DATA EVALUATION RECORD
§ 71-4 -- AVIAN REPRODUCTION TEST

1. **CHEMICAL:** Thiobencarb PC Code No.: 108401

2. **TEST MATERIAL:** Bolero Technical Purity: 97.5%

3. **CITATION**

Authors: Beavers, J., K. Chafey, L. Mitchell, and M. Jaber
Title: A Reproductive Study with the Northern Bobwhite.
Study Completion Date: December 28, 1993
Laboratory: Wildlife International Ltd.
Sponsor: Valent U.S.A. Corporation
Laboratory Report ID: 263-128
MRID No.: 430754-01
DP Barcode: D198764

4. **REVIEWED BY:** F. Nicholas Mastrota, Biologist, ERCB, EFED

Signature: F. Nicholas Mastrota **Date:** 7/7/95

5. **SECONDARY REVIEW BY:** Renée Costello, Biologist, ERCB, EFED

Signature: Renée Costello **Date:** 7/26/95

6. **STUDY PARAMETERS**

Scientific Name of Test Organism: *Colinus virginianus*
Age of Test Organisms at Test Initiation: 18 weeks
Definitive Study Duration: 25 weeks

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study with an upland gamebird species. The results of this study show that thiobencarb may impair reproduction of the northern bobwhite, but only at relatively high dietary concentrations. A dietary concentration of 930 ppm (mean measured concentration) caused a significant decrease in the number of normal hatchlings as a percentage of live embryos, as well as in the weight of hatchlings. Dietary concentrations of 86.2 and 267 ppm ai caused no detrimental effect on the feed consumption, body weight gain, or reproductive success of bobwhites.

Results Synopsis
Most sensitive endpoints: hatchling weight, hatchlings/live embryos
NOEC: 267 ppm ai LOEC: 930 ppm ai

8. **ADEQUACY OF THE STUDY**

A. Classification: Core.

B. Rationale: Guideline deviations were minor and probably did not affect the results of this study.

C. Repairability: N/A.

9. GUIDELINE DEVIATIONS

1. The duration of exposure to the test chemical after the onset of egg-laying was 9 weeks, whereas the guidelines state that it should be at least 10 weeks.

2. Hatchlings were removed from the hatcher on day 25 or 26, whereas the guidelines state that they should be removed on day 24.

10. SUBMISSION PURPOSE: Miscellaneous Data Package

11. MATERIALS AND METHODS

A. Test Organisms

Guideline Criteria	Reported Information
Species A wild waterfowl species, preferably the mallard (*Anas platyrhynchos*), or an upland game species, preferably the northern bobwhite (*Colinus virginianus*)	Northern Bobwhite (*Colinus virginianus*)
Age at beginning of test Birds should be approaching their first breeding season.	18 weeks (birds were approaching their first breeding season)
Supplier All birds should be from the same source.	Top Flight Quail Farm, Belvidere, NJ
Were birds pen-reared?	Yes
Were birds phenotypically indistinguishable from wild birds?	Yes
Health observation period 2 to 6 weeks.	4 weeks

Guideline Criteria	Reported Information
Were birds healthy and without excessive mortality prior to the test?	Yes

B. Test System

Guideline Criteria	Reported Information
Were pens for adult birds of adequate size and designed to conform to good husbandry p-ractices?	Yes
Were pens for chicks of ade-quate size and designed to conform to good husbandry pra-ctices?	Yes
Where pens constructed of a nonbinding material such as galvanized or stainless steel?	Yes
Was adequate ventilation pro-vided?	Yes
Temperature Approx. 21°C (70°F)	Mean: 21.2°C SD: 3.4°C
Relative humidity Approx. 55%	Mean: 51% SD: 17%
Lighting First 8 weeks: 7 h per day. Thereafter: 16-17 h per day. At least 6 footcandles at bird level.	First 7 weeks: 8 h per day. Thereafter: 17 h per day.
Diet A commercial breeder feed (or its equivalent) that is appropriate for the test species.	A diet formulated to Wildlife International Ltd. by Agway Inc. This diet was designed to meet the nutritional needs of both bobwhites and mallards.

Guideline Criteria	Reported Information
Preparation of test diet A premixed containing the test substance should be mechanically mixed with basal diet. If an evaporative vehicle is used, it must be completely evaporated prior to feeding.	A premix was prepared by mechanically mixing the test material, acetone, corn oil, and basal diet. The final diet was prepared by mechanically mixing 1000 g premix, 500 g limestone, and 8.50 kg basal diet.
Was the premix stored under conditions which maintain stability?	Yes
Was the diet analyzed to verify homogeneity and stability of the test substance?	Yes
Replenishment of feed	Fresh feed was provided on a weekly basis. Additional feed was prepared during the study when needed.

C. Test Design

Guideline Criteria	Reported Information
Nominal concentrations At least two concentrations other than the control are required; three or more are strongly recommended. The highest test concentrations should show a significant effect or be at or above the maximum field residue level.	Nominal concentrations: 100, 300, and 1000 ppm a.i. There were a significant effects at 1000 ppm a.i.
Control Vehicle control.	A vehicle control was used.
Vehicle Corn oil or other appropriate vehicle.	Corn oil and acetone
Vehicle amount (% of diet by weight) Not more than 2%.	2% corn oil 37 ml/kg acetone

