5-16-94

MRID No. 429186-22

DATA EVALUATION RECORD

FILE COPY

1. **CHEMICAL:** Fipronil and derivatives EUP (M&B 46030). Shaughnessey No. 129121.

2. **TEST MATERIAL:** M&B 46030 technical; Batch No. 78 GC 90; CAS No. 120068-37-3; 96.7% active ingredient; a white powder.

3. **STUDY TYPE:** 71-4. Avian Reproduction Study. Species Tested: Bobwhite quail (*Colinus virginianus*).

4. **CITATION:** Pedersen, C.A and D.R. DuCharme. 1993. M&B 46030 Technical: Toxicity and Reproduction Study in Bobwhite Quail. Conducted by Bio-Life Associates, Ltd., Neillsville, WI. Laboratory Project ID No. BLAL No. 108-005-07. Submitted by Rhône-Poulenc Ag Company, Research Triangle Park, NC. EPA MRID No. 429186-22.

5. **REVIEWED BY:**

Andrew C. Bryceland, Fishery Biologist
Review Section 5
Ecological Effects Branch
Environmental Fate and Effects Division (7507C)

Signature: [signature]
Date: 5/16/94

6. **APPROVED BY:**

Ann Stavola, Supervisory Biologist
Review Section 5
Ecological Effects Branch
Environmental Fate and Effects Division (7507C)

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7. **CONCLUSIONS:** This study is scientifically sound but does not fulfill the requirements for an avian reproduction study. There were no treatment-related effects observed in bobwhite quail that were fed M&B 46030 for 20 weeks and 2 days at 0.2, 2, and 10 ppm a.i. (nominal concentrations). The no-observed-effect concentration (NOEC) was 10 ppm a.i.

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The birds used in this study were bobwhite quail (*Colinus virginianus*) purchased from a

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5. **REVIEWED BY:**

Charles G. Nace Jr., M.S.
Associate Scientist
KBN Engineering and
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Signature: Michael L. Whitten for C.G. Nace
Date: 3/17/94

Michael L. Whitten, M.S.
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James J. Goodyear, Ph.D.
Project Officer, EEB/EFED
USEPA

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Date: 5/6/94

6. **APPROVED BY:**

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the requirements for an avian reproduction study. There were no treatment-related effects observed in bobwhite quail that were fed M&B 46030 for 20 weeks and 2 days at 0.2, 2, and 10 ppm a.i. (nominal concentrations). The no-observed-effect concentration (NOEC) was 10 ppm a.i.

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

commercial supplier in Gravette, AR. The birds were 26 weeks of age at study initiation and were acclimated to the laboratory environment for 29 days. All birds were phenotypically indistinguishable from wild birds. At test initiation, all birds were examined for physical injuries and general health.

B. **Dose/Diet Preparation/Food Consumption:** Diets were prepared by mixing a standard premix with stock diet. The standard premix was a mixture of the appropriate amount of test substance dissolved in acetone and added to stock diet. Diets were prepared fresh weekly, approximately 24 hours prior to administration. The control diet consisted of stock diet and acetone in the amount equivalent to the test diets. The diets were adjusted to 100 percent active ingredient and are reported as parts per million (ppm) of active ingredient (a.i.). Each of the three treatment groups and the control group were fed the appropriate diet for 20 weeks and 2 days.

Basal diet for adult birds during the first 4 weeks of the study was Purina® Duck Grower W/O®. The birds received Purina® Game Bird Breeder Layena® from week 5 until study termination. The compositions of these diets were presented in the report. The test substance was not mixed into the diet of the offspring. Food and water were supplied *ad libitum* during acclimation and during the test.

Samples of approximately 100 g were collected during test weeks 1, 2, 3, 4, 8, 12, 16, and 20. These samples were immediately frozen after collection and were shipped, under dry ice, to Hazleton, Wisconsin, for concentration verification using gas chromatography.

C. **Design:** The birds were randomly distributed into four groups as follows:

M&B 46030 Technical Nominal Concentration	Number of Pens	Birds Per Pen	
		Males	Females
Control (0 ppm a.i.)	12	1	2
0.2 ppm a.i.	12	1	2
2 ppm a.i.	12	1	2
10 ppm a.i.	12	1	2

Treatment levels were based upon results of a 28-day dietary pilot study. Adult birds were identified by individual wing tags.

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D. **Pen Facilities:** Adult birds were housed in steel wire pens which measured 53.3 x 61.0 x 38.1 cm. The average daily temperature in the adult study room was 25°C with an average relative humidity of 56%.

The photoperiod during the first 7 weeks of the study was 7 hours of light per day. At the start of week 8, the photoperiod was increased to 17 hours of light per day and maintained at that level for the duration of the study.

E. **Adult Observations/Gross Pathology:** Adult birds were observed daily throughout the study for signs of toxicity. Mortalities occurring prior to terminal adult sacrifice were recorded and necropsied. Necropsies were also conducted on half of all surviving adult birds from each concentration at study termination. Adult body weights were measured at study initiation, biweekly through week 8, and at study termination. Feed consumption was measured in each cage biweekly during the treatment period.

F. **Eggs/Eggshell Thickness:** Eggs were collected daily during the production period and were labeled according to pen of origin. Normal eggs were stored at 16 and 19°C (average daily minimum and maximum temperature) with an average relative humidity of 76%. The eggs were turned once daily during each seven-day collection period. Eggs were removed from the egg cooler weekly and eggs not cracked or used for eggshell thickness measurements were placed in incubators maintained at 37.7°C with relative humidity ranging from 58-67%. All eggs were turned automatically every four hours while in the incubator. Eggs were candled on day 11 of incubation to determine fertility and on day 18 to determine embryo survival. On incubation day 21, the eggs were placed in hatching trays.

Eggs were collected on the first day of six separate intervals of the test period for eggshell thickness measurements. Eggs were broken, the contents removed, thoroughly washed, air dried for at least 48 hours, and measured at three points around the equator of the egg. The egg shells and contents of the eggs were frozen for residue analysis, if requested by the Sponsor.

G. **Hatchlings:** Hatchlings were housed according to group and pen number. All hatchlings were observed daily and received untreated diet during the 14-day observation period. The hatchlings were maintained at average

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minimum and maximum temperatures ranging from 35 to 47°C and average relative humidity ranging from 39 to 52%. Hatchling body weights were measured and recorded at hatch and on day 14.

Gross pathological examinations were conducted on birds found dead during the 14-day observation period and on selected hatchlings on day 14.

H. **Statistics:** Analysis of variance (ANOVA) was used to statistically analyze the following parameters:

Adult Body Weight	Hatchling Body Weight
Adult Feed Consumption	Eggshell Thickness

Contingency Table Analysis was used to statistically analyze the following parameters:

Eggs Set of Eggs Laid	Eggs Laid Per Hen
One Week Eggs of Fertile Eggs Set	Midterm Eggs of Fertile Eggs Set
Full-Term Eggs of Fertile Eggs Set	Cracked Eggs of Eggs Laid
Infertile Eggs of Eggs Set	Live 3-Week Embryos of Fertile Eggs Set
Hatched Eggs of Fertile Eggs Set	14-Day Old Survivors of Hatchlings
Fertile Eggs of Eggs Set	Normal Eggs of Eggs Laid
Defective Eggs of Eggs Laid	

12. **REPORTED RESULTS:**

A. **Diet Analysis:** The percent recoveries for the diets prepared during test weeks 1, 2, 3, 4, 8, 12, 16, and 20 averaged 88.1, 89.0, and 92.2% for the 0.2, 2, and 10 ppm a.i. test groups, respectively (Table 1, attached).

B. **Mortality and Behavioral Reactions:** Mortality in the control and at 0.2, 2, and 10 ppm a.i. was 8.3, 5.6, 16.7, and 8.3%, respectively. The deaths were attributed to factors other than the test material and examinations of one-half of the surviving adult birds revealed no treatment-related effects.

