

# APPENDICES

## Appendix (1)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	nse1 nse2 nse3 sce1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
F					
Model	9	568.84444444	63.20493827	33.79	
0.0001					
Error	80	149.64444444	1.87055556		
Corrected Total	89	718.48888889			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.791723	30.31809	1.36768255	4.51111111	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	146.35555556	29.27111111	15.65	
0.0001					
TRTMENT	4	422.48888889	105.62222222	56.47	
0.0001					

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Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 1.870556

Number of Means 2 3 4 5

Critical Range 0.907 0.955 0.986 1.009

Means with the same letter are not significantly different.

Duncan Grouping	Mean	TRTMENT
A	7.4444	18 nse3
B	6.3333	18 nse2
C	4.5556	18 nse1
D	2.2222	18 sce1
D		
D	2.0000	18 wat1

Number of Means 2 3 4 5 6

Critical Range 0.994 1.046 1.080 1.105 1.125

Duncan Grouping	Mean	N	BLOCK
A	6.2667	15	1
A			
A	6.1333	15	2
B	4.5333	15	3
B			
C	3.7333	15	4
C			
C	3.2000	15	5
C			
C	3.2000	15	6

Duncan Grouping	Mean	N	TIME
A	6.0000	3	nse1t1
A			
A	6.0000	3	nse1t2
A			
B	4.6667	3	nse1t3
B			
B	4.0000	3	nse1t4
B			

B	3.3333	3	nse1t5
B			
B	3.3333	3	nse1t6
A	9.3333	3	nse2t1
A			
A	9.3333	3	nse2t2
A			
A	7.3333	3	nse2t3
B	5.3333	3	nse2t4
B			
B	3.3333	3	nse2t5
B			
B	3.3333	3	nse2t6
A	11.3333	3	nse3t1
A			
A	10.6667	3	nse3t2
B	6.6667	3	nse3t3
B			
B	5.3333	3	nse3t4
B			
B	5.3333	3	nse3t5
B			
B	5.3333	3	nse3t6

## Appendix (2)

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Analysis of Variance Procedure  
Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	nsh1 nsh2 nsh3 sch1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
F					
Model	9	4541.24444444	504.58271605	360.70	
Error	80	111.91111111	1.39888889		
Corrected Total	89	4653.15555556			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.975949	12.04154	1.18274633	9.82222222	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	158.75555556	31.75111111	22.70	
0.0001					
TRTMNT	4	4382.48888889	1095.62222222	783.21	
0.0001					

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 1.398889

Number of Means 2 3 4 5

Critical Range .7846 .8255 .8527 .8725

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	19.7778	18	nsh3
B	15.5556	18	nsh2
C	9.0000	18	nsh1
D	2.7778	18	sch
D	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range .8595 .9043 .9341 .955. 9726

Duncan Grouping	Mean	N	BLOCK
A	11.4667	15	1
A			
B	11.3333	15	2
B			
B	10.5333	15	3
C	8.8000	15	4
C			
C	8.4000	15	5
C			
C	8.4000	15	6

Duncan Grouping	Mean	N	TIME
A	11.3333	3	nsh1t1
A			
A	11.3333	3	nsh1t2
B	9.3333	3	nsh1t3
C	7.3333	3	nsh1t4
C			
C	7.3333	3	nsh1t5
C			

C	7.3333	3	nsh1t6
A	17.3333	3	nsh2t1
A	17.3333	3	nsh2t2
A	17.3333	3	nsh2t3
B	14.6667	3	nsh2t4
C	13.3333	3	nsh2t5
C	13.3333	3	nsh2t6
A	22.0000	3	nsh3t1
A	22.0000	3	nsh3t2
A	22.0000	3	nsh3t3
B	18.0000	3	nsh3t4
B	17.3333	3	nsh3t5
B	17.3333	3	nsh3t6

## Appendix (3)

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Analysis of Variance Procedure  
Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMNT	5	nle1 nle2 nle3 sce1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
F					
Model	9	768.97777778	85.44197531	37.76	
Error	80	181.02222222	2.26277778		
Corrected Total	89	950.00000000			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.809450	32.23400	1.50425323	4.66666667	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	259.20000000	51.84000000	22.91	
TRTMENT	4	509.77777778	127.44444444	56.32	

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Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 2.262778

Number of Means 2 3 4 5

Critical Range 0.998 1.050 1.084 1.110

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	7.7778	18	nle3
A			
A	7.0000	18	nle2
B	4.3333	18	nle1
C	2.2222	18	sce1
C			
C	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range 1.093 1.150 1.188 1.216 1.237