Guideline Criteria	Reported Information
Number of birds per pen One male and 1 female per pen is strongly recommended. For quail, 1 male and 2 females may be acceptable. For ducks, 2 males and 5 females may be acceptable.	1 male and 1 female per pen.
Number of pens per group At least 5 replicate pens are required for mallards housed in groups of 7. For other arrangements, at least 12 pens are required, but considerably more may be needed if birds are kept in pairs.	16 pens per group.
Pre-laying exposure duration At least 10 weeks prior to the onset of egg-laying.	11 weeks
Exposure duration with egg-laying At least 10 weeks.	9 weeks
Withdrawal period If reduced reproduction is evident, a withdrawal period of up to 3 weeks may be added to the test phase.	N/A

D. Egg Collection and Incubation

Guideline Criteria	Reported Information
Were eggs collected daily?	Yes
Egg storage temperature Approximately 16°C (61°F)	12.6 °C
Egg storage humidity Approximately 65%	85%
Were eggs set weekly?	Yes
Were eggs candled for cracks prior to being set for incubation on Day 0?	Yes

Guideline Criteria	Reported Information
Candling for fertility Quail: approx. Day 11 Ducks: approx. Day 14	Eggs were candled on Day 11.
Transfer of eggs to hatcher Bobwhite: Day 21 Mallard: Day 23	Eggs were transferred on Day 21.
Hatching temperature 39°C (102°F) is recommended	37.5°C
Hatching humidity 70% is recommended	56%
Day after egg set that chicks were removed and counted Bobwhite: Day 24 Mallard: Day 27	Chicks were removed and counted on Day 25 or 26.

E. Eggshell Thickness Measurement

Guideline Criteria	Reported Information
Collection Schedule At least once every two weeks (Week 1, 3, 5, 7 and 9).	One egg was collected in odd number pens during odd weeks and from even number pens during even number weeks.
Were shells opened, washed, and air dry for at least 48 hours before measuring?	Yes
Measurement 3-4 measurements per egg to the nearest 0.01 mm.	5 measurements per egg to the nearest 0.005 mm.

12. REPORTED RESULTS

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Did diet analysis verify the concentrations of test material?	Yes

Guideline Criteria	Reported Information
Did diet analysis show that the test substance was stable and homogeneous?	Yes
Were body weights of adults reported for test initiation and biweekly up to week 8 or the onset of egg laying?	Yes
Was average food consumption of adults reported at least biweekly?	Yes (reported weekly)
Reproductive Endpoints The following endpoints should be reported: • Eggs laid • Eggs cracked • Eggs set • Viable embryos • Live 3-week embryos • Normal hatchlings • 14-day-old survivors • Weights of 14-day-old survivors • Egg shell thickness • Total food consumption • Initial and final body weights, by sex	The following endpoints were measured: • Eggs laid • Eggs cracked • Eggs set • Viable embryos • Live 3-week embryos • Normal hatchlings • 14-day-old survivors • Weights of 14-day-old survivors • Egg shell thickness • Total food consumption • Initial and final body weights, by sex
Were data reported by pen for all endpoints?	Yes

Significant Results: There was a decrease in body weight of birds in the 930 ppm a.i. treatment group during the first two weeks of exposure. This was believed to be a treatment related effect. Normal increases in body weights were observed in all treatment groups from week 2 through the end of the study. There were no other treatment related effects or signs of toxicity in any of the treatment groups.

There were no negative effects on any reproductive parameter measured in the 86.2 and 267 ppm a.i. treatment groups. Compared to the control, the 930 ppm a.i. treatment group had a significant decrease in the percentage of live 3-week embryo as a percentage of viable embryos. There was also a slight but significant decrease in hatchling body weight in the 930 ppm a.i. group. There were also apparent reductions in the number of

hatchlings and number of 14-day-old survivors per hen in the 930 ppm a.i. treatment group, but these parameters were not significantly different from the control group.

13. VERIFIED STATISTICAL RESULTS

Means of Endpoints

Endpoint	Control	86.2 ppm	267 ppm	930 ppm
Eggs laid (EL)	48.9	44.0	41.4	41.5
Eggs cracked (EC)	2.20	0.40	0.80	0.67
Eggs set (ES)	40.6	39.3	36.2	36.6
Viable embryos (VE)	34.8	37.7	32.3	32.1
Live 3-wk embryos (LE)	34.4	37.2	32.1	30.4
Normal hatchlings (NH)	33.0	35.1	30.7	27.1
14-day-old survivors (HS)	27.1	30.3	24.9	21.3
Egg shell thick-ness (THICK)	0.23	0.23	0.22	0.21
Hatchling weight (HATWT)	5.47	5.60	5.67	5.00
14-day-old survivor weight (SURVWT)	21.5	21.9	20.5	19.6
Mean food con-sumption (FOOD)	21.7	21.5	21.5	21.1
Final weight of males (POSTM)	223	224	224	223
Final weight of females (POSTF)	242	234	232	228

Statistically Significant Endpoints

Endpoint	Statistical Method	Levels at which Effect Was Observed
Normal hatchlings/ live embryos	Fisher's protected t-test	930 ppm
Hatchling weight	Dunnett's test	930 ppm

14. REVIEWER'S COMMENTS

Results are reported in terms of mean measured concentrations since they were considerably less than the nominal concentrations.

Compared to the control, a significant decrease was observed in the numbers of eggs cracked at the 86.2 and 930 ppm treatment levels. This result is considered inconsequential since it does not represent a detrimental effect.

The statistical significance of the decrease in live 3-week embryo as a percentage of viable embryos, which was reported by the authors at the 930 ppm level, could not be confirmed. An apparent decrease was observed, however, and the ANOVA F statistic was close to being significant (P=0.08). At the 930 ppm level, a statistically significant decrease was observed in the number of normal hatchlings as a percentage of live embryos, as well as in the body weight of hatchlings. Several other reproductive parameters showed a nonsignificant decrease at the 930 ppm level. There was no evidence of any effects on reproduction, body weight, or feed consumption at the 86.2 or 267 ppm levels.