C. **Adult Body Weight and Food Consumption:** No significant differences in body weights were noted throughout the study. Small differences (increases or decreases) in mean body weights were considered to be random

occurrences which were unrelated to the test material. No significant differences in feed consumption were noted throughout the study. Occasional small differences were not statistically significant (Tables 2A and 2B, attached).

D. **Reproduction:** When compared to controls, there was a significantly higher number of cracked eggs at 0.2 and 2 ppm a.i. These differences were not considered to be treatment-related because the 10 ppm a.i. test group was unaffected (Tables 4A and 4B, attached). The ingestion of the test material had no adverse affects on egg fertility, hatchability, or survival of newly hatched quail.

E. **Eggshell Thickness:** There were no significant differences in eggshell thickness when compared to control eggs (Table 6A, attached).

F. **Offspring:** Although some significant differences in body weights were noted for various groups within the hatches, these intergroup differences were not consistent or dose correlated. Hence, these differences were not considered to be treatment-related (Tables 8 and 9, attached).

Twelve hatchlings in various groups died after their pens became wet from leaky waterers, or after they had been playing in the waterers, or after their waterers leaked dry. There were no significant differences noted in hatchling survival.

There were no treatment-related abnormal behavioral reactions or clinical signs of toxicity noted in any hatch. Gross pathological examinations of hatchlings found dead or of selected hatchlings on day 14 revealed no treatment-related findings.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** "The ingestion of M&B 46030 Technical by the parental generation did not adversely affect the reproductive success of the F_0 generation or the viability of the offspring in the F_1 generation. The no-observed-effect level was determined to be 10 ppm a.i."

The report stated that the study was conducted in conformance with Good Laboratory Practice (GLP) regulations (40 CFR Part 160). Quality assurance audits were conducted during the study and the final report was signed by a

Quality Assurance Officer for Bio-Life Associates, Ltd. An additional statement of conformance with GLP (40 CFR part 160) guidelines was included in the analytical report.

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:

A. Test Procedure: The test procedures were in accordance with Subdivision E, ASTM, and SEP guidelines except for the following deviations:

The homogeneity and stability of the test material in the diets were not confirmed by chemical analysis.

The average daily temperature in the adult study room was 25°C; 21°C is recommended.

The SEP recommends that eggs be stored at a temperature of 16°C and a relative humidity of 65%; eggs were stored with average daily minimum and maximum temperatures of 16 to 19°C with a relative humidity of 76%.

The SEP recommends that eggs be hatched at a temperature of 39°C and a relative humidity of 70%; eggs were hatched at 37.7°C and relative humidity ranging from 58-67%.

Test treatments were not of a high enough concentration to generate an effect level.

Test treatments were not separated by a factor of five.

Test treatments did not overlap the expected environmental concentration.

B. Statistical Analysis: Statistical analyses of reproductive parameters were performed by the reviewer using analysis of variance (ANOVA) following arcsine square-root transformation of the ratio data. The comparisons between control data and data from each treatment level were made using Dunnett's procedure and Bonferroni's procedure. The computer program is based on the EEB Birdall program. The significance level was $p \leq 0.05$.

The results of the statistical analyses were similar to those reported by the author with the following exception (see attached printouts): male body weight at 0.2 and 2 ppm a.i. was significantly lower when compared with the control using Dunnett's test. This

effect was not observed at 10 ppm a.i. and therefore is not considered to be treatment-related.

C. **Discussion/Results:** Excoriation developed in a total of 58 birds. The author stated that the affected birds "...did not exhibit any abnormal behavioral reactions other than slightly restricted mobility of the affected region, lethargy, and weight loss." However, weight loss in breeding birds (especially females) can have major effects on reproduction. It is unclear whether excoriation affected reproduction or contributed to the observed mortality. The authors attributed the excoriation to increased activity and additional stress during the 17-hour photoperiod. However, the reviewer notes that this testing laboratory routinely reports this condition in bobwhite quail studies, while other testing laboratories do not seem to have this problem. Husbandry techniques may be responsible for the frequency of excoriation observed in studies conducted by this laboratory. While excoriation does not appear to have affected the outcome of this study, the results may not be directly comparable with results of other studies that did not have a high rate of excoriation.

The maximum application rate of Fipronil 1.5G is 0.13 lbs. a.i./A. The maximum expected residues, based on Hoerger and Kenega, with 1 lb a.i./A is 240ppm (based on short grasses). Multiplying the maximum application rate of Fipronil 1.5G (0.13 lbs a.i./A) by the Kenega value (240ppm) would indicate an estimated environmental concentration (EEC) of 31 ppm a.i./A. Test concentrations should include an actual or expected field residue exposure level and a multiple level such as five. The range selected must generate an LOEC as well as NOEC without causing any mortalities in the parent generation. The highest concentration that was tested was 10ppm (nominal) which is lower than the estimated environmental concentration of 31 ppm ai/A.

This study is scientifically sound but does not fulfill the requirements for an avian reproduction study. There were no treatment-related effects observed in bobwhite quail that were fed M&B 46030 for 20 weeks and 2 days at 0.2, 2, and 10 ppm a.i. The NOEC was 10 ppm a.i.

D. **Adequacy of the Study:**

(1) Classification: Supplemental.

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(2) **Rationale:** This study must be repeated so that the test concentrations include the estimated environmental concentration (EEC = 31ppm) for Fipronil 1.5G. The range selected must generate an LOEC as well as NOEC without causing any mortalities in the parent generation.

(3) **Repairability:** Irreparable.

15. **COMPLETION OF ONE-LINER:** Yes; 01/28/94.

Fipronil Review

Page _____ is not included in this copy.

Pages 10 through 20 are not included in this copy.

The material not included contains the following type of information:

_____ Identity of product inert ingredients.

_____ Identity of product impurities.

_____ Description of the product manufacturing process.

_____ Description of quality control procedures.

_____ Identity of the source of product ingredients.

_____ Sales or other commercial/financial information.

_____ A draft product label.

_____ The product confidential statement of formula.

_____ Information about a pending registration action.

✓ FIFRA registration data.

