12/2/93

2

**DATA EVALUATION RECORD**

1. **CHEMICAL:** Acetochlor.
Shaughnessey Number: 121601.

2. **TEST MATERIAL:** Acetochlor; ICIA-5676; Batch No. A1016/9.P2; 89.4% purity; a dark brown liquid.

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

4. **CITATION:** Hakin, B., A.J. Norman, A. Anderson, I.S. Dawe, and D.O. Chanter. 1990. The effect of dietary inclusion of acetochlor on reproduction in the bobwhite quail. Study performed by Huntingdon Research Centre, Ltd., Huntingdon, Cambridgeshire, UK. HRC report No. ISN 188/891809. Submitted by ICI Americas Inc. EPA MRID No. 415920-10.

5. **REVIEWED BY:**

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Environmental Fate and Effects Division (7507C)

**Signature:** William S. Rabert
**Date:** October 29, 1993

6. **APPROVED BY:**

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Section Head
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**Signature:** Dan Rieder
**Date:** 11.9.93

Henry T. Craven, M.S.
Supervisor, EEB/EFED
USEPA

**Signature:** H T. Craven
**Date:** 12/2/93

7. **CONCLUSIONS:** Nominal dietary concentrations of acetochlor at 150 ppm and 300 ppm were reported to have had no effects upon behavior, food consumption, or reproduction in adult bobwhite quail during the 22-week exposure period. The NOEC was reported to be 300 ppm. At 600 ppm, adverse effects were reported to be reduced: adult food consumption, egg weight, eggshell thickness, chick body weights at hatch, chick body weights at 14 days of age, and the proportion of hatchlings surviving to 14 days of age. The proportion of cracked eggs was increased at 600 ppm.

added / revised

[ Eight birds died in replicates prior to the beginning of egg laying and were replaced by 6 pairs of birds. Replacement of dead birds is inappropriate, because the adverse effects resulting from the early deaths on reproductive potential has been obfuscated by the replacements. Therefore, this study is not scientifically sound and does not fulfill the guideline requirements for an avian reproduction study. ]

8. **RECOMMENDATIONS:** Repetition of this test is not necessary, since a second bobwhite reproduction test is Core. ] added

9. **BACKGROUND:** N/A

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Bobwhite quail (Colinus virginianus) were purchased from a supplier in Cambridgeshire, England. The birds were acclimated to the facilities for 7 days prior to initiation of the test. The birds were approximately 7 months of age at test initiation, and were identified by individual wing tags.

B. **Dose/Diet Preparation/Food Consumption:** Test diets were prepared by mixing acetochlor directly into the feed without the use of a vehicle. The control diet consisted of basal feed only. The control diet and three test concentrations (150, 300, and 600 ppm) were prepared weekly. After preparation, the diets were stored in closed paper sacks at room temperature until fed to the birds. Each of the four groups of adult birds was fed the appropriate diet for 22 weeks.

Basal diet for adult birds was quail layer diet manufactured by Special Diets Services, Witham, Essex. The composition of the diet was presented in the report. Food and water were supplied ad libitum during acclimation and during the test. Homogeneity and stability samples were taken from a trial mix of treatment diets (150 ppm and 600 ppm). Stability of the test chemical was determined in the trial mix by analyzing subsamples stored for 4, 9, and 14 days at room temperature in the animal room. Samples were taken from the test diets during weeks 1, 12, and 21 for confirmation of dietary concentrations of acetochlor. Analyses were performed by Huntingdon Research Centre (HRC) Department of Analytical Chemistry. Group food consumption was determined weekly throughout the study.

C. **Design:** The birds were distributed into four groups using a randomized block design as follows:

| Acetochlor Nominal Concentration | Number of Pens | Birds Per Pen | |
|---|---|---|---|
| | | Males | Females |
| Control (0 ppm) | 20 | 1 | 1 |
| 150 ppm | 20 | 1 | 1 |
| 300 ppm | 20 | 1 | 1 |
| 600 ppm | 20 | 1 | 1 |

In addition, 4 birds per group were maintained as replacements if needed prior to egg production.

D. **Pen Facilities:** Adult birds were housed indoors in pens constructed of polythene-coated steel wire. Pens measured approximately 30 cm x 40 cm x 25 cm. The mean daily maximum and minimum temperatures in the adult study rooms were 24°C and 21°C, respectively. The mean relative humidity was 76%.

The photoperiod during acclimation and during the first 6 weeks of the study was 7 hours of light per day. At the beginning of week 7, the lighting was increased to 16 hours per day, and was maintained at that level throughout the remainder of the study.

E. **Adult Observations/Gross Pathology:** Observations were made daily throughout the study for signs of toxicity or abnormal behavior. Gross pathological examinations were conducted on all birds that died during the study, as well as on all birds that survived until study termination. Adult birds were individually weighed on the following days: -7, 0, 15, 29, 43, 57, and 155.

F. **Eggs/Eggshell Thickness:** Eggs were collected daily during the 12-week production period, and stored at 16°C. Following each 7-day collection period, the eggs were candled and any cracked eggs were recorded and discarded. All normal eggs (except those used for eggshell thickness measurements) were then brought to room temperature (20°C) and placed in an incubator set to operate at 37.7°C and 55% relative humidity. Eggs were turned automatically every hour while in the incubator. Eggs were candled on day 11 to determine early embryonic death and on day 18 to determine late embryonic death. The eggs were placed in a hatcher at 37.5°C on incubation day 21. All eggs collected the first day of even-numbered weeks were used for egg shell thickness measurements. The thickness of the shells was measured at 4 points around the circumference using a micrometer calibrated to 0.01 mm.

G. **Hatchlings:** Upon removal from the hatcher, chicks were individually weighed and identified by leg bands. The hatchlings were housed in wooden pens with concrete

floors. The mean daily minimum and maximum temperatures were 25°C and 29°C, respectively. The mean relative humidity was 62%. Hatchlings were fed untreated diet (HRC chick meal), and were observed daily. Food and water were available ad libitum. At 14 days of age, individual body weights were measured. Gross pathological examinations were conducted on chicks that died during the 14-day observation period.

H. **Statistics:** Analysis of variance was used to evaluate adult food consumption, adult body weight, number of eggs laid, egg weight, % eggs damaged, egg shell thickness, infertile eggs/eggs set, early embryonic deaths/fertile eggs, late embryonic deaths/fertile eggs, eggs hatched/day 18 viable eggs, eggs hatched/fertile eggs, 14-day survivors/eggs hatched, and offspring body weight at hatching and 14 days later. Williams' test was used to compare individual treatment groups with the control.

12. **REPORTED RESULTS**

A. **Diet Analysis:** All mean measured concentrations of acetochlor taken from dietary samples were within 6% of nominal values (Addendum 1, Table 2, attached). Analyses of samples taken from the trial mix showed that acetochlor was homogeneously blended and was stable throughout the 14-day storage period (Addendum 1, Tables 3 & 4, attached).

revised

B. **Adult Mortality and Behavioral Reactions:** Eight birds died prior to the beginning of egg laying (i.e., 2 birds at 150 ppm, 1 at 300 ppm, and 5 at 600 ppm). Six of the 8 mortalities were replaced by birds from the group of spare birds maintained on the same diet as the replaced birds. The large number of mortalities at 600 ppm resulted in a reduced number of replicates (n=18) during the egg production period; these deaths "...may have been related to treatment." Another five deaths occurred after the beginning of the egg production; these deaths were as follows: 1 control bird, 2 at 150 ppm, 1 at 300 ppm, and 1 at 600 ppm, these birds were not replaced.

"In general, bird health was good throughout the study. Individual bird observations are given in Appendix 5" (attached).

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The results of gross pathological examinations conducted on birds that died or were sacrificed during the study were included in the report (attached). Most observations in the 600-ppm group consisted of "white deposits throughout the body cavity, especially thick around the heart" and were probably treatment-related.

Gross pathological examinations of birds surviving to terminal sacrifice revealed abnormalities in only 5 birds. These consisted of one thin bird (150 ppm) and cut feet in 4 birds (3 at 300 ppm, 1 at 600 ppm).

C. **Adult Body Weight and Food Consumption:** There was no evidence of any treatment-related effect on body weight. When compared to the control group, there were no significant differences in body weight at any concentration tested (Table 4, attached). Food consumption in the 600-ppm group was significantly lower than in the control group.

D. **Reproduction:** When compared to the control group, there were no significant differences in the following parameters at any concentration tested: egg production, cracked or broken eggs, infertile eggs/eggs set, early embryonic deaths/fertile eggs, late embryonic deaths/fertile eggs, eggs hatched/day 18 viable eggs, eggs hatched/fertile eggs, and 14-day survivors/eggs set (Tables 7, 9, 13, 14 & 16, attached).

The proportion of hatchlings surviving to 14 days of age was slightly low at 600 ppm (93%) compared to the controls (96%) (Table 16, attached). Analysis of the data found chick survival to be significantly lower at 600 ppm.

E. **Egg Shell Thickness:** Eggs in the 600-ppm group weighed significantly less, and had significantly thinner eggshells, than those in the controls (Tables 10-11, attached).

F. **Offspring Body Weight:** Chick body weights at hatch and at 14 days of age were slightly lower at 600 ppm than in the control group (Table 15, attached). Values at 600 ppm were significantly less than controls initially and 14 days later. Post-mortem examinations of chicks that died during the 14-day observation period revealed abnormalities in only one chick. That bird (from the 600-ppm group) was "very small with withered left leg."

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** "Following treatment of adult bobwhite quail with acetochlor in diet at 600 ppm, adult food consumption, mean egg weights, egg shell thickness and the number of chicks surviving to 14 days were reduced, and chicks were lighter in weight at time of hatch and at 14 days relative to controls. At dose levels of 150 ppm and 300 ppm, there were no treatment-related effects on adult birds or on any of the measured reproductive parameters."

