7-28-95

MRID No. 428344-01

DATA EVALUATION RECORD

1. **CHEMICAL:** Chlorpyrifos. Shaughnessey No. 059101.

2. **TEST MATERIAL:** Chlorpyrifos [o-o-diethyl-o-(3,5,6-trichloro-2-pyridyl)phosphorothioate]; CAS No. 2921-88-2; 99.7% active ingredient.

3. **STUDY TYPE:** 72-5. Fish Full Life-Cycle Toxicity Test. Species Tested: Fathead Minnow (*Pimephales promelas*).

4. **CITATION:** Mayes, M.A., J.T. Weinberg, D.L. Rick, and M.D. Martin. 1993. Chlorpyrifos: A Life-Cycle Toxicity Test with the Fathead Minnow, *Pimephales promelas* Rafinesque. Laboratory Study No. ES-DR-0043-4946-9. Prepared by The Environmental Toxicology and Chemistry Research Laboratory, The Dow Chemical Company, Midland, MI. Submitted by DowElanco, Indianapolis, IN. EPA MRID No. 428344-01.

5. **REVIEWED BY:**

William S. Rabert **Signature:** William S. Rabert
Section 4
Ecological Effects Branch **Date:** July 28, 1995
Environmental Fate and Effects Division (5707C)

6. **APPROVED BY:**

Henry T. Craven, M.S. **Signature:** Henry T. Craven 7/28/95
Supervisor
Ecological Effects Branch **Date:**
Environmental Fate and Effects Division (5707C)

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a full life-cycle toxicity test using freshwater fish. Since the significant effects on growth and hatchability were temporary and were not dose-related, they were not selected as the endpoint for this test. Reduced survival of young in both generations was identified as the most sensitive endpoint. The maximum acceptable toxicant concentration (MATC) for fathead minnows exposed to chlorpyrifos was >568 and <1093 ng/l (geometric mean MATC of 788 ug/l).

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

9. **BACKGROUND:**

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

DATA EVALUATION RECORD

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5. **REVIEWED BY:**

Rosemary Graham Mora, M.S.
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: Rosemary Graham Mora
Date: 1 November 1993

6. **APPROVED BY:**

Pim Kosalwat, Ph.D.
Senior Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: P. Kosalwat
Date: 11/1/93

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

Signature: Henry T. Craven
Date: 7/28/95

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a full life-cycle toxicity test using freshwater fish. The maximum acceptable toxicant concentration (MATC) for fathead minnows exposed to chlorpyrifos was >144 and <300 ng/l (geometric mean MATC of 209 ng/l).

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

9. **BACKGROUND:**

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

59.5

2

11. MATERIALS AND METHODS:

A. Test Animals: Fathead minnow (*Pimephales promelas* Rafinesque) embryos were obtained from in-house cultures. Embryos were obtained from laying substrates which had been placed in the breeding aquaria no more than 24 hours prior to test initiation.

B. Test System: An intermittent-flow proportional diluter system with a 50% dilution factor was used to deliver the test solutions to the test vessels. During the study, the flow rate to each replicate aquarium provided 5 volume changes per day. The test vessels were glass aquaria (46 x 46 x 22 cm), each provided with two larval growth sections (22 x 13 x 22 cm). The grow-out portion of each vessel measured 33 x 46 x 22 cm and was designed to be partitioned into four spawning chambers during the breeding period. Each spawning chamber measured 16 x 13 x 22 cm. The partitions between all sections of each vessel were provided with screens which allowed a free exchange of water throughout the tank. The grow-out section of each vessel was provided with screen-covered drains which maintained the water level at 16.5 cm. The embryo incubation cups were circular cups (6 cm diameter and 3 cm high) with nylon screen bottoms. The cups were suspended in a secondary cylindrical glass incubation chamber supported on glass beads in the larval growth section of the aquaria.

The glass aquaria were positioned in tandem in a one-tier temperature-controlled water bath. Throughout the study, the test system was maintained under cool white fluorescent bulbs with a photoperiod of 16 hours of light/8 hours of darkness with a 15-minute transition between light and dark. Light intensity was 1085 ±62.4 lux.

The dilution water was pumped from the upper Saginaw Bay of Lake Huron and was then limed and flocculated with ferric chloride by the City of Midland Water Treatment Plant. The water was sand and carbon filtered, UV irradiated, and pH-adjusted prior to use.

During the exposure, stock solutions were prepared by adding appropriate amounts of test material to a 1-l volumetric flask and bringing it to volume with acetone.

C. **Dosage:** Two-hundred-thirty-eight-day, flow-through, toxicity test. Five nominal concentrations (63, 125, 250, 500, and 1000 ng/l) were selected for this study. A solvent control (≤0.1 ml acetone/l) and a dilution water control were also included.

D. **Design:** Eighty fathead minnow embryos (≤24 hours old) were divided equally to each of two incubation cups in each of two replicate aquaria per treatment (i.e., 20 embryos/cup, 40 embryos/aquarium). Embryos were first distributed to incubation cups placed in glass dishes containing the dilution water. The cups were then randomly placed in the replicate incubation chambers located in the test vessels.

Embryos were observed daily. Dead embryos and larvae were discarded. Once hatching was complete, all larvae (live, dead, or deformed) were counted. Dead or deformed larvae were subtracted from the total to determine the number of normal larvae. The percentage of embryos hatched and the day to mean hatch were also determined. When hatching was complete, the live larvae, including the deformed individuals, were released into their respective incubation chambers.

On day 25, the larvae were impartially reduced to 25 larvae per replicate and released into the larval grow-out section of the aquaria. At 31 and 61 days of exposure, all fish were photographed for length (to the nearest 1 mm).

On day 61, the juveniles were released into the juvenile grow-out section of the aquaria. Spawning substrate were placed in the aquaria on day 80, after which time the fish were observed for secondary sex characteristics and breeding behavior.

Mortality and sublethal effects were recorded weekly during these phases of the study. The fish were fed live brine shrimp nauplii three times daily on normal work days and once or twice a day on weekends.

On day 105, the grow-out section of each aquarium was partitioned into four spawning cells, each containing a single spawning substrate. One male and two females were placed in each of four spawning cells per replicate. The remaining fish were placed in the larval growth section of the tank and held until day 199.

The spawning substrates were checked daily. For each spawning group, the number of eggs spawned was recorded. Hatching success was determined by observing groups of 25 embryos from each spawning unit. The viability of at least three sets of embryos for 70% of the spawning sets were evaluated. Observations of reproductive effects continued until 88% of the water controls and 75% of all breeding pairs had spawned 5 times. Observations of sublethal effects were made weekly. Mortality was recorded when observed.

The F_1 embryos were observed, selected, and assigned to hatching cups using the same procedure as that followed for F_0 embryos. Eighty F_1 embryos, 40 from a single spawning cell for each replicate, were hatched, and growth and survival observed until 28 days post day to mean hatch of the controls. At termination, the length (to the nearest 1 mm) and weight (to the nearest 0.01 g) of all surviving fish were recorded.

The dissolved oxygen concentration (DO) and pH were measured at least once weekly in all test vessels. Hardness, alkalinity, and conductivity were measured weekly in the water control and the highest test concentration. Temperature was recorded in each test vessel during DO and pH observations and continuously in at least one replicate aquarium.

With the exception of the samples taken on day 0, week 34, and week 35, composite samples of each treatment were analyzed weekly by obtaining 5 ml from each aquarium and combining the two samples in one vial for analysis. On day 0 and week 34, concentrations of chlorpyrifos were determined for each replicate aquarium. All treatments were terminated after week 34 except the 250 ng/l level and the solvent control, which were analyzed by individual aquaria during week 35 before termination of those levels. All samples were analyzed using gas chromatography.

E. **Statistics:** The dilution water control and the solvent control were compared. If no significant difference was detected, then the controls were combined for comparison to the treatments.

All data endpoints, except the proportion variables (mortality and terata), were analyzed for normality using Shapiro-Wilk's test (type I error rate of 0.01). If the data were not normally distributed, attempts to

normalize the data were made by transforming the data (logarithmic, inverse, or square root). The data were then examined for homogeneity of variance using Bartlett's test (type I error rate of 0.01). Due to the small number of replicates, all data, even those not meeting the assumptions of normality or homogeneity of variance, were statistically analyzed using analysis of variance (ANOVA) and Dunnett's test (α=0.05) for comparison of the treatments with the control. Proportion data were arcsine square root transformed prior to analysis.

12. **REPORTED RESULTS:** Mean measured concentrations were 82.6, 143.8, 300.1, 568.3, and 1093.2 ng/l (Table 3, attached).

There was no significant difference in the percentage hatch or the percentage normal at hatch. However, percentage hatch on day 4 at 568 and 1093 ng/l was significantly decreased compared to the solvent control (Table 5, attached). This difference was not evident on day 5. On days 12, 19, and 25, a significant increase in mortality was observed at 1093 ng/l when compared to both the dilution water control and the solvent control (Table 6, attached). No other significant increase in mortality was determined.

There was no significant decrease in F_0 growth after 31 days of exposure. After 61 days of exposure, a significant decrease was demonstrated at 300 ng/l when compared to the solvent control; however, no effect was detected above or below this concentration (Table 7, attached). After 199 days of exposure, there was a significant difference in weights of the non-breeders at 568 ng/l and in the water control when compared to the solvent control (Table 8, attached). "Here again there was no dose-related response and these observations are considered spurious." After 216 days of exposure, there was no significant difference in growth (length and weight) of the breeders when compared to the solvent control (Table 8, attached).

A summary of F_0 mortality data is presented in Table 9, (attached). Sublethal effects were demonstrated by one fish in the two highest test concentrations and in three fish of the dilution water control.

The reproduction data (mean number of spawns, mean number of eggs per spawn per breeding unit, and mean egg production) are summarized in Table 10 (attached). "Examination of these data indicates that the water controls had relatively higher reproductive performance, however, the reproductive

6

data for the acetone controls was consistent with the remainder of the treatment levels and there was no statistically significant treatment-related effects on any of the reproductive parameters analyzed."

For the F_1 generation, there was no significant difference in growth, percentage hatched, or percentage normal at hatch between the controls and treatments (Table 14, attached). Mortality at 1093 ng/l was statistically higher on days 8, 11, 14, 19, 22, 27, and 32 (Table 12, attached).

During the study, DO ranged from 6.1 to 9.0 mg/l, pH from 7.0 to 8.1, and temperature from 24.8 to 25.7°C. The conductivity was 150-250 µmhos/cm. The alkalinity and hardness were 42-77 and 52-88 mg/l as $CaCO_3$, respectively.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** "Evaluation of the results of this study indicate that mortality was the most consistent sensitive toxicity end-point (Table 15, attached). Mortality was increased at the 1093 ng/l treatment level in both the parental and F1 embryo-larval exposures. The no-observed effect concentration (NOEC) was 568 ng/l. Larvae less than 25 days of age were the most susceptible life stage. Statistically significant effects on growth were transient and nonsystematic in nature, and statistically significant effects on reproductive end-points were not observed."

Quality Assurance and Good Laboratory Practice Compliance Statements were included in the report, indicating that the study was conducted in accordance with USEPA Good Laboratory Practice Standards (40 CFR Part 160). The dates and types of quality assurance audits performed were also included in the report.

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

A. **Test Procedure:** The test procedures were generally in accordance with the SEP except for the following:

The recommended study design is 50 embryos/incubation cup, one cup/growth chamber and four replicate growth chambers/treatment. In this test, only two replicate growth chambers were used per treatment level, with two incubation cups/chamber and 20 embryos/cup.

The continuous temperature measurement was not reported.

The hardness of the dilution water (52-88 mg/l as $CaCO_3$) was slightly higher than recommended (40-48 mg/l).

The light intensity used during the test (1025-1252 lux) was greater than recommended by the SEP (10-100 lux).

Control contamination was evident in the sample collected on week 24.

B. **Statistical Analysis:** The reviewer used two computer programs (Toxstat version 3.3 and Systat 5.0), depending on the type of data, to analyze embryo, juvenile, and adult survival, and juvenile and adult growth. Some proportional data were arcsine square root transformed prior to the analyses but, in the case of F_0 survival at day 12, transformation did not improve the homogeneity of variance of the data. Williams' test was used to analyze the hatchability data and most of the survival data. Survival of F_0 larvae at day 12 was analyzed using Steel's Many-One Rank test. As necessary, a two-way ANOVA followed by Bonferroni's multiple comparison test was used to analyze weight and length data.

The percentage of F_1 eggs hatched was calculated by the number of eggs hatched divided by the number of eggs observed for each replicate. Results show that the percentage of F_1 eggs hatched at concentrations $\geq$300 ng/l was significantly less than that of the dilution water control (page 25 of printouts, attached). F_0 survival at day 12 and F_1 survival at day 32 were significantly reduced at the highest test concentration (1093 ng/l) when compared to that of the dilution water control (pages 11 and 17 of printouts, attached).

The reviewer analyzed the length and weight data according to sex. F_0 non-breeder male weights at day 199 were significantly reduced at 1093 ng/l when compared to the solvent control (page 67 of printouts, attached). No significant difference in F_0 lengths at day 31 or 61 was noted between any treatment and the dilution water control (pages 55-58 of printouts, attached). In addition, no significant difference in growth (length and weight) of F_0 breeders and F_0 non-breeder females at test termination was noted between any treatment and either the solvent control or the

6

dilution water control (pages 68-72 of printouts, attached).

The analysis of F_1 larval weights determined that the highest test level was significantly higher than those of the dilution water control and the solvent control (page 89 of printouts, attached). F_1 lengths were not significantly affected at any concentration when compared to the controls (page 90 of printouts, attached).

C. **Discussion/Results:** The analytical results indicate that the concentration of the test material was generally stable throughout the test period. Percentage relative standard deviations by concentration ranged from 17.7 to 31.6%. Although the dilution water control solution appeared to be contaminated during week 24 of the study, the level (33 ng/l) was very close to the limit of quantitation (30 ng/l). The reviewer does not believe that this level of contamination significantly affected the results of this study.

All statistically significant ($P < 0.05$) effects on growth and hatching were temporary and were not dose-related. The only consistent effect was reduced survival of young fry in both the F_0 and F_1 generations at 1093 ng/l.