_____ The document is a duplicate of page(s) _____.

_____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

E. pronil EUP; Bobwhite Quail Reproteat MRID # 42518C-22 SAS Data

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OBS	TRT	EL	EC	ES	VE	LE	NH	HS	THICK	HATWT	SURVWT	FOOD	PREM	POSTM	PREF	POSTF
1	A	4	0	4	4	4	2	2	.	38.5	185.5	39465	1243	1268	954	1040
2	A	45	2	39	38	37	37	37	0.377	38.7	257.3	35178	1309	1217	995	1105
3	A	39	0	38	37	23	10	10	0.333	30.3	239.7	40374	1044	1049	941	1123
4	A	63	1	57	53	52	48	46	0.377	33.6	286.5	46000	1245	1398	941	1036
5	A	41	0	38	36	35	30	30	0.391	34.1	270.9	43984	1124	1077	953	1087
6	A	26	0	23	23	20	16	16	0.389	40.6	291.7	41157	1050	1198	986	1070
7	A	78	2	71	68	48	33	33	0.383	37.1	282.5	35999	1108	1110	1025	1193
8	A	22	0	21	19	11	2	2	0.347	32.0	232.0	32026	1393	1277	1023	976
9	A	4	0	3	3	1	0	0	0.377	.	.	31345	1249	1178	1018	1316
10	A	61	1	54	53	51	42	42	0.393	34	284.4	36398	1176	1316	1000	1171
11	A	.	.	.	.	.	.	.	.	.	.	2111	1015	.	1156	.
12	A	50	5	41	36	33	27	26	0.322	38.3	250.5	36439	1109	1224	1047	1088
13	A	62	1	57	28	24	17	17	0.397	42.3	285.7	40039	1067	1199	1048	1060
14	A	72	0	65	63	61	39	39	0.416	37.7	295.4	36673	1156	1168	966	1098
15	A	29	3	24	22	22	19	19	0.372	37.9	333.0	37627	1141	1009	1048	1197
16	B	63	0	58	53	15	5	5	0.389	39.1	241.4	36757	1226	1128	1067	1315
17	B	37	0	34	33	30	21	20	0.390	43.5	362.4	39656	1192	1121	1068	1200
18	B	64	1	58	57	55	50	49	0.352	38.4	290.7	34166	1062	1073	1055	1285
19	B	39	1	35	31	29	26	25	0.382	31.1	268.5	44997	1137	1132	1109	987
20	B	56	1	51	49	45	32	31	0.370	37.8	279.3	34749	1086	1225	1002	1080
21	B	52	3	45	42	38	33	33	0.373	34.2	285.0	37698	1183	1448	972	1105
22	B	80	1	73	1	1	1	1	0.364	38.0	287.0	36502	1340	1432	1057	1153
23	B	74	0	68	65	61	55	55	0.381	41.7	337.4	42617	1030	1130	1085	1037
24	B	29	0	26	26	20	12	11	0.372	36.1	297.6	40118	1302	1189	1027	1013
25	B	63	2	55	24	23	17	17	0.382	39.0	313.8	36203	945	1151	905	1292
26	B	74	0	69	66	58	28	27	0.377	35.8	272.4	35115	1143	1320	907	.
27	B	58	3	49	44	22	14	14	0.360	36.8	266.9	43143	1252	1360	905	1060
28	B	71	1	64	62	61	57	57	0.390	39.0	313.9	38249	1153	971	1027	1035
29	B	89	0	83	70	69	65	65	0.370	39.8	292.8	38031	1177	1069	929	1102
30	B	47	1	43	39	37	34	34	0.337	41.5	307.0	32774	1225	1194	1022	1234
31	C	36	0	33	30	30	24	24	0.360	36.1	289.3	34433	1030	957	1111	1141
32	C	68	0	63	62	54	51	50	0.356	41.1	316.0	35049	1128	1109	1203	1518
33	C	64	3	56	5	3	0	0	0.368	.	.	40950	1335	1265	1030	1055
34	C	85	0	79	69	65	63	63	0.389	37.7	317.9	35871	1157	1146	1154	1466
35	C	49	2	45	43	42	36	36	0.347	32.4	286.5	42319	1009	1140	1096	1212
36	C	73	0	66	60	57	52	51	0.372	34.7	274.5	36927	1041	1263	1095	1172
37	C	68	1	59	56	52	37	36	0.392	37.7	298.2	34670	1329	1140	936	1122
38	C	68	0	62	37	37	34	34	0.370	41.6	332.8	35409	1328	1216	1043	1155
39	C	1	1	5	5	5	5	5	0.330	40.6	285.3	34642	1015	951	945	1075
40	C	62	1	58	56	31	10	10	0.401	34.2	263.1	44345	1148	1030	905	1012
41	C	17	0	16	16	14	10	10	0.323	35.3	255.4	41127	1146	1316	970	987
42	C	66	1	59	58	56	50	50	0.368	37.1	303.5	37848	1207	1151	1030	1260
43	C	32	0	29	26	21	10	8	0.401	37.0	284.9	37487	1090	1152	884	1159
44	C	63	2	55	51	49	46	44	0.328	38.2	342.2	39967	1372	1403	903	1066
45	C	74	11	55	30	28	27	24	0.368	35.2	293.1	36908	1195	955	945	1044
46	C	73	1	68	67	64	59	59	0.385	38.1	252.2	34138	1080	970	950	1180
47	D	54	0	50	14	11	9	9	0.373	36.6	324.3	30197	1095	952	1074	1307
48	D	83	1	76	73	64	61	61	0.328	42.6	329.2	40429	1182	1263	1248	1165
49	D	33	2	26	12	6	5	5	0.403	35.1	308.5	43608	1149	1134	1086	949
50	D	62	0	57	56	52	45	44	0.344	37.6	269.7	33770	1285	1395	848	1035
51	D	0	.	.	.	.	.	.	.	.	.	32103	1212	1230	847	913
52	D	31	2	27	25	21	16	16	0.375	38.8	253.1	30231	1011	1031	836	.
53	D	4	0	3	3	1	0	0	0.380	.	.	27809	1294	1072	1139	1270
54	D	42	1	39	37	27	10	10	0.397	33.9	253.8	30670	1135	1120	828	1061
55	D	.	.	.	.	.	.	.	.	.	.	7099	1280	.	975	.
56	D	63	0	59	56	55	51	51	0.351	40.4	301.0	36607	1202	1294	1049	1045
57	D	77	0	71	64	58	53	53	0.349	39.5	312.5	39363	1091	1337	978	1100
58	D	1	0	1	1	0	0	0	.	.	.	43684	1210	1140	917	824
59	D	76	1	69	69	69	65	65	0.361	38.2	314.4	38612	1077	1120	1048	1152
60	D	17	3	13	7	5	5	5	0.320	37.2	293.5	30652	1310	1100	935	1166
61	D	76	1	70	67	65	56	55	0.389	42.3	319.2	35615	1030	1000	1209	1327

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TRT=A

N Obs	Variable	N	Minimum	Maximum	Mean	Std Dev
15	EL	14	4.0000000	78.0000000	42.5714286	23.5166530
	EC	14	0	5.0000000	1.0714286	1.4917355
	ES	14	3.0000000	71.0000000	38.2142857	21.2970875
	VE	14	3.0000000	68.0000000	34.5000000	19.8755745
	LE	14	1.0000000	61.0000000	30.1428571	18.4384929
	NH	14	0	48.0000000	23.0000000	15.8938788
	HS	14	0	46.0000000	22.7857143	15.6410632
	THICK	13	0.3220000	0.4160000	0.3749231	0.0264306
	HATWT	13	30.3000000	42.3000000	36.8846154	3.4258445
	SURVWT	13	185.5000000	333.0000000	268.8538462	36.5091453
	FOOD	15	2111.00	46000.00	35655.67	10093.23
	PREM	15	1015.00	1393.00	1161.93	107.2157149
	POSTM	14	1009.00	1398.00	1192.00	106.4121161
	PREF	15	941.0000000	1156.00	1006.73	56.4515806
	POSTF	14	976.0000000	1316.00	1111.43	85.2008616

TRT=B

N Obs	Variable	N	Minimum	Maximum	Mean	Std Dev
15	EL	15	29.0000000	89.0000000	59.7333333	16.8415586
	EC	15	0	3.0000000	0.9333333	1.0327956
	ES	15	26.0000000	83.0000000	54.0666667	15.8945933
	VE	15	1.0000000	70.0000000	44.1333333	19.0707954
	LE	15	1.0000000	69.0000000	37.6000000	20.0064275
	NH	15	1.0000000	65.0000000	30.0000000	19.5009157
	HS	15	1.0000000	65.0000000	29.6000000	19.5477437
	THICK	15	0.3370000	0.3900000	0.3726000	0.0148314
	HATWT	15	31.1000000	43.5000000	38.1200000	3.1002765
	SURVWT	15	241.4000000	362.4000000	294.4066667	29.8879447
	FOOD	15	32774.00	44997.00	38047.67	3509.76
	PREM	15	945.0000000	1340.00	1163.53	103.6256082
	POSTM	15	971.0000000	1448.00	1196.20	137.5744993
	PREF	15	905.0000000	1109.00	1009.13	69.5453261
	POSTF	14	987.0000000	1315.00	1135.57	111.2604113

