type I SS	Mean Square	F Value	Pr > F
treat	5	6398.333333	1279.666667	71.20	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
treat	5	6398.333333	1279.666667	71.20	<.0001

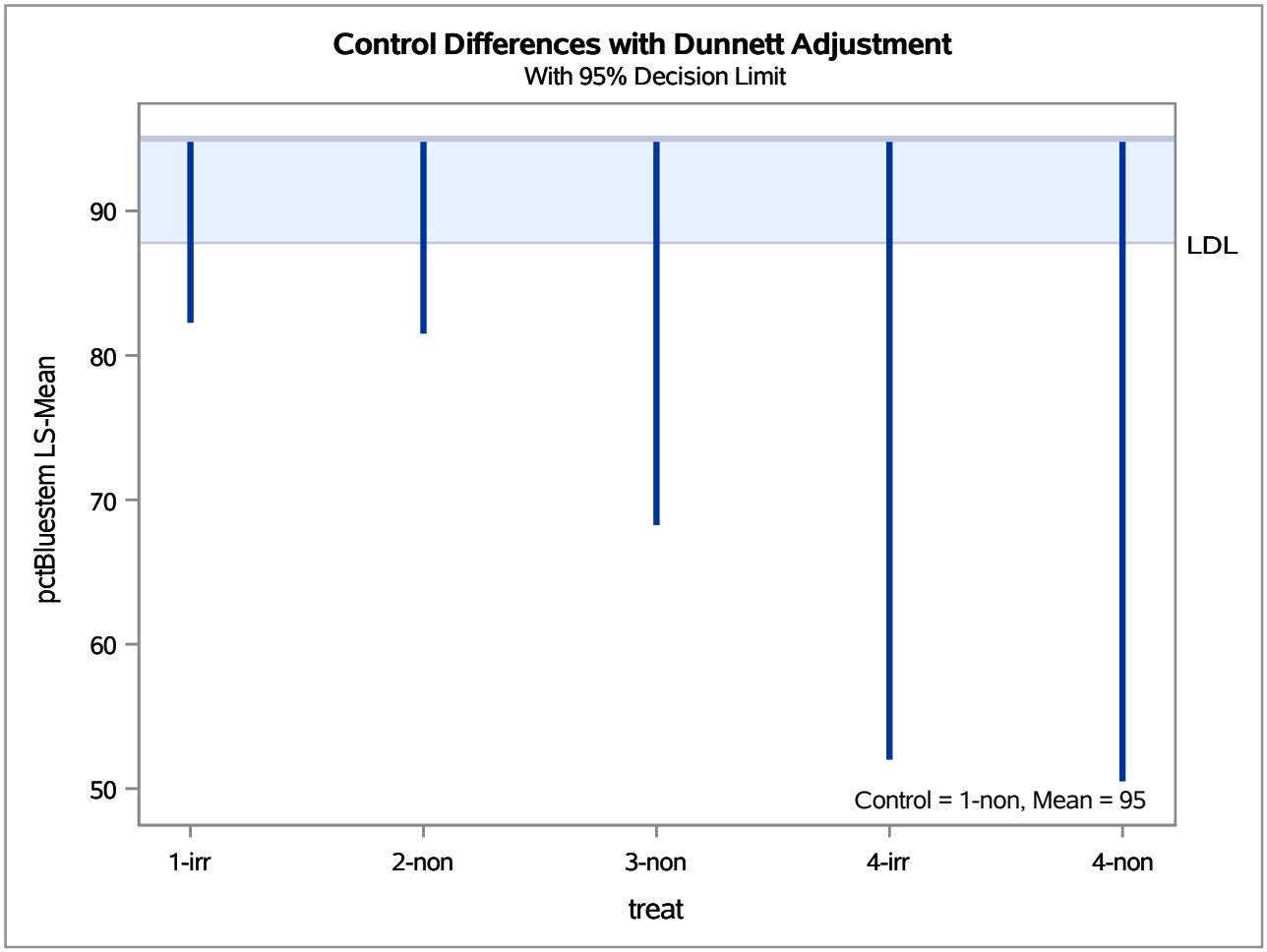


The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Dunnett

treat	pctBluestem LSMEAN	H0:LSMean=Control Pr < t
1-irr	82.2500000	0.0010
1-non	95.0000000	
2-non	81.5000000	0.0006
3-non	68.2500000	<.0001
4-irr	52.0000000	<.0001
4-non	50.5000000	<.0001