Duncan Grouping	Mean	N	BLOCK
A	6.6667	15	1
A			
A	6.6667	15	2

A			
A	5.6000	15	3
B	3.4667	15	4
B			
B	2.8000	15	5
B			
B	2.8000	15	6

	<b>Duncan Grouping</b>	<b>Mean</b>	<b>N</b>	<b>TIME</b>
A	7.3333	3	nle1t1	
A				
A	7.3333	3	nle1t2	
B	4.6667	3	nle1t3	
C	2.0000	3	nle1t4	
C				
C	2.0000	3	nle1t5	
C				
C	2.0000	3	nle1t6	
A	10.0000	3	nle2t1	
A				
A	10.0000	3	nle2t2	
A				
A	9.3333	3	nle2t3	
B	4.6667	3	nle2t4	
B				
B	4.0000	3	nle2t5	
B				
B	4.0000	3	nle2t6	
A	11.3333	3	nle3t1	
A				
A	11.3333	3	nle3t2	
B	10.0000	3	nle3t3	
C	6.0000	3	nle3t4	
D	4.0000	3	nle3t5	
D				
D	4.0000	3	nle3t6	



## Appendix (4)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	nlh1 nlh2 nlh3 sch1 wat1

Number of observations in data set = 9

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
F					
Model	9	1225.511111111	136.16790123	59.19	
0.0001					
Error	80	184.044444444	2.30055556		
Corrected Total	89	1409.55555556			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.869431	26.25158	1.51675824	5.77777778	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	305.95555556	61.19111111	26.60	
0.0001					
TRTMENT	4	919.55555556	229.88888889	99.93	
0.0001					

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 2.300556

Number of Means 2 3 4 5

Critical Range 1.006 1.059 1.093 1.119

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	10.5556	18	nlh3
B	8.0000	18	nlh2
C	5.5556	18	nlh1
D	2.7778	18	sch1
D	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range 1.102 1.160 1.198 1.226 1.247

Duncan Grouping	Mean	N	BLOCK
A	8.2667	15	1
A	8.1333	15	2
B	5.4667	15	3
B	5.3333	15	4
C	3.7333	15	5
C	3.7333	15	6

Duncan Grouping	Mean	N	TIME
A	8.0000	3	nlht1
A	8.0000	3	nlht2
B	5.3333	3	nlht3
B	5.3333	3	nlht4
C	3.3333	3	nlht5

C			
C	3.3333	3	nlht6
A	12.6667	3	nlh2t1
A			
A	12.6667	3	nlh2t2
B	7.3333	3	nlh2t3
B			
B	7.3333	3	nlh2t4
C	4.0000	3	nlh2t5
C			
C	4.0000	3	nlh2t6
A	14.0000	3	nlh3t1
A			
A	14.0000	3	nlh3t2
B	10.6667	3	nlh3t3
B			
B	10.0000	3	nlh3t4
C	7.3333	3	nlh3t5
C			
C	7.3333	3	nlh3t6

## Appendix (5)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	cle1 cle2 cle3 sce1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	4466.88888889	496.32098765	329.78	0.0001
Error	80	120.40000000	1.50500000		
Corrected Total	89	4587.28888889			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.973754	13.49763	1.22678441	9.08888889	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	103.15555556	20.63111111	13.71	0.0001
TRTMENT	4	4363.73333333	1090.93333333	724.87	0.0001

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 Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 1.505

Number of Means 2 3 4 5

Critical Range .8138 .8563 .8844 .9050

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	19.5556	18	cle3
B	14.6667	18	cle2
C	7.0000	18	cle1
D	2.2222	18	sce1
D	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range 0.891 0.938 0.969 0.991 1.009

Duncan Grouping	Mean	N	BLOCK
A	10.2667	15	1
A			
B	10.1333	15	2

B	A		
B	A	9.6000	15 3
B			
B		9.2000	15 4
	C		
	C	7.8667	15 5
	C		
	C	7.4667	15 6

Duncan Grouping		Mean	N	TIME
A		10.0000	3	cle1t1
A				
A		9.3333	3	cle1t2
B		7.3333	3	cle1t3
C		6.0000	3	cle1t4
C				
C		5.3333	3	cle1t5
D		4.0000	3	cle1t6
A		16.0000	3	cle2t1
A				
A		16.0000	3	cle2t2
A				
A		16.0000	3	cle2t3
A				
A		15.3333	3	cle2t4
B		12.6667	3	cle2t5
B				
B		12.0000	3	cle2t6
A		20.6667	3	cle3t1
A				
A		20.6667	3	cle3t2
A				
A		20.6667	3	cle3t3
A				
A		20.6667	3	cle3t4
B		17.3333	3	cle3t5
B				
B		17.3333	3	cle3t6

## Appendix (6)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	clh1 clh2 clh3 sch1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	9103.24444444	1011.47160494	1048.76	0.0001
Error	80	77.15555556	0.96444444		
Corrected Total	89	9180.40000000			

R-Square	C.V.	Root MSE	REPL Mean
0.991596	7.632601	0.98206132	12.86666667

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	64.40000000	12.88000000	13.35	0.0001
TRTMENT	4	9038.84444444	2259.71111111	2343.02	0.0001

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### Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 0.964444

Number of Means 2 3 4 5

Critical Range .6515 .6855 .7080 .7245

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	28.6667	18	clh3
B	18.5556	18	clh2
C	12.3333	18	clh1
D	2.7778	18	sch1
E	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range .7136 .7509 .7756 .7936 .8076