TRT=C

N Obs	Variable	N	Minimum	Maximum	Mean	Std Dev
16	EL	16	1.0000000	85.0000000	56.1875000	23.0859806
	EC	16	0	11.0000000	1.4375000	2.7072434
	ES	16	5.0000000	79.0000000	50.5000000	19.9632997
	VE	16	5.0000000	69.0000000	41.9375000	21.2774333
	LE	16	3.0000000	65.0000000	38.0000000	20.1196421
	NH	16	0	63.0000000	32.1250000	20.5097538
	HS	16	0	63.0000000	31.5000000	20.4939015
	THICK	16	0.3230000	0.4010000	0.3661250	0.0247194
	HATWT	15	32.4000000	41.6000000	37.1333333	2.6122422
	SURVWT	15	252.2000000	342.2000000	292.9933333	26.4392691
	FOOD	16	34138.00	44345.00	37630.62	3179.81
	PREM	16	1009.00	1372.00	1163.13	121.9813510
	POSTM	16	951.0000000	1403.00	1135.25	137.1157662
	PREF	16	884.0000000	1203.00	1012.50	97.3214605
	POSTF	16	987.0000000	1518.00	1164.00	148.0986158

TRT=D

N Obs	Variable	N	Minimum	Maximum	Mean	Std Dev
15	EL	14	0	83.0000000	44.2142857	30.1921502
	EC	13	0	3.0000000	0.8461538	0.9870962
	ES	13	1.0000000	76.0000000	43.1538462	26.7763769
	VE	13	1.0000000	73.0000000	37.2307692	27.8692000
	LE	13	0	69.0000000	33.3846154	27.4455171
	NH	13	0	65.0000000	28.9230769	26.0271062
	HS	13	0	65.0000000	28.7692308	25.8912915
	THICK	12	0.3200000	0.4030000	0.3641667	0.0265050
	HATWT	11	33.9000000	42.6000000	38.3818182	2.7334294
	SURVWT	11	253.1000000	329.2000000	298.1090909	27.3928624
	FOOD	15	7099.00	43684.00	33363.27	8853.53
	PREM	15	1011.00	1310.00	1170.87	97.0580582
	POSTM	14	952.0000000	1395.00	1156.29	130.3695508
	PREF	15	828.0000000	1248.00	1001.13	135.5622507
	POSTF	13	824.0000000	1327.00	1101.08	152.0046389

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 59 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	3213.826503	1071.275501	1.90	0.1403
Error	55	31005.156548	563.730119		
Corrected Total	58	34218.983051			

R-Square	C.V.	Root MSE	RESP Mean
0.093919	46.53944	23.74300	51.0169492

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	3213.826503	1071.275501	1.90	0.1403

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	3213.826503	1071.275501	1.90	0.1403

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 55 MSE= 563.7301
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.7046

Number of Means	2	3	4
Critical Range	17.56	18.46	19.06

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	59.733	15	B
A			
A	56.188	16	C
A			
A	44.214	14	D
A			
A	42.571	14	A

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 55 MSE= 563.7301
Critical Value of Dunnett's T= 2.412

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-4.121	17.162	38.445
C - A	-7.343	13.616	34.575
D - A	-20.004	1.643	23.289

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 55 MSE= 563.7301
Critical Value of T= 2.73704

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

TRT Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B	- C	-19.810	3.546	26.902
B	- D	-8.630	15.519	39.668
B	- A	-6.988	17.162	41.311
C	- B	-26.902	-3.546	19.810
C	- D	-11.809	11.973	35.756
C	- A	-10.166	13.616	37.398
D	- B	-39.668	-15.519	8.630
D	- C	-35.756	-11.973	11.809
D	- A	-22.919	1.643	26.205
A	- B	-41.311	-17.162	6.988
A	- C	-37.398	-13.616	10.166
A	- D	-26.205	-1.643	22.919

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	3.07725306	1.02575102	0.33	0.8003
Error	54	165.49171245	3.06466134		
Corrected Total	57	168.56896552			

R-Square	C.V.	Root MSE	RESP Mean
0.018255	161.1680	1.750617	1.08620690

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	3.07725306	1.02575102	0.33	0.8003

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	3.07725306	1.02575102	0.33	0.8003

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 3.064661
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	1.308	1.375	1.420

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	1.437	16	C
A			
A	1.071	14	A
A			
A	0.933	15	B
A			
A	0.846	13	D

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 3.064661
Critical Value of Dunnett's T= 2.415

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

TRT Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C	- A	-1.181	0.366	1.913

B	- A	-1.709	-0.138	1.433
D	- A	-1.854	-0.225	1.403

2. ANALYSIS OF EC DATA 12
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 3.064661
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-1.389	0.366	2.121
C - B	-1.219	0.504	2.227
C - D	-1.199	0.591	2.382
A - C	-2.121	-0.366	1.389
A - B	-1.644	0.138	1.920
A - D	-1.622	0.225	2.072
B - C	-2.227	-0.504	1.219
B - A	-1.920	-0.138	1.644
B - D	-1.730	0.087	1.904
D - C	2.382	-0.591	1.199
D - A	-2.072	-0.225	1.622
D - B	-1.904	-0.087	1.730

3. ANALYSIS OF ES DATA 13
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

3. ANALYSIS OF ES DATA 14
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	2215.931009	738.643670	1.66	0.1863
Error	54	24014.982784	444.721903		
Corrected Total	57	26230.913793			

R-Square	C.V.	Root MSE	RESP Mean
0.084478	45.05079	21.08843	46.8103448

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	2215.931009	738.643670	1.66	0.1863

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	2215.931009	738.643670	1.66	0.1863

3. ANALYSIS OF ES DATA 15
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 444.7219
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	15.76	16.57	17.10

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	54.067	15	B
A A	50.500	16	C
A A	43.154	13	D
A	38.214	14	A

3. ANALYSIS OF ES DATA 16
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for

comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 444.7219
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-3.072	15.852	34.777
C - A	-6.351	12.286	30.923
D - A	-14.675	4.940	24.555

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 444.7219
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - C	-17.192	3.567	24.325
B - D	-10.974	10.913	32.800
B - A	-5.612	15.852	37.317
C - B	-24.325	-3.567	17.192
C - D	-14.221	7.346	28.913
C - A	-8.852	12.286	33.424
D - B	-32.800	-10.913	10.974
D - C	-28.913	-7.346	14.221
D - A	-17.308	4.940	27.187
A - B	-37.317	-15.852	5.612
A - C	-33.424	-12.286	8.852
A - D	-27.187	-4.940	17.308

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	832.6249226	277.5416409	0.57	0.6378
Error	54	26338.4785256	487.7496023		
Corrected Total	57	27171.1034483			

R-Square	C.V.	Root MSE	RESP Mean
0.030644	55.69274	22.08505	39.6551724

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	832.6249226	277.5416409	0.57	0.6378

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	832.6249226	277.5416409	0.57	0.6378

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 487.7496
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	16.50	17.35	17.91

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	44.133	15	B
A			
A	41.938	16	C
A			
A	37.231	13	D
A			
A	34.500	14	A

4. ANALYSIS OF VE DATA 21
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 487.7496
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-10.186	9.633	29.453
C - A	-12.080	7.437	26.955
D - A	-17.811	2.731	23.273

4. ANALYSIS OF VE DATA 22
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 487.7496
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - C	-19.544	2.196	23.936
B - D	-16.019	6.903	29.824
B - A	-12.845	9.633	32.112
C - B	-23.936	-2.196	19.544
C - D	-17.880	4.707	27.293
C - A	-14.699	7.437	29.574
D - B	-29.824	-6.903	16.019
D - C	-27.293	-4.707	17.880
D - A	-20.568	2.731	26.029
A - B	-32.112	-9.633	12.845
A - C	-29.574	-7.437	14.699
A - D	-26.029	-2.731	20.568