In conclusion, thiobencarb may impair reproduction of the northern bobwhite, but only at relatively high dietary concentrations. The NOEL and LOEL are 267 and 930 ppm ai, respectively.

Variable	Mean	Minimum	Maximum
EL	43.9500000	3.0000000	72.0000000
EC	1.0166667	0	10.0000000
ES	38.1666667	2.0000000	66.0000000
VE	34.2166667	2.0000000	65.0000000
LE	33.5166667	2.0000000	64.0000000
NH	31.4666667	2.0000000	62.0000000
HS	25.9166667	1.0000000	55.0000000
THICK	0.2209492	0.1790000	0.2760000
HATWT	5.4333333	4.0000000	7.0000000
SURVWT	20.8666667	17.0000000	31.0000000
FOOD	21.4285714	17.0000000	28.8000000
PREM	205.2343750	183.0000000	228.0000000
POSTM	223.5333333	181.0000000	267.0000000
PREF	201.5468750	180.0000000	228.0000000
POSTF	234.0333333	142.0000000	288.0000000
E	1.0000000	1.0000000	1.0000000
W	0.3846154	0	2.0000000

OBS	LEVEL	EL	EC	ES	VE	LE	NH	HS	THICK	HATWT	SURVWT	FOOD	PREM	POSTM	PREF	POSTF
1	CONTROL	33	0	29	29	29	29	22	0.212	5	21	19.0	200	222	188	223
2	CONTROL	49	1	44	43	41	39	38	0.228	6	20	27.3	203	216	220	260
3	CONTROL	47	5	38	31	31	28	24	0.228	6	25	19.4	195	213	188	223
4	CONTROL	36	0	31	28	28	26	17	0.240	5	19	21.1	209	217	202	261
5	CONTROL	24	0	20	18	18	16	12	0.235	5	20	19.0	211	224	198	234
6	CONTROL	65	1	60	55	53	51	40	0.249	5	23	20.2	203	213	206	239
7	CONTROL	64	10	48	46	46	43	37	0.204	6	21	22.3	219	263	212	259
8	CONTROL	51	3	42	38	37	36	26	0.209	5	17	17.6	206	212	202	239
9	CONTROL	32	6	22	21	21	21	19	0.211	6	20	24.0	198	213	204	235
10	CONTROL	64	2	56	33	33	29	24	0.256	6	21	23.9	193	196	202	253
11	CONTROL	45	2	40	40	40	39	35	0.223	5	22	21.8	228	245	196	239
12	CONTROL	.	.	.	.	.	.	.	.	.	.	.	192	.	191	.
13	CONTROL	59	0	33	24	24	23	17	0.248	6	23	19.3	222	222	199	240
14	CONTROL	52	0	48	47	47	47	32	0.212	5	19	23.1	213	254	202	235
15	CONTROL	49	0	43	43	43	43	40	0.223	6	26	20.6	221	230	213	250
16	CONTROL	63	3	55	26	25	25	24	0.207	5	25	26.1	197	205	190	245
17	TRT1	28	2	22	22	21	20	18	0.230	5	20	19.8	219	259	188	189
18	TRT1	4	0	2	2	2	2	2	0.230	6	21	18.1	202	234	184	216
19	TRT1	72	1	66	65	64	62	55	0.251	5	20	23.1	203	221	207	238
20	TRT1	58	0	54	52	52	51	45	0.206	6	23	24.5	189	198	198	239
21	TRT1	42	0	37	35	34	30	26	0.218	6	20	21.9	203	213	217	265
22	TRT1	44	0	39	39	38	36	32	0.202	6	23	21.3	197	211	205	241
23	TRT1	57	2	48	41	41	37	37	0.236	6	29	22.5	197	228	219	278
24	TRT1	31	0	28	28	28	27	25	0.211	5	23	19.1	217	234	193	254
25	TRT1	58	0	53	50	48	47	38	0.226	6	22	23.0	215	247	197	226
26	TRT1	52	0	46	45	45	42	35	0.215	6	20	21.7	204	225	210	245
27	TRT1	58	0	53	50	50	46	39	0.226	5	23	23.7	194	205	181	227
28	TRT1	10	0	9	8	8	7	2	0.276	5	21	20.1	196	205	215	210
29	TRT1	.	.	.	.	.	.	.	.	.	.	17.0	215	.	205	.
30	TRT1	47	0	43	41	40	39	36	0.218	6	22	22.9	192	211	202	251
31	TRT1	49	0	44	42	42	39	28	0.224	6	23	22.3	198	217	187	222
32	TRT1	50	1	45	45	45	42	37	0.211	5	19	22.5	204	259	185	214
33	TRT2	59	7	47	38	38	35	35	0.214	7	31	21.7	228	267	217	288
34	TRT2	60	2	53	51	50	46	34	0.206	5	20	18.5	216	232	215	231
35	TRT2	46	0	40	38	38	35	23	0.210	5	19	21.9	204	221	196	212
36	TRT2	35	0	31	23	23	23	19	0.206	5	18	18.1	183	181	214	217