The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Dunnett



The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey

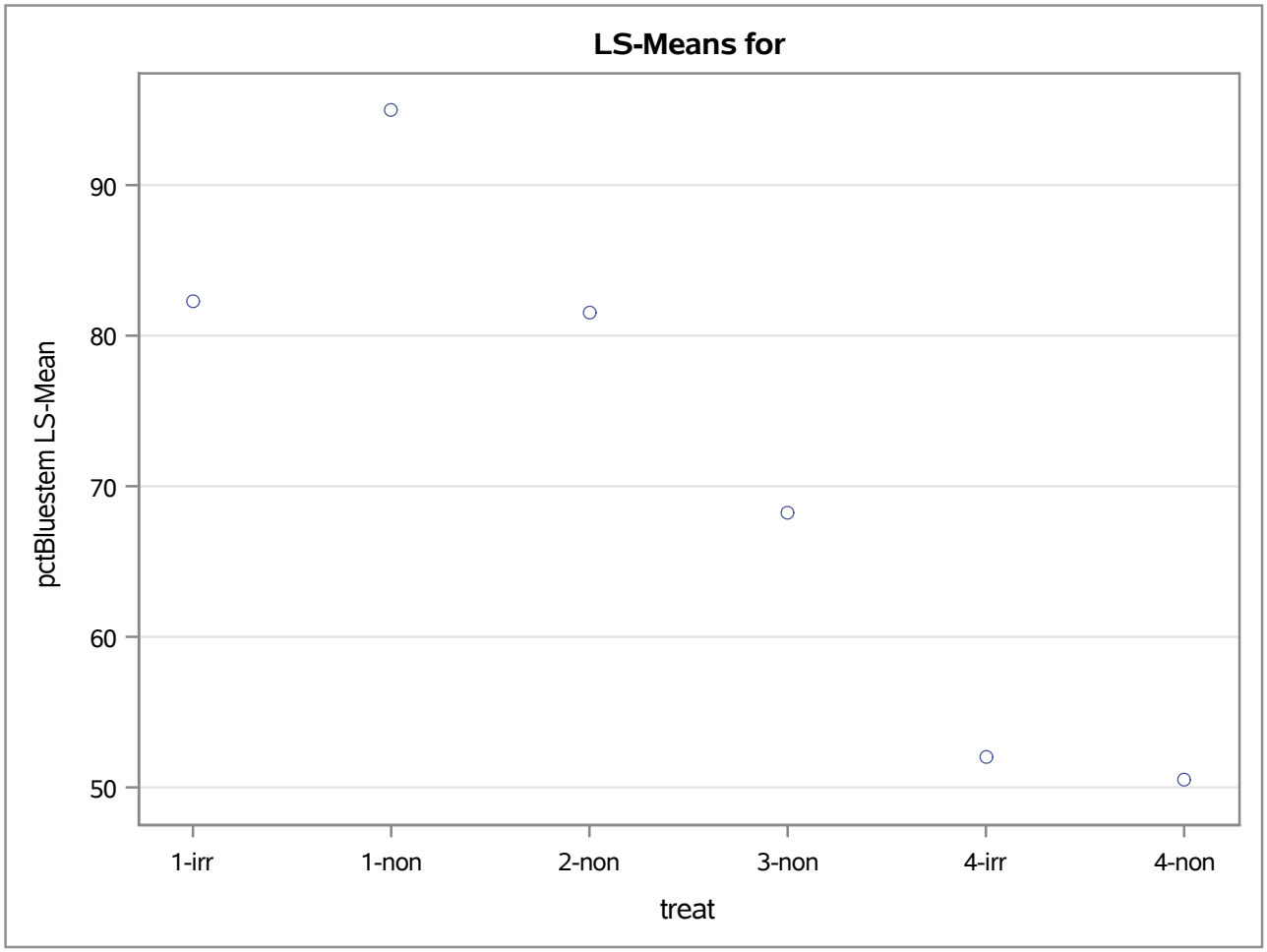
treat	pctBluestem LSMEAN	LSMEAN Number
1-irr	82.2500000	1
1-non	95.0000000	2
2-non	81.5000000	3
3-non	68.2500000	4
4-irr	52.0000000	5
4-non	50.5000000	6

Least Squares Means for effect treat
Pr > |t| for H0: LSMean(i)=LSMean(j)

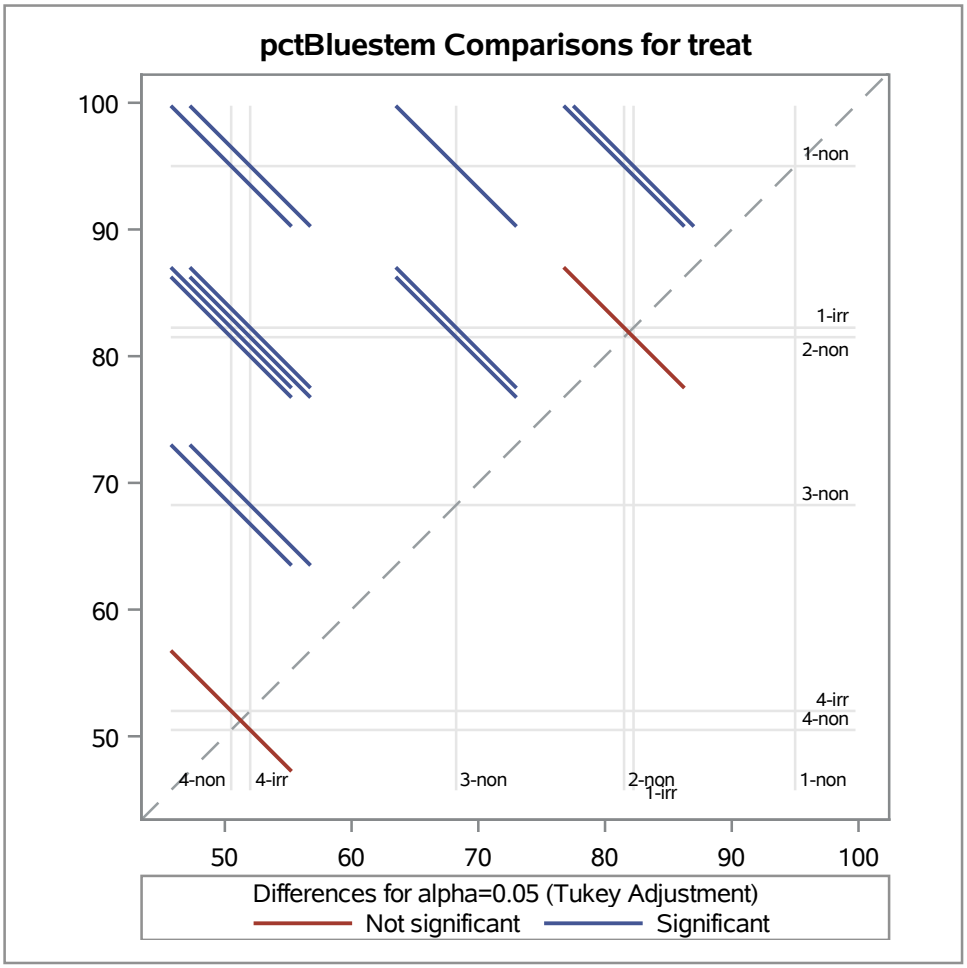
Dependent Variable: pctBluestem

i/j	1	2	3	4	5	6
1		0.0054	0.9998	0.0022	<.0001	<.0001
2	0.0054		0.0032	<.0001	<.0001	<.0001
3	0.9998	0.0032		0.0038	<.0001	<.0001
4	0.0022	<.0001	0.0038		0.0005	0.0002
5	<.0001	<.0001	<.0001	0.0005		0.9955
6	<.0001	<.0001	<.0001	0.0002	0.9955	