5. ANALYSIS OF LE DATA 23
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

5. ANALYSIS OF LE DATA 24
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	609.5398257	203.1799419	0.44	0.7278
Error	54	25134.3912088	465.4516891		
Corrected Total	57	25743.9310345			

R-Square	C.V.	Root MSE	RESP Mean
0.023677	61.70173	21.57433	34.9655172

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	609.5398257	203.1799419	0.44	0.7278

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	609.5398257	203.1799419	0.44	0.7278

5. ANALYSIS OF LE DATA 25
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 465.4517
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means 2 3 4

Critical Range 16.12 16.95 17.50

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	38.000	16	C
A			
A	37.600	15	B
A			
A	33.385	13	D
A			
A	30.143	14	A

5. ANALYSIS OF LE DATA 26

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 465.4517
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-11.209	7.857	26.924
B - A	-11.904	7.457	26.818
D - A	-16.825	3.242	23.309

5. ANALYSIS OF LE DATA 27

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 465.4517
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - B	-20.837	0.400	21.637
C - D	-17.449	4.615	26.680
C - A	-13.768	7.857	29.482

B	- C	-21.637	-0.400	20.837
B	- D	-18.176	4.215	26.607
B	- A	-14.502	7.457	29.416
D	- C	-26.680	-4.615	17.449
D	- B	-26.607	-4.215	18.176
D	- A	-19.518	3.242	26.001
A	- C	-29.482	-7.857	13.768
A	- B	-29.416	-7.457	14.502
A	- D	-26.001	-3.242	19.518

6. ANALYSIS OF NH DATA 28

10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

6. ANALYSIS OF NH DATA 29

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	668.4303714	222.8101238	0.52	0.6689
Error	54	23046.6730769	426.7902422		
Corrected Total	57	23715.1034483			

R-Square	C.V.	Root MSE	RESP Mean
0.028186	72.09485	20.65890	28.6551724

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	668.4303714	222.8101238	0.52	0.6689

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	668.4303714	222.8101238	0.52	0.6689

6. ANALYSIS OF NH DATA 30

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 426.7902
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.40346

Number of Means	2	3	4
Critical Range	15.44	16.23	16.76

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	32.125	16	C
A			
A	30.000	15	B
A			
A	28.923	13	D
A			
A	23.000	14	A

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 426.7902
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-9.133	9.125	27.383
B - A	-11.539	7.000	25.539
D - A	-13.292	5.923	25.139

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 426.7902
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - B	-18.211	2.125	22.461
C - D	-17.926	3.202	24.330
C - A	-11.582	9.125	29.832
B - C	-22.461	-2.125	18.211
B - D	-20.364	1.077	22.518
B - A	-14.027	7.000	28.027
D - C	-24.330	-3.202	17.926
D - B	-22.518	-1.077	20.364
D - A	-15.871	5.923	27.717
A - C	-29.832	-9.125	11.582
A - B	-28.027	-7.000	14.027
A - D	-27.717	-5.923	15.871

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	617.7524062	205.9174687	0.49	0.6933
Error	54	22874.2648352	423.5974969		
Corrected Total	57	23492.0172414			

R-Square	C.V.	Root MSE	RESP Mean
0.026296	72.74382	20.58148	28.2931034

Source	DF	Type I SS	Mean Square	F Value	Pr > F

TRT	3	617.7524062	205.9174687	0.49	0.6933

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	617.7524062	205.9174687	0.49	0.6933

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 423.5975
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means 2 3 4
Critical Range 15.38 16.17 16.69

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	31.500	16	C
A			
A	29.600	15	B
A			
A	28.769	13	D
A			
A	22.786	14	A

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 423.5975
Critical Value of Dunnett's T= 2.1415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-9.475	8.714	26.903
B - A	-11.656	6.814	25.284
D - A	-13.160	5.984	25.127

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 423.5975
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - B	-18.360	1.900	22.160
C - D	-18.318	2.731	23.780
C - A	-11.916	8.714	29.344
B - C	-22.160	-1.900	18.360
B - D	-20.530	0.831	22.192
B - A	-14.134	6.814	27.763
D - C	-23.780	-2.731	18.318
D - B	-22.192	-0.831	20.530
D - A	-15.729	5.984	27.696
A - C	-29.344	-8.714	11.916
A - B	-27.763	-6.814	14.134
A - D	-27.696	-5.984	15.729

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 56 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Model	3	0.00105004	0.00035001	0.64	0.5916
Error	52	0.02835594	0.00054531		
Corrected Total	55	0.02940598			

R-Square	C.V.	Root MSE	RESP Mean
0.035708	6.320143	0.023352	0.36948214

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	0.00105004	0.00035001	0.64	0.5916

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	0.00105004	0.00035001	0.64	0.5916

8. ANALYSIS OF EGGSHELL THICKNESS DATA 40
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 52 MSE= 0.000545
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 13.8206

Number of Means 2 3 4
Critical Range .0178 .0188 .0194

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	0.37492	13	A
A	0.37260	15	B
A	0.36613	16	C
A	0.36417	12	D

8. ANALYSIS OF EGGSHELL THICKNESS DATA 41
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 0.000545
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-0.02369	-0.00232	0.01905
C - A	-0.02986	-0.00880	0.01226
D - A	-0.03333	-0.01076	0.01182

8. ANALYSIS OF EGGSHELL THICKNESS DATA 42
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 0.000545
Critical Value of T= 2.74295

Comparisons significnt at the 0.05 level are indicated by '***'.

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
A - B	-0.02195	0.00232	0.02659
A - C	-0.01512	0.00880	0.03272
A - D	-0.01489	0.01076	0.03640
B - A	-0.02659	-0.00232	0.02195
B - C	-0.01655	0.00647	0.02950
B - D	-0.01637	0.00843	0.03324
C - A	-0.03272	-0.00880	0.01512
C - B	-0.02950	-0.00647	0.01655
C - D	-0.02250	0.00196	0.02642
D - A	-0.03640	-0.01076	0.01489
D - B	-0.03324	-0.00843	0.01637
D - C	-0.02642	-0.00196	0.02250

9. ANALYSIS OF HATCHLING WEIGHT DATA 43
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 54 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	20.69919477	6.89973159	0.77	0.5140
Error	50	445.65062005	8.91301240		
Corrected Total	53	466.34981481			

R-Square	C.V.	Root MSE	RESP Mean
0.044386	7.939680	2.985467	37.6018519

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	20.69919477	6.89973159	0.77	0.5140

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	20.69919477	6.89973159	0.77	0.5140

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 50 MSE= 8.913012
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 13.28173

Number of Means 2 3 4
Critical Range 2.328 2.448 2.527

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	38.382	11	D
A A	38.120	15	B
A A	37.133	15	C
A	36.885	13	A

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 8.913012
Critical Value of Dunnett's T= 2.421

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-1.464	1.497	4.458
B - A	-1.503	1.235	3.974
C - A	-2.490	0.249	2.988

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 8.913012
Critical Value of T= 2.74730

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - B	-2.994	0.262	3.518
D - C	-2.007	1.248	4.504
D - A	-1.863	1.497	4.857
B - D	-3.518	-0.262	2.994
B - C	-2.008	0.987	3.982
B - A	-1.873	1.235	4.343
C - D	-4.504	-1.248	2.007
C - B	-3.982	-0.987	2.008
C - A	-2.859	0.249	3.357
A - D	-4.857	-1.497	1.863
A - B	-4.343	-1.235	1.873
A - C	-3.357	-0.249	2.859

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 54 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	6858.754935	2286.251645	2.50	0.0704
Error	50	45791.240065	915.824801		
Corrected Total	53	52649.995000			

R-Square	C.V.	Root MSE	RESP Mean
0.130271	10.48539	30.26260	288.616667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	6858.754935	2286.251645	2.50	0.0704