Duncan Grouping	Mean	N	BLOCK
A	14.0000	15	1
A			
B	13.7333	15	2
B			
B	13.2000	15	3
C			
D	12.5333	15	4
D			
D	12.0000	15	5
E			
E	11.7333	15	6

Duncan Grouping	Mean	N	TIME
A	14.0000	3	clh1t1
A			
A	13.3333	3	clh1t2
A			
B	12.6667	3	clh1t3
B			
B	11.3333	3	clh1t4
B			
B	11.3333	3	clh1t5
B			
B	11.3333	3	clh1t6
A	20.0000	3	clh2t1

A				
A	20.0000	3	clh2t2	
A				
A	20.0000	3	clh2t3	
B	18.0000	3	clh2t4	
B				
B	16.6667	3	clh2t5	
B				
B	16.6667	3	clh2t6	
A	29.3333	3	clh3t1	
A				
A	29.3333	3	clh3t2	
A				
A	29.3333	3	clh3t3	
A				
A	29.3333	3	clh3t4	
B	28.0000	3	clh3t5	
C	26.6667	3	clh3t6	

## Appendix (7)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	5	rlh1 rlh2 rlh3 sch1 wat1

Number of observations in data set = 90

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
Model	9	11970.75555556	1330.08395062	1582.39	
F					0.0001



Error	80	67.24444444	0.84055556		
Corrected Total	89	12038.00000000			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.994414	6.251033	0.91681817	14.66666667	
Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	48.53333333	9.70666667	11.55	0.0001
TRTMENT	4	11922.22222222	2980.55555556	3545.94	
0.0001					

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 80 MSE= 0.840556

Number of Means 2 3 4 5

Critical Range .6082 .6399 .6610 .6763

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	32.8889	18	rlh3
B	19.8889	18	rlh2
C	15.7778	18	rlh1
D	2.7778	18	sch1
E	2.0000	18	wat1

Number of Means 2 3 4 5 6

Critical Range .6662 .7010 .7241 .7409 .7539

Duncan Grouping	Mean	N	BLOCK
A	15.7333	15	1
A			
B	15.3333	15	2
B			
B	14.9333	15	3
C			
D	14.4000	15	4
D			
D	13.8667	15	5
D			
D	13.7333	15	6

Duncan Grouping	Mean	N	TIME
A	17.3333	3	rlh1t1
A			
B	16.0000	3	rlh1t2
B			
B	16.0000	3	rlh1t3
B			
B	15.3333	3	rlh1t4
B			
B	15.3333	3	rlh1t5

B				
B	14.6667	3	rlh1t6	
A	21.3333	3	rlh2t1	
A				
A	21.3333	3	rlh2t2	
A				
A	21.3333	3	rlh2t3	
B	19.3333	3	rlh2t4	
C	18.0000	3	rlh2t5	
C				
C	18.0000	3	rlh2t6	
A	33.3333	3	rlh3t1	
A				
A	33.3333	3	rlh3t2	
A				
A	33.3333	3	rlh3t3	
A				
A	33.3333	3	rlh3t4	
B	32.0000	3	rlh3t5	
B				
B	32.0000	3	rlh3t6	

## Appendix (8)

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### Analysis of Variance Procedure Class Level Information

Class	Levels	Values
BLOCK	6	1 2 3 4 5 6
TRTMENT	9	cle1 clh1 nle1 nlh1 nse1 nsh1 rlh1 ssi1 wat1

Number of observations in data set = 162

Dependent Variable: **Repellency**

Source	DF	Sum of Squares	Mean Square	F Value	Pr >
Model	13	15646.46913580	1203.57454891	543.28	0.0001
Error	148	327.87654321	2.21538205		
Corrected Total	161	15974.34567901			
	R-Square	C.V.	Root MSE	REPL Mean	
	0.979475	9.037608	1.48841595	16.46913580	

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BLOCK	5	351.90123457	70.38024691	31.77	0.0001
TRTMENT	8	15294.56790123	1911.82098765	862.98	0.0001

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Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 148 MSE= 2.215382

Number of Means 2 3 4 5 6 7 8 9

Critical Range 0.980 1.032 1.066 1.091 1.111 1.127 1.140 1.151

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRTMENT
A	32.8889	18	rlh1
B	28.6667	18	clh1
C	19.7778	18	nsh1
C	19.5556	18	cle1
C	19.5556	18	ssi1
D	10.5556	18	nlh1

E	7.7778	18	nle1
E			
E	7.4444	18	nse1
F	2.0000	18	wat

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Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: **Repellency**

Alpha= 0.05 df= 148 MSE= 2.215382

Number of Means 2 3 4 5 6

Critical Range .8005 .8426 .8706 .8912 .9072

Means with the same letter are not significantly different.

	<b>Duncan Grouping</b>	<b>Mean</b>	<b>N TIME</b>
A	18.2222	27	1
A			
A	18.1481	27	2
B	17.1111	27	3
C	16.0000	27	4
D	14.7407	27	5
D			
D	14.5926	27	6