The report stated that study was conducted in conformance with Good Laboratory Practice regulations. The GLP statement was signed by the Study Director. Quality assurance audits were conducted during the study and the final report was signed by the Systems Compliance Auditor of Huntingdon Research Centre Ltd.

14. **Reviewer's Discussion and Interpretation of the Study:**

A. **Test Procedure:** The test procedures were in accordance with Subdivision E - Hazard Evaluation: Wildlife and Aquatic Organisms, ASTM, and SEP guidelines except for the following deviations:

The acclimation period was only one week; while a two- to six-week period is recommended.

[ Extra birds were used to replace some birds that died during treatment. The use of replacement birds is not recommended and is inappropriate. ] added

A solvent (test vehicle) was not used in the preparation of the test diets.

The SEP states that the test chemical should be administered for at least 10 weeks prior to the onset of egg laying. In this study, egg production began during week 9. However, no eggs were selected for hatching until after the birds had been on test feed for 10 weeks.

The mean relative humidity in the adult study rooms was 76%; the recommended relative humidity is 55%.

B. **Statistical Analysis:** Statistical analyses of reproductive parameters were performed by the KBN reviewer (attached) using analysis of variance (ANOVA) following square-root transformation of the count data and arcsine square-root transformation of the ratio data. The comparisons between the control and each treatment group were made using multiple comparison tests. The computer program used is based on the EEB Bigbird program, with an exception that the count data were square-root transformed before the ANOVA.

Analyses of reproductive parameters generally supported the results reported by the authors. An exception was the analysis of adult food consumption; the authors reported that this value was significantly lower in the 600-ppm group than in the controls, while the KBN reviewer's analysis revealed no significant difference. Egg weights were not subjected to statistical analysis by the reviewer.

C. **Discussion/Results:** Chemical analyses of food samples taken during weeks 2, 13, and 22 show that measured concentrations of acetochlor were very similar to nominal concentrations; all measured values were within 6% of nominal values. Homogeneity and stability was measured on a trial mix of treatment diets. Therefore, homogeneity and stability of the actual treatment diets were not measured. However, judging from the data using the trial mix, acetochlor was extremely stable in the diet, and the method of preparation achieved a homogeneous mix.

The percentages of cracked eggs in the control group (12%) and in all treatment groups are unusually high (Table 9, attached). Typically, 0.5% to 2.0% may be expected for the bobwhite quail (Technical Support Document to Subdivision E - Hazard Evaluation: Wildlife and Aquatic Organisms). The authors provided no explanation for these high values. Statistical analysis of this parameter showed no significant differences between groups. However, the high values in the control group may have confounded the analysis. Only one treatment group (600 ppm) had a higher proportion of cracked eggs than the control. A conservative approach is to assume that the value at 600 ppm (16% of the eggs were cracked) was a treatment effect.

The authors' conclusion of reduced egg weight, eggshell thickness, and adult food consumption at in the 600-ppm group is accepted. Therefore, the following parameters were reduced at 600 ppm: adult food consumption, egg weight, eggshell thickness, chick body weights at hatch, chick body weights at 14 days of age, and the proportion of hatchlings surviving to 14 days of age. The proportion of cracked eggs was increased at 600 ppm. The NOEC was 300 ppm.

The study is not scientifically sound and does not fulfill the guideline requirements for an avian reproduction study, because replacement birds were used after treatments began. The use of replacement birds obfuscates the measurement of adverse effects of the chemical on total reproductive potential.

revised

D. **Adequacy of the Study:**

(1) **Classification:** [Supplemental.] revised

added [ (2) **Rationale:** The use of replacement birds confounds the measurement of reproductive effects resulting from adverse effects including those resulting from early adult deaths. ]

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER:** Yes; [October 29, 1993.] revised

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Shaughnessey Number: 121601.

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

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5. **REVIEWED BY:**

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KBN Engineering and
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**Signature:** Michael L. Whitten
**Date:** 10/10/91

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Senior Scientist
KBN Engineering and
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**Date:** 10/10/91

Henry T. Craven, M.S.
Supervisor, EEB/EFED
USEPA

**Signature:** H. T. Craven
**Date:** 12/2/93

7. **CONCLUSIONS:** Nominal dietary concentrations of acetochlor at 150 ppm and 300 ppm had no effects upon behavior, food consumption, or reproduction in adult bobwhite quail during the 22-week exposure period. The NOEC was 300 ppm. At 600 ppm, the following parameters were reduced: adult food consumption, egg weight, eggshell thickness, chick bodyweights at hatch, chick bodyweights at 14 days of age, and the proportion of hatchlings surviving to 14 days of age. The proportion of cracked eggs was increased at 600 ppm. This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study.

ACETOCHLOR

Page_____ is not included in this copy.

Pages 10 through 22 are not included.

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.

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____ Sales or other commercial/financial information.

____ A draft product label.

____ The product confidential statement of formula.

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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.

ACETOCHLOR/QUAIL

TREATMENT LEVEL: Control

| | | PENNO | EL | EC | ES | VE | LE21 | HAT | TWOWK |
|---|---|---|---|---|---|---|---|---|---|
| CASE | 1 | 1 | 26 | 2 | 21 | 20 | 20 | 18 | 18 |
| CASE | 2 | 2 | 61 | 12 | 46 | 46 | 46 | 45 | 45 |
| CASE | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CASE | 4 | 4 | 36 | 1 | 31 | 30 | 30 | 25 | 25 |
| CASE | 5 | 5 | 69 | 8 | 57 | 57 | 56 | 55 | 54 |
| CASE | 6 | 6 | 21 | 4 | 16 | 16 | 16 | 13 | 11 |
| CASE | 7 | 7 | 72 | 2 | 64 | 62 | 62 | 60 | 60 |
| CASE | 8 | 8 | 34 | 5 | 26 | 25 | 24 | 19 | 19 |
| CASE | 9 | 9 | 37 | 5 | 28 | 27 | 24 | 23 | 22 |
| CASE | 10 | 10 | 52 | 13 | 36 | 36 | 35 | 34 | 33 |
| CASE | 11 | 11 | 65 | 1 | 60 | 58 | 57 | 57 | 46 |
| CASE | 12 | 12 | 20 | 3 | 14 | 10 | 10 | 9 | 9 |
| CASE | 13 | 13 | 9 | 3 | 5 | 0 | 0 | 0 | 0 |
| CASE | 14 | 14 | 40 | 3 | 35 | 34 | 34 | 34 | 34 |
| CASE | 15 | 15 | 47 | 5 | 37 | 36 | 34 | 26 | 26 |
| CASE | 16 | 16 | 45 | 13 | 30 | 30 | 30 | 26 | 24 |
| CASE | 17 | 17 | 59 | 10 | 44 | 15 | 15 | 15 | 14 |
| CASE | 18 | 18 | 42 | 8 | 30 | 30 | 29 | 26 | 26 |
| CASE | 19 | 19 | 53 | 1 | 47 | 43 | 42 | 39 | 35 |
| CASE | 20 | 20 | 55 | 1 | 48 | 45 | 45 | 43 | 43 |
| | Sums | | 843 | 100 | 675 | 620 | 609 | 567 | 544 |

TREATMENT LEVEL: 150 ppm

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CASE | 21 | 1 | 64 | 13 | 44 | 29 | 28 | 24 | 22 |
| CASE | 22 | 2 | 24 | 0 | 21 | 21 | 21 | 21 | 14 |
| CASE | 23 | 3 | 58 | 4 | 48 | 36 | 36 | 25 | 25 |
| CASE | 24 | 4 | 34 | 3 | 28 | 27 | 26 | 25 | 23 |
| CASE | 25 | 5 | 72 | 10 | 57 | 51 | 40 | 24 | 23 |
| CASE | 26 | 6 | 47 | 2 | 40 | 38 | 38 | 33 | 33 |
| CASE | 27 | 7 | 35 | 4 | 27 | 24 | 24 | 16 | 14 |
| CASE | 28 | 8 | 35 | 2 | 28 | 26 | 26 | 26 | 26 |
| CASE | 29 | 9 | 79 | 9 | 64 | 63 | 61 | 60 | 60 |
| CASE | 30 | 10 | 28 | 3 | 21 | 18 | 19 | 15 | 14 |
| CASE | 31 | 11 | 46 | 2 | 38 | 29 | 26 | 25 | 25 |
| CASE | 32 | 12 | 13 | 2 | 10 | 10 | 10 | 9 | 9 |
| CASE | 33 | 13 | 74 | 5 | 63 | 59 | 59 | 57 | 56 |
| CASE | 34 | 14 | 25 | 3 | 20 | 20 | 20 | 20 | 20 |
| CASE | 35 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CASE | 36 | 16 | 34 | 6 | 26 | 22 | 18 | 10 | 9 |
| CASE | 37 | 17 | 61 | 1 | 55 | 55 | 55 | 53 | 51 |
| CASE | 38 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CASE | 39 | 19 | 9 | 4 | 5 | 3 | 2 | 0 | 0 |
| CASE | 40 | 20 | 40 | 10 | 27 | 25 | 24 | 21 | 21 |
| | Sums | | 778 | 83 | 622 | 556 | 533 | 464 | 445 |