This study is scientifically sound and meets the guideline requirements for a full life-cycle toxicity test using freshwater fish. The maximum acceptable toxicant concentration (MATC) for fathead minnows exposed to Chlorpyrifos was >568 and <1093 ng/l (geometric mean MATC of 788 ng/l).

D. **Adequacy of the Study:**

(1) Classification: Core.

(2) Rationale: N/A.

(3) Repairability: N/A.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes; 27 July 1995.

9

Page_____ is not included in this copy.

Pages 10 through 19 are not included.

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____ Description of quality control procedures.

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Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORMATION

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.876	6.776	10.696	6.776	1.876
OBSERVED	0	9	8	11	0

Calculated Chi-Square goodness of fit test statistic = 7.7946
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

30

Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 0.387

W = 0.959

Critical W (P = 0.05) (n = 28) = 0.924
Critical W (P = 0.01) (n = 28) = 0.896

Data PASS normality test at P=0.01 level. Continue analysis.

Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORMATION

Hartley test for homogeneity of variance

Calculated H statistic (max Var/min Var) = 7.22
Closest, conservative, Table H statistic = 216.0 (alpha = 0.01)

Used for Table H ==>	R (# groups) =	7,	df (# reps-1) =		3
Actual values ==>	R (# groups) =	7,	df (# avg reps-1) =		3.00

Data PASS homogeneity test. Continue analysis.

NOTE: This test requires equal replicate sizes. If they are unequal but do not differ greatly, the Hartley test may still be used as an approximate test (average df are used).

Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 4.28
Table Chi-square value = 16.81 (alpha = 0.01)
Table Chi-square value = 12.59 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 3.00
Used for Chi-square table value ==> df (#groups-1) = 6

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

23

TITLE: Chlorpyrifos: F0 Hatchability of Fathead minnows
FILE: b:42834401.f0h
TRANSFORM: NO TRANSFORM NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	0.9500	0.9500
1	Control	2	1.0000	1.0000
1	Control	3	0.6500	0.6500
1	Control	4	0.7000	0.7000
2	Solvent Control	1	1.0000	1.0000
2	Solvent Control	2	0.9000	0.9000
2	Solvent Control	3	1.0000	1.0000
2	Solvent Control	4	0.8500	0.8500
3	83 ng/l	1	0.7500	0.7500
3	83 ng/l	2	0.8500	0.8500
3	83 ng/l	3	0.6000	0.6000
3	83 ng/l	4	0.9500	0.9500
4	144 ng/l	1	0.9500	0.9500
4	144 ng/l	2	0.8500	0.8500
4	144 ng/l	3	0.5500	0.5500
4	144 ng/l	4	1.0000	1.0000
5	300 ng/l	1	0.8000	0.8000
5	300 ng/l	2	0.9500	0.9500
5	300 ng/l	3	0.8000	0.8000
5	300 ng/l	4	1.0000	1.0000
6	568 ng/l	1	0.7500	0.7500
6	568 ng/l	2	0.6000	0.6000
6	568 ng/l	3	0.7500	0.7500
6	568 ng/l	4	0.8000	0.8000
7	1093 ng/l	1	0.6000	0.6000
7	1093 ng/l	2	0.5500	0.5500
7	1093 ng/l	3	0.6500	0.6500
7	1093 ng/l	4	0.8000	0.8000

24

Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	4	0.825	0.825	0.881
2	Solvent Control	4	0.938	0.938	0.881
3	83 ng/l	4	0.788	0.788	0.838
4	144 ng/l	4	0.838	0.838	0.838
5	300 ng/l	4	0.887	0.887	0.838
6	568 ng/l	4	0.725	0.725	0.725
7	1093 ng/l	4	0.650	0.650	0.650

Chlorpyrifos: F0 Hatchability of Fathead minnows
File: b:42834401.f0h Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	0.881				
Solvent Control	0.881	0.586		1.72	k= 1, v=21
83 ng/l	0.838	0.130		1.80	k= 2, v=21
144 ng/l	0.838	0.130		1.83	k= 3, v=21
300 ng/l	0.838	0.130		1.84	k= 4, v=21
568 ng/l	0.725	1.041		1.85	k= 5, v=21
1093 ng/l	0.650	1.822		1.85	k= 6, v=21

s = 0.136
Note: df used for table values are approximate when v > 20.

Chlorpyrifos: F0 Larval Survival day 12
File: b:\42834401.f02 Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.876	6.776	10.696	6.776	1.876
OBSERVED	0	4	20	4	0

Calculated Chi-Square goodness of fit test statistic = 14.1197
Table Chi-Square value (alpha = 0.01) = 13.277

Data FAIL normality test. Try another transformation.

Warning - The two homogeneity tests are sensitive to non-normal data and should not be performed.

26

Chlorpyrifos: F0 Larval Survival day 12
File: b:\42834401.f02 Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro Wilks test for normality

D = 0.037

W = 0.831

Critical W (P = 0.05) (n = 28) = 0.924
Critical W (P = 0.01) (n = 28) = 0.896

Data FAIL normality test. Try another transformation.

Warning - The two homogeneity tests are sensitive to non-normal data and should not be performed.

Chlorpyrifos: F0 Larval Survival day 12
File: b:\42834401.f02 Transform: ARC SINE(SQUARE ROOT(Y))

Hartley test for homogeneity of variance
Bartletts test for homogeneity of variance

These two tests can not be performed because at least one group has zero variance.

Data FAIL to meet homogeneity of variance assumption.
Additional transformations are useless.

TITLE: Chlorpyrifos: F0 Larval Survival day 12
FILE: b:\42834401.f02
TRANSFORM: ARC SINE(SQUARE ROOT(Y)) NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	1.0000	1.4588
1	Control	2	1.0000	1.4588
1	Control	3	1.0000	1.4588
1	Control	4	1.0000	1.4588
2	Solvent Control	1	1.0000	1.4588
2	Solvent Control	2	1.0000	1.4588
2	Solvent Control	3	1.0000	1.4588
2	Solvent Control	4	1.0000	1.4588
3	83 ng/l	1	1.0000	1.4588
3	83 ng/l	2	1.0000	1.4588
3	83 ng/l	3	1.0000	1.4588
3	83 ng/l	4	1.0000	1.4588
4	144 ng/l	1	0.9500	1.3453
4	144 ng/l	2	1.0000	1.4588
4	144 ng/l	3	1.0000	1.4588
4	144 ng/l	4	1.0000	1.4588
5	300 ng/l	1	1.0000	1.4588
5	300 ng/l	2	1.0000	1.4588
5	300 ng/l	3	1.0000	1.4588
5	300 ng/l	4	1.0000	1.4588
6	568 ng/l	1	1.0000	1.4588
6	568 ng/l	2	1.0000	1.4588
6	568 ng/l	3	0.9500	1.3453
6	568 ng/l	4	0.9500	1.3453
7	1093 ng/l	1	0.8500	1.1731
7	1093 ng/l	2	0.8000	1.1071
7	1093 ng/l	3	0.9000	1.2490
7	1093 ng/l	4	0.9000	1.2490

Chlorpyrifos: F0 Larval Survival day 12
File: b:\42834401.f02 Transform: ARC SINE(SQUARE ROOT(Y))

STEELS MANY-ONE RANK TEST - Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	RANK SUM	CRIT. VALUE	df	SIG
1	Control	1.459				
2	Solvent Control	1.459	18.00	10.00	4.00	
3	83 ng/l	1.459	18.00	10.00	4.00	
4	144 ng/l	1.430	16.00	10.00	4.00	
5	300 ng/l	1.459	18.00	10.00	4.00	
6	568 ng/l	1.402	14.00	10.00	4.00	
7	1093 ng/l	1.195	10.00	10.00	4.00	*

Critical values use k = 6, are 1 tailed, and alpha = 0.05

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

Chi-square test for normality: actual and expected frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	1.876	6.776	10.696	6.776	1.876
OBSERVED	0	8	14	6	0

Calculated Chi-Square goodness of fit test statistic = 5.0826
Table Chi-Square value (alpha = 0.01) = 13.277

Data PASS normality test. Continue analysis.

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro Wilks test for normality

D = 0.366

W = 0.925

Critical W (P = 0.05) (n = 28) = 0.924
Critical W (P = 0.01) (n = 28) = 0.896

Data PASS normality test at P=0.01 level. Continue analysis.

32

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

Hartley test for homogeneity of variance

Calculated H statistic (max Var/min Var) = 16.94
Closest, conservative, Table H statistic = 216.0 (alpha = 0.01)

Used for Table H ==> R (# groups) = 7, df (# reps-1) = 3
Actual values ==> R (# groups) = 7, df (# avg reps-1) = 3.00

Data PASS homogeneity test. Continue analysis.

NOTE: This test requires equal replicate sizes. If they are unequal but do not differ greatly, the Hartley test may still be used as an approximate test (average df are used).

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

Bartletts test for homogeneity of variance

Calculated B statistic = 11.32
Table Chi-square value = 16.81 (alpha = 0.01)
Table Chi-square value = 12.59 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 3.00
Used for Chi-square table value ==> df (#groups-1) = 6

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

34

TITLE: CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
FILE: 42834401.F1S
TRANSFORM: ARC SINE(SQUARE ROOT(Y)) NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	0.9000	1.2490
1	Control	2	0.9000	1.2490
1	Control	3	0.9500	1.3453
1	Control	4	1.0000	1.4588
2	Solvent Control	1	1.0000	1.4588
2	Solvent Control	2	1.0000	1.4588
2	Solvent Control	3	0.9500	1.3453
2	Solvent Control	4	1.0000	1.4588
3	83 ng/l	1	0.9500	1.3453
3	83 ng/l	2	1.0000	1.4588
3	83 ng/l	3	1.0000	1.4588
3	83 ng/l	4	1.0000	1.4588
4	144 ng/l	1	0.9000	1.2490
4	144 ng/l	2	1.0000	1.4588
4	144 ng/l	3	0.9500	1.3453
4	144 ng/l	4	1.0000	1.4588
5	300 ng/l	1	1.0000	1.4588
5	300 ng/l	2	1.0000	1.4588
5	300 ng/l	3	0.9500	1.3453
5	300 ng/l	4	1.0000	1.4588
6	568 ng/l	1	1.0000	1.4588
6	568 ng/l	2	1.0000	1.4588
6	568 ng/l	3	0.9500	1.3453
6	568 ng/l	4	0.7500	1.0472
7	1093 ng/l	1	0.9000	1.2490
7	1093 ng/l	2	0.4000	0.6847
7	1093 ng/l	3	0.6500	0.9377
7	1093 ng/l	4	0.6000	0.8861

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	4	0.938	1.326	1.399
2	Solvent Control	4	0.988	1.430	1.399
3	83 ng/l	4	0.988	1.430	1.399
4	144 ng/l	4	0.962	1.378	1.399
5	300 ng/l	4	0.988	1.430	1.399
6	568 ng/l	4	0.925	1.328	1.328
7	1093 ng/l	4	0.637	0.939	0.939

CHLORPYRIFOS: F1 LARVAL SURVIVAL AT DAY 32
File: 42834401.F1S Transform: ARC SINE(SQUARE ROOT(Y))

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	1.399				
Solvent Control	1.399	0.786		1.72	k= 1, v=21
83 ng/l	1.399	0.786		1.80	k= 2, v=21
144 ng/l	1.399	0.786		1.83	k= 3, v=21
300 ng/l	1.399	0.786		1.84	k= 4, v=21
568 ng/l	1.328	0.021		1.85	k= 5, v=21
1093 ng/l	0.939	4.134	*	1.85	k= 6, v=21

s = 0.132
Note: df used for table values are approximate when v > 20.

36

Chlorpyrifos: F0 Survival at Day 195
File: 42834401.f0s Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 0.045

W = 0.973

Critical W (P = 0.05) (n = 14) = 0.874
Critical W (P = 0.01) (n = 14) = 0.825

Data PASS normality test at P=0.01 level. Continue analysis.

Chlorpyrifos: F0 Survival at Day 195
File: 42834401.f0s Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 4.35
Table Chi-square value = 16.81 (alpha = 0.01)
Table Chi-square value = 12.59 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 1.00
Used for Chi-square table value ==> df (#groups-1) = 6

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

35

TITLE: Chlorpyrifos: F0 Survival at Day 195
FILE: 42834401.f0s
TRANSFORM: NO TRANSFORMATION NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	0.9600	0.9600
1	Control	2	0.9200	0.9200
2	Solvent Control	1	0.8400	0.8400
2	Solvent Control	2	0.9600	0.9600
3	83 ng/l	1	0.9200	0.9200
3	83 ng/l	2	1.0000	1.0000
4	144 ng/l	1	0.9600	0.9600
4	144 ng/l	2	1.0000	1.0000
5	300 ng/l	1	0.9200	0.9200
5	300 ng/l	2	1.0000	1.0000
6	568 ng/l	1	1.0000	1.0000
6	568 ng/l	2	0.9600	0.9600
7	1093 ng/l	1	1.0000	1.0000
7	1093 ng/l	2	0.7600	0.7600

Chlorpyrifos: F0 Survival at Day 195
File: 42834401.f0s Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	2	0.940	0.940	0.953
2	Solvent Control	2	0.900	0.900	0.953
3	83 ng/l	2	0.960	0.960	0.953
4	144 ng/l	2	0.980	0.980	0.953
5	300 ng/l	2	0.960	0.960	0.953
6	568 ng/l	2	0.980	0.980	0.953
7	1093 ng/l	2	0.880	0.880	0.880

Chlorpyrifos: F0 Survival at Day 195
File: 42834401.f0s Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	0.953				
Solvent Control	0.953	0.167		1.89	k= 1, v= 7
83 ng/l	0.953	0.167		2.00	k= 2, v= 7
144 ng/l	0.953	0.167		2.04	k= 3, v= 7
300 ng/l	0.953	0.167		2.06	k= 4, v= 7
568 ng/l	0.953	0.167		2.07	k= 5, v= 7
1093 ng/l	0.880	0.750		2.08	k= 6, v= 7

s = 0.080
Note: df used for table values are approximate when v > 20.

Chlorpyrifos: Percentage of F1 Eggs Hatched
File: 42834401.f1h Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 0.007

W = 0.985

Critical W (P = 0.05) (n = 14) = 0.874
Critical W (P = 0.01) (n = 14) = 0.825

Data PASS normality test at P=0.01 level. Continue analysis.