OBS	LEVEL	EL	EC	ES	VE	LE	NH	HS	THICK	HATWT	SURVWT	FOOD	PREM	POSTM	PREF	POSTF
37	TRT2	50	0	45	33	33	33	27	0.214	6	21	22.7	203	247	214	246
38	TRT2	3	0	3	3	3	3	1	.	6	18	22.7	200	235	201	226
39	TRT2	22	0	19	19	19	19	16	0.231	6	20	18.6	198	211	201	237
40	TRT2	55	2	48	31	30	28	22	0.252	5	18	21.6	217	266	196	240
41	TRT2	59	0	53	53	53	52	47	0.225	6	25	24.7	196	208	200	240
42	TRT2	49	0	45	44	44	41	38	0.225	5	19	22.7	197	207	196	244
43	TRT2	52	0	46	42	41	39	26	0.228	5	19	28.8	217	225	211	257
44	TRT2	.	.	.	.	.	.	.	.	.	.	18.8	204	.	201	.
45	TRT2	23	0	19	19	19	18	16	0.207	6	20	21.7	215	213	187	209
46	TRT2	31	0	27	26	25	25	19	0.191	6	20	19.4	195	236	205	237
47	TRT2	31	0	27	25	25	23	19	0.226	6	20	20.0	196	211	180	163
48	TRT2	46	1	40	40	40	40	32	0.226	6	19	22.1	188	194	187	229
49	TRT3	21	0	17	15	12	8	5	0.224	5	20	20.9	197	198	211	226
50	TRT3	41	0	38	38	38	37	35	0.215	6	21	20.5	208	225	212	253
51	TRT3	54	1	48	47	46	45	40	0.197	5	18	18.6	209	229	218	251
52	TRT3	33	1	28	27	27	27	22	0.198	5	19	21.3	220	239	194	142
53	TRT3	24	0	21	14	13	12	9	0.179	5	18	21.3	215	231	203	234
54	TRT3	57	0	53	45	45	40	35	0.208	5	21	17.8	204	221	228	252
55	TRT3	46	0	42	42	42	41	36	0.203	6	19	22.2	205	216	190	231
56	TRT3	36	0	32	32	32	30	22	0.227	5	20	20.7	218	234	207	202
57	TRT3	56	0	50	50	50	44	28	0.218	4	19	17.9	226	247	190	213
58	TRT3	.	.	.	.	.	.	.	.	.	.	20.8	206	.	208	.
59	TRT3	23	1	19	8	8	8	5	0.224	5	20	18.0	217	215	208	234

OBS	LEVEL	EL	EC	ES	VE	LE	NH	HS	THICK	HATWT	SURVWT	FOOD	PREM	POSTM	PREF	POSTF
60	TRT3	57	0	53	37	33	24	22	0.237	5	21	25.2	193	209	202	255
61	TRT3	57	4	47	40	35	33	23	0.231	5	20	22.1	228	242	193	228
62	TRT3	46	3	36	25	21	11	5	0.201	4	17	24.6	193	210	191	228
63	TRT3	59	0	54	51	44	36	25	0.243	5	18	22.5	186	206	214	238
64	TRT3	13	0	11	10	10	10	7	0.205	5	23	23.4	198	224	203	229

	LEVEL			
	CONTROL	TRT1	TRT2	TRT3
	MEAN	MEAN	MEAN	MEAN
EL	48.87	44.00	41.40	41.53
EC	2.20	0.40	0.80	0.67
ES	40.60	39.27	36.20	36.60
VE	34.80	37.67	32.33	32.07
LE	34.40	37.20	32.07	30.40
NH	33.00	35.13	30.67	27.07
HS	27.13	30.33	24.93	21.27
ES/EL (%)	83.07	86.47	88.07	87.32
EC/EL (%)	4.45	0.94	1.40	1.52
VE/ES (%)	87.33	96.07	90.81	85.73
LE/VE (%)	99.02	98.80	99.24	94.51

POSTM		15	1	223.067	14.180	6.357
PREF		16	0	204.500	10.985	5.372
POSTF		15	1	227.733	27.955	12.275
ES_EL	ES/EL (%)	15	1	87.319	4.760	5.451
NH_EL	NH/EL (%)	15	1	64.089	21.804	34.022
EC_EL	EC/EL (%)	15	1	1.518	2.518	165.851
VE_ES	VE/ES (%)	15	1	85.732	16.845	19.649
NH_ES	NH/ES (%)	15	1	72.821	23.388	32.117
HS_ES	HS/ES (%)	15	1	56.224	23.379	41.582
LE_VE	LE/VE (%)	15	1	94.513	7.179	7.595
NH_LE	NH/LE (%)	15	1	88.243	14.130	16.013
HS_NH	HS/NH (%)	15	1	74.900	13.675	18.257

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA
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General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA
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16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: EL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	547.78333	182.59444	0.70	0.5539
Error	56	14535.06667	259.55476		
Corrected Total	59	15082.85000			

R-Square	C.V.	Root MSE	EL Mean
0.036318	36.65689	16.111	43.950

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	547.78333	182.59444	0.70	0.5539

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA
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16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	EL LSMEAN	Pr > |T| HO: LSMEAN(i)=LSMEAN(j) i/j	1	2	3	4
CONTROL	48.8666667	1	.	0.4116	0.2096	0.2177
TRT1	44.0000000	2	0.4116	.	0.6602	0.6766
TRT2	41.4000000	3	0.2096	0.6602	.	0.9820
TRT3	41.5333333	4	0.2177	0.6766	0.9820	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: EL

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 259.5548
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 15.577

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

LEVEL Comparison			Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
CONTROL	-	TRT1	-10.711	4.867	20.444
CONTROL	-	TRT3	-8.244	7.333	22.911
CONTROL	-	TRT2	-8.111	7.467	23.044
TRT1	-	CONTROL	-20.444	-4.867	10.711
TRT1	-	TRT3	-13.111	2.467	18.044
TRT1	-	TRT2	-12.977	2.600	18.177
TRT3	-	CONTROL	-22.911	-7.333	8.244
TRT3	-	TRT1	-18.044	-2.467	13.111
TRT3	-	TRT2	-15.444	0.133	15.711
TRT2	-	CONTROL	-23.044	-7.467	8.111
TRT2	-	TRT1	-18.177	-2.600	12.977
TRT2	-	TRT3	-15.711	-0.133	15.444