TREATMENT LEVEL: 300 ppm

| | | PENNO | EL | EC | ES | VE | LE21 | HAT | TWOWK |
|---|---|---|---|---|---|---|---|---|---|
| CASE | 41 | 1 | 59 | 2 | 52 | 47 | 46 | 43 | 42 |
| CASE | 42 | 2 | 56 | 5 | 46 | 46 | 46 | 44 | 44 |
| CASE | 43 | 3 | 63 | 15 | 44 | 39 | 38 | 29 | 28 |
| CASE | 44 | 4 | 62 | 5 | 52 | 51 | 51 | 51 | 46 |
| CASE | 45 | 5 | 53 | 2 | 47 | 45 | 45 | 43 | 35 |
| CASE | 46 | 6 | 35 | 2 | 30 | 22 | 21 | 19 | 19 |
| CASE | 47 | 7 | 32 | 2 | 29 | 27 | 26 | 22 | 22 |
| CASE | 48 | 8 | 55 | 2 | 49 | 48 | 48 | 45 | 45 |
| CASE | 49 | 9 | 39 | 0 | 35 | 34 | 34 | 33 | 33 |
| CASE | 50 | 10 | 27 | 3 | 21 | 21 | 21 | 21 | 21 |
| CASE | 51 | 11 | 9 | 0 | 7 | 4 | 4 | 4 | 4 |
| CASE | 52 | 12 | 52 | 6 | 41 | 38 | 38 | 38 | 37 |
| CASE | 53 | 13 | 51 | 3 | 43 | 43 | 43 | 42 | 41 |
| CASE | 54 | 14 | 57 | 1 | 50 | 28 | 28 | 28 | 28 |
| CASE | 55 | 15 | 71 | 6 | 62 | 59 | 57 | 54 | 52 |
| CASE | 56 | 16 | 36 | 3 | 28 | 27 | 27 | 24 | 23 |
| CASE | 57 | 17 | 65 | 2 | 57 | 55 | 54 | 51 | 46 |
| CASE | 58 | 18 | 63 | 17 | 43 | 43 | 42 | 40 | 37 |
| CASE | 59 | 19 | 63 | 10 | 47 | 47 | 46 | 45 | 42 |
| CASE | 60 | 20 | 50 | 2 | 46 | 38 | 37 | 36 | 33 |
| | Sums | | 998 | 88 | 829 | 762 | 752 | 712 | 678 |

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TREATMENT LEVEL: 600 ppm

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CASE | 61 | 1 | 66 | 2 | 59 | 53 | 53 | 51 | 51 |
| CASE | 62 | 2 | 13 | 10 | 3 | 0 | 0 | 0 | 0 |
| CASE | 63 | 3 | 68 | 9 | 55 | 54 | 54 | 52 | 48 |
| CASE | 64 | 4 | 60 | 3 | 52 | 52 | 50 | 45 | 44 |
| CASE | 65 | 5 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| CASE | 66 | 6 | 59 | 6 | 50 | 50 | 50 | 49 | 47 |
| CASE | 67 | 7 | 53 | 1 | 47 | 33 | 33 | 31 | 29 |
| CASE | 68 | 8 | 61 | 4 | 51 | 48 | 47 | 34 | 31 |
| CASE | 69 | 9 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| CASE | 70 | 10 | 35 | 9 | 24 | 19 | 18 | 15 | 13 |
| CASE | 71 | 11 | 57 | 52 | 4 | 1 | 1 | 1 | 1 |
| CASE | 72 | 12 | 38 | 6 | 27 | 27 | 26 | 25 | 24 |
| CASE | 73 | 13 | 68 | 3 | 59 | 58 | 57 | 49 | 47 |
| CASE | 74 | 14 | 59 | 13 | 41 | 17 | 15 | 15 | 6 |
| CASE | 75 | 15 | 66 | 12 | 50 | 49 | 48 | 45 | 41 |
| CASE | 76 | 16 | 63 | 5 | 53 | 52 | 52 | 37 | 36 |
| CASE | 77 | 17 | 53 | 2 | 45 | 43 | 43 | 42 | 39 |
| CASE | 78 | 18 | 33 | 3 | 26 | 24 | 22 | 22 | 20 |
| | Sums | | 854 | 140 | 648 | 582 | 571 | 515 | 478 |

ANOVA on SQR(Eggs Laid)
ACETOCHLOR/QUAIL
Sorted by Treatment Levels

DEP VAR: SEL N: 78 MULTIPLE R: 0.216 SQUARED MULTIPLE R: 0.047

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 15.835 | 3 | 5.278 | 1.213 | 0.311 |
| ERROR | 322.119 | 74 | 4.353 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 2.041 | 1 | 2.041 | 0.469 | 0.496 |
| ERROR | 322.119 | 74 | 4.353 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 5.877 | 1 | 5.877 | 1.350 | 0.249 |
| ERROR | 322.119 | 74 | 4.353 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.989 | 1 | 0.989 | 0.227 | 0.635 |
| ERROR | 322.119 | 74 | 4.353 | | |

ANOVA on SQR(Eggs Cracked)

DEP VAR: SEC N: 78 MULTIPLE R: 0.175 SQUARED MULTIPLE R: 0.031

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 3.287 | 3 | 1.096 | 0.780 | 0.509 |
| ERROR | 103.963 | 74 | 1.405 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.566 | 1 | 0.566 | 0.403 | 0.528 |
| ERROR | 103.963 | 74 | 1.405 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.324 | 1 | 0.324 | 0.231 | 0.632 |
| ERROR | 103.963 | 74 | 1.405 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.852 | 1 | 0.852 | 0.607 | 0.439 |
| ERROR | 103.963 | 74 | 1.405 | | |

ANOVA on SQR(Eggs Set)

DEP VAR: SES N: 78 MULTIPLE R: 0.226 SQUARED MULTIPLE R: 0.051

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 15.943 | 3 | 5.314 | 1.323 | 0.273 |
| ERROR | 297.172 | 74 | 4.016 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1.562 | 1 | 1.562 | 0.389 | 0.535 |
| ERROR | 297.172 | 74 | 4.016 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 6.952 | 1 | 6.952 | 1.731 | 0.192 |
| ERROR | 297.172 | 74 | 4.016 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.007 | 1 | 0.007 | 0.002 | 0.968 |
| ERROR | 297.172 | 74 | 4.016 | | |

ANOVA on SQR(Viable Embryos)

DEP VAR: SVE N: 78 MULTIPLE R: 0.221 SQUARED MULTIPLE R: 0.049

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 17.053 | 3 | 5.684 | 1.272 | 0.290 |
| ERROR | 330.638 | 74 | 4.468 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1.179 | 1 | 1.179 | 0.264 | 0.609 |
| ERROR | 330.638 | 74 | 4.468 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 7.913 | 1 | 7.913 | 1.771 | 0.187 |
| ERROR | 330.638 | 74 | 4.468 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.042 | 1 | 0.042 | 0.009 | 0.923 |
| ERROR | 330.638 | 74 | 4.468 | | |

ANOVA on SQR(Hatched)

DEP VAR: SHAT N: 78 MULTIPLE R: 0.270 SQUARED MULTIPLE R: 0.073

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 24.805 | 3 | 8.268 | 1.944 | 0.130 |
| ERROR | 314.740 | 74 | 4.253 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 3.701 | 1 | 3.701 | 0.870 | 0.354 |
| ERROR | 314.740 | 74 | 4.253 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 8.705 | 1 | 8.705 | 2.047 | 0.157 |
| ERROR | 314.740 | 74 | 4.253 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.127 | 1 | 0.127 | 0.030 | 0.863 |
| ERROR | 314.740 | 74 | 4.253 | | |

ANOVA on SQR(21-day Live Embryos)

DEP VAR: SLE21 N: 78 MULTIPLE R: 0.232 SQUARED MULTIPLE R: 0.054

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 18.564 | 3 | 6.188 | 1.405 | 0.248 |
| ERROR | 325.907 | 74 | 4.404 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1.634 | 1 | 1.634 | 0.371 | 0.544 |
| ERROR | 325.907 | 74 | 4.404 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 8.059 | 1 | 8.059 | 1.830 | 0.180 |
| ERROR | 325.907 | 74 | 4.404 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.055 | 1 | 0.055 | 0.012 | 0.912 |
| ERROR | 325.907 | 74 | 4.404 | | |

ANOVA on SQR(Two week Survivors)

DEP VAR: STWOWK N: 78 MULTIPLE R: 0.272 SQUARED MULTIPLE R: 0.074

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 25.140 | 3 | 8.380 | 1.978 | 0.125 |
| ERROR | 313.493 | 74 | 4.236 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 3.785 | 1 | 3.785 | 0.894 | 0.348 |
| ERROR | 313.493 | 74 | 4.236 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 8.084 | 1 | 8.084 | 1.908 | 0.171 |
| ERROR | 313.493 | 74 | 4.236 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.740 | 1 | 0.740 | 0.175 | 0.677 |
| ERROR | 313.493 | 74 | 4.236 | | |

ACETOCHLOR/QUAIL
Sorted by Treatment Levels
ANOVA on EC/EL

DEP VAR: RESP1 N: 75 MULTIPLE R: 0.212 SQUARED MULTIPLE R: 0.045

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 467.020 | 3 | 155.673 | 1.116 | 0.348 |
| ERROR | 9901.283 | 71 | 139.455 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 11.407 | 1 | 11.407 | 0.082 | 0.776 |
| ERROR | 9901.283 | 71 | 139.455 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 266.811 | 1 | 266.811 | 1.913 | 0.171 |
| ERROR | 9901.283 | 71 | 139.455 | | |

Post-hoc contrast of treatment 3 with control.