Chlorpyrifos: Percentage of F1 Eggs Hatched
File: 42834401.f1h Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 4.59
Table Chi-square value = 16.81 (alpha = 0.01)
Table Chi-square value = 12.59 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 1.00
Used for Chi-square table value ==> df (#groups-1) = 6

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

42

TITLE: Chlorpyrifos: Percentage of F1 Eggs Hatched
FILE: 42834401.f1h
TRANSFORM: NO TRANSFORMATION NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	0.9820	0.9820
1	Control	2	0.9690	0.9690
2	Solvent Control	1	0.9740	0.9740
2	Solvent Control	2	0.9850	0.9850
3	83 ng/l	1	0.9720	0.9720
3	83 ng/l	2	0.9870	0.9870
4	144 ng/l	1	0.8720	0.8720
4	144 ng/l	2	0.9550	0.9550
5	300 ng/l	1	0.8480	0.8480
5	300 ng/l	2	0.9120	0.9120
6	568 ng/l	1	0.9530	0.9530
6	568 ng/l	2	0.9160	0.9160
7	1093 ng/l	1	0.8498	0.8498
7	1093 ng/l	2	0.8900	0.8900

Chlorpyrifos: Percentage of F1 Eggs Hatched
File: 42834401.f1h Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	2	0.976	0.976	0.978
2	Solvent Control	2	0.980	0.980	0.978
3	83 ng/l	2	0.980	0.980	0.978
4	144 ng/l	2	0.914	0.914	0.914
5	300 ng/l	2	0.880	0.880	0.907
6	568 ng/l	2	0.935	0.935	0.907
7	1093 ng/l	2	0.870	0.870	0.870

Chlorpyrifos: Percentage of F1 Eggs Hatched
File: 42834401.f1h Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	0.978				
Solvent Control	0.978	0.083		1.89	k= 1, v= 7
83 ng/l	0.978	0.083		2.00	k= 2, v= 7
144 ng/l	0.914	1.932		2.04	k= 3, v= 7
300 ng/l	0.907	2.127	*	2.06	k= 4, v= 7
568 ng/l	0.907	2.127	*	2.07	k= 5, v= 7
1093 ng/l	0.870	3.290	*	2.08	k= 6, v= 7

s = 0.032
Note: df used for table values are approximate when v > 20.

44

Chlorpyrifos: Total No. of Eggs Laid
File: 42834401.teg Transform: NO TRANSFORMATION

Shapiro Wilks test for normality

D = 24704014.500

W = 0.988

Critical W (P = 0.05) (n = 14) = 0.874
Critical W (P = 0.01) (n = 14) = 0.825

Data PASS normality test at P=0.01 level. Continue analysis.

45

Chlorpyrifos: Total No. of Eggs Laid
File: 42834401.teg Transform: NO TRANSFORMATION

Bartletts test for homogeneity of variance

Calculated B statistic = 5.07
Table Chi-square value = 16.81 (alpha = 0.01)
Table Chi-square value = 12.59 (alpha = 0.05)

Average df used in calculation ==> df (avg n - 1) = 1.00
Used for Chi-square table value ==> df (#groups-1) = 6

Data PASS homogeneity test at 0.01 level. Continue analysis.

NOTE: If groups have unequal replicate sizes the average replicate size is used to calculate the B statistic (see above).

46

TITLE: Chlorpyrifos: Total No. of Eggs Laid
FILE: 42834401.teg
TRANSFORM: NO TRANSFORMATION NUMBER OF GROUPS: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Control	1	6490.0000	6490.0000
1	Control	2	3591.0000	3591.0000
2	Solvent Control	1	1362.0000	1362.0000
2	Solvent Control	2	4104.0000	4104.0000
3	83 ng/l	1	3471.0000	3471.0000
3	83 ng/l	2	2998.0000	2998.0000
4	144 ng/l	1	3180.0000	3180.0000
4	144 ng/l	2	5449.0000	5449.0000
5	300 ng/l	1	2608.0000	2608.0000
5	300 ng/l	2	3554.0000	3554.0000
6	568 ng/l	1	1973.0000	1973.0000
6	568 ng/l	2	2650.0000	2650.0000
7	1093 ng/l	1	1637.0000	1637.0000
7	1093 ng/l	2	6810.0000	6810.0000

47

Chlorpyrifos: Total No. of Eggs Laid
File: 42834401.teg Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	Control	2	5040.500	5040.500	5040.500
2	Solvent Control	2	2733.000	2733.000	3427.333
3	83 ng/l	2	3234.500	3234.500	3427.333
4	144 ng/l	2	4314.500	4314.500	3427.333
5	300 ng/l	2	3081.000	3081.000	3205.333
6	568 ng/l	2	2311.500	2311.500	3205.333
7	1093 ng/l	2	4223.500	4223.500	3205.333

Chlorpyrifos: Total No. of Eggs Laid
File: 42834401.teg Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
Control	5040.500				
Solvent Control	3427.333	0.859		1.89	k= 1, v= 7
83 ng/l	3427.333	0.859		2.00	k= 2, v= 7
144 ng/l	3427.333	0.859		2.04	k= 3, v= 7
300 ng/l	3205.333	0.977		2.06	k= 4, v= 7
568 ng/l	3205.333	0.977		2.07	k= 5, v= 7
1093 ng/l	3205.333	0.977		2.08	k= 6, v= 7

ṡ = 1878.602
Note: df used for table values are approximate when v > 20.

48

Chlorpyrifos : F0 Lengths at 31 Days

TRT 1 = Solvent Control
TRT 2 = Dilution Water Control
TRT 3 = 83 ng/l
TRT 4 = 144 ng/l
TRT 5 = 300 ng/l
TRT 6 = 568 ng/l
TRT 7 = 1093 ng/l

		TRT	REP	LEN
CASE	1	1.0000	1.0000	11.0000
CASE	2	1.0000	1.0000	12.0000
CASE	3	1.0000	1.0000	16.0000
CASE	4	1.0000	1.0000	15.0000
CASE	5	1.0000	1.0000	17.0000
CASE	6	1.0000	1.0000	16.0000
CASE	7	1.0000	1.0000	10.0000
CASE	8	1.0000	1.0000	15.0000
CASE	9	1.0000	1.0000	16.0000
CASE	10	1.0000	1.0000	16.0000
CASE	11	1.0000	1.0000	16.0000
CASE	12	1.0000	1.0000	15.0000
CASE	13	1.0000	1.0000	15.0000
CASE	14	1.0000	1.0000	12.0000
CASE	15	1.0000	1.0000	15.0000
CASE	16	1.0000	1.0000	15.0000
CASE	17	1.0000	1.0000	16.0000
CASE	18	1.0000	1.0000	15.0000
CASE	19	1.0000	1.0000	10.0000
CASE	20	1.0000	1.0000	16.0000
CASE	21	1.0000	1.0000	16.0000
CASE	22	1.0000	1.0000	10.0000
CASE	23	1.0000	1.0000	15.0000
CASE	24	1.0000	1.0000	14.0000
CASE	25	1.0000	2.0000	18.0000
CASE	26	1.0000	2.0000	18.0000
CASE	27	1.0000	2.0000	15.0000
CASE	28	1.0000	2.0000	16.0000
CASE	29	1.0000	2.0000	13.0000
CASE	30	1.0000	2.0000	18.0000
CASE	31	1.0000	2.0000	16.0000
CASE	32	1.0000	2.0000	16.0000
CASE	33	1.0000	2.0000	11.0000
CASE	34	1.0000	2.0000	16.0000
CASE	35	1.0000	2.0000	14.0000
CASE	36	1.0000	2.0000	16.0000
CASE	37	1.0000	2.0000	14.0000
CASE	38	1.0000	2.0000	14.0000
CASE	39	1.0000	2.0000	15.0000
CASE	40	1.0000	2.0000	14.0000
CASE	41	1.0000	2.0000	18.0000
CASE	42	1.0000	2.0000	16.0000
CASE	43	1.0000	2.0000	16.0000
CASE	44	1.0000	2.0000	15.0000
CASE	45	1.0000	2.0000	14.0000
CASE	46	1.0000	2.0000	14.0000
CASE	47	1.0000	2.0000	11.0000
CASE	48	1.0000	2.0000	19.0000
CASE	49	1.0000	2.0000	20.0000
CASE	50	2.0000	1.0000	12.0000
CASE	51	2.0000	1.0000	16.0000
CASE	52	2.0000	1.0000	15.0000
CASE	53	2.0000	1.0000	16.0000
CASE	54	2.0000	1.0000	15.0000
CASE	55	2.0000	1.0000	16.0000
CASE	56	2.0000	1.0000	17.0000
CASE	57	2.0000	1.0000	10.0000
CASE	58	2.0000	1.0000	14.0000
CASE	59	2.0000	1.0000	15.0000
CASE	60	2.0000	1.0000	16.0000
CASE	61	2.0000	1.0000	16.0000

CASE	62	2.0000	1.0000	14.0000
CASE	63	2.0000	1.0000	13.0000
CASE	64	2.0000	1.0000	12.0000
CASE	65	2.0000	1.0000	14.0000
CASE	66	2.0000	1.0000	15.0000
CASE	67	2.0000	1.0000	15.0000
CASE	68	2.0000	1.0000	17.0000
CASE	69	2.0000	1.0000	15.0000
CASE	70	2.0000	1.0000	16.0000
CASE	71	2.0000	1.0000	13.0000
CASE	72	2.0000	1.0000	19.0000
CASE	73	2.0000	1.0000	15.0000
CASE	74	2.0000	2.0000	17.0000
CASE	75	2.0000	2.0000	17.0000
CASE	76	2.0000	2.0000	15.0000
CASE	77	2.0000	2.0000	14.0000
CASE	78	2.0000	2.0000	15.0000
CASE	79	2.0000	2.0000	14.0000
CASE	80	2.0000	2.0000	12.0000
CASE	81	2.0000	2.0000	14.0000
CASE	82	2.0000	2.0000	12.0000
CASE	83	2.0000	2.0000	16.0000
CASE	84	2.0000	2.0000	9.0000
CASE	85	2.0000	2.0000	16.0000
CASE	86	2.0000	2.0000	17.0000
CASE	87	2.0000	2.0000	16.0000
CASE	88	2.0000	2.0000	15.0000
CASE	89	2.0000	2.0000	12.0000
CASE	90	2.0000	2.0000	16.0000
CASE	91	2.0000	2.0000	15.0000
CASE	92	2.0000	2.0000	15.0000
CASE	93	2.0000	2.0000	12.0000
CASE	94	2.0000	2.0000	16.0000
CASE	95	2.0000	2.0000	14.0000
CASE	96	2.0000	2.0000	15.0000
CASE	97	2.0000	2.0000	14.0000
CASE	98	2.0000	2.0000	15.0000
CASE	99	3.0000	1.0000	10.0000
CASE	100	3.0000	1.0000	13.0000
CASE	101	3.0000	1.0000	15.0000
CASE	102	3.0000	1.0000	15.0000
CASE	103	3.0000	1.0000	16.0000
CASE	104	3.0000	1.0000	10.0000
CASE	105	3.0000	1.0000	15.0000
CASE	106	3.0000	1.0000	17.0000
CASE	107	3.0000	1.0000	12.0000
CASE	108	3.0000	1.0000	13.0000
CASE	109	3.0000	1.0000	16.0000
CASE	110	3.0000	1.0000	15.0000
CASE	111	3.0000	1.0000	17.0000
CASE	112	3.0000	1.0000	15.0000
CASE	113	3.0000	1.0000	14.0000
CASE	114	3.0000	1.0000	16.0000
CASE	115	3.0000	1.0000	12.0000
CASE	116	3.0000	1.0000	14.0000
CASE	117	3.0000	1.0000	15.0000
CASE	118	3.0000	1.0000	16.0000
CASE	119	3.0000	1.0000	14.0000
CASE	120	3.0000	1.0000	17.0000
CASE	121	3.0000	1.0000	18.0000
CASE	122	3.0000	1.0000	16.0000
CASE	123	3.0000	2.0000	15.0000
CASE	124	3.0000	2.0000	15.0000
CASE	125	3.0000	2.0000	17.0000
CASE	126	3.0000	2.0000	13.0000
CASE	127	3.0000	2.0000	13.0000
CASE	128	3.0000	2.0000	15.0000
CASE	129	3.0000	2.0000	14.0000
CASE	130	3.0000	2.0000	12.0000
CASE	131	3.0000	2.0000	16.0000
CASE	132	3.0000	2.0000	13.0000
CASE	133	3.0000	2.0000	14.0000