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
1. ANALYSIS OF EL DATA

TRT1	- CONTROL	-3.5984	-1.8000	-0.0016	***
TRT1	- TRT2	-2.1984	-0.4000	1.3984	
TRT1	- TRT3	-2.0651	-0.2667	1.5317	

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
2. ANALYSIS OF EC DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed T tests for variable: EC

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

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 3.459524
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 1.431

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit	
TRT2	- CONTROL	-2.8310	-1.4000	0.0310	
TRT3	- CONTROL	-2.9643	-1.5333	-0.1023	***
TRT1	- CONTROL	-3.2310	-1.8000	-0.3690	***

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
3. ANALYSIS OF ES DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
3. ANALYSIS OF ES DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
3. ANALYSIS OF ES DATA

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: ES

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	201.80000	67.26667	0.31	0.8192
Error	56	12214.53333	218.11667		
Corrected Total	59	12416.33333			

R-Square	C.V.	Root MSE	ES Mean
0.016253	38.69548	14.769	38.167

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	201.80000	67.26667	0.31	0.8192

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
3. ANALYSIS OF ES DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	ES LSMEAN	Pr > |T| i/j	HO: LSMEAN(i)=LSMEAN(j) 1	2	3	4
CONTROL	40.6000000	1	.	0.8056	0.4180	0.4614
TRT1	39.2666667	2	0.8056	.	0.5719	0.6229
TRT2	36.2000000	3	0.4180	0.5719	.	0.9411
TRT3	36.6000000	4	0.4614	0.6229	0.9411	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
3. ANALYSIS OF ES DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: ES

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 218.1167
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 14.28

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

LEVEL Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
CONTROL - TRT1	-12.946	1.333	15.613
CONTROL - TRT3	-10.280	4.000	18.280
CONTROL - TRT2	-9.880	4.400	18.680

LEVEL Comparison		Confidence Limit	Between Means	Confidence Limit
TRT1	- CONTROL	-10.747	2.867	16.481
TRT1	- TRT2	-8.281	5.333	18.947
TRT1	- TRT3	-8.014	5.600	19.214
CONTROL	- TRT1	-16.481	-2.867	10.747
CONTROL	- TRT2	-11.147	2.467	16.081
CONTROL	- TRT3	-10.881	2.733	16.347
TRT2	- TRT1	-18.947	-5.333	8.281
TRT2	- CONTROL	-16.081	-2.467	11.147
TRT2	- TRT3	-13.347	0.267	13.881
TRT3	- TRT1	-19.214	-5.600	8.014
TRT3	- CONTROL	-16.347	-2.733	10.881
TRT3	- TRT2	-13.881	-0.267	13.347

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
4. ANALYSIS OF VE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed T tests for variable: VE

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

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 198.25
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 10.833

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-7.966	2.867	13.699
TRT2	- CONTROL	-13.299	-2.467	8.366
TRT3	- CONTROL	-13.566	-2.733	8.099

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
5. ANALYSIS OF LE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
5. ANALYSIS OF LE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
5. ANALYSIS OF LE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: LE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	392.45000	130.81667	0.68	0.5673
Error	56	10754.53333	192.04524		
Corrected Total	59	11146.98333			

R-Square	C.V.	Root MSE	LE Mean
0.035207	41.34671	13.858	33.517

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	392.45000	130.81667	0.68	0.5673

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
5. ANALYSIS OF LE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	LE LSMEAN	Pr > |T| i/j	HO: LSMEAN(i)=LSMEAN(j) 1	2	3	4
CONTROL	34.4000000	1	.	0.5822	0.6465	0.4326
TRT1	37.2000000	2	0.5822	.	0.3147	0.1844
TRT2	32.0666667	3	0.6465	0.3147	.	0.7431
TRT3	30.4000000	4	0.4326	0.1844	0.7431	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
5. ANALYSIS OF LE DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: LE

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 192.0452

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: NH

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 178.5
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 12.918

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-10.785	2.133	15.051
TRT1	- TRT2	-8.451	4.467	17.385
TRT1	- TRT3	-4.851	8.067	20.985
CONTROL	- TRT1	-15.051	-2.133	10.785
CONTROL	- TRT2	-10.585	2.333	15.251
CONTROL	- TRT3	-6.985	5.933	18.851
TRT2	- TRT1	-17.385	-4.467	8.451
TRT2	- CONTROL	-15.251	-2.333	10.585
TRT2	- TRT3	-9.318	3.600	16.518
TRT3	- TRT1	-20.985	-8.067	4.851
TRT3	- CONTROL	-18.851	-5.933	6.985
TRT3	- TRT2	-16.518	-3.600	9.318

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
6. ANALYSIS OF NH DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed T tests for variable: NH

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

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 178.5
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 10.279

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-8.146	2.133	12.412
TRT2	- CONTROL	-12.612	-2.333	7.946
TRT3	- CONTROL	-16.212	-5.933	4.346

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
7. ANALYSIS OF HS DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
7. ANALYSIS OF HS DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
7. ANALYSIS OF HS DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: HS

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	653.65000	217.88333	1.52	0.2183
Error	56	8006.93333	142.98095		
Corrected Total	59	8660.58333			

R-Square	C.V.	Root MSE	HS Mean
0.075474	46.13813	11.957	25.917

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	653.65000	217.88333	1.52	0.2183

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
7. ANALYSIS OF HS DATA
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	HS LSMEAN	Pr > |T| i/j	HO: LSMEAN(i)=LSMEAN(j) 1	2	3	4
CONTROL	27.1333333	1	.	0.4667	0.6163	0.1845
TRT1	30.3333333	2	0.4667	.	0.2213	0.0424
TRT2	24.9333333	3	0.6163	0.2213	.	0.4046
TRT3	21.2666667	4	0.1845	0.0424	0.4046	.