FOR EFFECT CALLED: TRT

OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| OTHESIS | 16.490 | 1 | 16.490 | 0.118 | 0.732 |
| ERROR | 9901.283 | 71 | 139.455 | | |

03

ANOVA on LE21/VE

DEP VAR: RESP3 N: 72 MULTIPLE R: 0.227 SQUARED MULTIPLE R: 0.051

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 217.650 | 3 | 72.550 | 1.228 | 0.306 |
| ERROR | 4017.857 | 68 | 59.086 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 134.802 | 1 | 134.802 | 2.281 | 0.136 |
| ERROR | 4017.857 | 68 | 59.086 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 3.802 | 1 | 3.802 | 0.064 | 0.801 |
| ERROR | 4017.857 | 68 | 59.086 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 4.958 | 1 | 4.958 | 0.084 | 0.773 |
| ERROR | 4017.857 | 68 | 59.086 | | |

ANOVA on HAT/LE21

DEP VAR: RESP4 N: 73 MULTIPLE R: 0.321 SQUARED MULTIPLE R: 0.103

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 1420.177 | 3 | 473.392 | 2.642 | 0.056 |
| ERROR | 12364.788 | 69 | 179.200 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 565.247 | 1 | 565.247 | 3.154 | 0.080 |
| ERROR | 12364.788 | 69 | 179.200 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 109.991 | 1 | 109.991 | 0.614 | 0.436 |
| ERROR | 12364.788 | 69 | 179.200 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 39.846 | 1 | 39.846 | 0.222 | 0.639 |
| ERROR | 12364.788 | 69 | 179.200 | | |

ANOVA on TWOWK/HAT

DEP VAR: RESP5 N: 72 MULTIPLE R: 0.323 SQUARED MULTIPLE R: 0.104

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 1390.415 | 3 | 463.472 | 2.640 | 0.056 |
| ERROR | 11939.608 | 68 | 175.582 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 30.477 | 1 | 30.477 | 0.174 | 0.678 |
| ERROR | 11939.608 | 68 | 175.582 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 17.769 | 1 | 17.769 | 0.101 | 0.751 |
| ERROR | 11939.608 | 68 | 175.582 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1116.029 | 1 | 1116.029 | 6.356 | 0.014 |
| ERROR | 11939.608 | 68 | 175.582 | | |

ANOVA on HAT/ES

DEP VAR: RESP6 N: 75 MULTIPLE R: 0.179 SQUARED MULTIPLE R: 0.032

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 842.063 | 3 | 280.688 | 0.787 | 0.505 |
| ERROR | 25330.494 | 71 | 356.768 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 104.521 | 1 | 104.521 | 0.293 | 0.590 |
| ERROR | 25330.494 | 71 | 356.768 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 284.529 | 1 | 284.529 | 0.798 | 0.375 |
| ERROR | 25330.494 | 71 | 356.768 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 29.592 | 1 | 29.592 | 0.083 | 0.774 |
| ERROR | 25330.494 | 71 | 356.768 | | |

ACETOCHLOR/QUAIL
Sorted by Treatment Levels
ANOVA on TWOWK/ES

DEP VAR: RESP7 N: 75 MULTIPLE R: 0.248 SQUARED MULTIPLE R: 0.062

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 1699.959 | 3 | 566.653 | 1.555 | 0.208 |
| ERROR | 25865.352 | 71 | 364.301 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 175.077 | 1 | 175.077 | 0.481 | 0.490 |
| ERROR | 25865.352 | 71 | 364.301 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 199.864 | 1 | 199.864 | 0.549 | 0.461 |
| ERROR | 25865.352 | 71 | 364.301 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 610.152 | 1 | 610.152 | 1.675 | 0.200 |
| ERROR | 25865.352 | 71 | 364.301 | | |

QUAIL ACETOCHLOR

ANOVA on hatwt

DEP VAR: HATWT N: 674 MULTIPLE R: 0.353 SQUARED MULTIPLE R: 0.124

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 41.473 | 3 | 13.824 | 31.728 | 0.000 |
| ERROR | 291.927 | 670 | 0.436 | | |

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Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.290 | 1 | 0.290 | 0.666 | 0.415 |
| ERROR | 291.927 | 670 | 0.436 | | |

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Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.205 | 1 | 0.205 | 0.471 | 0.493 |
| ERROR | 291.927 | 670 | 0.436 | | |

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Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 28.160 | 1 | 28.160 | 64.630 | 0.000 |
| ERROR | 291.927 | 670 | 0.436 | | |

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ANOVA on survwt

DEP VAR: SURVWT N: 663 MULTIPLE R: 0.331 SQUARED MULTIPLE R: 0.109

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 916.308 | 3 | 305.436 | 26.971 | 0.000 |
| ERROR | 7462.971 | 659 | 11.325 | | |

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Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.040 | 1 | 0.040 | 0.003 | 0.953 |
| ERROR | 7462.971 | 659 | 11.325 | | |

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Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 12.159 | 1 | 12.159 | 1.074 | 0.300 |
| ERROR | 7462.971 | 659 | 11.325 | | |

---

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 571.955 | 1 | 571.955 | 50.505 | 0.000 |
| ERROR | 7462.971 | 659 | 11.325 | | |

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REPRODUCTION/QUAIL
Sorted by Treatment Levels
ANOVA on thick

DEP VAR: THICK N: 312 MULTIPLE R: 0.201 SQUARED MULTIPLE R: 0.040

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 0.005 | 3 | 0.002 | 4.307 | 0.005 |
| ERROR | 0.114 | 308 | 0.000 | | |

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Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.000 | 1 | 0.000 | 0.153 | 0.696 |
| ERROR | 0.114 | 308 | 0.000 | | |

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Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.000 | 1 | 0.000 | 0.172 | 0.679 |
| ERROR | 0.114 | 308 | 0.000 | | |

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Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 0.004 | 1 | 0.004 | 10.190 | 0.002 |
| ERROR | 0.114 | 308 | 0.000 | | |

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QUAIL (1)

| TRT | PENNO | THICK (eggshell thickness) | HATWT (Day-0 weight) | SURWT (weight at 14 days of age) |
|---|---|---|---|---|
| 1 | 1 | | | |
| 1 | 2 | 0.22 | | |
| 1 | 3 | | | |
| 1 | 4 | | | |
| 1 | 5 | | 7.2 | 29 |
| 1 | 6 | 0.21 | | |
| 1 | 7 | 0.22 | 6.4 | 29 |
| 1 | 8 | 0.18 | 7.22 | 29 |
| 1 | 9 | | | |
| 1 | 10 | | | |
| 1 | 11 | 0.21 | 6.5 | 27 |
| 1 | 12 | | | |
| 1 | 13 | | | |
| 1 | 14 | | 5.8 | 25 |
| 1 | 15 | 0.22 | 6.4 | 27 |
| 1 | 16 | 0.2 | 6.1 | 29 |
| 1 | 17 | 0.2 | 6.3 | 25 |
| 1 | 18 | | | |
| 1 | 19 | | 6.3 | 26 |
| 1 | 20 | 0.15 | | |
| 2 | 1 | | 6.2 | 23 |
| 2 | 2 | | | |
| 2 | 3 | 0.21 | 6 | 28 |
| 2 | 4 | | | |
| 2 | 5 | 0.18 | | |
| 2 | 6 | 0.18 | 7.3 | 31 |
| 2 | 7 | | | |
| 2 | 8 | 0.19 | | |
| 2 | 9 | 0.19 | 6 | 21 |
| 2 | 10 | 0.18 | | |
| 2 | 11 | 0.2 | 6.1 | 27 |
| 2 | 12 | | | |
| 2 | 13 | 0.19 | | |
| 2 | 14 | 0.21 | 7.4 | 30 |
| 2 | 15 | | | |
| 2 | 16 | | | |
| 2 | 17 | | 6 | 24 |
| 2 | 18 | | | |
| 2 | 19 | | | |
| 2 | 20 | | | |
| 3 | 1 | | | |
| 3 | 2 | | | |
| 3 | 3 | | | |
| 3 | 4 | 0.21 | 5.7 | 25 |
| 3 | 5 | | | |
| 3 | 6 | 0.19 | | |
| 3 | 7 | 0.19 | 6.8 | 29 |
| 3 | 8 | 0.22 | 6.6 | 32 |
| 3 | 9 | | | |
| 3 | 10 | 0.18 | 7.2 | 26 |
| 3 | 11 | 0.17 | | |
| 3 | 12 | | | |
| 3 | 13 | | | |
| 3 | 14 | 0.2 | | |
| 3 | 15 | 0.21 | 6.2 | 26 |
| 3 | 16 | 0.18 | | |
| 3 | 17 | 0.19 | 6.8 | 27 |
| 3 | 18 | | | |
| 3 | 19 | 0.2 | 7.5 | 33 |
| 3 | 20 | | | |
| 4 | 1 | 0.21 | | |
| 4 | 2 | 0.12 | | |