50

CASE	134	3.0000	2.0000	16.0000
CASE	135	3.0000	2.0000	16.0000
CASE	136	3.0000	2.0000	16.0000
CASE	137	3.0000	2.0000	14.0000
CASE	138	3.0000	2.0000	18.0000
CASE	139	3.0000	2.0000	13.0000
CASE	140	3.0000	2.0000	16.0000
CASE	141	3.0000	2.0000	15.0000
CASE	142	3.0000	2.0000	15.0000
CASE	143	3.0000	2.0000	16.0000
CASE	144	3.0000	2.0000	17.0000
CASE	145	3.0000	2.0000	13.0000
CASE	146	3.0000	2.0000	17.0000
CASE	147	3.0000	2.0000	16.0000
CASE	148	3.0000	2.0000	16.0000
CASE	149	3.0000	2.0000	14.0000
CASE	150	4.0000	1.0000	12.0000
CASE	151	4.0000	1.0000	15.0000
CASE	152	4.0000	1.0000	16.0000
CASE	153	4.0000	1.0000	12.0000
CASE	154	4.0000	1.0000	15.0000
CASE	155	4.0000	1.0000	16.0000
CASE	156	4.0000	1.0000	15.0000
CASE	157	4.0000	1.0000	13.0000
CASE	158	4.0000	1.0000	18.0000
CASE	159	4.0000	1.0000	14.0000
CASE	160	4.0000	1.0000	17.0000
CASE	161	4.0000	1.0000	16.0000
CASE	162	4.0000	1.0000	17.0000
CASE	163	4.0000	1.0000	14.0000
CASE	164	4.0000	1.0000	13.0000
CASE	165	4.0000	1.0000	18.0000
CASE	166	4.0000	1.0000	15.0000
CASE	167	4.0000	1.0000	12.0000
CASE	168	4.0000	1.0000	13.0000
CASE	169	4.0000	1.0000	16.0000
CASE	170	4.0000	1.0000	15.0000
CASE	171	4.0000	1.0000	15.0000
CASE	172	4.0000	1.0000	13.0000
CASE	173	4.0000	1.0000	18.0000
CASE	174	4.0000	1.0000	13.0000
CASE	175	4.0000	2.0000	17.0000
CASE	176	4.0000	2.0000	19.0000
CASE	177	4.0000	2.0000	17.0000
CASE	178	4.0000	2.0000	17.0000
CASE	179	4.0000	2.0000	14.0000
CASE	180	4.0000	2.0000	14.0000
CASE	181	4.0000	2.0000	14.0000
CASE	182	4.0000	2.0000	15.0000
CASE	183	4.0000	2.0000	13.0000
CASE	184	4.0000	2.0000	13.0000
CASE	185	4.0000	2.0000	11.0000
CASE	186	4.0000	2.0000	14.0000
CASE	187	4.0000	2.0000	13.0000
CASE	188	4.0000	2.0000	11.0000
CASE	189	4.0000	2.0000	16.0000
CASE	190	4.0000	2.0000	12.0000
CASE	191	4.0000	2.0000	15.0000
CASE	192	4.0000	2.0000	17.0000
CASE	193	4.0000	2.0000	15.0000
CASE	194	4.0000	2.0000	13.0000
CASE	195	4.0000	2.0000	16.0000
CASE	196	4.0000	2.0000	16.0000
CASE	197	4.0000	2.0000	18.0000
CASE	198	4.0000	2.0000	12.0000
CASE	199	4.0000	2.0000	16.0000
CASE	200	5.0000	1.0000	16.0000
CASE	201	5.0000	1.0000	16.0000
CASE	202	5.0000	1.0000	17.0000
CASE	203	5.0000	1.0000	17.0000
CASE	204	5.0000	1.0000	16.0000
CASE	205	5.0000	1.0000	14.0000

CASE	206	5.0000	1.0000	15.0000
CASE	207	5.0000	1.0000	16.0000
CASE	208	5.0000	1.0000	11.0000
CASE	209	5.0000	1.0000	13.0000
CASE	210	5.0000	1.0000	14.0000
CASE	211	5.0000	1.0000	15.0000
CASE	212	5.0000	1.0000	16.0000
CASE	213	5.0000	1.0000	15.0000
CASE	214	5.0000	1.0000	18.0000
CASE	215	5.0000	1.0000	13.0000
CASE	216	5.0000	1.0000	18.0000
CASE	217	5.0000	1.0000	12.0000
CASE	218	5.0000	1.0000	13.0000
CASE	219	5.0000	1.0000	17.0000
CASE	220	5.0000	1.0000	15.0000
CASE	221	5.0000	1.0000	13.0000
CASE	222	5.0000	1.0000	14.0000
CASE	223	5.0000	2.0000	10.0000
CASE	224	5.0000	2.0000	15.0000
CASE	225	5.0000	2.0000	14.0000
CASE	226	5.0000	2.0000	13.0000
CASE	227	5.0000	2.0000	16.0000
CASE	228	5.0000	2.0000	17.0000
CASE	229	5.0000	2.0000	18.0000
CASE	230	5.0000	2.0000	16.0000
CASE	231	5.0000	2.0000	20.0000
CASE	232	5.0000	2.0000	16.0000
CASE	233	5.0000	2.0000	12.0000
CASE	234	5.0000	2.0000	18.0000
CASE	235	5.0000	2.0000	15.0000
CASE	236	5.0000	2.0000	16.0000
CASE	237	5.0000	2.0000	18.0000
CASE	238	5.0000	2.0000	17.0000
CASE	239	5.0000	2.0000	17.0000
CASE	240	5.0000	2.0000	13.0000
CASE	241	5.0000	2.0000	14.0000
CASE	242	5.0000	2.0000	10.0000
CASE	243	5.0000	2.0000	13.0000
CASE	244	5.0000	2.0000	13.0000
CASE	245	5.0000	2.0000	17.0000
CASE	246	5.0000	2.0000	14.0000
CASE	247	5.0000	2.0000	14.0000
CASE	248	6.0000	1.0000	15.0000
CASE	249	6.0000	1.0000	18.0000
CASE	250	6.0000	1.0000	14.0000
CASE	251	6.0000	1.0000	13.0000
CASE	252	6.0000	1.0000	13.0000
CASE	253	6.0000	1.0000	17.0000
CASE	254	6.0000	1.0000	17.0000
CASE	255	6.0000	1.0000	18.0000
CASE	256	6.0000	1.0000	14.0000
CASE	257	6.0000	1.0000	15.0000
CASE	258	6.0000	1.0000	19.0000
CASE	259	6.0000	1.0000	17.0000
CASE	260	6.0000	1.0000	19.0000
CASE	261	6.0000	1.0000	16.0000
CASE	262	6.0000	1.0000	13.0000
CASE	263	6.0000	1.0000	10.0000
CASE	264	6.0000	1.0000	11.0000
CASE	265	6.0000	1.0000	10.0000
CASE	266	6.0000	1.0000	12.0000
CASE	267	6.0000	1.0000	19.0000
CASE	268	6.0000	1.0000	16.0000
CASE	269	6.0000	1.0000	11.0000
CASE	270	6.0000	1.0000	17.0000
CASE	271	6.0000	1.0000	14.0000
CASE	272	6.0000	1.0000	16.0000
CASE	273	6.0000	2.0000	15.0000
CASE	274	6.0000	2.0000	17.0000
CASE	275	6.0000	2.0000	16.0000
CASE	276	6.0000	2.0000	16.0000
CASE	277	6.0000	2.0000	13.0000

52

CASE	278	6.0000	2.0000	15.0000
CASE	279	6.0000	2.0000	18.0000
CASE	280	6.0000	2.0000	11.0000
CASE	281	6.0000	2.0000	12.0000
CASE	282	6.0000	2.0000	19.0000
CASE	283	6.0000	2.0000	14.0000
CASE	284	6.0000	2.0000	14.0000
CASE	285	6.0000	2.0000	17.0000
CASE	286	6.0000	2.0000	16.0000
CASE	287	6.0000	2.0000	11.0000
CASE	288	6.0000	2.0000	14.0000
CASE	289	6.0000	2.0000	13.0000
CASE	290	6.0000	2.0000	15.0000
CASE	291	6.0000	2.0000	19.0000
CASE	292	6.0000	2.0000	11.0000
CASE	293	6.0000	2.0000	18.0000
CASE	294	6.0000	2.0000	13.0000
CASE	295	6.0000	2.0000	16.0000
CASE	296	6.0000	2.0000	13.0000
CASE	297	6.0000	2.0000	15.0000
CASE	298	7.0000	1.0000	18.0000
CASE	299	7.0000	1.0000	13.0000
CASE	300	7.0000	1.0000	13.0000
CASE	301	7.0000	1.0000	16.0000
CASE	302	7.0000	1.0000	14.0000
CASE	303	7.0000	1.0000	15.0000
CASE	304	7.0000	1.0000	12.0000
CASE	305	7.0000	1.0000	9.0000
CASE	306	7.0000	1.0000	13.0000
CASE	307	7.0000	1.0000	12.0000
CASE	308	7.0000	1.0000	17.0000
CASE	309	7.0000	1.0000	19.0000
CASE	310	7.0000	1.0000	18.0000
CASE	311	7.0000	1.0000	10.0000
CASE	312	7.0000	1.0000	12.0000
CASE	313	7.0000	1.0000	18.0000
CASE	314	7.0000	1.0000	14.0000
CASE	315	7.0000	1.0000	8.0000
CASE	316	7.0000	1.0000	19.0000
CASE	317	7.0000	1.0000	19.0000
CASE	318	7.0000	1.0000	18.0000
CASE	319	7.0000	1.0000	11.0000
CASE	320	7.0000	1.0000	13.0000
CASE	321	7.0000	1.0000	15.0000
CASE	322	7.0000	1.0000	16.0000
CASE	323	7.0000	2.0000	18.0000
CASE	324	7.0000	2.0000	13.0000
CASE	325	7.0000	2.0000	17.0000
CASE	326	7.0000	2.0000	18.0000
CASE	327	7.0000	2.0000	15.0000
CASE	328	7.0000	2.0000	11.0000
CASE	329	7.0000	2.0000	17.0000
CASE	330	7.0000	2.0000	17.0000
CASE	331	7.0000	2.0000	17.0000
CASE	332	7.0000	2.0000	16.0000
CASE	333	7.0000	2.0000	16.0000
CASE	334	7.0000	2.0000	20.0000
CASE	335	7.0000	2.0000	18.0000
CASE	336	7.0000	2.0000	15.0000
CASE	337	7.0000	2.0000	17.0000
CASE	338	7.0000	2.0000	16.0000
CASE	339	7.0000	2.0000	15.0000
CASE	340	7.0000	2.0000	14.0000
CASE	341	7.0000	2.0000	13.0000
CASE	342	7.0000	2.0000	16.0000
CASE	343	7.0000	2.0000	13.0000
CASE	344	7.0000	2.0000	11.0000
CASE	345	7.0000	2.0000	17.0000

Chlorpyrifos : F0 Lengths at 31 Days
ANOVA on Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 345 MULTIPLE R: 0.153 SQUARED MULTIPLE R: 0.023

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	5.1343	6	0.8557	0.1671	0.9853
REP	8.6927	1	8.6927	1.6977	0.1935
TRT*REP	27.5237	6	4.5873	0.8959	0.4980
ERROR	1694.8656	331	5.1204		

Post-hoc pairwise comparison of length/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-0.2300	0.0000			
3	-0.0942	0.1358	0.0000		
4	-0.1267	0.1033	-0.0325	0.0000	
5	0.0916	0.3216	0.1858	0.2183	0.0000
6	-0.0067	0.2233	0.0875	0.1200	-0.0983
7	0.1594	0.3894	0.2536	0.2861	0.0678

	6	7
6	0.0000	
7	0.1661	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlorpyrifos : F0 Lengths at 31 Days

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000

TOTAL OBSERVATIONS: 49

	LEN
N OF CASES	49
MINIMUM	10.0000
MAXIMUM	20.0000
MEAN	14.9184
STANDARD DEV	2.2715

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000

TOTAL OBSERVATIONS: 49

	LEN
N OF CASES	49
MINIMUM	9.0000
MAXIMUM	19.0000
MEAN	14.6735
STANDARD DEV	1.8972

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000

TOTAL OBSERVATIONS: 51

	LEN
N OF CASES	51
MINIMUM	10.0000
MAXIMUM	18.0000
MEAN	14.8235
STANDARD DEV	1.8189

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000

TOTAL OBSERVATIONS: 50

	LEN
N OF CASES	50
MINIMUM	11.0000
MAXIMUM	19.0000
MEAN	14.7800
STANDARD DEV	2.0232

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000

TOTAL OBSERVATIONS: 48

	LEN
N OF CASES	48
MINIMUM	10.0000
MAXIMUM	20.0000
MEAN	15.0000
STANDARD DEV	2.2122

55

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000

TOTAL OBSERVATIONS: 50

	LEN
N OF CASES	50
MINIMUM	10.0000
MAXIMUM	19.0000
MEAN	14.9000
STANDARD DEV	2.5892

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000

TOTAL OBSERVATIONS: 48

	LEN
N OF CASES	48
MINIMUM	8.0000
MAXIMUM	20.0000
MEAN	15.0417
STANDARD DEV	2.8655

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 15.9922 DF= 6 PROBABILITY = 0.0138

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	4.7832	6	0.7972	0.1557	0.9878
WITHIN GROUPS	1730.8574	338	5.1209		

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 1.0000

TOTAL OBSERVATIONS: 24

	LEN
N OF CASES	24
MINIMUM	10.0000
MAXIMUM	17.0000
MEAN	14.3333
STANDARD DEV	2.2001

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

	LEN
N OF CASES	25
MINIMUM	11.0000
MAXIMUM	20.0000
MEAN	15.4800
STANDARD DEV	2.2383

56

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THE FOLLOWING RESULTS ARE FOR:
              TRT     =       2.0000
              REP     =       1.0000

TOTAL OBSERVATIONS:     24
                       LEN

  N OF CASES              24
  MINIMUM            10.0000
  MAXIMUM            19.0000
  MEAN               14.8333
  STANDARD DEV        1.9035

THE FOLLOWING RESULTS ARE FOR:
              TRT     =       2.0000
              REP     =       2.0000

TOTAL OBSERVATIONS:     25
                       LEN

  N OF CASES              25
  MINIMUM             9.0000
  MAXIMUM            17.0000
  MEAN               14.5200
  STANDARD DEV        1.9175

THE FOLLOWING RESULTS ARE FOR:
              TRT     =       3.0000
              REP     =       1.0000

TOTAL OBSERVATIONS:     24
                       LEN

  N OF CASES              24
  MINIMUM            10,0000
  MAXIMUM            18.0000
  MEAN               14.6250
  STANDARD DEV        2.1020

THE FOLLOWING RESULTS ARE FOR:
              TRT     =       3.0000
              REP     =       2.0000

TOTAL OBSERVATIONS:     27
                       LEN

  N OF CASES              27
  MINIMUM            12.0000
  MAXIMUM            18.0000
  MEAN               15.0000
  STANDARD DEV        1.5442