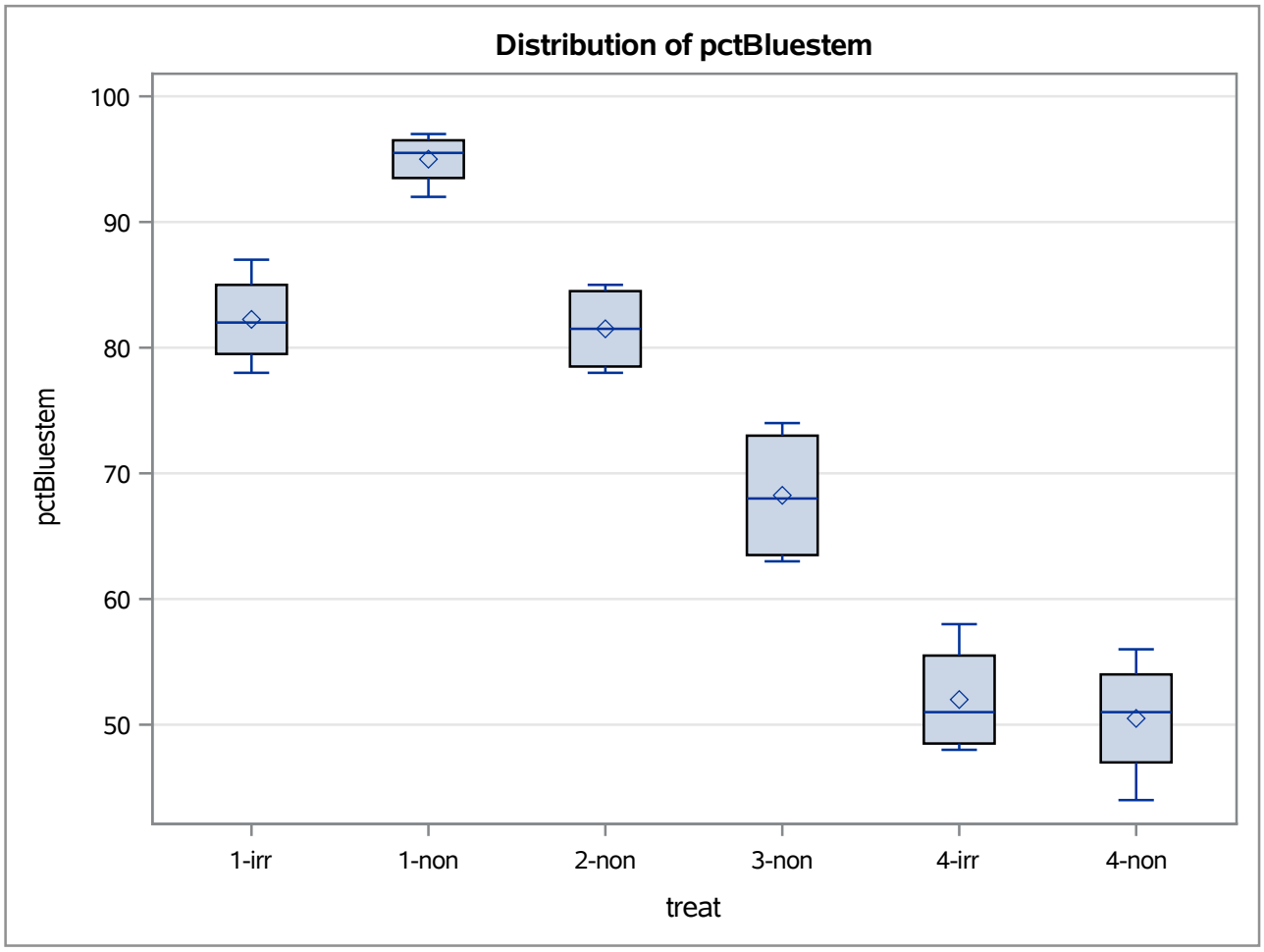
The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey



The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Tukey



The GLM Procedure



The GLM Procedure

Dunnett's One-tailed t Tests for pctBluestem

Note: This test controls the Type I experimentwise error for comparisons of all treatments against a control.

Alpha	0.05
Error Degrees of Freedom	18
Error Mean Square	17.97222
Critical Value of Dunnett's t	2.40710
Minimum Significant Difference	7.2157