NOTE: To ensure overall protection level, only probabilities associated

General Linear Models Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	Pr > |T| i/j	1	2	3	4
			HO: LSMEAN(i)=LSMEAN(j)			
CONTROL	66.3670222	1	.	0.0094	0.0936	0.0376
TRT1	71.0570283	2	0.0094	.	0.3619	0.6136
TRT2	69.3880701	3	0.0936	0.3619	.	0.6862
TRT3	70.1359129	4	0.0376	0.6136	0.6862	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
8. ANALYSIS OF ES/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 1054.441
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 31.397

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- TRT3	-30.476	0.921	32.318
TRT1	- TRT2	-29.728	1.669	33.066
TRT1	- CONTROL	-26.707	4.690	36.087
TRT3	- TRT1	-32.318	-0.921	30.476
TRT3	- TRT2	-30.649	0.748	32.145
TRT3	- CONTROL	-27.628	3.769	35.166
TRT2	- TRT1	-33.066	-1.669	29.728
TRT2	- TRT3	-32.145	-0.748	30.649
TRT2	- CONTROL	-28.376	3.021	34.418
CONTROL	- TRT1	-36.087	-4.690	26.707
CONTROL	- TRT3	-35.166	-3.769	27.628
CONTROL	- TRT2	-34.418	-3.021	28.376

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
8. ANALYSIS OF ES/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed 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= 56 MSE= 1054.441
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 24.983

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-20.293	4.690	29.673
TRT3	- CONTROL	-21.214	3.769	28.752
TRT2	- CONTROL	-21.962	3.021	28.004

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
9. ANALYSIS OF VE/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
9. ANALYSIS OF VE/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
9. ANALYSIS OF VE/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: ES

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	23458.287	7819.429	1.29	0.2858
Error	56	338628.024	6046.929		
Corrected Total	59	362086.311			

R-Square	C.V.	Root MSE	RESPONSE Mean

Dependent Variable: RESPONSE
Weight: VE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	10759.910	3586.637	2.37	0.0802
Error	56	84748.087	1513.359		
Corrected Total	59	95507.997			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.112660	45.66705	38.902	85.186

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	10759.910	3586.637	2.37	0.0802

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
10. ANALYSIS OF LE/VE DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	Pr > |T| i/j	1	2	3	4
CONTROL	86.5379774	1	.	0.7414	0.8253	0.0323
TRT1	85.7546264	2	0.7414	.	0.5836	0.0609
TRT2	87.0821875	3	0.8253	0.5836	.	0.0210
TRT3	81.1386553	4	0.0323	0.0609	0.0210	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
10. ANALYSIS OF LE/VE DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 1513.359
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 37.614

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT2	- CONTROL	-37.070	0.544	38.158
TRT2	- TRT1	-36.286	1.328	38.941
TRT2	- TRT3	-31.670	5.944	43.557

CONTROL	- TRT2	-38.158	-0.544	37.070
CONTROL	- TRT1	-36.831	0.783	38.397
CONTROL	- TRT3	-32.215	5.399	43.013
TRT1	- TRT2	-38.941	-1.328	36.286
TRT1	- CONTROL	-38.397	-0.783	36.831
TRT1	- TRT3	-32.998	4.616	42.230
TRT3	- TRT2	-43.557	-5.944	31.670
TRT3	- CONTROL	-43.013	-5.399	32.215
TRT3	- TRT1	-42.230	-4.616	32.998

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
10. ANALYSIS OF LE/VE DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed 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= 56 MSE= 1513.359
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 29.929

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT2	- CONTROL	-29.385	0.544	30.474
TRT1	- CONTROL	-30.713	-0.783	29.146
TRT3	- CONTROL	-35.329	-5.399	24.530

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
11. ANALYSIS OF NH/LE DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
11. ANALYSIS OF NH/LE DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect	Coefficients

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
12. ANALYSIS OF NH/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
12. ANALYSIS OF NH/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: EL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	32332.139	10777.380	2.48	0.0703
Error	56	243180.691	4342.512		
Corrected Total	59	275512.830			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.117353	112.6622	65.898	58.491

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	32332.139	10777.380	2.48	0.0703

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
12. ANALYSIS OF NH/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	Pr > |T| i/j	1	2	3	4
CONTROL	56.0179064	1	.	0.0369	0.2821	0.6918
TRT1	63.5786331	2	0.0369	.	0.3251	0.0178
TRT2	59.9212984	3	0.2821	0.3251	.	0.1590
TRT3	54.5870341	4	0.6918	0.0178	0.1590	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
12. ANALYSIS OF NH/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 4342.512
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 63.716

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- TRT2	-60.059	3.657	67.373
TRT1	- CONTROL	-56.155	7.561	71.277
TRT1	- TRT3	-54.724	8.992	72.708
TRT2	- TRT1	-67.373	-3.657	60.059
TRT2	- CONTROL	-59.813	3.903	67.619
TRT2	- TRT3	-58.382	5.334	69.050
CONTROL	- TRT1	-71.277	-7.561	56.155
CONTROL	- TRT2	-67.619	-3.903	59.813
CONTROL	- TRT3	-62.285	1.431	65.147
TRT3	- TRT1	-72.708	-8.992	54.724
TRT3	- TRT2	-69.050	-5.334	58.382
TRT3	- CONTROL	-65.147	-1.431	62.285