THE FOLLOWING RESULTS ARE FOR:
              TRT     =       4.0000
              REP     =       1.0000

TOTAL OBSERVATIONS:     25


                       LEN

  N OF CASES              25
  MINIMUM            12.0000
  MAXIMUM            18.0000
  MEAN               14.8400
  STANDARD DEV        1.9079
```

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	11.0000
MAXIMUM	19.0000
MEAN	14.7200
STANDARD DEV	2.1703

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 1.0000

TOTAL OBSERVATIONS: 23

LEN

N OF CASES	23
MINIMUM	11.0000
MAXIMUM	18.0000
MEAN	14.9565
STANDARD DEV	1.8944

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	10.0000
MAXIMUM	20.0000
MEAN	15.0400
STANDARD DEV	2.5080

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 1.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	10.0000
MAXIMUM	19.0000
MEAN	14.9600
STANDARD DEV	2.8208

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	11.0000
MAXIMUM	19.0000
MEAN	14.8400
STANDARD DEV	2.3923

58

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 1.0000

TOTAL OBSERVATIONS: 25

	LEN
N OF CASES	25
MINIMUM	8.0000
MAXIMUM	19.0000
MEAN	14.4800
STANDARD DEV	3.2547

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 2.0000

TOTAL OBSERVATIONS: 23

	LEN
N OF CASES	23
MINIMUM	11.0000
MAXIMUM	20.0000
MEAN	15.6522
STANDARD DEV	2.2885

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

VARIABLE	N-OF-CASES	MAXDIF	PROBABILITY (2-TAIL)
LEN	345.0000	1.0000	0.0000

59

Chlorpyrifos : F0 Lengths at 61 Days
TRT 1 = Solvent Control

TRT 2 = Dilution Water Control

TRT 3 = 83 ng/l

TRT 4 = 144 ng/l

TRT 5 = 300 ng/l

TRT 6 = 568 ng/l

TRT 7 = 1093 ng/l

		TRT	REP	LEN
CASE	1	1.0000	1.0000	38.0000
CASE	2	1.0000	1.0000	32.0000
CASE	3	1.0000	1.0000	30.0000
CASE	4	1.0000	1.0000	30.0000
CASE	5	1.0000	1.0000	36.0000
CASE	6	1.0000	1.0000	27.0000
CASE	7	1.0000	1.0000	26.0000
CASE	8	1.0000	1.0000	26.0000
CASE	9	1.0000	1.0000	32.0000
CASE	10	1.0000	1.0000	31.0000
CASE	11	1.0000	1.0000	30.0000
CASE	12	1.0000	1.0000	31.0000
CASE	13	1.0000	1.0000	32.0000
CASE	14	1.0000	1.0000	33.0000
CASE	15	1.0000	1.0000	35.0000
CASE	16	1.0000	1.0000	33.0000
CASE	17	1.0000	1.0000	34.0000
CASE	18	1.0000	1.0000	31.0000
CASE	19	1.0000	1.0000	28.0000
CASE	20	1.0000	1.0000	34.0000
CASE	21	1.0000	1.0000	35.0000
CASE	22	1.0000	1.0000	31.0000
CASE	23	1.0000	1.0000	35.0000
CASE	24	1.0000	2.0000	34.0000
CASE	25	1.0000	2.0000	30.0000
CASE	26	1.0000	2.0000	40.0000
CASE	27	1.0000	2.0000	36.0000
CASE	28	1.0000	2.0000	31.0000
CASE	29	1.0000	2.0000	30.0000
CASE	30	1.0000	2.0000	32.0000
CASE	31	1.0000	2.0000	33.0000
CASE	32	1.0000	2.0000	37.0000
CASE	33	1.0000	2.0000	31.0000
CASE	34	1.0000	2.0000	35.0000
CASE	35	1.0000	2.0000	31.0000
CASE	36	1.0000	2.0000	30.0000
CASE	37	1.0000	2.0000	33.0000
CASE	38	1.0000	2.0000	35.0000
CASE	39	1.0000	2.0000	24.0000
CASE	40	1.0000	2.0000	35.0000
CASE	41	1.0000	2.0000	27.0000
CASE	42	1.0000	2.0000	29.0000
CASE	43	1.0000	2.0000	28.0000
CASE	44	1.0000	2.0000	30.0000
CASE	45	1.0000	2.0000	27.0000
CASE	46	1.0000	2.0000	30.0000
CASE	47	1.0000	2.0000	33.0000
CASE	48	1.0000	2.0000	31.0000
CASE	49	2.0000	1.0000	30.0000
CASE	50	2.0000	1.0000	25.0000
CASE	51	2.0000	1.0000	28.0000
CASE	52	2.0000	1.0000	28.0000
CASE	53	2.0000	1.0000	25.0000
CASE	54	2.0000	1.0000	33.0000
CASE	55	2.0000	1.0000	28.0000
CASE	56	2.0000	1.0000	35.0000

60

CASE	57	2.0000	1.0000	27.0000
CASE	58	2.0000	1.0000	32.0000
CASE	59	2.0000	1.0000	26.0000
CASE	60	2.0000	1.0000	26.0000
CASE	61	2.0000	1.0000	24.0000
CASE	62	2.0000	1.0000	20.0000
CASE	63	2.0000	1.0000	30.0000
CASE	64	2.0000	1.0000	28.0000
CASE	65	2.0000	1.0000	27.0000
CASE	66	2.0000	1.0000	26.0000
CASE	67	2.0000	1.0000	27.0000
CASE	68	2.0000	1.0000	27.0000
CASE	69	2.0000	1.0000	27.0000
CASE	70	2.0000	1.0000	27.0000
CASE	71	2.0000	1.0000	30.0000
CASE	72	2.0000	1.0000	24.0000
CASE	73	2.0000	2.0000	34.0000
CASE	74	2.0000	2.0000	30.0000
CASE	75	2.0000	2.0000	35.0000
CASE	76	2.0000	2.0000	32.0000
CASE	77	2.0000	2.0000	31.0000
CASE	78	2.0000	2.0000	34.0000
CASE	79	2.0000	2.0000	38.0000
CASE	80	2.0000	2.0000	30.0000
CASE	81	2.0000	2.0000	31.0000
CASE	82	2.0000	2.0000	32.0000
CASE	83	2.0000	2.0000	33.0000
CASE	84	2.0000	2.0000	30.0000
CASE	85	2.0000	2.0000	16.0000
CASE	86	2.0000	2.0000	30.0000
CASE	87	2.0000	2.0000	30.0000
CASE	88	2.0000	2.0000	28.0000
CASE	89	2.0000	2.0000	27.0000
CASE	90	2.0000	2.0000	18.0000
CASE	91	2.0000	2.0000	29.0000
CASE	92	2.0000	2.0000	24.0000
CASE	93	2.0000	2.0000	29.0000
CASE	94	2.0000	2.0000	22.0000
CASE	95	2.0000	2.0000	28.0000
CASE	96	2.0000	2.0000	24.0000
CASE	97	2.0000	2.0000	33.0000
CASE	98	3.0000	1.0000	34.0000
CASE	99	3.0000	1.0000	37.0000
CASE	100	3.0000	1.0000	33.0000
CASE	101	3.0000	1.0000	30.0000
CASE	102	3.0000	1.0000	36.0000
CASE	103	3.0000	1.0000	23.0000
CASE	104	3.0000	1.0000	34.0000
CASE	105	3.0000	1.0000	34.0000
CASE	106	3.0000	1.0000	31.0000
CASE	107	3.0000	1.0000	28.0000
CASE	108	3.0000	1.0000	31.0000
CASE	109	3.0000	1.0000	30.0000
CASE	110	3.0000	1.0000	36.0000
CASE	111	3.0000	1.0000	30.0000
CASE	112	3.0000	1.0000	23.0000
CASE	113	3.0000	1.0000	34.0000
CASE	114	3.0000	1.0000	29.0000
CASE	115	3.0000	1.0000	32.0000
CASE	116	3.0000	1.0000	29.0000
CASE	117	3.0000	1.0000	36.0000
CASE	118	3.0000	1.0000	29.0000
CASE	119	3.0000	1.0000	30.0000
CASE	120	3.0000	1.0000	29.0000
CASE	121	3.0000	1.0000	27.0000
CASE	122	3.0000	2.0000	31.0000
CASE	123	3.0000	2.0000	27.0000
CASE	124	3.0000	2.0000	32.0000
CASE	125	3.0000	2.0000	31.0000
CASE	126	3.0000	2.0000	32.0000
CASE	127	3.0000	2.0000	30.0000
CASE	128	3.0000	2.0000	29.0000

CASE	129	3.0000	2.0000	31.0000
CASE	130	3.0000	2.0000	26.0000
CASE	131	3.0000	2.0000	30.0000
CASE	132	3.0000	2.0000	30.0000
CASE	133	3.0000	2.0000	28.0000
CASE	134	3.0000	2.0000	32.0000
CASE	135	3.0000	2.0000	30.0000
CASE	136	3.0000	2.0000	28.0000
CASE	137	3.0000	2.0000	23.0000
CASE	138	3.0000	2.0000	31.0000
CASE	139	3.0000	2.0000	35.0000
CASE	140	3.0000	2.0000	28.0000
CASE	141	3.0000	2.0000	22.0000
CASE	142	3.0000	2.0000	29.0000
CASE	143	3.0000	2.0000	33.0000
CASE	144	3.0000	2.0000	31.0000
CASE	145	3.0000	2.0000	29.0000
CASE	146	3.0000	2.0000	29.0000
CASE	147	3.0000	2.0000	31.0000
CASE	148	3.0000	2.0000	30.0000
CASE	149	4.0000	1.0000	33.0000
CASE	150	4.0000	1.0000	37.0000
CASE	151	4.0000	1.0000	30.0000
CASE	152	4.0000	1.0000	32.0000
CASE	153	4.0000	1.0000	33.0000
CASE	154	4.0000	1.0000	31.0000
CASE	155	4.0000	1.0000	25.0000
CASE	156	4.0000	1.0000	25.0000
CASE	157	4.0000	1.0000	27.0000
CASE	158	4.0000	1.0000	32.0000
CASE	159	4.0000	1.0000	33.0000
CASE	160	4.0000	1.0000	33.0000
CASE	161	4.0000	1.0000	30.0000
CASE	162	4.0000	1.0000	32.0000
CASE	163	4.0000	1.0000	34.0000
CASE	164	4.0000	1.0000	30.0000
CASE	165	4.0000	1.0000	26.0000
CASE	166	4.0000	1.0000	32.0000
CASE	167	4.0000	1.0000	32.0000
CASE	168	4.0000	1.0000	28.0000
CASE	169	4.0000	1.0000	29.0000
CASE	170	4.0000	1.0000	27.0000
CASE	171	4.0000	1.0000	32.0000
CASE	172	4.0000	1.0000	36.0000
CASE	173	4.0000	1.0000	28.0000
CASE	174	4.0000	2.0000	38.0000
CASE	175	4.0000	2.0000	33.0000
CASE	176	4.0000	2.0000	32.0000
CASE	177	4.0000	2.0000	29.0000
CASE	178	4.0000	2.0000	28.0000
CASE	179	4.0000	2.0000	27.0000
CASE	180	4.0000	2.0000	33.0000
CASE	181	4.0000	2.0000	25.0000
CASE	182	4.0000	2.0000	28.0000
CASE	183	4.0000	2.0000	31.0000
CASE	184	4.0000	2.0000	28.0000
CASE	185	4.0000	2.0000	28.0000
CASE	186	4.0000	2.0000	30.0000
CASE	187	4.0000	2.0000	30.0000
CASE	188	4.0000	2.0000	29.0000
CASE	189	4.0000	2.0000	32.0000
CASE	190	4.0000	2.0000	32.0000
CASE	191	4.0000	2.0000	30.0000
CASE	192	4.0000	2.0000	23.0000
CASE	193	4.0000	2.0000	31.0000
CASE	194	4.0000	2.0000	32.0000
CASE	195	4.0000	2.0000	29.0000
CASE	196	4.0000	2.0000	37.0000
CASE	197	4.0000	2.0000	25.0000
CASE	198	4.0000	2.0000	28.0000
CASE	199	5.0000	1.0000	35.0000
CASE	200	5.0000	1.0000	29.0000

CASE	201	5.0000	1.0000	26.0000
CASE	202	5.0000	1.0000	32.0000
CASE	203	5.0000	1.0000	28.0000
CASE	204	5.0000	1.0000	29.0000
CASE	205	5.0000	1.0000	23.0000
CASE	206	5.0000	1.0000	33.0000
CASE	207	5.0000	1.0000	35.0000
CASE	208	5.0000	1.0000	28.0000
CASE	209	5.0000	1.0000	30.0000
CASE	210	5.0000	1.0000	28.0000
CASE	211	5.0000	1.0000	29.0000
CASE	212	5.0000	1.0000	31.0000
CASE	213	5.0000	1.0000	26.0000
CASE	214	5.0000	1.0000	30.0000
CASE	215	5.0000	1.0000	28.0000
CASE	216	5.0000	1.0000	32.0000
CASE	217	5.0000	1.0000	28.0000
CASE	218	5.0000	1.0000	33.0000
CASE	219	5.0000	1.0000	30.0000
CASE	220	5.0000	1.0000	30.0000
CASE	221	5.0000	1.0000	31.0000
CASE	222	5.0000	2.0000	30.0000
CASE	223	5.0000	2.0000	28.0000
CASE	224	5.0000	2.0000	28.0000
CASE	225	5.0000	2.0000	24.0000
CASE	226	5.0000	2.0000	32.0000
CASE	227	5.0000	2.0000	29.0000
CASE	228	5.0000	2.0000	25.0000
CASE	229	5.0000	2.0000	30.0000
CASE	230	5.0000	2.0000	26.0000
CASE	231	5.0000	2.0000	36.0000
CASE	232	5.0000	2.0000	26.0000
CASE	233	5.0000	2.0000	32.0000
CASE	234	5.0000	2.0000	26.0000
CASE	235	5.0000	2.0000	29.0000
CASE	236	5.0000	2.0000	33.0000
CASE	237	5.0000	2.0000	29.0000
CASE	238	5.0000	2.0000	25.0000
CASE	239	5.0000	2.0000	31.0000
CASE	240	5.0000	2.0000	32.0000
CASE	241	5.0000	2.0000	30.0000
CASE	242	5.0000	2.0000	30.0000
CASE	243	5.0000	2.0000	32.0000
CASE	244	5.0000	2.0000	28.0000
CASE	245	5.0000	2.0000	28.0000
CASE	246	5.0000	2.0000	29.0000
CASE	247	6.0000	1.0000	27.0000
CASE	248	6.0000	1.0000	34.0000
CASE	249	6.0000	1.0000	34.0000
CASE	250	6.0000	1.0000	27.0000
CASE	251	6.0000	1.0000	24.0000
CASE	252	6.0000	1.0000	31.0000
CASE	253	6.0000	1.0000	35.0000
CASE	254	6.0000	1.0000	26.0000
CASE	255	6.0000	1.0000	37.0000
CASE	256	6.0000	1.0000	34.0000
CASE	257	6.0000	1.0000	23.0000
CASE	258	6.0000	1.0000	32.0000
CASE	259	6.0000	1.0000	31.0000
CASE	260	6.0000	1.0000	27.0000
CASE	261	6.0000	1.0000	25.0000
CASE	262	6.0000	1.0000	32.0000
CASE	263	6.0000	1.0000	28.0000