Comparisons significant at the 0.05 level are indicated by *.**

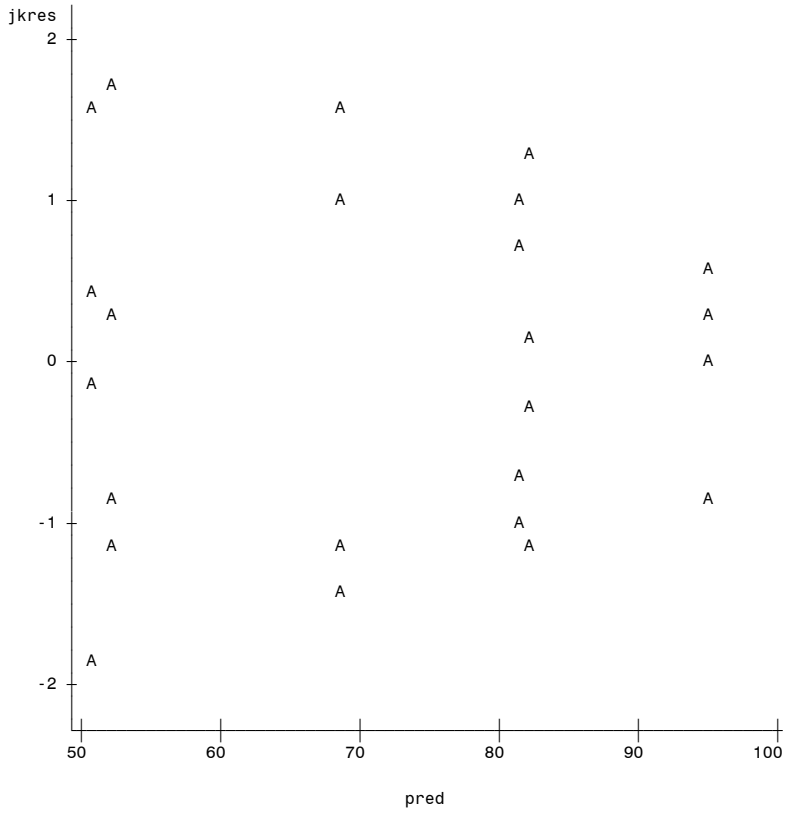
treat Comparison	Difference Between Means	Simultaneous 95% Confidence Limits		
1-irr - 1-non	-12.750	-Infinity	-5.534	***
2-non - 1-non	-13.500	-Infinity	-6.284	***
3-non - 1-non	-26.750	-Infinity	-19.534	***
4-irr - 1-non	-43.000	-Infinity	-35.784	***
4-non - 1-non	-44.500	-Infinity	-37.284	***

The GLM Procedure

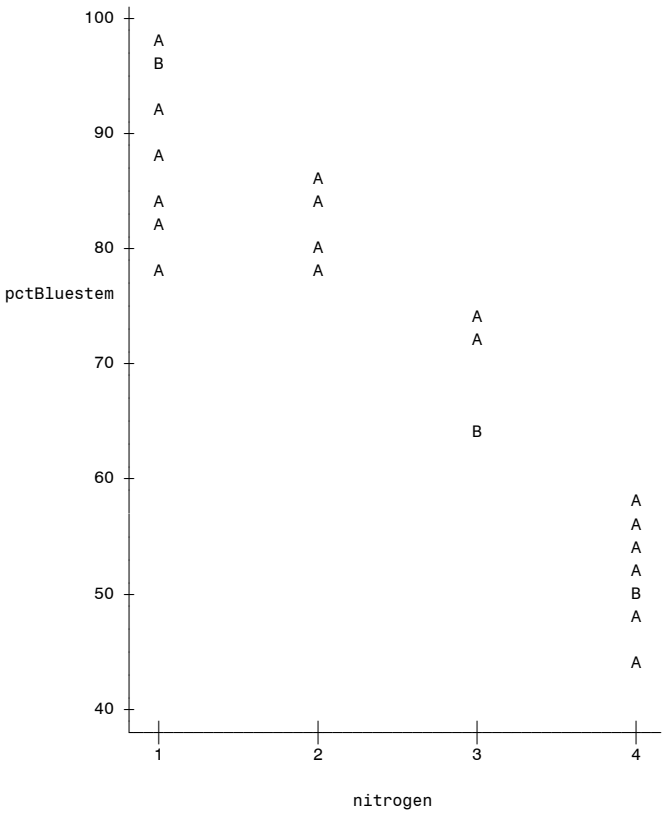
Dependent Variable: pctBluestem

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
Irrigation effect at common N	1	126.5625000	126.5625000	7.04	0.0162
Quad nitrogen non-irrigated	1	18.0625000	18.0625000	1.01	0.3294