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	6858.754935	2286.251645	2.50	0.0704

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 50 MSE= 915.8248
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 13.28173

Number of Means 2 3 4
Critical Range 23.60 24.81 25.62

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	298.11	11	D
A			
A	294.41	15	B
A			
A	292.99	15	C
B	268.85	13	A

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 915.8248
Critical Value of Dunnett's T= 2.421

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-0.76	29.26	59.27
B - A	-2.21	25.55	53.32
C - A	-3.62	24.14	51.90

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 915.8248
Critical Value of T= 2.74730

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - B	-29.30	3.70	36.71
D - C	-27.89	5.12	38.12
D - A	-4.81	29.26	63.32
B - D	-36.71	-3.70	29.30
B - C	-28.95	1.41	31.77
B - A	-5.95	25.55	57.06

C	- D	-38.12	-5.12	27.89
C	- B	-31.77	-1.41	28.95
C	- A	-7.37	24.14	55.64
A	- D	-63.32	-29.26	4.81
A	- B	-57.06	-25.55	5.95
A	- C	-55.64	-24.14	7.37

11. ANALYSIS OF FOOD CONSUMPTION DATA 53
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

11. ANALYSIS OF FOOD CONSUMPTION DATA 54
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	209105207.7	69701735.9	1.40	0.2536
Error	57	2847743743.3	49960416.5		
Corrected Total	60	3056848951.0			

R-Square	C.V.	Root MSE	RESP Mean
0.068405	19.52658	7068.268	36198.1803

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	209105207.7	69701735.9	1.40	0.2536

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	209105207.7	69701735.9	1.40	0.2536

11. ANALYSIS OF FOOD CONSUMPTION DATA 55
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Tst for variable: RESP

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 57 MSE= 49960417
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 15.2381

Number of Means 2 3 4
Critical Range 5131 5395 5569

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	38048	15	B
A			
A	37631	16	C
A			
A	35656	15	A
A			
A	33363	15	D

11. ANALYSIS OF FOOD CONSUMPTION DATA 56
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 57 MSE= 49960417
Critical Value of Dunnett's T= 2.412

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-3834	2392	8618
C - A	-4153	1975	8103
D - A	-8518	-2292	3933

11. ANALYSIS OF FOOD CONSUMPTION DATA 57
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 57 MSE= 49960417
Critical Value of T= 2.73346

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

	Simultaneous Lower	Difference	Simultaneous Upper

TRT Comparison			Confidence Limit	Between Means	Confidence Limit
B	-	C	-6527	417	7361
B	-		-4663	2392	9447
B	-	D	-2371	4684	11739
C	-	B	-7361	-417	6527
C	-	A	-4969	1975	8919
C	-	D	-2677	4267	11211
A	-	B	-9447	-2392	4663
A	-	C	-8919	-1975	4969
A	-	D	-4763	2292	9347
D	-	B	-11739	-4684	2371
D	-	C	-11211	-4267	2677
D	-	A	-9347	-2292	4763

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 57 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	524.2922558	174.7640853	0.24	0.8687
Error	53	38747.6348442	731.0874499		
Corrected Total	56	39271.9271000			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.013350	37.60984	27.03863	71.8924270

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	524.2922558	174.7640853	0.24	0.8687

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	524.2922558	174.7640853	0.24	0.8687

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 731.0874
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.20026

Number of Means	2	3	4
Critical Range	20.36	21.41	22.10

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	72.44	13	D
A A	72.16	15	B
A A	71.73	14	A
A A	71.36	15	C

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 731.0874
Critical Value of Dunnett's T= 2.417

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

TRT Comparison			Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D	-	A	-24.461	0.713	25.887
B	-	A	-23.862	0.426	24.714
C	-	A	-24.662	-0.374	23.914

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 731.0874
Critical Value of T= 2.74091

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - B	-27.796	0.287	28.370
D - A	-27.832	0.713	29.258
D - C	-26.995	1.087	29.170
B - D	-28.370	-0.287	27.796
B - A	-27.114	0.426	27.966
B - C	-26.261	0.800	27.862
A - D	-29.258	-0.713	27.832
A - B	-27.966	-0.426	27.114
A - C	-27.166	0.374	27.915
C - D	-29.170	-1.087	26.995
C - B	-27.862	-0.800	26.261
C - A	-27.915	-0.374	27.166

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	21065.30029	7021.76676	0.45	0.7209
Error	54	849611.51362	15733.54655		
Corrected Total	57	870676.81391			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.024194	178.4013	125.4334	70.3097203

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	21065.30029	7021.76676	0.45	0.7209

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	21065.30029	7021.76676	0.45	0.7209

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 15733.55
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	93.7	98.5	101.7

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	74.59	14	A
A			
A	72.44	13	D
A			
A	69.01	16	C
A			
A	67.30	15	B

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 15733.55
Critical Value of Dunnett's T= 2.415

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

	Simultaneous Lower	Difference	Simultaneous Upper

TRT Comparison		Confidence Limit	Between Means	Confidence Limit
D	- A	-118.818	-2.149	114.521
C	- A	-116.437	-5.584	105.269
B	- A	-119.853	-7.289	105.276

9. ANALYSIS OF VE/ES DATA 67

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 15733.55
Critical Value of T= 2.73894

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

TRT Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
A	- D	-130.176	2.149	134.474
A	- C	-120.144	5.584	131.312
A	- B	-120.380	7.289	134.958
D	- A	-134.474	-2.149	130.176
D	- C	-124.846	3.436	131.717
D	- B	-125.044	5.140	135.324
C	- A	-131.312	-5.584	120.144
C	- D	-131.717	-3.436	124.846
C	- B	-121.768	1.705	125.177
B	- A	-134.958	-7.289	120.380
B	- D	-135.324	-5.140	125.044
B	- C	-125.177	-1.705	121.768

10. ANALYSIS OF LE/VE DATA 68

10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

10. ANALYSIS OF LE/VE DATA 69

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7145.974583	2381.991528	0.38	0.7681
Error	54	338866.419614	6275.304067		
Corrected Total	57	346012.394197			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.020652	108.9682	79.21682	72.6971695

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	7145.974583	2381.991528	0.38	0.7681

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	7145.974583	2381.991528	0.38	0.7681

10. ANALYSIS OF LE/VE DATA 70

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 6275.304
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	59.19	62.24	64.25

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	74.61	16	C
A			
A	73.93	13	D
A			
A	72.08	14	A
A			
A	70.31	15	B

10. ANALYSIS OF LE/VE DATA 71

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 6275.304
Critical Value of Dunnett's T= 2.415

Comparisons significant atte 0.05 level are indicated by '***'.

TRT Comparison	Simultaneous Lower Cofdence Limit	Difference Beteen Means	Simultaneous Upper Confidence Limit
C - A	-67.481	2.528	72.537
D - A	-71.825	1.857	75.539
B - A	-72.858	-1.769	69.321

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 6275.304
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - D	-80.344	0.672	81.687
C - A	-76.875	2.528	81.931
C - B	-73.682	4.297	82.275
D - C	-81.687	-0.672	80.344
D - A	-81.712	1.857	85.426
D - B	-78.592	3.625	85.842
A - C	-81.931	-2.528	76.875
A - D	-85.426	-1.857	81.712
A - B	-78.860	1.769	82.397
B - C	-82.275	-4.297	73.682
B - D	-85.842	-3.625	78.592
B - A	-82.397	-1.769	78.860

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 57 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	15505.77954	5168.59318	0.93	0.4308
Error	53	293270.19013	5533.39981		
Corrected Total	56	308775.96967			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.050217	111.5993	74.38683	66.6552988

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	15505.77954	5168.59318	0.93	0.4308

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	15505.77954	5168.59318	0.93	0.4308

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 5533.4
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.08805

Number of Means	2	3	4
Critical Range	56.24	59.14	61.05

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	69.94	12	D

A			
A	68.70	16	C
A			
A	64.86	15	B
A			
A	62.74	14	A

11 ANALYSIS OF NH/LE DATA 76
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 5533.4
Critical Value of Dunnett's T= 2.418

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-63.555	7.198	77.951
C - A	-59.860	5.959	71.777
B - A	-64.717	2.118	68.953

11 ANALYSIS OF NH/LE DATA 77
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 5533.4
Critical Value of T= 2.74091

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - C	-76.621	1.239	79.100
D - B	-73.885	5.080	84.045
D - A	-73.011	7.198	87.407
C - D	-79.100	-1.239	76.621
C - B	-69.436	3.840	77.117
C - A	-68.656	5.959	80.574
B - D	-84.045	-5.080	73.885
B - C	-77.117	-3.840	69.436

B	- A	-73.649	2.118	77.885
A	- D	-87.407	-7.198	73.011
A	- C	-80.574	-5.959	68.656
A	- B	-77.885	-2.118	73.649

12 ANALYSIS OF NH/EL DATA 78
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 57 observations can be used in this analysis.