CASE	264	6.0000	1.0000	30.0000
CASE	265	6.0000	1.0000	29.0000
CASE	266	6.0000	1.0000	21.0000
CASE	267	6.0000	1.0000	31.0000
CASE	268	6.0000	1.0000	30.0000
CASE	269	6.0000	1.0000	34.0000
CASE	270	6.0000	1.0000	32.0000
CASE	271	6.0000	1.0000	31.0000
CASE	272	6.0000	2.0000	29.0000

CASE	273	6.0000	2.0000	34.0000
CASE	274	6.0000	2.0000	39.0000
CASE	275	6.0000	2.0000	35.0000
CASE	276	6.0000	2.0000	31.0000
CASE	277	6.0000	2.0000	34.0000
CASE	278	6.0000	2.0000	30.0000
CASE	279	6.0000	2.0000	31.0000
CASE	280	6.0000	2.0000	31.0000
CASE	281	6.0000	2.0000	26.0000
CASE	282	6.0000	2.0000	22.0000
CASE	283	6.0000	2.0000	34.0000
CASE	284	6.0000	2.0000	27.0000
CASE	285	6.0000	2.0000	29.0000
CASE	286	6.0000	2.0000	28.0000
CASE	287	6.0000	2.0000	31.0000
CASE	288	6.0000	2.0000	31.0000
CASE	289	6.0000	2.0000	29.0000
CASE	290	6.0000	2.0000	37.0000
CASE	291	6.0000	2.0000	31.0000
CASE	292	6.0000	2.0000	28.0000
CASE	293	6.0000	2.0000	27.0000
CASE	294	6.0000	2.0000	32.0000
CASE	295	6.0000	2.0000	30.0000
CASE	296	6.0000	2.0000	33.0000
CASE	297	7.0000	1.0000	15.0000
CASE	298	7.0000	1.0000	36.0000
CASE	299	7.0000	1.0000	30.0000
CASE	300	7.0000	1.0000	39.0000
CASE	301	7.0000	1.0000	25.0000
CASE	302	7.0000	1.0000	28.0000
CASE	303	7.0000	1.0000	32.0000
CASE	304	7.0000	1.0000	21.0000
CASE	305	7.0000	1.0000	40.0000
CASE	306	7.0000	1.0000	35.0000
CASE	307	7.0000	1.0000	27.0000
CASE	308	7.0000	1.0000	23.0000
CASE	309	7.0000	1.0000	26.0000
CASE	310	7.0000	1.0000	26.0000
CASE	311	7.0000	1.0000	27.0000
CASE	312	7.0000	1.0000	35.0000
CASE	313	7.0000	1.0000	35.0000
CASE	314	7.0000	1.0000	29.0000
CASE	315	7.0000	1.0000	26.0000
CASE	316	7.0000	1.0000	31.0000
CASE	317	7.0000	1.0000	39.0000
CASE	318	7.0000	1.0000	37.0000
CASE	319	7.0000	1.0000	24.0000
CASE	320	7.0000	1.0000	27.0000
CASE	321	7.0000	1.0000	31.0000
CASE	322	7.0000	2.0000	25.0000
CASE	323	7.0000	2.0000	33.0000
CASE	324	7.0000	2.0000	32.0000
CASE	325	7.0000	2.0000	38.0000
CASE	326	7.0000	2.0000	31.0000
CASE	327	7.0000	2.0000	26.0000
CASE	328	7.0000	2.0000	34.0000
CASE	329	7.0000	2.0000	29.0000
CASE	330	7.0000	2.0000	34.0000
CASE	331	7.0000	2.0000	29.0000
CASE	332	7.0000	2.0000	36.0000
CASE	333	7.0000	2.0000	33.0000
CASE	334	7.0000	2.0000	37.0000
CASE	335	7.0000	2.0000	27.0000
CASE	336	7.0000	2.0000	23.0000
CASE	337	7.0000	2.0000	22.0000
CASE	338	7.0000	2.0000	31.0000
CASE	339	7.0000	2.0000	29.0000
CASE	340	7.0000	2.0000	24.0000
CASE	341	7.0000	2.0000	39.0000
CASE	342	7.0000	2.0000	32.0000
CASE	343	7.0000	2.0000	37.0000
CASE	344	7.0000	2.0000	29.0000

Chlorpyrifos : F0 Lengths at 61 Days

ANOVA on Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 344 MULTIPLE R: 0.275 SQUARED MULTIPLE R: 0.076
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	310.4148	6	51.7358	3.4489	0.0026
REP	1.0258	1	1.0258	0.0684	0.7939
TRT*REP	97.4532	6	16.2422	1.0828	0.3724
ERROR	4950.2233	330	15.0007		

Post-hoc pairwise comparison of length/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-3.3996	0.0000			
3	-1.4110	1.9886	0.0000		
4	-1.4096	1.9900	0.0014	0.0000	
5	-2.2800	1.1196	-0.8690	-0.8704	0.0000
6	-1.4296	1.9700	-0.0186	-0.0200	0.8504
7	-1.3948	2.0048	0.0162	0.0148	0.8852

	6	7
6	0.0000	
7	0.0348	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	0.0004	1.0000			
3	1.0000	0.2264	1.0000		
4	1.0000	0.2319	1.0000	1.0000	
5	0.0886	1.0000	1.0000	1.0000	1.0000
6	1.0000	0.2493	1.0000	1.0000	1.0000
7	1.0000	0.2374	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlorpyrifos : F0 Lengths at 61 Days

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000

TOTAL OBSERVATIONS: 48

	LEN
N OF CASES	48
MINIMUM	24.0000
MAXIMUM	40.0000
MEAN	31.7083
STANDARD DEV	3.3131

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000

TOTAL OBSERVATIONS: 49

	LEN
N OF CASES	49
MINIMUM	16.0000
MAXIMUM	38.0000
MEAN	28.3265
STANDARD DEV	4.2933

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000

TOTAL OBSERVATIONS: 51

	LEN
N OF CASES	51
MINIMUM	22.0000
MAXIMUM	37.0000
MEAN	30.2549
STANDARD DEV	3.3277

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000

TOTAL OBSERVATIONS: 50

	LEN
N OF CASES	50
MINIMUM	23.0000
MAXIMUM	38.0000
MEAN	30.3000
STANDARD DEV	3.2904

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000

TOTAL OBSERVATIONS: 48

	LEN
N OF CASES	48
MINIMUM	23.0000
MAXIMUM	36.0000
MEAN	29.4167
STANDARD DEV	2.8497

66

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000

TOTAL OBSERVATIONS: 50

	LEN
N OF CASES	50
MINIMUM	21.0000
MAXIMUM	39.0000
MEAN	30.2800
STANDARD DEV	3.8335

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000

TOTAL OBSERVATIONS: 48

	LEN
N OF CASES	48
MINIMUM	15.0000
MAXIMUM	40.0000
MEAN	30.2917
STANDARD DEV	5.5772

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 30.8283 DF= 6 PROBABILITY = 0.0000

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	307.1791	6	51.1965	3.4175	0.0027
WITHIN GROUPS	5048.5418	337	14.9808		

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 1.0000

TOTAL OBSERVATIONS: 23

	LEN
N OF CASES	23
MINIMUM	26.0000
MAXIMUM	38.0000
MEAN	31.7391
STANDARD DEV	3.1365

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

	LEN
N OF CASES	25
MINIMUM	24.0000
MAXIMUM	40.0000
MEAN	31.6800
STANDARD DEV	3.5322

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 1.0000

TOTAL OBSERVATIONS: 24

LEN

N OF CASES	24
MINIMUM	20.0000
MAXIMUM	35.0000
MEAN	27.5000
STANDARD DEV	3.1485

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	16.0000
MAXIMUM	38.0000
MEAN	29.1200
STANDARD DEV	5.1016

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 1.0000

TOTAL OBSERVATIONS: 24

LEN

N OF CASES	24
MINIMUM	23.0000
MAXIMUM	37.0000
MEAN	31.0417
STANDARD DEV	3.7588

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 2.0000

TOTAL OBSERVATIONS: 27

LEN

N OF CASES	27
MINIMUM	22.0000
MAXIMUM	35.0000
MEAN	29.5556
STANDARD DEV	2.7781

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 1.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	25.0000
MAXIMUM	37.0000
MEAN	30.6800
STANDARD DEV	3.1849

64

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	23.0000
MAXIMUM	38.0000
MEAN	29.9200
STANDARD DEV	3.4147

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 1.0000

TOTAL OBSERVATIONS: 23

LEN

N OF CASES	23
MINIMUM	23.0000
MAXIMUM	35.0000
MEAN	29.7391
STANDARD DEV	2.8638

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	24.0000
MAXIMUM	36.0000
MEAN	29.1200
STANDARD DEV	2.8624

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 1.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	21.0000
MAXIMUM	37.0000
MEAN	29.8000
STANDARD DEV	4.0415

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 2.0000

TOTAL OBSERVATIONS: 25

LEN

N OF CASES	25
MINIMUM	22.0000
MAXIMUM	39.0000
MEAN	30.7600
STANDARD DEV	3.6318

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 1.0000

TOTAL OBSERVATIONS: 25

	LEN
N OF CASES	25
MINIMUM	15.0000
MAXIMUM	40.0000
MEAN	29.7600
STANDARD DEV	6.2000

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 2.0000

TOTAL OBSERVATIONS: 23

	LEN
N OF CASES	23
MINIMUM	22.0000
MAXIMUM	39.0000
MEAN	30.8696
STANDARD DEV	4.8832

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 39.5582 DF= 13 PROBABILITY = 0.0002

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	405.4977	13	31.1921	2.0794	0.0150
WITHIN GROUPS	4950.2233	330	15.0007		

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

VARIABLE	N-OF-CASES	MAXDIF	PROBABILITY (2-TAIL)
LEN	344.0000	1.0000	0.0000

Chlopyrifos :
FO BREEDERS at DAY 216

TRT 1 = Solvent Control

TRT 2 = Dilution Water Control

TRT 3 = 83 ng/l

TRT 4 = 144 ng/l

TRT 5 = 300 ng/l

TRT 6 = 568 ng/l

TRT 7 = 1093 ng/l

		TRT	REP	SEX	WT	LEN
CASE	1	1.0000	1.0000	1.0000	4.1900	57.0000
CASE	2	1.0000	1.0000	1.0000	5.4400	62.0000
CASE	3	1.0000	1.0000	1.0000	3.0800	50.0000
CASE	4	1.0000	1.0000	1.0000	3.4800	55.0000
CASE	5	1.0000	1.0000	2.0000	1.9600	48.0000
CASE	6	1.0000	1.0000	2.0000	1.8000	48.0000
CASE	7	1.0000	1.0000	2.0000	1.5500	45.0000
CASE	8	1.0000	1.0000	2.0000	2.3200	50.0000
CASE	9	1.0000	1.0000	2.0000	1.4600	42.0000
CASE	10	1.0000	1.0000	2.0000	1.7200	46.0000
CASE	11	1.0000	1.0000	2.0000	1.7500	45.0000
CASE	12	1.0000	1.0000	2.0000	1.8600	47.0000
CASE	13	1.0000	2.0000	1.0000	4.6800	61.0000
CASE	14	1.0000	2.0000	1.0000	4.1200	55.0000
CASE	15	1.0000	2.0000	1.0000	5.2400	62.0000
CASE	16	1.0000	2.0000	1.0000	3.8600	58.0000
CASE	17	1.0000	2.0000	2.0000	4.7200	59.0000
CASE	18	1.0000	2.0000	2.0000	2.2500	46.0000
CASE	19	1.0000	2.0000	2.0000	1.8400	45.0000
CASE	20	1.0000	2.0000	2.0000	1.7400	45.0000
CASE	21	1.0000	2.0000	2.0000	2.0200	46.0000
CASE	22	1.0000	2.0000	2.0000	1.5800	42.0000
CASE	23	1.0000	2.0000	2.0000	1.8000	46.0000
CASE	24	1.0000	2.0000	2.0000	1.8000	45.0000
CASE	25	2.0000	1.0000	1.0000	2.9500	49.0000
CASE	26	2.0000	1.0000	1.0000	4.8300	61.0000
CASE	27	2.0000	1.0000	1.0000	4.9100	61.0000
CASE	28	2.0000	1.0000	1.0000	4.4600	58.0000
CASE	29	2.0000	1.0000	2.0000	2.0300	44.0000
CASE	30	2.0000	1.0000	2.0000	2.0100	45.0000
CASE	31	2.0000	1.0000	2.0000	1.9200	44.0000
CASE	32	2.0000	1.0000	2.0000	1.5100	42.0000
CASE	33	2.0000	1.0000	2.0000	1.8500	45.0000
CASE	34	2.0000	1.0000	2.0000	2.2700	50.0000
CASE	35	2.0000	1.0000	2.0000	2.0100	44.0000
CASE	36	2.0000	1.0000	2.0000	1.6200	42.0000
CASE	37	2.0000	2.0000	1.0000	4.4600	55.0000
CASE	38	2.0000	2.0000	1.0000	5.1400	57.0000
CASE	39	2.0000	2.0000	1.0000	4.3200	54.0000
CASE	40	2.0000	2.0000	1.0000	3.6000	56.0000
CASE	41	2.0000	2.0000	2.0000	1.1500	38.0000
CASE	42	2.0000	2.0000	2.0000	1.4300	43.0000
CASE	43	2.0000	2.0000	2.0000	1.9500	46.0000
CASE	44	2.0000	2.0000	2.0000	1.7400	45.0000
CASE	45	2.0000	2.0000	2.0000	2.4700	47.0000
CASE	46	2.0000	2.0000	2.0000	2.2700	46.0000
CASE	47	2.0000	2.0000	2.0000	2.1900	45.0000
CASE	48	3.0000	1.0000	1.0000	4.1500	55.0000