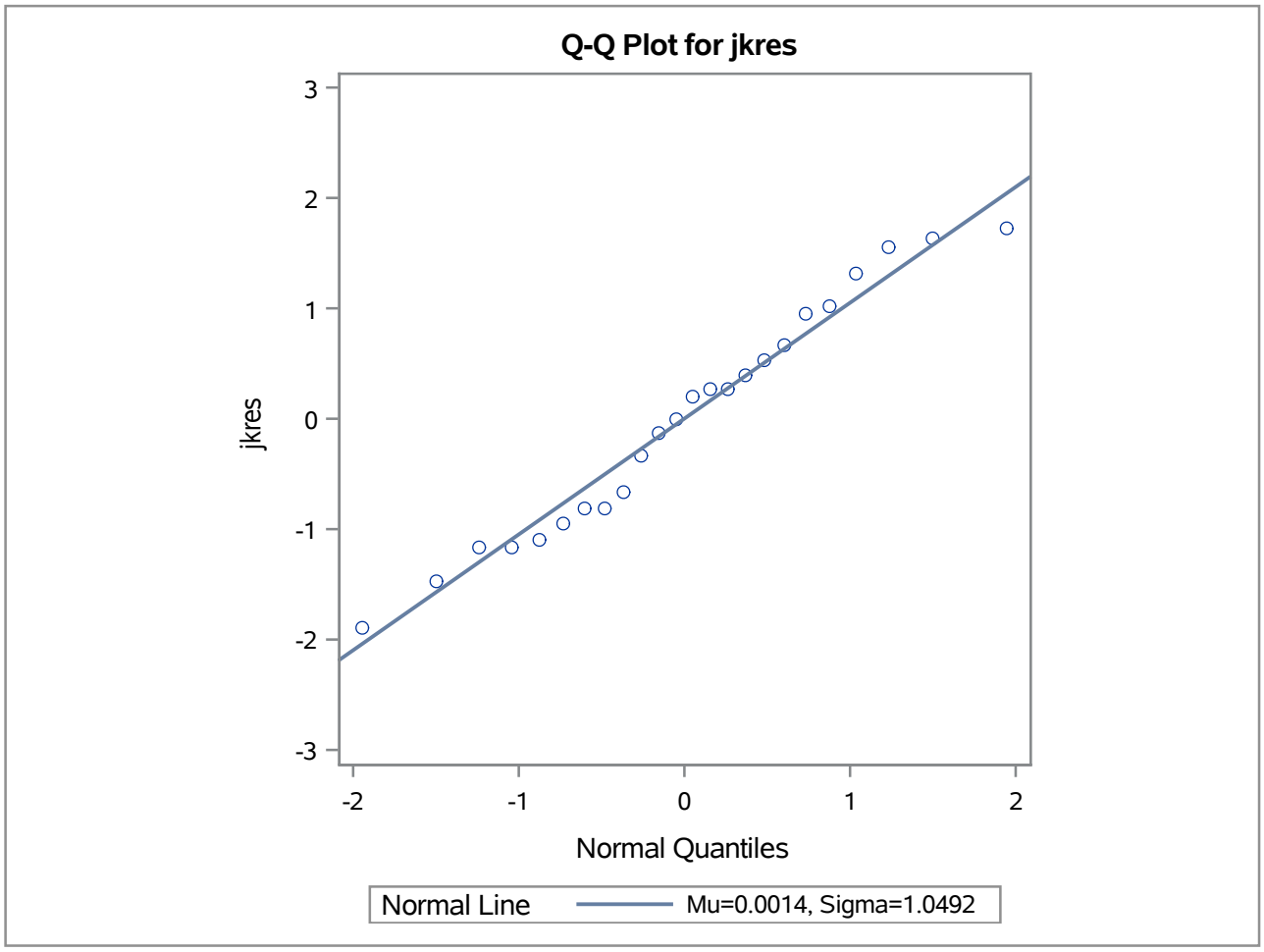
Plot of jkres*pred. Legend: A = 1 obs, B = 2 obs, etc.



Plot of pctBluestem*nitrogen. Legend: A = 1 obs, B = 2 obs, etc.



The UNIVARIATE Procedure



The TRANSREG Procedure

Box-Cox Transformation Information for pctBluestem				
Lambda		R-Square	Log Like	
-2.00		0.89	-48.8988	
-1.95		0.89	-48.5601	
-1.90		0.90	-48.2236	
-1.85		0.90	-47.8894	
-1.80		0.90	-47.5575	
-1.75		0.90	-47.2280	
-1.70		0.90	-46.9010	
-1.65		0.90	-46.5764	
-1.60		0.91	-46.2543	
-1.55		0.91	-45.9349	
-1.50		0.91	-45.6182	
-1.45		0.91	-45.3041	
-1.40		0.91	-44.9929	
-1.35		0.91	-44.6845	
-1.30		0.91	-44.3791	
-1.25		0.91	-44.0766	
-1.20		0.92	-43.7772	
-1.15		0.92	-43.4809	
-1.10		0.92	-43.1878	
-1.05		0.92	-42.8980	
-1.00		0.92	-42.6114	
-0.95		0.92	-42.3283	
-0.90		0.92	-42.0487	
-0.85		0.92	-41.7726	
-0.80		0.93	-41.5001	
-0.75		0.93	-41.2313	
-0.70		0.93	-40.9662	
-0.65		0.93	-40.7050	
-0.60		0.93	-40.4477	
-0.55		0.93	-40.1943	
-0.50		0.93	-39.9450	
-0.45		0.93	-39.6999	
-0.40		0.93	-39.4589	
< - Best Lambda * - 95% Confidence Interval + - Convenient Lambda				

The TRANSREG Procedure

Box-Cox Transformation Information for pctBluestem				
Lambda		**R-Square**	**Log Like**	
-0.35		0.93	-39.2222	
-0.30		0.94	-38.9898	
-0.25		0.94	-38.7618	
-0.20		0.94	-38.5382	
-0.15		0.94	-38.3193	
-0.10		0.94	-38.1049	
-0.05		0.94	-37.8952	
0.00		0.94	-37.6902	
0.05		0.94	-37.4900	
0.10		0.94	-37.2947	
0.15		0.94	-37.1043	
0.20		0.94	-36.9189	
0.25		0.94	-36.7385	
0.30		0.94	-36.5632	
0.35		0.95	-36.3930	
0.40		0.95	-36.2281	
0.45		0.95	-36.0683	
0.50		0.95	-35.9138	
0.55		0.95	-35.7646	
0.60		0.95	-35.6208	*
0.65		0.95	-35.4823	*
0.70		0.95	-35.3492	*
0.75		0.95	-35.2216	*
0.80		0.95	-35.0995	*
0.85		0.95	-34.9828	*
0.90		0.95	-34.8717	*
0.95		0.95	-34.7660	*
1.00	+	0.95	-34.6659	*
1.05		0.95	-34.5714	*
1.10		0.95	-34.4823	*
1.15		0.95	-34.3989	*
1.20		0.95	-34.3209	*
1.25		0.95	-34.2485	*