(2)

| | | | | |
|---|---|---|---|---|
| 4 | 3 | | 5.9 | 19 |
| 4 | 4 | 0.19 | 5.5 | 24 |
| 4 | 5 | | | |
| 4 | 6 | 0.19 | 5.8 | 23 |
| 4 | 7 | 0.2 | 5 | 23 |
| 4 | 8 | 0.23 | 6.2 | 22 |
| 4 | 9 | | | |
| 4 | 10 | | | |
| 4 | 11 | 0.17 | | |
| 4 | 12 | | | |
| 4 | 13 | 0.2 | 6 | 24 |
| 4 | 14 | 0.16 | 6 | 19 |
| 4 | 15 | 0.19 | 6.4 | 26 |
| 4 | 16 | 0.22 | 6.5 | 25 |
| 4 | 17 | 0.21 | | |
| 4 | 18 | | | |
| 1 | 1 | | | |
| 1 | 2 | 0.2 | 7.2 | 25 |
| 1 | 3 | | | |
| 1 | 4 | | | |
| 1 | 5 | 0.18 | 8 | 29 |
| 1 | 6 | | 5.8 | 23 |
| 1 | 7 | 0.22 | 7.4 | 28 |
| 1 | 8 | 0.19 | 8.5 | 25 |
| 1 | 9 | 0.22 | | |
| 1 | 10 | | 6 | 27 |
| 1 | 11 | | 6.9 | 22 |
| 1 | 12 | | | |
| 1 | 13 | | | |
| 1 | 14 | 0.23 | 6.7 | 26 |
| 1 | 15 | 0.23 | 7.3 | 30 |
| 1 | 16 | 0.22 | 6.8 | 28 |
| 1 | 17 | 0.22 | 6.5 | 25 |
| 1 | 18 | | | |
| 1 | 19 | 0.19 | 6.3 | 26 |
| 1 | 20 | 0.16 | 7.3 | 23 |
| 2 | 1 | 0.18 | 6.9 | 34 |
| 2 | 2 | 0.18 | | |
| 2 | 3 | 0.21 | 7 | 28 |
| 2 | 4 | 0.21 | | |
| 2 | 5 | | 7.5 | 29 |
| 2 | 6 | | 7.8 | 33 |
| 2 | 7 | 0.18 | 7.2 | 21 |
| 2 | 8 | 0.2 | 7.2 | 28 |
| 2 | 9 | 0.21 | 6.5 | 19 |
| 2 | 10 | 0.21 | | |
| 2 | 11 | 0.18 | | |
| 2 | 12 | | 7.2 | 23 |
| 2 | 13 | 0.2 | 7.4 | 31 |
| 2 | 14 | 0.21 | 8.4 | 32 |
| 2 | 15 | | | |
| 2 | 16 | 0.19 | | |
| 2 | 17 | 0.22 | 6.5 | 25 |
| 2 | 18 | | | |
| 2 | 19 | | | |
| 2 | 20 | 0.19 | 7 | 33 |
| 3 | 1 | 0.21 | | |
| 3 | 2 | 0.18 | 7.6 | 29 |
| 3 | 3 | 0.2 | 6 | 26 |
| 3 | 4 | 0.22 | 6.2 | 28 |

| | | | | |
|---|---|---|---|---|
| 3 | 5 | 0.21 | 6.3 | 24 |
| 3 | 6 | | 8.2 | 31 |
| 3 | 7 | 0.18 | 7.7 | 27 |
| 3 | 8 | | 7.6 | 31 |
| 3 | 9 | 0.2 | 6.7 | 25 |
| 3 | 10 | 0.18 | 8.3 | 21 |
| 3 | 11 | 0.18 | | |
| 3 | 12 | 0.19 | | |
| 3 | 13 | 0.21 | 5.8 | 31 |
| 3 | 14 | 0.21 | 7.5 | 27 |
| 3 | 15 | | 6.7 | 23 |
| 3 | 16 | 0.2 | 7.6 | 32 |
| 3 | 17 | 0.2 | 7.1 | 30 |
| 3 | 18 | 0.21 | 6.9 | 28 |
| 3 | 19 | 0.22 | 7.6 | 27 |
| 3 | 20 | | | |
| 4 | 1 | 0.21 | | |
| 4 | 2 | | | |
| 4 | 3 | 0.19 | 5.3 | 19 |
| 4 | 4 | 0.19 | 6.6 | 23 |
| 4 | 5 | | | |
| 4 | 6 | | 6.5 | 24 |
| 4 | 7 | 0.18 | 6 | 21 |
| 4 | 8 | | 6.7 | 22 |
| 4 | 9 | | | |
| 4 | 10 | | 6.1 | 22 |
| 4 | 11 | | | |
| 4 | 12 | 0.17 | | |
| 4 | 13 | 0.22 | 6.4 | 29 |
| 4 | 14 | | 5.9 | |
| 4 | 15 | | 7.1 | 27 |
| 4 | 16 | 0.22 | 6.7 | 22 |
| 4 | 17 | 0.21 | 6.7 | 19 |
| 4 | 18 | 0.2 | | |
| 1 | 1 | | 6.8 | 25 |
| 1 | 2 | 0.2 | 7.1 | 27 |
| 1 | 3 | | | |
| 1 | 4 | 0.19 | | |
| 1 | 5 | 0.18 | 7.9 | 29 |
| 1 | 6 | | 7 | 27 |
| 1 | 7 | 0.22 | 7.5 | 32 |
| 1 | 8 | | 8.1 | 31 |
| 1 | 9 | 0.2 | 5.6 | 21 |
| 1 | 10 | 0.2 | 6.3 | 25 |
| 1 | 11 | 0.23 | 7.1 | 20 |
| 1 | 12 | | | |
| 1 | 13 | 0.18 | | |
| 1 | 14 | | 7 | 25 |
| 1 | 15 | 0.22 | 8.1 | 27 |
| 1 | 16 | 0.22 | 7.4 | 28 |
| 1 | 17 | 0.22 | 6.7 | 29 |
| 1 | 18 | 0.22 | 8.6 | 32 |
| 1 | 19 | 0.2 | 6.8 | 25 |
| 1 | 20 | 0.18 | 7.5 | 24 |
| 2 | 1 | 0.22 | 7 | 27 |
| 2 | 2 | | | |
| 2 | 3 | 0.22 | 7 | 34 |
| 2 | 4 | 0.21 | 6.8 | 27 |
| 2 | 5 | 0.21 | 8 | 26 |
| 2 | 6 | 0.2 | 8.4 | 28 |
| 2 | 7 | | 6.6 | 26 |
| 2 | 8 | 0.19 | 7.2 | 26 |
| 2 | 9 | 0.19 | 6.5 | 19 |
| 2 | 10 | 0.19 | 6.9 | 28 |
| 2 | 11 | 0.21 | 6.6 | 28 |

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| 2 | 13 | 0.2 | 7 | 25 |
| 2 | 14 | 0.23 | 7.9 | 29 |
| 2 | 15 | | | |
| 2 | 16 | 0.21 | | |
| 2 | 17 | 0.23 | 7 | 21 |
| 2 | 18 | | | |
| 2 | 19 | | | |
| 2 | 20 | 0.19 | 7.3 | 25 |
| 3 | 1 | 0.2 | 6.6 | 28 |
| 3 | 2 | 0.18 | 7.3 | 26 |
| 3 | 3 | 0.19 | 6.9 | 24 |
| 3 | 4 | 0.22 | 6.4 | 26 |
| 3 | 5 | 0.21 | 6.7 | 23 |
| 3 | 6 | 0.21 | 7.8 | 29 |
| 3 | 7 | | 7.6 | 25 |
| 3 | 8 | 0.22 | 7.6 | 26 |
| 3 | 9 | 0.22 | 6.7 | 19 |
| 3 | 10 | 0.18 | 8.4 | 27 |
| 3 | 11 | | 6.3 | 20 |
| 3 | 12 | 0.19 | 7.5 | 27 |
| 3 | 13 | 0.19 | 6.3 | 22 |
| 3 | 14 | 0.21 | 7.6 | 28 |
| 3 | 15 | 0.22 | 7 | 26 |
| 3 | 16 | 0.22 | 8 | 29 |
| 3 | 17 | 0.21 | 7.4 | 26 |
| 3 | 18 | 0.2 | 8 | 26 |
| 3 | 19 | 0.21 | 8.1 | 29 |
| 3 | 20 | 0.19 | 6 | 24 |
| 4 | 1 | 0.21 | 6.4 | 22 |
| 4 | 2 | | | |
| 4 | 3 | 0.19 | 5.9 | 21 |
| 4 | 4 | 0.2 | 7.2 | 25 |
| 4 | 5 | | | |
| 4 | 6 | 0.19 | 6.7 | 25 |
| 4 | 7 | 0.18 | 6.2 | 23 |
| 4 | 8 | 0.2 | 7.7 | 27 |
| 4 | 9 | | | |
| 4 | 10 | | | |
| 4 | 11 | 0.14 | | |
| 4 | 12 | 0.18 | 7.4 | 22 |
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| 4 | 14 | 0.17 | 5.8 | |
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| 4 | 17 | 0.21 | 7.7 | 23 |
| 4 | 18 | 0.2 | 6.8 | 10 |
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| 1 | 3 | | | |
| 1 | 4 | 0.19 | 7 | 24 |
| 1 | 5 | 0.18 | 8 | 26 |
| 1 | 6 | | 6.5 | 26 |
| 1 | 7 | 0.23 | 7.5 | 30 |
| 1 | 8 | 0.22 | | |
| 1 | 9 | | 6.7 | 28 |
| 1 | 10 | | 7.5 | 31 |
| 1 | 11 | 0.18 | 7.3 | 25 |
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| 1 | 13 | | | |
| 1 | 14 | 0.22 | 7.3 | 23 |