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
12. ANALYSIS OF NH/EL DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed 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= 56 MSE= 4342.512
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 50.699

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-43.138	7.561	58.260
TRT2	- CONTROL	-46.795	3.903	54.602
TRT3	- CONTROL	-52.130	-1.431	49.268

Minimum Significant Difference= 38.252

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-34.825	3.427	41.678
TRT2	- CONTROL	-38.508	-0.257	37.995
TRT3	- CONTROL	-40.998	-2.746	35.505

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
14. ANALYSIS OF EC/EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
14. ANALYSIS OF EC/EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
14. ANALYSIS OF EC/EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: EL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	16269.910	5423.303	2.65	0.0578
Error	56	114717.024	2048.518		
Corrected Total	59	130986.934			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.124210	845.3256	45.261	5.3542

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	16269.910	5423.303	2.65	0.0578

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
14. ANALYSIS OF EC/EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	Pr > |T| i/j	HO: LSMEAN(i)=LSMEAN(j) 1	2	3	4
CONTROL	9.24696828	1	.	0.0120	0.0612	0.0434
TRT1	2.94310812	2	0.0120	.	0.5330	0.6351
TRT2	4.53049083	3	0.0612	0.5330	.	0.8825
TRT3	4.14952625	4	0.0434	0.6351	0.8825	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
14. ANALYSIS OF EC/EL DATA
****
16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 2048.518
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 43.762

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
CONTROL	- TRT2	-39.046	4.716	48.479
CONTROL	- TRT3	-38.665	5.097	48.859
CONTROL	- TRT1	-37.458	6.304	50.066
TRT2	- CONTROL	-48.479	-4.716	39.046
TRT2	- TRT3	-43.381	0.381	44.143
TRT2	- TRT1	-42.175	1.587	45.349
TRT3	- CONTROL	-48.859	-5.097	38.665
TRT3	- TRT2	-44.143	-0.381	43.381
TRT3	- TRT1	-42.556	1.206	44.968
TRT1	- CONTROL	-50.066	-6.304	37.458
TRT1	- TRT2	-45.349	-1.587	42.175
TRT1	- TRT3	-44.968	-1.206	42.556

TRT2	- TRT1	-76.869	-2.229	72.411
TRT2	- CONTROL	-72.738	1.902	76.542
TRT2	- TRT3	-66.892	7.749	82.389
CONTROL	- TRT1	-78.771	-4.131	70.509
CONTROL	- TRT2	-76.542	-1.902	72.738
CONTROL	- TRT3	-68.794	5.846	80.486
TRT3	- TRT1	-84.617	-9.977	64.663
TRT3	- TRT2	-82.389	-7.749	66.892
TRT3	- CONTROL	-80.486	-5.846	68.794

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
15. ANALYSIS OF NH/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed 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= 56 MSE= 5959.201
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 59.391

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-55.260	4.131	63.522
TRT2	- CONTROL	-57.489	1.902	61.293
TRT3	- CONTROL	-65.237	-5.846	53.545

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
16. ANALYSIS OF HS/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
16. ANALYSIS OF HS/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
16. ANALYSIS OF HS/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: RESPONSE
Weight: ES

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	38937.227	12979.076	3.11	0.0335
Error	56	233833.519	4175.599		
Corrected Total	59	272770.745			

R-Square	C.V.	Root MSE	RESPONSE Mean
0.142747	115.1144	64.619	56.134

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	38937.227	12979.076	3.11	0.0335

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
16. ANALYSIS OF HS/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	RESPONSE LSMEAN	Pr > |T| HO: LSMEAN(i)=LSMEAN(j) i/j	1	2	3	4
CONTROL	55.5792297	1	.	0.0998	0.7880	0.1605
TRT1	61.8291145	2	0.0998	.	0.1800	0.0036
TRT2	56.6098236	3	0.7880	0.1800	.	0.1053
TRT3	50.1706885	4	0.1605	0.0036	0.1053	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
16. ANALYSIS OF HS/ES DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
17. ANALYSIS OF EGGSHELL THICKNESS DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: THICK

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 55 MSE= 0.000291
Critical Value of Studentized Range= 3.747

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

LEVEL Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
CONTROL - TRT1	-0.016165	0.000333	0.016831
CONTROL - TRT2	-0.009766	0.007024	0.023814
CONTROL - TRT3	-0.004831	0.011667	0.028165
TRT1 - CONTROL	-0.016831	-0.000333	0.016165
TRT1 - TRT2	-0.010100	0.006690	0.023481
TRT1 - TRT3	-0.005165	0.011333	0.027831
TRT2 - CONTROL	-0.023814	-0.007024	0.009766
TRT2 - TRT1	-0.023481	-0.006690	0.010100
TRT2 - TRT3	-0.012147	0.004643	0.021433
TRT3 - CONTROL	-0.028165	-0.011667	0.004831
TRT3 - TRT1	-0.027831	-0.011333	0.005165
TRT3 - TRT2	-0.021433	-0.004643	0.012147

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
17. ANALYSIS OF EGGSHELL THICKNESS DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed T tests for variable: THICK

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= 0.000291
Critical Value of Dunnett's T= 2.109

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

LEVEL Comparison	Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1 - CONTROL	-0.013468	-0.000333	0.012801
TRT2 - CONTROL	-0.020391	-0.007024	0.006343
TRT3 - CONTROL	-0.024801	-0.011667	0.001468

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
18. ANALYSIS OF HATCHLING WEIGHT DATA

****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
18. ANALYSIS OF HATCHLING WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
18. ANALYSIS OF HATCHLING WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: HATWT