< - Best Lambda
*** - 95% Confidence Interval**
+ - Convenient Lambda

The TRANSREG Procedure

Box-Cox Transformation Information for pctBluestem				
Lambda		R-Square	Log Like	
1.30		0.95	-34.1816	*
1.35		0.95	-34.1203	*
1.40		0.95	-34.0644	*
1.45		0.95	-34.0140	*
1.50		0.96	-33.9691	*
1.55		0.96	-33.9296	*
1.60		0.96	-33.8955	*
1.65		0.96	-33.8668	*
1.70		0.96	-33.8434	*
1.75		0.96	-33.8253	*
1.80		0.96	-33.8125	*
1.85		0.96	-33.8049	*
1.90		0.96	-33.8025	<
1.95		0.96	-33.8052	*
2.00		0.96	-33.8130	*
2.05		0.96	-33.8258	*
2.10		0.96	-33.8436	*
2.15		0.96	-33.8663	*
2.20		0.96	-33.8939	*
2.25		0.96	-33.9263	*
2.30		0.96	-33.9634	*
2.35		0.96	-34.0053	*
2.40		0.96	-34.0517	*
2.45		0.96	-34.1028	*
2.50		0.96	-34.1583	*
2.55		0.96	-34.2183	*
2.60		0.96	-34.2826	*
2.65		0.96	-34.3513	*
2.70		0.96	-34.4242	*
2.75		0.96	-34.5013	*
2.80		0.96	-34.5825	*
2.85		0.96	-34.6677	*
2.90		0.96	-34.7569	*

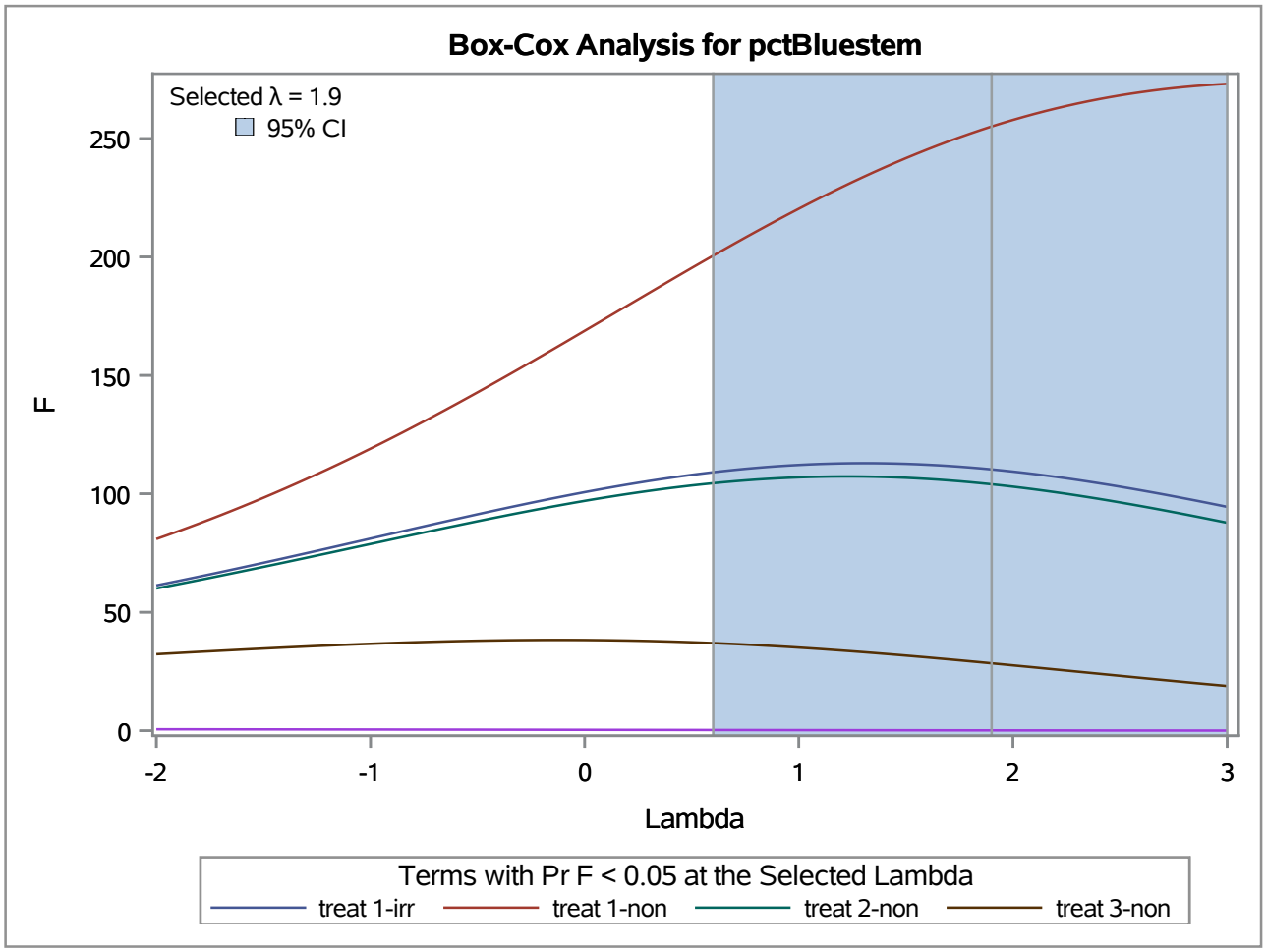
< - Best Lambda
*** - 95% Confidence Interval**
+ - Convenient Lambda