CASE	49	3.0000	1.0000	1.0000	3.6800	57.0000
CASE	50	3.0000	1.0000	1.0000	3.3800	52.0000
CASE	51	3.0000	1.0000	1.0000	3.7800	52.0000
CASE	52	3.0000	1.0000	2.0000	1.4400	41.0000
CASE	53	3.0000	1.0000	2.0000	2.5400	46.0000

CASE	54	3.0000	1.0000	2.0000	1.9000	47.0000
CASE	55	3.0000	1.0000	2.0000	2.3300	51.0000
CASE	56	3.0000	1.0000	2.0000	2.4000	51.0000
CASE	57	3.0000	1.0000	2.0000	1.5200	44.0000
CASE	58	3.0000	1.0000	2.0000	1.6000	43.0000
CASE	59	3.0000	1.0000	2.0000	1.8500	42.0000
CASE	60	3.0000	2.0000	1.0000	4.8500	55.0000
CASE	61	3.0000	2.0000	1.0000	4.5500	58.0000
CASE	62	3.0000	2.0000	1.0000	4.6200	58.0000
CASE	63	3.0000	2.0000	1.0000	3.6200	54.0000
CASE	64	3.0000	2.0000	2.0000	1.7700	43.0000
CASE	65	3.0000	2.0000	2.0000	1.8900	45.0000
CASE	66	3.0000	2.0000	2.0000	1.8700	43.0000
CASE	67	3.0000	2.0000	2.0000	1.9100	42.0000
CASE	68	3.0000	2.0000	2.0000	1.7800	43.0000
CASE	69	3.0000	2.0000	2.0000	2.2500	46.0000
CASE	70	3.0000	2.0000	2.0000	1.9200	45.0000
CASE	71	3.0000	2.0000	2.0000	1.9400	48.0000
CASE	72	4.0000	1.0000	1.0000	4.3500	56.0000
CASE	73	4.0000	1.0000	1.0000	4.2700	55.0000
CASE	74	4.0000	1.0000	1.0000	4.1100	55.0000
CASE	75	4.0000	1.0000	1.0000	4.4300	57.0000
CASE	76	4.0000	1.0000	2.0000	2.2200	45.0000
CASE	77	4.0000	1.0000	2.0000	1.5400	44.0000
CASE	78	4.0000	1.0000	2.0000	1.8200	45.0000
CASE	79	4.0000	1.0000	2.0000	1.6500	43.0000
CASE	80	4.0000	1.0000	2.0000	1.8500	45.0000
CASE	81	4.0000	1.0000	2.0000	1.9900	44.0000
CASE	82	4.0000	1.0000	2.0000	1.9200	45.0000
CASE	83	4.0000	1.0000	2.0000	1.8000	45.0000
CASE	84	4.0000	2.0000	1.0000	4.1600	53.0000
CASE	85	4.0000	2.0000	1.0000	5.1400	57.0000
CASE	86	4.0000	2.0000	1.0000	4.8600	55.0000
CASE	87	4.0000	2.0000	1.0000	4.6900	60.0000
CASE	88	4.0000	2.0000	2.0000	3.2300	55.0000
CASE	89	4.0000	2.0000	2.0000	1.9000	45.0000
CASE	90	4.0000	2.0000	2.0000	2.0100	46.0000
CASE	91	4.0000	2.0000	2.0000	1.8500	43.0000
CASE	92	4.0000	2.0000	2.0000	1.8200	44.0000
CASE	93	4.0000	2.0000	2.0000	1.7500	45.0000
CASE	94	4.0000	2.0000	2.0000	1.6300	42.0000
CASE	95	4.0000	2.0000	2.0000	2.2100	46.0000
CASE	96	5.0000	1.0000	1.0000	5.0400	56.0000
CASE	97	5.0000	1.0000	1.0000	4.2600	56.0000
CASE	98	5.0000	1.0000	1.0000	4.8000	59.0000
CASE	99	5.0000	1.0000	1.0000	4.1000	55.0000
CASE	100	5.0000	1.0000	1.0000	2.7300	50.0000
CASE	101	5.0000	1.0000	2.0000	1.8800	48.0000
CASE	102	5.0000	1.0000	2.0000	1.7300	43.0000
CASE	103	5.0000	1.0000	2.0000	2.1110	45.0000
CASE	104	5.0000	1.0000	2.0000	1.3000	43.0000
CASE	105	5.0000	1.0000	2.0000	2.0200	45.0000
CASE	106	5.0000	1.0000	2.0000	1.6100	42.0000
CASE	107	5.0000	1.0000	2.0000	1.9900	47.0000
CASE	108	5.0000	2.0000	1.0000	3.7600	52.0000
CASE	109	5.0000	2.0000	1.0000	5.0100	59.0000
CASE	110	5.0000	2.0000	1.0000	4.1600	58.0000
CASE	111	5.0000	2.0000	1.0000	4.7000	55.0000
CASE	112	5.0000	2.0000	1.0000	4.6100	47.0000
CASE	113	5.0000	2.0000	2.0000	2.0700	48.0000
CASE	114	5.0000	2.0000	2.0000	1.8700	46.0000
CASE	115	5.0000	2.0000	2.0000	2.0700	49.0000
CASE	116	5.0000	2.0000	2.0000	2.0700	46.0000
CASE	117	5.0000	2.0000	2.0000	1.7200	43.0000
CASE	118	5.0000	2.0000	2.0000	1.3500	41.0000
CASE	119	5.0000	2.0000	2.0000	1.7100	44.0000
CASE	120	6.0000	1.0000	1.0000	4.8600	58.0000
CASE	121	6.0000	1.0000	1.0000	4.2100	58.0000
CASE	122	6.0000	1.0000	1.0000	5.4900	61.0000
CASE	123	6.0000	1.0000	1.0000	3.8900	55.0000
CASE	124	6.0000	1.0000	2.0000	2.4200	48.0000
CASE	125	6.0000	1.0000	2.0000	2.1800	47.0000

CASE	126	6.0000	1.0000	2.0000	2.5300	49.0000
CASE	127	6.0000	1.0000	2.0000	1.8900	46.0000
CASE	128	6.0000	1.0000	2.0000	1.6300	43.0000
CASE	129	6.0000	1.0000	2.0000	1.5300	42.0000
CASE	130	6.0000	1.0000	2.0000	1.5700	43.0000
CASE	131	6.0000	1.0000	2.0000	1.6000	44.0000
CASE	132	6.0000	2.0000	1.0000	3.5800	51.0000
CASE	133	6.0000	2.0000	1.0000	6.4000	63.0000
CASE	134	6.0000	2.0000	1.0000	4.4100	56.0000
CASE	135	6.0000	2.0000	1.0000	3.9500	54.0000
CASE	136	6.0000	2.0000	2.0000	1.6200	44.0000
CASE	137	6.0000	2.0000	2.0000	1.4700	37.0000
CASE	138	6.0000	2.0000	2.0000	1.9900	46.0000
CASE	139	6.0000	2.0000	2.0000	1.8200	43.0000
CASE	140	6.0000	2.0000	2.0000	1.1900	41.0000
CASE	141	6.0000	2.0000	2.0000	1.4600	41.0000
CASE	142	6.0000	2.0000	2.0000	1.5700	44.0000
CASE	143	6.0000	2.0000	2.0000	2.0000	45.0000
CASE	144	7.0000	1.0000	1.0000	5.2000	52.0000
CASE	145	7.0000	1.0000	1.0000	5.9300	61.0000
CASE	146	7.0000	1.0000	1.0000	5.5000	61.0000
CASE	147	7.0000	1.0000	1.0000	5.0900	57.0000
CASE	148	7.0000	1.0000	2.0000	2.2600	48.0000
CASE	149	7.0000	1.0000	2.0000	1.8300	45.0000
CASE	150	7.0000	1.0000	2.0000	2.1800	49.0000
CASE	151	7.0000	1.0000	2.0000	1.7500	47.0000
CASE	152	7.0000	1.0000	2.0000	1.6300	41.0000
CASE	153	7.0000	1.0000	2.0000	2.1100	46.0000
CASE	154	7.0000	1.0000	2.0000	1.7100	42.0000
CASE	155	7.0000	1.0000	2.0000	2.1100	41.0000
CASE	156	7.0000	2.0000	1.0000	5.4000	57.0000
CASE	157	7.0000	2.0000	1.0000	5.1400	58.0000
CASE	158	7.0000	2.0000	1.0000	4.2000	52.0000
CASE	159	7.0000	2.0000	1.0000	5.6300	58.0000
CASE	160	7.0000	2.0000	2.0000	1.9600	47.0000
CASE	161	7.0000	2.0000	2.0000	2.5500	49.0000
CASE	162	7.0000	2.0000	2.0000	1.7300	45.0000
CASE	163	7.0000	2.0000	2.0000	2.1000	49.0000
CASE	164	7.0000	2.0000	2.0000	2.3500	47.0000
CASE	165	7.0000	2.0000	2.0000	1.7100	46.0000
CASE	166	7.0000	2.0000	2.0000	1.9600	49.0000
CASE	167	7.0000	2.0000	2.0000	1.7800	44.0000

Chlopyrifos :
FO BREEDERS at DAY 216

ANOVA on Male Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: WT N: 58 MULTIPLE R: 0.543 SQUARED MULTIPLE R: 0.294

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	7.1042	6	1.1840	2.3837	0.0442
REP	0.6635	1	0.6635	1.3358	0.2540
TRT*REP	1.3406	6	0.2234	0.4498	0.8412
ERROR	21.8559	44	0.4967		

Post-hoc pairwise comparison of wt/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	0.0725	0.0000			
3	-0.1825	-0.2550	0.0000		
4	0.2400	0.1675	0.4225	0.0000	
5	0.0558	-0.0168	0.2383	-0.1843	0.0000
6	0.3375	0.2650	0.5200	0.0975	0.2817
7	1.0000	0.9275	1.1825	0.7600	0.9442

	6	7
6	0.0000	
7	0.6625	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	0.1438	0.2449	0.0344	0.7672	0.1489

	6	7
6	1.0000	
7	1.0000	1.0000

94

Chlopyrifos :
FO BREEDERS at DAY 216
ANOVA on Female Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: WT N: 109 MULTIPLE R: 0.315 SQUARED MULTIPLE R: 0.099

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.6647	6	0.1108	0.6233	0.7112
REP	0.0852	1	0.0852	0.4794	0.4904
TRT*REP	1.1049	6	0.1841	1.0361	0.4069
ERROR	16.8843	95	0.1777		

Post-hoc pairwise comparison of wt/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-0.1165	0.0000			
3	-0.0788	0.0378	0.0000		
4	-0.0613	0.0553	0.0175	0.0000	
5	-0.1891	-0.0726	-0.1104	-0.1279	0.0000
6	-0.2312	-0.1147	-0.1525	-0.1700	-0.0421
7	-0.0281	0.0884	0.0506	0.0331	0.1610

	6	7
6	0.0000	
7	0.2031	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
FO BREEDERS at DAY 216
ANOVA on Male Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 58 MULTIPLE R: 0.393 SQUARED MULTIPLE R: 0.154

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	56.0638	6	9.3440	0.7100	0.6433
REP	0.0735	1	0.0735	0.0056	0.9408
TRT*REP	49.5948	6	8.2658	0.6280	0.7069
ERROR	579.1000	44	13.1614		

Post-hoc pairwise comparison of len/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-1.1250	0.0000			
3	-2.3750	-1.2500	0.0000		
4	-1.5000	-0.3750	0.8750	0.0000	
5	-2.8000	-1.6750	-0.4250	-1.3000	0.0000
6	-0.5000	0.6250	1.8750	1.0000	2.3000
7	-0.5000	0.6250	1.8750	1.0000	2.3000

	6	7
6	0.0000	
7	0.0000	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
FO BREEDERS at DAY 216
ANOVA on Female Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 109 MULTIPLE R: 0.369 SQUARED MULTIPLE R: 0.136

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	74.6117	6	12.4353	1.3879	0.2274
REP	0.0299	1	0.0299	0.0033	0.9541
TRT*REP	59.9838	6	9.9973	1.1158	0.3590
ERROR	851.1607	95	8.9596		

Post-hoc pairwise comparison of len/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-2.1696	0.0000			
3	-1.5625	0.6071	0.0000		
4	-1.4375	0.7321	0.1250	0.0000	
5	-1.5625	0.6071	0.0000	-0.1250	0.0000
6	-2.6250	-0.4554	-1.0625	-1.1875	-1.0625
7	-0.6250	1.5446	0.9375	0.8125	0.9375

	6	7
6	0.0000	
7	2.0000	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	0.9824	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	0.3125	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
FO BREEDERS at 216 DAYS

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.4600	42.0000
MAXIMUM	5.4400	62.0000
MEAN	2.7608	50.2083
STANDARD DEV	1.3243	6.5473

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000

TOTAL OBSERVATIONS: 23

	WT	LEN
N OF CASES	23	23
MINIMUM	1.1500	38.0000
MAXIMUM	5.1400	61.0000
MEAN	2.7430	48.5652
STANDARD DEV	1.2884	6.5908

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.4400	41.0000
MAXIMUM	4.8500	58.0000
MEAN	2.6475	48.3750
STANDARD DEV	1.1049	5.6168

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.5400	42.0000
MAXIMUM	5.1400	60.0000
MEAN	2.8000	48.7500
STANDARD DEV	1.2840	5.8328

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.3000	41.0000
MAXIMUM	5.0400	59.0000
MEAN	2.8613	49.0417
STANDARD DEV	1.3451	5.7746

78

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.1900	37.0000
MAXIMUM	6.4000	63.0000
MEAN	2.7192	48.2917
STANDARD DEV	1.4842	7.0617

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	1.6300	41.0000
MAXIMUM	5.9300	61.0000
MEAN	3.0754	49.6250
STANDARD DEV	1.6184	6.0850

SUMMARY STATISTICS FOR WT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 3.9205 DF= 6 PROBABILITY = 0.6874

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	2.7367	6	0.4561	0.2471	0.9599
WITHIN GROUPS	295.3747	160	1.8461		

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 1.9462 DF= 6 PROBABILITY = 0.9246