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| 2 | 6 | 0.2 | 8.4 | 23 |
| 2 | 7 | 0.21 | 7.6 | 22 |
| 2 | 8 | 0.23 | 7.6 | 30 |
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| 2 | 10 | 0.22 | 7.6 | 25 |
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| 2 | 14 | | 7.9 | 27 |
| 2 | 15 | | | |
| 2 | 16 | | 6.6 | 17 |
| 2 | 17 | 0.22 | 7.6 | 24 |
| 2 | 18 | | | |
| 2 | 19 | | | |
| 2 | 20 | | 6.7 | 27 |
| 3 | 1 | 0.22 | 7.4 | 26 |
| 3 | 2 | 0.17 | 7.8 | 25 |
| 3 | 3 | 0.2 | 6.6 | 26 |
| 3 | 4 | 0.21 | 6.7 | 23 |
| 3 | 5 | | 7.1 | 26 |
| 3 | 6 | | 8.2 | 25 |
| 3 | 7 | | 8.1 | 28 |
| 3 | 8 | | 7.4 | 27 |
| 3 | 9 | 0.22 | 7.7 | 21 |
| 3 | 10 | | 7.9 | 24 |
| 3 | 11 | | 5.8 | 19 |
| 3 | 12 | 0.19 | 7.6 | 26 |
| 3 | 13 | 0.19 | 6.2 | 24 |
| 3 | 14 | 0.22 | 7.7 | 25 |
| 3 | 15 | | 7 | 23 |
| 3 | 16 | 0.22 | 8 | 28 |
| 3 | 17 | 0.2 | 7.3 | 24 |
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| 3 | 19 | 0.222 | 8.4 | 27 |
| 3 | 20 | 0.19 | 6.9 | 22 |
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| 4 | 2 | | | |
| 4 | 3 | 0.19 | 6 | 23 |
| 4 | 4 | 0.21 | 6.9 | 23 |
| 4 | 5 | | | |
| 4 | 6 | 0.19 | 6.8 | 25 |
| 4 | 7 | 0.2 | | |
| 4 | 8 | 0.22 | | |
| 4 | 9 | | | |
| 4 | 10 | 0.2 | 6.7 | 23 |
| 4 | 11 | 0.16 | | |
| 4 | 12 | 0.18 | 7.6 | 21 |
| 4 | 13 | 0.21 | 6.7 | 24 |
| 4 | 14 | 0.18 | | |

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| 4 | 15 | 0.19 | 7.2 | 22 |
| 4 | 16 | 0.23 | 6.8 | 21 |
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| 4 | 18 | 0.19 | 6.9 | |
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| 1 | 3 | | | |
| 1 | 4 | 0.18 | | |
| 1 | 5 | 0.17 | 7.8 | 25 |
| 1 | 6 | | 6.4 | 27 |
| 1 | 7 | 0.23 | 7.5 | 32 |
| 1 | 8 | 0.22 | 8.2 | 27 |
| 1 | 9 | 0.21 | 7.2 | 22 |
| 1 | 10 | 0.21 | 7.4 | 27 |
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| 1 | 14 | 0.22 | 7.1 | 25 |
| 1 | 15 | 0.24 | 7.7 | 14 |
| 1 | 16 | | 7.1 | 23 |
| 1 | 17 | 0.21 | 6.8 | 22 |
| 1 | 18 | 0.23 | 8.7 | 31 |
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| 2 | 1 | 0.19 | 7.5 | 29 |
| 2 | 2 | 0.22 | 6.8 | 22 |
| 2 | 3 | 0.22 | 7.2 | 31 |
| 2 | 4 | | 7.8 | 26 |
| 2 | 5 | 0.19 | 8 | 26 |
| 2 | 6 | 0.22 | 8.5 | 25 |
| 2 | 7 | 0.2 | 6.9 | 26 |
| 2 | 8 | 0.19 | 7.2 | 24 |
| 2 | 9 | 0.21 | 7 | 18 |
| 2 | 10 | | | |
| 2 | 11 | 0.22 | 6.7 | 27 |
| 2 | 12 | | 7.2 | 27 |
| 2 | 13 | 0.2 | 7.2 | 25 |
| 2 | 14 | | 7.9 | 27 |
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| 2 | 16 | 0.21 | | |
| 2 | 17 | 0.22 | 7.8 | 25 |
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| 2 | 20 | 0.19 | 7.2 | 31 |
| 3 | 1 | 0.21 | 7.5 | 28 |
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| 3 | 5 | 0.22 | 6.9 | 22 |
| 3 | 6 | 0.21 | 8 | 29 |
| 3 | 7 | | 8 | 27 |
| 3 | 8 | 0.23 | 7.7 | 30 |
| 3 | 9 | 0.23 | 7.4 | 23 |
| 3 | 10 | | 8 | 25 |
| 3 | 11 | | 6.3 | 22 |
| 3 | 12 | 0.2 | 7.2 | 26 |
| 3 | 13 | 0.19 | 6.3 | 20 |
| 3 | 14 | 0.23 | 8 | 26 |
| 3 | 15 | 0.21 | 7.2 | 25 |
| 3 | 16 | 0.2 | 8.1 | 30 |
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| 3 | 18 | 0.2 | 7.8 | 25 |
| 3 | 19 | 0.23 | 8 | 30 |
| 3 | 20 | 0.19 | 6.6 | 23 |
| 4 | 1 | 0.22 | 6.8 | 21 |
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| 4 | 4 | | 6.9 | 23 |
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| 4 | 6 | 0.19 | 6.9 | 26 |
| 4 | 7 | 0.21 | 6.1 | 20 |
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| 4 | 11 | 0.16 | | |
| 4 | 12 | 0.19 | 7.6 | 20 |
| 4 | 13 | 0.21 | 6.7 | 24 |
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| 4 | 15 | 0.2 | 7.1 | 24 |
| 4 | 16 | 0.23 | 6.9 | 26 |
| 4 | 17 | | 7.6 | 26 |
| 4 | 18 | 0.19 | 7.6 | 16 |
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| 1 | 2 | 0.19 | 7.7 | 23 |
| 1 | 3 | | 3 | |
| 1 | 4 | 0.18 | 7.1 | 25 |
| 1 | 5 | 0.17 | 7.9 | 26 |
| 1 | 6 | | 6.2 | 28 |
| 1 | 7 | 0.22 | 7.5 | 32 |
| 1 | 8 | | 8.2 | 26 |
| 1 | 9 | 0.2 | 6.9 | 23 |
| 1 | 10 | 0.2 | 7.4 | 30 |
| 1 | 11 | 0.23 | 7.3 | 23 |
| 1 | 12 | 0.21 | | |
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| 1 | 14 | | 6.9 | 24 |
| 1 | 15 | 0.23 | 7.2 | 24 |
| 1 | 16 | | 7.5 | 27 |
| 1 | 17 | 0.19 | 6.9 | 23 |
| 1 | 18 | 0.22 | 8.2 | 28 |
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| 2 | 1 | | 7.2 | 28 |
| 2 | 2 | | 7.2 | 25 |
| 2 | 3 | 0.22 | 7.3 | 31 |
| 2 | 4 | 0.19 | 7 | 27 |
| 2 | 5 | 0.19 | 8.1 | 26 |
| 2 | 6 | 0.18 | 8.8 | 28 |
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| 2 | 8 | | 7.2 | 20 |
| 2 | 9 | 0.21 | 7 | 20 |
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| 2 | 11 | 0.23 | 6.3 | 29 |
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| 3 | 1 | 0.21 | 7.8 | 26 |
| 3 | 2 | 0.17 | 7.7 | 23 |
| 3 | 3 | 0.19 | 6.6 | 23 |
| 3 | 4 | 0.2 | 6.9 | 24 |

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| 3 | 5 | 0.21 | 7.4 | 27 |
| 3 | 6 | | 8 | 34 |
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| 3 | 8 | 0.21 | 7.2 | 30 |
| 3 | 9 | | 7.2 | 22 |
| 3 | 10 | | 8.5 | 24 |
| 3 | 11 | | | |
| 3 | 12 | 0.21 | 7.7 | 26 |
| 3 | 13 | 0.19 | 6.5 | 23 |
| 3 | 14 | 0.22 | 7.5 | 22 |
| 3 | 15 | 0.21 | 7 | 25 |
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| 3 | 19 | 0.22 | 8.1 | 31 |
| 3 | 20 | | 7.1 | 20 |
| 4 | 1 | 0.2 | 6.5 | 21 |
| 4 | 2 | | | |
| 4 | 3 | 0.19 | 5.7 | 23 |
| 4 | 4 | 0.19 | 6.8 | 25 |
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| 4 | 10 | 0.2 | | |
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| 4 | 13 | 0.19 | 6.3 | 21 |
| 4 | 14 | 0.19 | 6.1 | 20 |
| 4 | 15 | 0.19 | 7.2 | 23 |
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| 1 | 1 | | 7.4 | 28 |