The TRANSREG Procedure

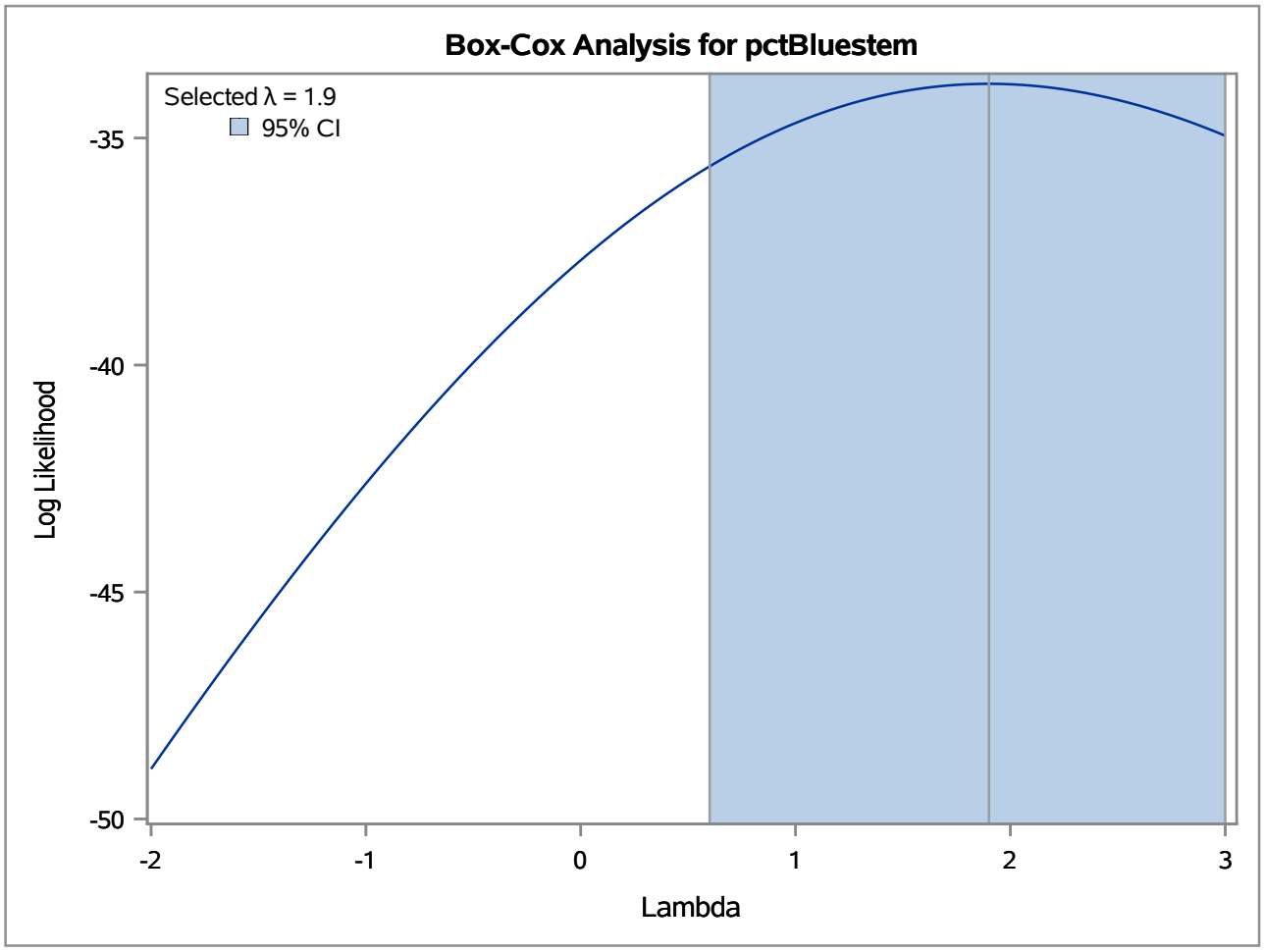
Box-Cox Transformation Information for pctBluestem				
Lambda		**R-Square**	**Log Like**	
2.95		0.96	-34.8501	*
3.00		0.96	-34.9471	*

< - Best Lambda
*** - 95% Confidence Interval**
+ - Convenient Lambda

The TRANSREG Procedure



The TRANSREG Procedure



Dependent Variable BoxCox(pctBluestem)

Class Level Information		
Class	Levels	Values
treat	6	1-irr 1-non 2-non 3-non 4-irr 4-non

Number of Observations Read	24
Number of Observations Used	24

The TRANSREG Procedure

The TRANSREG Procedure Hypothesis Tests for BoxCox(pctBluestem)

Univariate ANOVA Table Based on the Usual Degrees of Freedom					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Liberal p**
Model	5	13737893	2747579	79.39	>= <.0001
Error	18	622944	34608		
Corrected Total	23	14360838			
The above statistics are not adjusted for the fact that the dependent variable was transformed and so are generally liberal.					

Root MSE	186.03232	**R-Square**	0.9566
Dependent Mean	1841.34583	**Adj R-Sq**	0.9446
Coeff Var	10.10306	**Lambda**	1.9000

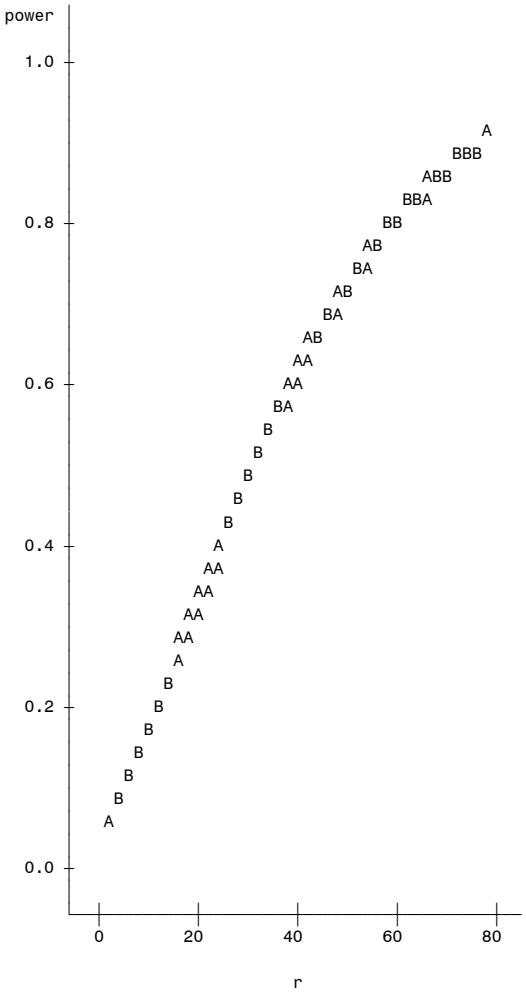
Univariate Regression Table Based on the Usual Degrees of Freedom							
Variable	**DF**	**Coefficient**	**Type II Sum of Squares**	**Mean Square**	**F Value**	**Liberal p**	**Label**
Intercept	1	911.95584	3326654	3326654	96.12	>= <.0001	Intercept
Class.treat1_irr	1	1381.50350	3817104	3817104	110.30	>= <.0001	treat 1-irr
Class.treat1_non	1	2100.97690	8828208	8828208	255.09	>= <.0001	treat 1-non
Class.treat2_non	1	1341.56324	3599584	3599584	104.01	>= <.0001	treat 2-non
Class.treat3_non	1	701.45203	984070	984070	28.43	>= <.0001	treat 3-non
Class.treat4_irr	1	50.84430	5170	5170	0.15	>= 0.7036	treat 4-irr