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4.0666667	1.3555556	4.55	0.0063
Error	56	16.6666667	0.2976190		
Corrected Total	59	20.7333333			

R-Square	C.V.	Root MSE	HATWT Mean
0.196141	10.04070	0.5455	5.4333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	4.0666667	1.3555556	4.55	0.0063

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
18. ANALYSIS OF HATCHLING WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	48.933333	16.311111	2.51	0.0680

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	SURVWT LSMEAN	Pr > |T| i/j	HO: LSMEAN(i)=LSMEAN(j) 1	2	3	4
CONTROL	21.4666667	1	.	0.6181	0.2874	0.0498
TRT1	21.9333333	2	0.6181	.	0.1208	0.0151
TRT2	20.4666667	3	0.2874	0.1208	.	0.3559
TRT3	19.6000000	4	0.0498	0.0151	0.3559	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: SURVWT

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 6.5
Critical Value of Studentized Range= 3.745
Minimum Significant Difference= 2.4651

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-1.9984	0.4667	2.9318
TRT1	- TRT2	-0.9984	1.4667	3.9318
TRT1	- TRT3	-0.1318	2.3333	4.7984
CONTROL	- TRT1	-2.9318	-0.4667	1.9984
CONTROL	- TRT2	-1.4651	1.0000	3.4651
CONTROL	- TRT3	-0.5984	1.8667	4.3318
TRT2	- TRT1	-3.9318	-1.4667	0.9984
TRT2	- CONTROL	-3.4651	-1.0000	1.4651
TRT2	- TRT3	-1.5984	0.8667	3.3318
TRT3	- TRT1	-4.7984	-2.3333	0.1318
TRT3	- CONTROL	-4.3318	-1.8667	0.5984
TRT3	- TRT2	-3.3318	-0.8667	1.5984

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
19. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed T tests for variable: SURVWT

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

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 6.5
Critical Value of Dunnett's T= 2.107
Minimum Significant Difference= 1.9615

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-1.4948	0.4667	2.4281
TRT2	- CONTROL	-2.9615	-1.0000	0.9615
TRT3	- CONTROL	-3.8281	-1.8667	0.0948

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
20. ANALYSIS OF FOOD CONSUMPTION DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 63 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
20. ANALYSIS OF FOOD CONSUMPTION DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Type I Estimable Functions for: LEVEL

Effect		Coefficients
INTERCEPT		0
LEVEL	CONTROL	L2
	TRT1	L3
	TRT2	L4
	TRT3	-L2-L3-L4

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
20. ANALYSIS OF FOOD CONSUMPTION DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dependent Variable: FOOD

Sum of Mean

Corrected Total	59	20830.933			

R-Square	C.V.	Root MSE	POSTM Mean
0.579529	5.645455	12.619	223.53

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LEVEL	3	20.667	6.889	0.04	0.9879
PREM	1	12051.454	12051.454	75.68	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LEVEL	3	864.596	288.199	1.81	0.1561
PREM	1	12051.454	12051.454	75.68	0.0001

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Least Squares Means

LEVEL	POSTM LSMEAN	Std Err LSMEAN	Pr > |T| HO:LSMEAN=0	LSMEAN Number
CONTROL	219.689421	3.280483	0.0001	1
TRT1	228.723125	3.294867	0.0001	2
TRT2	225.878710	3.268847	0.0001	3
TRT3	219.842077	3.279351	0.0001	4

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

i/j	1	2	3	4
1	.	0.0592	0.1889	0.9737
2	0.0592	.	0.5401	0.0634
3	0.1889	0.5401	.	0.1998
4	0.9737	0.0634	0.1998	.

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

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Tukey's Studentized Range (HSD) Test for variable: POSTM

NOTE: This test controls the type I experimentwise error rate.

Alpha= 0.05 Confidence= 0.95 df= 55 MSE= 159.2511
Critical Value of Studentized Range= 3.747
Minimum Significant Difference= 12.208

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- TRT2	-11.342	0.867	13.075
TRT1	- TRT3	-10.808	1.400	13.608
TRT1	- CONTROL	-10.742	1.467	13.675
TRT2	- TRT1	-13.075	-0.867	11.342
TRT2	- TRT3	-11.675	0.533	12.742
TRT2	- CONTROL	-11.608	0.600	12.808
TRT3	- TRT1	-13.608	-1.400	10.808
TRT3	- TRT2	-12.742	-0.533	11.675
TRT3	- CONTROL	-12.142	0.067	12.275
CONTROL	- TRT1	-13.675	-1.467	10.742
CONTROL	- TRT2	-12.808	-0.600	11.608
CONTROL	- TRT3	-12.275	-0.067	12.142

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure

Dunnett's One-tailed 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= 55 MSE= 159.2511
Critical Value of Dunnett's T= 2.108
Minimum Significant Difference= 9.7127

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

LEVEL Comparison		Simultaneous Lower Confidence Limit	Difference Between Means	Simultaneous Upper Confidence Limit
TRT1	- CONTROL	-8.246	1.467	11.179
TRT2	- CONTROL	-9.113	0.600	10.313
TRT3	- CONTROL	-9.646	0.067	9.779

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA
****

16:29 Thursday, June 22, 1995

General Linear Models Procedure
Class Level Information

Class	Levels	Values
LEVEL	4	CONTROL TRT1 TRT2 TRT3

Number of observations in data set = 64

NOTE: Due to missing values, only 60 observations can be used in this analysis.

EFFECTS OF THIOBENCARB ON THE REPRODUCTION OF BOBWHITES
22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA
****

16:29 Thursday, June 22, 1995