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| 2 | 20 | 6.7 | 29 |
| 3 | 1 | 7.3 | 25 |
| 3 | 2 | 7.8 | 27 |
| 3 | 3 | 6.4 | 25 |
| 3 | 4 | 6.8 | 25 |
| 3 | 5 | 7.3 | 23 |
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| 3 | 9 | 7.2 | 24 |
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| 3 | 15 | 7.6 | 24 |
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| 3 | 18 | 7.6 | 29 |
| 3 | 19 | 8.1 | 31 |
| 3 | 20 | 7 | 21 |
| 4 | 1 | 6.4 | 18 |
| 4 | 2 | | |
| 4 | 3 | 5.5 | 22 |
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| 4 | 5 | 5.4 | 12 |
| 4 | 6 | 6.6 | 24 |
| 4 | 7 | 6.1 | 20 |
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| 4 | 18 | 7.4 | 23 |
| 1 | 1 | 7.8 | 26 |
| 1 | 2 | 7 | 23 |
| 1 | 3 | | |
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| 1 | 5 | 7.6 | 25 |
| 1 | 6 | 6.5 | 25 |
| 1 | 7 | 7.7 | 32 |
| 1 | 8 | 8.1 | 32 |
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| 2 | 1 | 7.1 | 25 |
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| 2 | 3 | 7.5 | 28 |
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| 3 | 20 | 6.7 | 25 |
| 4 | 1 | 6.8 | 19 |
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| 4 | 15 | 7 | 21 |
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| 2 | 11 | 6.7 | 29 |
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| 2 | 13 | 7.1 | 26 |
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| 2 | 16 | 5.7 | 23 |
| 2 | 17 | 8.1 | 26 |
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| 2 | 20 | 7.2 | 32 |
| 3 | 1 | 6.4 | 29 |
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| 3 | 17 | 7.3 | 26 |
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| 4 | 3 | 5.7 | 24 |
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| 4 | 6 | 6.7 | 27 |
| 4 | 7 | 5.7 | 21 |
| 4 | 8 | 6.6 | 25 |
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| 4 | 12 | 7.4 | 26 |
| 4 | 13 | 6.6 | 25 |
| 4 | 14 | 6.5 | |
| 4 | 15 | 7.3 | 25 |
| 4 | 16 | 6.9 | 30 |
| 4 | 17 | 7.3 | 26 |
| 4 | 18 | 7.7 | 30 |
| 1 | 1 | 7.5 | 29 |
| 1 | 2 | 7.5 | 27 |
| 1 | 3 | | |
| 1 | 4 | 6.8 | 25 |
| 1 | 5 | 7.8 | 26 |
| 1 | 6 | | |
| 1 | 7 | 7.6 | 33 |
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| 1 | 10 | 7.5 | 29 |
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| 2 | 6 | 8.2 | 26 |
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| 3 | 20 | 7.1 | 26 |
| 4 | 1 | 6.2 | 18 |
| 4 | 2 | | |
| 4 | 3 | 5.3 | 21 |
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| 4 | 11 | | |
| 4 | 12 | 8 | 27 |
| 4 | 13 | 6.4 | 23 |
| 4 | 14 | 5.5 | 20 |
| 4 | 15 | 6.6 | 23 |
| 4 | 16 | 6.9 | 26 |
| 4 | 17 | 6.8 | 25 |
| 4 | 18 | 7.3 | 25 |
| 1 | 1 | 7.8 | 33 |
| 1 | 2 | 6.8 | 24 |
| 1 | 3 | | |
| 1 | 4 | | |
| 1 | 5 | 7.3 | 25 |
| 1 | 6 | | |
| 1 | 7 | 7.7 | 32 |
| 1 | 8 | 7.9 | 22 |
| 1 | 9 | 6.8 | 23 |
| 1 | 10 | 7.4 | 27 |
| 1 | 11 | 6.7 | 21 |
| 1 | 12 | 6.9 | 26 |
| 1 | 13 | | |
| 1 | 14 | 6.5 | 24 |
| 1 | 15 | 7.1 | 25 |
| 1 | 16 | | |
| 1 | 17 | | |
| 1 | 18 | 7.8 | 28 |
| 1 | 19 | 7.4 | 28 |
| 1 | 20 | 7.7 | 27 |
| 2 | 1 | | |
| 2 | 2 | 6.8 | 30 |
| 2 | 3 | 7 | 29 |
| 2 | 4 | 6.4 | 27 |
| 2 | 5 | | |
| 2 | 6 | | |

| | | | |
|---|---|---|---|
| 2 | 7 | 7 | 26 |
| 2 | 8 | | |
| 2 | 9 | 7.1 | 22 |
| 2 | 10 | | |
| 2 | 11 | | |
| 2 | 12 | | |
| 2 | 13 | 7 | 29 |
| 2 | 14 | | |
| 2 | 15 | | |
| 2 | 16 | 6 | 15 |
| 2 | 17 | 7.8 | 27 |
| 2 | 18 | | |
| 2 | 19 | | |
| 2 | 20 | 7.1 | 27 |
| 3 | 1 | 7.2 | 28 |
| 3 | 2 | 7.4 | 30 |
| 3 | 3 | 6.8 | 29 |
| 3 | 4 | 6.2 | 27 |
| 3 | 5 | 7 | 28 |
| 3 | 6 | | |
| 3 | 7 | | |
| 3 | 8 | 7.1 | 32 |
| 3 | 9 | 7.2 | 24 |
| 3 | 10 | | |
| 3 | 11 | | |
| 3 | 12 | 6.6 | 30 |
| 3 | 13 | 6.6 | 26 |
| 3 | 14 | | |
| 3 | 15 | 7 | 23 |
| 3 | 16 | | |
| 3 | 17 | 7.6 | 31 |
| 3 | 18 | 7.5 | 30 |
| 3 | 19 | 7.6 | 25 |
| 3 | 20 | 6.9 | 25 |
| 4 | 1 | 6.3 | 21 |
| 4 | 2 | | |
| 4 | 3 | 5.4 | 22 |
| 4 | 4 | 6.5 | 29 |
| 4 | 5 | | |
| 4 | 6 | | |
| 4 | 7 | 5.9 | 24 |
| 4 | 8 | 6.3 | 24 |
| 4 | 9 | | |
| 4 | 10 | 6.4 | 24 |
| 4 | 11 | | |
| 4 | 12 | 7.8 | 16 |
| 4 | 13 | 6.7 | 24 |
| 4 | 14 | | |
| 4 | 15 | 7.1 | 23 |
| 4 | 16 | 6.7 | 20 |
| 4 | 17 | 7.6 | 28 |
| 4 | 18 | | |
| 1 | 1 | 8.2 | 28 |
| 1 | 2 | 7.1 | 26 |
| 1 | 3 | | |
| 1 | 4 | 7.5 | 28 |
| 1 | 5 | 7.8 | 29 |
| 1 | 6 | | |
| 1 | 7 | 8.1 | 33 |
| 1 | 8 | 8.7 | 23 |

| | | | |
|---|---|---|---|
| 1 | 9 | 5.8 | 17 |
| 1 | 10 | 7.3 | 24 |
| 1 | 11 | 6.6 | 23 |
| 1 | 12 | | |
| 1 | 13 | | |
| 1 | 14 | 7.2 | 26 |
| 1 | 15 | 7.3 | 24 |
| 1 | 16 | | |
| 1 | 17 | | |
| 1 | 18 | | |
| 1 | 19 | | |
| 1 | 20 | 7.1 | 21 |
| 2 | 1 | | |
| 2 | 2 | | |
| 2 | 3 | 6.8 | 25 |
| 2 | 4 | 6.8 | 26 |
| 2 | 5 | 8.1 | 17 |
| 2 | 6 | 8.8 | 21 |
| 2 | 7 | 7.5 | 26 |
| 2 | 8 | | |
| 2 | 9 | 6.4 | 20 |
| 2 | 10 | | |
| 2 | 11 | | |
| 2 | 12 | | |
| 2 | 13 | 7.1 | 29 |
| 2 | 14 | | |
| 2 | 15 | | |
| 2 | 16 | 6.4 | 19 |
| 2 | 17 | 8.1 | 25 |
| 2 | 18 | | |
| 2 | 19 | | |
| 2 | 20 | | |
| 3 | 1 | 7.7 | 25 |
| 3 | 2 | 7.7 | 28 |
| 3 | 3 | 6.9 | 26 |
| 3 | 4 | 6.1 | 23 |
| 3 | 5 | 7.3 | 28 |
| 3 | 6 | | |
| 3 | 7 | | |
| 3 | 8 | 7.4 | 33 |
| 3 | 9 | | |
| 3 | 10 | | |
| 3 | 11 | | |
| 3 | 12 | 8.3 | 31 |
| 3 | 13 | 6.5 | 27 |
| 3 | 14 | | |
| 3 | 15 | 7.4 | 20 |
| 3 | 16 | | |
| 3 | 17 | 7.7 | 25 |
| 3 | 18 | 7.7 | 27 |
| 3 | 19 | 7.4 | 23 |
| 3 | 20 | 6.2 | |
| 4 | 1 | 6.3 | 22 |
| 4 | 2 | | |
| 4 | 3 | 5.4 | 22 |
| 4 | 4 | 6.8 | 20 |
| 4 | 5 | | |
| 4 | 6 | | |
| 4 | 7 | 6.3 | 26 |
| 4 | 8 | 7.1 | 22 |
| 4 | 9 | | |
| 4 | 10 | 7.2 | 28 |
| 4 | 11 | | |
| 4 | 12 | 7.3 | 20 |
| 4 | 13 | 7 | 26 |
| 4 | 14 | | |

| | | | |
|---|---|---|---|
| 4 | 15 | 6.7 | |
| 4 | 16 | | |
| 4 | 17 | 7.4 | 24 |
| 4 | 18 | | |

16

ANOVA on postwt FEMALES
REPRODUCTION/~~MALLARD~~ QUAIL
Sorted by Treatment Levels

DEP VAR: POSTWT N: 75 MULTIPLE R: 0.537 SQUARED MULTIPLE R: 0.289

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 1952.001 | 3 | 650.667 | 1.246 | 0.300 |
| PREWT | 13665.225 | 1 | 13665.225 | 26.162 | 0.000 |
| ERROR | 36563.255 | 70 | 522.332 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 777.491 | 1 | 777.491 | 1.488 | 0.227 |
| ERROR | 36563.255 | 70 | 522.332 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1375.832 | 1 | 1375.832 | 2.634 | 0.109 |
| ERROR | 36563.255 | 70 | 522.332 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1535.118 | 1 | 1535.118 | 2.939 | 0.091 |
| ERROR | 36563.255 | 70 | 522.332 | | |