The above statistics are not adjusted for the fact that the dependent variable was transformed and so are generally liberal.

r	ndf	ddf	nonc	fcr	power
2	2	3	0.3334	9.55209	0.06087
3	2	6	0.5001	5.14325	0.07442
4	2	9	0.6668	4.25649	0.08834
5	2	12	0.8335	3.88529	0.10256
6	2	15	1.0002	3.68232	0.11708
7	2	18	1.1669	3.55456	0.13188
8	2	21	1.3336	3.46680	0.14694
9	2	24	1.5003	3.40283	0.16223
10	2	27	1.6670	3.35413	0.17771
11	2	30	1.8337	3.31583	0.19336
12	2	33	2.0004	3.28492	0.20915
13	2	36	2.1671	3.25945	0.22504
14	2	39	2.3338	3.23810	0.24102
15	2	42	2.5005	3.21994	0.25704
16	2	45	2.6672	3.20432	0.27310
17	2	48	2.8339	3.19073	0.28915
18	2	51	3.0006	3.17880	0.30519
19	2	54	3.1673	3.16825	0.32118
20	2	57	3.3340	3.15884	0.33712
21	2	60	3.5007	3.15041	0.35296
22	2	63	3.6674	3.14281	0.36871
23	2	66	3.8341	3.13592	0.38435
24	2	69	4.0008	3.12964	0.39984
25	2	72	4.1675	3.12391	0.41519
26	2	75	4.3342	3.11864	0.43038
27	2	78	4.5009	3.11379	0.44540
28	2	81	4.6676	3.10931	0.46023
29	2	84	4.8343	3.10516	0.47487
30	2	87	5.0010	3.10130	0.48930
31	2	90	5.1677	3.09770	0.50351
32	2	93	5.3344	3.09434	0.51751
33	2	96	5.5011	3.09119	0.53127
34	2	99	5.6678	3.08824	0.54481
35	2	102	5.8345	3.08547	0.55810
36	2	105	6.0012	3.08285	0.57115
37	2	108	6.1679	3.08039	0.58395
38	2	111	6.3346	3.07806	0.59649
39	2	114	6.5013	3.07585	0.60879

r	ndf	ddf	nonc	fcr	power
40	2	117	6.6680	3.07376	0.62082
41	2	120	6.8347	3.07178	0.63260
42	2	123	7.0014	3.06989	0.64413
43	2	126	7.1681	3.06810	0.65539
44	2	129	7.3348	3.06639	0.66639
45	2	132	7.5015	3.06476	0.67713
46	2	135	7.6682	3.06320	0.68762
47	2	138	7.8349	3.06172	0.69785
48	2	141	8.0016	3.06029	0.70782
49	2	144	8.1683	3.05893	0.71754
50	2	147	8.3350	3.05762	0.72701
51	2	150	8.5017	3.05637	0.73623
52	2	153	8.6684	3.05516	0.74521
53	2	156	8.8351	3.05400	0.75394
54	2	159	9.0018	3.05289	0.76243
55	2	162	9.1685	3.05182	0.77068
56	2	165	9.3352	3.05079	0.77870
57	2	168	9.5019	3.04979	0.78649
58	2	171	9.6686	3.04883	0.79406
59	2	174	9.8353	3.04791	0.80140
60	2	177	10.0020	3.04701	0.80853
61	2	180	10.1687	3.04615	0.81544
62	2	183	10.3354	3.04531	0.82214
63	2	186	10.5021	3.04450	0.82863
64	2	189	10.6688	3.04372	0.83492
65	2	192	10.8355	3.04296	0.84102
66	2	195	11.0022	3.04223	0.84692
67	2	198	11.1689	3.04152	0.85263
68	2	201	11.3356	3.04083	0.85816
69	2	204	11.5023	3.04016	0.86351
70	2	207	11.6690	3.03951	0.86868
71	2	210	11.8357	3.03888	0.87368
72	2	213	12.0024	3.03826	0.87852
73	2	216	12.1691	3.03767	0.88319
74	2	219	12.3358	3.03709	0.88770
75	2	222	12.5025	3.03652	0.89206
76	2	225	12.6692	3.03597	0.89627
77	2	228	12.8359	3.03544	0.90033

Plot of power*r. Legend: A = 1 obs, B = 2 obs, etc.



The GLMPOWER Procedure

Fixed Scenario Elements	
Dependent Variable	groupmean
Source	group
Alpha	0.05
Error Standard Deviation	2
Nominal Power	0.9
Test Degrees of Freedom	2

Computed N Total		
Error DF	**Actual Power**	**N Total**
228	0.900	231