12 ANALYSIS OF NH/EL DATA 79
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	19667.07680	6555.69227	0.43	0.7336
Error	53	811366.01345	15308.79271		
Corrected Total	56	831033.09024			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.023666	261.4860	123.7287	47.3175225

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	19667.07680	6555.69227	0.43	0.7336

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	19667.07680	6555.69227	0.43	0.7336

12 ANALYSIS OF NH/EL DATA 80
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not

the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 15308.79
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.20026

Number of Means	2	3	4
Critical Range	93.2	98.0	101.2

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	51.32	13	D
A			
A	47.87	15	C
A			
A	47.22	14	A
A			
A	44.06	15	B

12 ANALYSIS OF NH/EL DATA 81
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 15308.79
Critical Value of Dunnett's T= 2.417

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-111.095	4.101	119.296
C - A	-110.483	0.659	111.801
B - A	-114.294	-3.152	107.991

12 ANALYSIS OF NH/EL DATA 82
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 15308.79
Critical Value of T= 2.74091

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - C	-125.065	3.441	131.948
D - A	-126.520	4.101	134.721
D - B	-121.255	7.252	135.759
C - D	-131.948	-3.441	125.065
C - A	-125.365	0.659	126.683
C - B	-120.022	3.811	127.643
A - D	-134.721	-4.101	126.520
A - C	-126.683	-0.659	125.365
A - B	-122.873	3.152	129.176
B - D	-135.759	-7.252	121.255
B - C	-127.643	-3.811	120.022
B - A	-129.176	-3.152	122.873

17. ANALYSIS OF HS/NH DATA 83
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 54 observations can be used in this analysis.

17. ANALYSIS OF HS/NH DATA 84
****
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	1978.894547	659.631516	0.70	0.5536
Error	50	46789.496341	935.789927		
Corrected Total	53	48768.390888			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.040577	35.42387	30.59068	86.3561269

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	1978.894547	659.631516	0.70	0.5536

Source	DF	Type III SS	Mean Square	F Value	Pr > F

TRT	3	1978.894547	659.631516	0.70	0.5536

17. ANALYSIS OF HS/NH DATA 85
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 50 MSE= 935.7899
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 13.28173

Number of Means	2	3	4
Critical Range	23.85	25.08	25.89

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	87.79	11	D
A A	87.28	13	A
A A	85.97	15	B
A	85.06	15	C

17. ANALYSIS OF HS/NH DATA 86
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 935.7899
Critical Value of Dunnett's T= 2.421

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-29.824	0.516	30.856
B - A	-29.371	-1.308	26.756
C - A	-30.280	-2.216	25.848

17. ANALYSIS OF HS/NH DATA 87
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 50 MSE= 935.7899
Critical Value of T= 2.74730

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-33.914	0.516	34.946
D - B	-31.537	1.824	35.185
D - C	-30.629	2.732	36.093
A - D	-34.946	-0.516	33.914
A - B	-30.539	1.308	33.154
A - C	-29.630	2.216	34.062
B - D	-35.185	-1.824	31.537
B - A	-33.154	-1.308	30.539
B - C	-29.779	0.908	31.596
C - D	-36.093	-2.732	30.629
C - A	-34.062	-2.216	29.630
C - B	-31.596	-0.908	29.779

18. ANALYSIS OF EC/EL DATA 88
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

18. ANALYSIS OF EC/EL DATA 89
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	1259.657767	419.885922	0.21	0.8921
Error	54	110326.708822	2043.087200		

Corrected Total	57	111586.366589		

R-Square	C.V.	Root MSE	RESPONSE Mean
0.011289	765.6460	45.20052	5.90357941

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	1259.657767	419.885922	0.21	0.8921

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	1259.657767	419.885922	0.21	0.8921

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 2043.087
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means	2	3	4
Critical Range	33.77	35.51	36.66

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	6.858	14	A
A A	6.304	16	C
A A	5.324	15	B
A A	5.241	13	D

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 2043.087
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-40.501	-0.555	39.392
B - A	-42.097	-1.534	39.029
D - A	-43.659	-1.617	40.425

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 2043.087
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
A - C	-44.752	0.555	45.861
A - B	-44.472	1.534	47.540
A - D	-46.067	1.617	49.301
C - A	-45.861	-0.555	44.752
C - B	-43.514	0.980	45.474
C - D	-45.164	1.062	47.289
B - A	-47.540	-1.534	44.472
B - C	-45.474	-0.980	43.514
B - D	-46.830	0.083	46.995
D - A	-49.301	-1.617	46.067
D - C	-47.289	-1.062	45.164
D - B	-46.995	-0.083	46.830

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

19. ANALYSIS OF NH/ES DATA 94

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	23756.66208	7918.88736	0.48	0.7004
Error	54	898529.41166	16639.43355		
Corrected Total	57	922286.07374			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.025758	250.3141	128.9939	51.5328356

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	23756.66208	7918.88736	0.48	0.7004

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	23756.66208	7918.88736	0.48	0.7004

19. ANALYSIS OF NH/ES DATA 95

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 16639.43
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means 2 3 4
Critical Range 96.4 101.3 104.6

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	55.86	13	D
A			
A	52.53	16	C
A			
A	51.42	14	A
A			
A	47.62	15	B

19. ANALYSIS OF NH/ES DATA 96

1:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 16639.43
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-115.535	4.446	124.428
C - A	-112.885	1.115	115.115
B - A	-119.558	-3.798	111.962

19. ANALYSIS OF NH/ES DATA 97

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 16639.43
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - C	-128.591	3.331	135.254
D - A	-131.635	4.446	140.527
D - B	-125.635	8.244	142.123
C - D	-135.254	-3.331	128.591
C - A	-128.182	1.115	130.412
C - B	-122.065	4.913	131.890
A - D	-140.527	-4.446	131.635
A - C	-130.412	-1.115	128.182
A - B	-127.495	3.798	135.091
B - D	-142.123	-8.244	125.635
B - C	-131.890	-4.913	122.065
B - A	-135.091	-3.798	127.495

20. ANALYSIS OF HS/ES DATA 98

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: WT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	24386.72243	8128.90748	0.49	0.6882
Error	54	889140.42397	16465.56341		
Corrected Total	57	913527.14639			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.026695	251.4734	128.3182	51.0265580

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	24386.72243	8128.90748	0.49	0.6882

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	24386.72243	8128.90748	0.49	0.6882

General Linear Models Procedure

Duncan's Multiple Range Test for variable: RESPONSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 16465.56
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.41346

Number of Means 95.2 100.8 104.4

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	55.61	13	D
A			
A	51.73	16	C
A			
A	51.02	14	A
A			
A	47.15	15	B

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 16465.56
Critical Value of Dunnett's T= 2.415

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - A	-114.762	4.591	123.943
C - A	-112.692	0.710	114.113
B - A	-119.025	-3.872	111.282

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 16465.56
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
D - C	-127.351	3.880	135.112
D - A	-130.778	4.591	139.959
D - B	-124.716	8.462	141.640
C - D	-135.112	-3.880	127.351
C - A	-127.909	0.710	129.330
C - B	-121.730	4.582	130.894
A - D	-139.959	-4.591	130.778

A	- C	-129.330	-0.710	127.909
A	- B	-126.733	3.872	134.477
B	- D	-141.640	-8.462	124.716
B	- C	-130.894	-4.582	121.730
B	- A	-134.477	-3.872	126.733

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 103

10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 59 observations can be used in this analysis.