ACETOCHLOR - REPRODUCTION - BOBWHITE QUAIL
ADULT FEMALE BODYWEIGHHTS

| TRT LEVEL | PREWEIGHT | POSTWEIGHT |
|---|---|---|
| 1 | 174 | 174 |
| 1 | 195 | 236 |
| 1 | 171 | 203 |
| 1 | 185 | 202 |
| 1 | 203 | 244 |
| 1 | 184 | 190 |
| 1 | 186 | 237 |
| 1 | 175 | 179 |
| 1 | 185 | 205 |
| 1 | 183 | 174 |
| 1 | 173 | 216 |
| 1 | 162 | 170 |
| 1 | 163 | 179 |
| 1 | 169 | 196 |
| 1 | 179 | 200 |
| 1 | 175 | 214 |
| 1 | 215 | 247 |
| 1 | 176 | 196 |
| 1 | 168 | 205 |
| 2 | 204 | 229 |
| 2 | 173 | 180 |
| 2 | 211 | 255 |
| 2 | 202 | 240 |
| 2 | 202 | 223 |
| 2 | 195 | 228 |
| 2 | 177 | 199 |
| 2 | 181 | 182 |
| 2 | 188 | 210 |
| 2 | 186 | 193 |
| 2 | 186 | 222 |
| 2 | 198 | 237 |
| 2 | 192 | 140 |
| 2 | 160 | 136 |
| 2 | 189 | 181 |
| 2 | 181 | 235 |
| 2 | 180 | 174 |
| 2 | 178 | 175 |
| 2 | 198 | 221 |
| 3 | 174 | 216 |
| 3 | 196 | 198 |
| 3 | 180 | 214 |
| 3 | 174 | 184 |
| 3 | 213 | 225 |
| 3 | 197 | 197 |
| 3 | 195 | 183 |
| 3 | 189 | 193 |
| 3 | 189 | 216 |
| 3 | 178 | 130 |

| | | |
|---|---|---|
| 3 | 189 | 210 |
| 3 | 155 | 190 |
| 3 | 180 | 196 |
| 3 | 196 | 224 |
| 3 | 198 | 178 |
| 3 | 171 | 207 |
| 3 | 207 | 209 |
| 3 | 192 | 215 |
| 3 | 174 | 183 |
| 4 | 176 | 209 |
| 4 | 162 | 160 |
| 4 | 176 | 206 |
| 4 | 167 | 198 |
| 4 | 188 | 150 |
| 4 | 183 | 143 |
| 4 | 173 | 175 |
| 4 | 176 | 207 |
| 4 | 189 | 164 |
| 4 | 201 | 201 |
| 4 | 192 | 208 |
| 4 | 196 | 222 |
| 4 | 197 | 199 |
| 4 | 197 | 233 |
| 4 | 180 | 210 |
| 4 | 187 | 216 |
| 4 | 161 | 195 |
| 4 | 194 | 192 |

ANOVA on postwt
REPRODUCTION/MALLARD
Sorted by Treatment Levels

MALES

DEP VAR: POSTWT N: 77 MULTIPLE R: 0.737 SQUARED MULTIPLE R: 0.543

ANALYSIS OF VARIANCE

| SOURCE | SUM-OF-SQUARES | DF | MEAN-SQUARE | F-RATIO | P |
|---|---|---|---|---|---|
| TRT | 107.741 | 3 | 35.914 | 0.245 | 0.864 |
| PREWT | 12249.018 | 1 | 12249.018 | 83.673 | 0.000 |
| ERROR | 10540.241 | 72 | 146.392 | | |

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 1.876 | 1 | 1.876 | 0.013 | 0.910 |
| ERROR | 10540.241 | 72 | 146.392 | | |

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 62.730 | 1 | 62.730 | 0.429 | 0.515 |
| ERROR | 10540.241 | 72 | 146.392 | | |

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

| SOURCE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| HYPOTHESIS | 64.597 | 1 | 64.597 | 0.441 | 0.509 |
| ERROR | 10540.241 | 72 | 146.392 | | |

| | |
|---|---|
| 2 | 408 |
| 2 | 338 |
| 2 | 404 |
| 2 | 331 |
| 2 | 329 |
| 2 | 338 |
| 3 | 402 |
| 3 | 316 |
| 3 | 381 |
| 3 | 330 |
| 3 | 331 |
| 3 | 358 |
| 3 | 426 |
| 3 | 343 |
| 3 | 267 |
| 3 | 347 |
| 3 | 360 |
| 3 | 357 |
| 3 | 357 |
| 3 | 379 |
| 3 | 340 |
| 3 | 388 |
| 3 | 308 |
| 3 | 296 |

ACETOCHLOR - REPRODUCTION - BOBWHITE QUAIL
ADULT MALE BODYWEIGHHTS

| TRT LEVEL | PREWEIGHT | POSTWEIGHT |
|---|---|---|
| 1 | 195 | 200 |
| 1 | 200 | 201 |
| 1 | 190 | 190 |
| 1 | 183 | 204 |
| 1 | 199 | 211 |
| 1 | 195 | 197 |
| 1 | 196 | 223 |
| 1 | 210 | 216 |
| 1 | 190 | 193 |
| 1 | 172 | 165 |
| 1 | 171 | 182 |
| 1 | 202 | 190 |
| 1 | 168 | 187 |
| 1 | 185 | 189 |
| 1 | 173 | 174 |
| 1 | 203 | 216 |
| 1 | 179 | 164 |
| 1 | 199 | 199 |
| 1 | 197 | 196 |
| 1 | 208 | 221 |
| 2 | 191 | 203 |
| 2 | 188 | 189 |
| 2 | 196 | 182 |
| 2 | 171 | 158 |
| 2 | 191 | 197 |
| 2 | 178 | 185 |
| 2 | 191 | 204 |
| 2 | 180 | 171 |
| 2 | 206 | 198 |
| 2 | 189 | 197 |
| 2 | 167 | 170 |
| 2 | 181 | 187 |
| 2 | 188 | 198 |
| 2 | 195 | 212 |
| 2 | 207 | 233 |
| 2 | 173 | 167 |
| 2 | 203 | 205 |
| 2 | 175 | 193 |
| 2 | 196 | 207 |
| 3 | 207 | 211 |
| 3 | 183 | 202 |
| 3 | 211 | 219 |
| 3 | 198 | 204 |
| 3 | 169 | 171 |
| 3 | 216 | 159 |
| 3 | 183 | 195 |
| 3 | 204 | 204 |
| 3 | 181 | 173 |
| 3 | 212 | 214 |

| | | |
|---|---|---|
| 3 | 196 | 215 |
| 3 | 175 | 165 |
| 3 | 194 | 213 |
| 3 | 190 | 190 |
| 3 | 194 | 198 |
| 3 | 191 | 203 |
| 3 | 174 | 172 |
| 3 | 165 | 173 |
| 3 | 176 | 191 |
| 3 | 185 | 185 |
| 4 | 200 | 193 |
| 4 | 192 | 199 |
| 4 | 209 | 213 |
| 4 | 175 | 169 |
| 4 | 206 | 210 |
| 4 | 178 | 179 |
| 4 | 185 | 184 |
| 4 | 192 | 197 |
| 4 | 186 | 188 |
| 4 | 187 | 180 |
| 4 | 186 | 184 |
| 4 | 187 | 204 |
| 4 | 206 | 223 |
| 4 | 199 | 214 |
| 4 | 164 | 176 |
| 4 | 182 | 174 |
| 4 | 166 | 158 |
| 4 | 185 | 186 |

Acetochlor
Bobwhite Quail - Food Consumption

Analysis of Variance File: ACE Date: 10-08-1991

FILTER: None

N's, means and standard deviations based on dependent variable: FOOD

* Indicates statistics are collapsed over this factor

| Factors: T | N | Mean | S.D. |
|---|---|---|---|
| * | 78 | 352.4231 | 36.0092 |
| 1 | 20 | 352.2500 | 29.2770 |
| 2 | 20 | 350.1500 | 40.5843 |
| 3 | 20 | 357.7500 | 36.8394 |
| 4 | 18 | 349.2222 | 38.8217 |

Fmax for testing homogeneity of between subjects variances: 1.92
Number of variances= 4 df per variance= 18.

Analysis of Variance Dependent variable: FOOD

| Source | df | SS (H) | MSS | F | P |
|---|---|---|---|---|---|
| Between Subjects | 77 | 99843.0310 | | | |
| T (TRT) | 3 | 855.8769 | 285.2923 | 0.213 | 0.8879 |
| Subj w Groups | 74 | 98987.1560 | 1337.6643 | | |

Post-hoc tests for factor T (TRT)

| Level | Mean |
|---|---|
| 1 | 352.250 |
| 2 | 350.150 |
| 3 | 357.750 |
| 4 | 349.222 |

| Comparison | Bon-ferroni T-test | Dunnett |
|---|---|---|
| 1 > 2 | | |
| 1 < 3 | | |
| 1 > 4 | | |
| 2 < 3 | | N.A. |
| 2 > 4 | | N.A. |
| 3 > 4 | | N.A. |

For Dunnett's test only the P-values .05 and .01 are possible and only for comparisons with the control mean (level 1).

0 = control
1 = 150 ppm
2 = 300 ppm
3 = 600 ppm

g/bird over the entire 22 weeks

| TRT | |
|---|---|
| 0 | 348 |
| 0 | 343 |
| 0 | 366 |
| 0 | 331 |
| 0 | 376 |
| 0 | 326 |
| 0 | 383 |
| 0 | 378 |
| 0 | 339 |
| 0 | 362 |
| 0 | 339 |
| 0 | 306 |
| 0 | 320 |
| 0 | 358 |
| 0 | 364 |
| 0 | 442 |
| 0 | 355 |
| 0 | 342 |
| 0 | 331 |
| 0 | 336 |
| 1 | 327 |
| 1 | 338 |
| 1 | 383 |
| 1 | 341 |
| 1 | 375 |
| 1 | 325 |
| 1 | 319 |
| 1 | 354 |
| 1 | 354 |
| 1 | 360 |
| 1 | 354 |
| 1 | 284 |
| 1 | 448 |
| 1 | 364 |
| 1 | 302 |
| 1 | 436 |
| 1 | 362 |
| 1 | 319 |
| 1 | 304 |
| 1 | 354 |
| 2 | 398 |
| 2 | 345 |
| 2 | 369 |
| 2 | 305 |
| 2 | 340 |
| 2 | 397 |
| 2 | 330 |
| 2 | 333 |
| 2 | 313 |
| 2 | 357 |
| 2 | 363 |
| 2 | 346 |
| 2 | 360 |
| 2 | 451 |