10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: POSTM

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	238918.9700	59729.7425	4.51	0.0032
Error	54	715212.5894	13244.6776		
Corrected Total	58	954131.5593			

R-Square	C.V.	Root MSE	POSTM Mean
0.250405	9.843071	115.0855	1169.20339

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	38989.3022	12996.6341	0.98	0.4085
PEM	1	199929.6678	199929.6678	15.10	0.0003

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	35723.1861	11907.7287	0.90	0.4477
PREM	1	199929.6678	199929.6678	15.10	0.0003

Parameter		Estimate	T for H0: Parameter=0	Pr > |T|	Std Error of Estimate
INTERCEPT		501.3192693 B	2.93	0.0050	171.36108130
TRT	A	30.4449493 B	0.70	0.4872	43.51937725
	B	39.6541709 B	0.93	0.3579	42.76717651
	C	-21.0658822 B	-0.50	0.6190	42.11698954
	D	0.0000000 B	.	.	.
PREM		0.5631352	3.89	0.0003	0.14494216

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Least Squares Means
Coefficients for TRT Least Square Means

TRT		A	B	C
Effect		Coefficients		
INTERCEPT		1	1	1
TRT	A	1	0	0
	B	0	1	0
	C	0	0	1
	D	0	0	0
PREM		1165.4237288	1165.4237288	1165.4237288

TRT		D
Effect		Coefficients
INTERCEPT		1
TRT	A	0
	B	0
	C	0
	D	1
PREM		1165.4237288

10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Least Squares Means

TRT	POSTM LSMEAN	Std Err LSMEAN	Pr > |T| H0:LSMEAN=0	LSMEAN Number
A	1188.05533	30.77465	0.0001	1
B	1197.26455	29.71622	0.0001	2
C	1136.54450	28.77331	0.0001	3
D	1157.61038	30.75979	0.0001	4

Pr > |T| H0: LSMEAN(i)=LSMEAN(j)

i/j	1	2	3	4
1	.	0.8304	0.2269	0.4872
2	0.8304	.	0.1479	0.3579
3	0.2269	0.1479	.	0.6190

4	0.4872	0.3579	0.6190	.

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 107
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Duncan's Multiple Range Test for variable: POSTM

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 13244.68
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.7046

Number of Means	2	3	4
Critical Range	85.14	89.52	92.42

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	1196.20	15	B
A A	1192.00	14	A
A A	1156.29	14	D
A A	1135.25	16	C

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 108
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dunnett's T tests for variable: POSTM

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 13244.68
Critical Value of Dunnett's T= 2.413

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-99.01	4.20	107.41
D - A	-140.69	-35.71	69.26

C	- A	-158.40	-56.75	44.90

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21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 109
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTM

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 13244.68
Critical Value of T= 2.73894

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
B - A	-112.94	4.20	121.34
B - D	-77.22	39.91	157.05
B - C	-52.34	60.95	174.24
A - B	-121.34	-4.20	112.94
A - D	-83.42	35.71	154.85
A - C	-58.61	56.75	172.11
D - B	-157.05	-39.91	77.22
D - A	-154.85	-35.71	83.42
D - C	-94.32	21.04	136.39
C - B	-174.24	-60.95	52.34
C - A	-172.11	-56.75	58.61
C - D	-136.39	-21.04	94.32

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 110
10:25 Tuesday, March 29, 1994

General Linear Models Procedure
Class Level Information

Class	Levels	Values
TRT	4	A B C D

Number of observations in data set = 61

NOTE: Due to missing values, only 57 observations can be used in this analysis.

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 111
10:25 Tuesday, March 29, 1994

General Linear Models Procedure

Dependent Variable: POSTF

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	266588.4944	66647.1236	5.50	0.0009
Error	52	629600.0670	12107.6936		
Corrected Total	56	896188.5614			

R-Square	C.V.	Root MSE	POSTF Mean
0.297469	9.739725	110.0350	1129.75439

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	34630.7812	11543.5937	0.95	0.4217
PREF	1	231957.7132	231957.7132	19.16	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	31883.9920	10627.9973	0.88	0.4587
PREF	1	231957.7132	231957.7132	19.16	0.0001

Parameter		Estimate	T for H0: Parameter=0	Pr > |T|	Std Error of Estimate
INTERCEPT		368.3686051 B	2.16	0.0350	170.15985209
TRT	A	24.6147389 B	0.58	0.5650	42.50664903
	B	34.0744200 B	0.80	0.4251	42.38166484
	C	65.3365868 B	1.59	0.1179	41.09009552
	D	0.0000000 B	.	.	.
PREF		0.7212788	4.38	0.0001	0.16478948

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

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General Linear Models Procedure
Least Squares Means
Coefficients for TRT Least Square Means

TRT		A	B	C
Effect		Coefficients		
INTERCEPT		1	1	1
TRT	A	1	0	0
	B	0	1	0
	C	0	0	1
	D	0	0	0
PREF		1010.1929825	1010.1929825	1010.1929825

TRT		D
Effect		Coefficients
INTERCEPT		1
TRT	A	0
	B	0
	C	0
	D	1
PREF		1010.1929825

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General Linear Models Procedure
Least Squares Means

TRT	POSTF LSMEAN	Std Err LSMEAN	Pr > |T| HO:LSMEAN=0	LSMEAN Number
A	1121.61415	29.50001	0.0001	1
B	1131.07383	29.42603	0.0001	2
C	1162.33600	27.51137	0.0001	3
D	1096.99941	30.53242	0.0001	4

Pr > |T| HO: LSMEAN(i)=LSMEAN(j)

i/j	1	2	3	4
1	.	0.8215	0.3177	0.5650
2	0.8215	.	0.4411	0.4251
3	0.377	0.4411	.	0.1179
4	0.5650	0.4251	0.1179	.

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

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General Linear Models Procedure

Dunnett's T tests for variable: POSTF

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 12107.69
Critical Value of Dunnett's T= 2.419

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - A	-44.83	52.57	149.97
B - A	-76.45	24.14	124.74
D - A	-112.86	-10.35	92.16

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 115

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General Linear Models Procedure

Duncan's Multiple Range Test for variable: POSTF

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 52 MSE= 12107.69
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.17032

Number of Means	2	3	4
Critical Range	82.99	87.26	90.09

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	1164.00	16	C
A A	1135.57	14	B
A A	1111.43	14	A
A A	1101.08	13	D

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 116

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General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTF

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 12107.69
Critical Value of T= 2.74295

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

TRT Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
C - B	-82.03	28.43	138.88
C - A	-57.88	52.57	163.03
C - D	-49.77	62.92	175.62
B - C	-138.88	-28.43	82.03
B - A	-89.93	24.14	138.22
B - D	-81.76	34.49	150.75
A - C	-163.03	-52.57	57.88
A - B	-138.22	-24.14	89.93
A - D	-105.90	10.35	126.60

D	- C	-175.62	-62.92	49.77
D	- B	-150.75	-34.49	81.76
D	- A	-126.60	-10.35	105.90

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