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	71.6689	6	11.9448	0.3075	0.9323
WITHIN GROUPS	6215.2772	160	38.8455		

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.4600	42.0000
MAXIMUM	5.4400	62.0000
MEAN	2.5508	49.5833
STANDARD DEV	1.2484	5.7439

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.5800	42.0000
MAXIMUM	5.2400	62.0000
MEAN	2.9708	50.8333
STANDARD DEV	1.4185	7.4691

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.5100	42.0000
MAXIMUM	4.9100	61.0000
MEAN	2.6975	48.7500
STANDARD DEV	1.2821	7.2253

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 2.0000

TOTAL OBSERVATIONS: 11

	WT	LEN
N OF CASES	11	11
MINIMUM	1.1500	38.0000
MAXIMUM	5.1400	57.0000
MEAN	2.7927	48.3636
STANDARD DEV	1.3560	6.1688

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.4400	41.0000
MAXIMUM	4.1500	57.0000
MEAN	2.5475	48.4167
STANDARD DEV	0.9638	5.2994

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.7700	42.0000
MAXIMUM	4.8500	58.0000
MEAN	2.7475	48.3333
STANDARD DEV	1.2656	6.1546

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.5400	43.0000
MAXIMUM	4.4300	57.0000
MEAN	2.6625	48.2500
STANDARD DEV	1.2154	5.5942

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.6300	42.0000
MAXIMUM	5.1400	60.0000
MEAN	2.9375	49.2500
STANDARD DEV	1.3888	6.2686

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.3000	42.0000
MAXIMUM	5.0400	59.0000
MEAN	2.7976	49.0833
STANDARD DEV	1.3565	5.9766

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.3500	41.0000
MAXIMUM	5.0100	59.0000
MEAN	2.9250	49.0000
STANDARD DEV	1.3907	5.8310

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.5300	42.0000
MAXIMUM	5.4900	61.0000
MEAN	2.8167	49.5000
STANDARD DEV	1.4148	6.7353

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.1900	37.0000
MAXIMUM	6.4000	63.0000
MEAN	2.6217	47.0833
STANDARD DEV	1.6074	7.4646

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 1.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.6300	41.0000
MAXIMUM	5.9300	61.0000
MEAN	3.1083	49.1667
STANDARD DEV	1.7367	7.1837

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 2.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.7100	44.0000
MAXIMUM	5.6300	58.0000
MEAN	3.0425	50.0833
STANDARD DEV	1.5678	5.0355

SUMMARY STATISTICS FOR WT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 5.2584 DF= 13 PROBABILITY = 0.9691

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	4.8925	13	0.3763	0.1964	0.9990
WITHIN GROUPS	293.2189	153	1.9165		

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 4.4516 DF= 13 PROBABILITY = 0.9854

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	128.0673	13	9.8513	0.2447	0.9968
WITHIN GROUPS	6158.8788	153	40.2541		

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

VARIABLE	N-OF-CASES	MAXDIF	PROBABILITY (2-TAIL)
LEN	167.0000	1.0000	0.0000
WT	167.0000	0.8997	0.0000

82

Chlopyrifos :
FO Non-Breeders at Day 199

TRT 1 = Solvent Control

TRT 2 = Dilution Water Control

TRT 3 = 83 ng/l

TRT 4 = 144 ng/l

TRT 5 = 300 ng/l

TRT 6 = 568 ng/l

TRT 7 = 1093 ng/l

		TRT	REP	SEX	WT	LEN
CASE	1	1.0000	1.0000	1.0000	3.2900	55.0000
CASE	2	1.0000	1.0000	1.0000	4.8100	60.0000
CASE	3	1.0000	1.0000	2.0000	3.4600	53.0000
CASE	4	1.0000	1.0000	2.0000	3.7300	55.0000
CASE	5	1.0000	1.0000	1.0000	4.8500	63.0000
CASE	6	1.0000	1.0000	2.0000	1.1400	40.0000
CASE	7	1.0000	1.0000	2.0000	0.9600	36.0000
CASE	8	1.0000	1.0000	1.0000	4.4100	58.0000
CASE	9	1.0000	1.0000	1.0000	3.3900	54.0000
CASE	10	1.0000	2.0000	1.0000	3.8200	56.0000
CASE	11	1.0000	2.0000	1.0000	4.9900	60.0000
CASE	12	1.0000	2.0000	2.0000	1.6700	42.0000
CASE	13	1.0000	2.0000	1.0000	5.3400	63.0000
CASE	14	1.0000	2.0000	1.0000	3.5000	57.0000
CASE	15	1.0000	2.0000	1.0000	4.2100	57.0000
CASE	16	1.0000	2.0000	2.0000	1.8900	47.0000
CASE	17	1.0000	2.0000	2.0000	1.5700	44.0000
CASE	18	1.0000	2.0000	2.0000	0.6400	38.0000
CASE	19	1.0000	2.0000	1.0000	4.6700	59.0000
CASE	20	1.0000	2.0000	3.0000	0.4100	29.0000
CASE	21	1.0000	2.0000	1.0000	4.6600	62.0000
CASE	22	2.0000	1.0000	2.0000	3.0000	51.0000
CASE	23	2.0000	1.0000	2.0000	3.0300	53.0000
CASE	24	2.0000	1.0000	2.0000	2.6800	51.0000
CASE	25	2.0000	1.0000	2.0000	1.4400	40.0000
CASE	26	2.0000	1.0000	1.0000	2.8000	52.0000
CASE	27	2.0000	1.0000	1.0000	3.4700	56.0000
CASE	28	2.0000	1.0000	2.0000	2.6000	50.0000
CASE	29	2.0000	1.0000	1.0000	2.2000	49.0000
CASE	30	2.0000	1.0000	2.0000	2.3000	47.0000
CASE	31	2.0000	1.0000	2.0000	1.7300	42.0000
CASE	32	2.0000	1.0000	3.0000	0.9200	37.0000
CASE	33	2.0000	1.0000	2.0000	1.1800	39.0000
CASE	34	2.0000	2.0000	1.0000	3.2900	55.0000
CASE	35	2.0000	2.0000	2.0000	1.6200	44.0000
CASE	36	2.0000	2.0000	2.0000	1.9300	45.0000
CASE	37	2.0000	2.0000	1.0000	2.3400	45.0000
CASE	38	2.0000	2.0000	1.0000	4.2800	60.0000
CASE	39	2.0000	2.0000	2.0000	1.1100	38.0000
CASE	40	2.0000	2.0000	3.0000	0.5600	35.0000
CASE	41	2.0000	2.0000	1.0000	2.9300	56.0000
CASE	42	2.0000	2.0000	1.0000	3.6700	55.0000
CASE	43	2.0000	2.0000	2.0000	2.0900	47.0000
CASE	44	2.0000	2.0000	1.0000	2.5800	43.0000
CASE	45	3.0000	1.0000	1.0000	4.1100	55.0000
CASE	46	3.0000	1.0000	1.0000	5.1200	58.0000
CASE	47	3.0000	1.0000	1.0000	3.5200	57.0000
CASE	48	3.0000	1.0000	2.0000	1.1700	40.0000
CASE	49	3.0000	1.0000	2.0000	3.4400	54.0000
CASE	50	3.0000	1.0000	2.0000	1.0800	40.0000
CASE	51	3.0000	1.0000	1.0000	3.5900	57.0000
CASE	52	3.0000	1.0000	3.0000	5.5800	64.0000
CASE	53	3.0000	1.0000	2.0000	1.5600	44.0000
CASE	54	3.0000	1.0000	1.0000	6.1300	65.0000

CASE	55	3.0000	1.0000	1.0000	5.5100	62.0000
CASE	56	3.0000	2.0000	1.0000	5.8600	62.0000
CASE	57	3.0000	2.0000	1.0000	4.0100	59.0000
CASE	58	3.0000	2.0000	1.0000	4.6500	62.0000
CASE	59	3.0000	2.0000	3.0000	0.7200	36.0000
CASE	60	3.0000	2.0000	2.0000	0.7200	36.0000
CASE	61	3.0000	2.0000	2.0000	2.5900	51.0000
CASE	62	3.0000	2.0000	2.0000	1.9600	45.0000
CASE	63	3.0000	2.0000	2.0000	1.5100	42.0000
CASE	64	3.0000	2.0000	2.0000	4.6500	62.0000
CASE	65	3.0000	2.0000	2.0000	1.1600	38.0000
CASE	66	3.0000	2.0000	1.0000	3.0200	50.0000
CASE	67	3.0000	2.0000	2.0000	0.9600	38.0000
CASE	68	3.0000	2.0000	1.0000	3.3100	53.0000
CASE	69	3.0000	2.0000	2.0000	1.7900	45.0000
CASE	70	3.0000	2.0000	1.0000	2.8700	50.0000
CASE	71	4.0000	1.0000	1.0000	3.7600	53.0000
CASE	72	4.0000	1.0000	2.0000	1.1000	39.0000
CASE	73	4.0000	1.0000	1.0000	5.2600	52.0000
CASE	74	4.0000	1.0000	1.0000	3.1400	43.0000
CASE	75	4.0000	1.0000	2.0000	2.1900	49.0000
CASE	76	4.0000	1.0000	2.0000	0.9800	36.0000
CASE	77	4.0000	1.0000	1.0000	3.5100	55.0000
CASE	78	4.0000	1.0000	1.0000	4.7900	60.0000
CASE	79	4.0000	1.0000	2.0000	2.0000	37.0000
CASE	80	4.0000	1.0000	1.0000	4.4900	59.0000
CASE	81	4.0000	1.0000	1.0000	3.5100	53.0000
CASE	82	4.0000	1.0000	3.0000	0.9500	37.0000
CASE	83	4.0000	1.0000	1.0000	3.7000	56.0000
CASE	84	4.0000	2.0000	1.0000	3.6600	52.0000
CASE	85	4.0000	2.0000	1.0000	3.4100	54.0000
CASE	86	4.0000	2.0000	2.0000	1.4000	37.0000
CASE	87	4.0000	2.0000	1.0000	3.2000	55.0000
CASE	88	4.0000	2.0000	1.0000	3.7700	55.0000
CASE	89	4.0000	2.0000	1.0000	4.4300	60.0000
CASE	90	4.0000	2.0000	2.0000	1.6400	42.0000
CASE	91	4.0000	2.0000	2.0000	0.9300	36.0000
CASE	92	4.0000	2.0000	2.0000	4.6800	62.0000
CASE	93	4.0000	2.0000	1.0000	4.2200	59.0000
CASE	94	4.0000	2.0000	3.0000	0.7400	34.0000
CASE	95	4.0000	2.0000	1.0000	4.1500	57.0000
CASE	96	5.0000	1.0000	2.0000	1.0400	40.0000
CASE	97	5.0000	1.0000	2.0000	1.8900	42.0000
CASE	98	5.0000	1.0000	1.0000	4.6900	61.0000
CASE	99	5.0000	1.0000	3.0000	0.4200	30.0000
CASE	100	5.0000	1.0000	2.0000	2.2000	47.0000
CASE	101	5.0000	1.0000	1.0000	3.5900	55.0000
CASE	102	5.0000	1.0000	1.0000	4.2100	57.0000
CASE	103	5.0000	1.0000	2.0000	1.8900	45.0000
CASE	104	5.0000	1.0000	1.0000	4.1900	59.0000
CASE	105	5.0000	1.0000	2.0000	0.7400	35.0000
CASE	106	5.0000	1.0000	2.0000	2.6100	50.0000
CASE	107	5.0000	2.0000	1.0000	2.7000	53.0000
CASE	108	5.0000	2.0000	2.0000	1.4200	40.0000
CASE	109	5.0000	2.0000	1.0000	5.2700	62.0000
CASE	110	5.0000	2.0000	2.0000	1.5600	40.0000
CASE	111	5.0000	2.0000	1.0000	5.2000	60.0000
CASE	112	5.0000	2.0000	1.0000	4.0800	59.0000
CASE	113	5.0000	2.0000	2.0000	1.8700	45.0000
CASE	114	5.0000	2.0000	1.0000	3.8500	55.0000
CASE	115	5.0000	2.0000	2.0000	1.5600	42.0000
CASE	116	5.0000	2.0000	2.0000	2.1000	49.0000
CASE	117	5.0000	2.0000	2.0000	1.5700	43.0000
CASE	118	5.0000	2.0000	1.0000	3.8600	61.0000
CASE	119	5.0000	2.0000	1.0000	4.5700	61.0000
CASE	120	6.0000	1.0000	3.0000	0.7200	35.0000
CASE	121	6.0000	1.0000	1.0000	4.3800	58.0000
CASE	122	6.0000	1.0000	2.0000	1.9000	43.0000
CASE	123	6.0000	1.0000	1.0000	4.1700	51.0000
CASE	124	6.0000	1.0000	2.0000	2.1200	45.0000
CASE	125	6.0000	1.0000	1.0000	2.7900	37.0000
CASE	126	6.0000	1.0000	1.0000	4.4800	58.0000

84

CASE	127	6.0000	1.0000	2.0000	1.6800	42.0000
CASE	128	6.0000	1.0000	2.0000	1.7600	44.0000
CASE	129	6.0000	1.0000	2.0000	2.5500	47.0000
CASE	130	6.0000	1.0000	2.0000	1.3200	40.0000
CASE	131	6.0000	1.0000	2.0000	1.5100	40.0000
CASE	132	6.0000	1.0000	2.0000	1.6800	43.0000
CASE	133	6.0000	2.0000	2.0000	1.9400	45.0000
CASE	134	6.0000	2.0000	1.0000	3.0600	54.0000
CASE	135	6.0000	2.0000	2.0000	2.4400	49.0000
CASE	136	6.0000	2.0000	1.0000	3.9000	56.0000
CASE	137	6.0000	2.0000	2.0000	2.2300	45.0000
CASE	138	6.0000	2.0000	1.0000	3.5900	55.0000
CASE	139	6.0000	2.0000	1.0000	3.9600	57.0000
CASE	140	6.0000	2.0000	1.0000	4.2200	56.0000
CASE	141	6.0000	2.0000	2.0000	1.5800	44.0000
CASE	142	6.0000	2.0000	1.0000	3.2900	53.0000
CASE	143	6.0000	2.0000	2.0000	2.1100	45.0000
CASE	144	6.0000	2.0000	2.0000	2.4900	49.0000
CASE	145	7.0000	1.0000	3.0000	0.7400	36.0000
CASE	146	7.0000	1.0000	2.0000	0.6200	37.0000
CASE	147	7.0000	1.0000	2.0000	2.0900	48.0000
CASE	148	7.0000	1.0000	2.0000	1.2600	37.0000
CASE	149	7.0000	1.0000	2.0000	0.7900	35.0000
CASE	150	7.0000	1.0000	2.0000	2.4400	48.0000
CASE	151	7.0000	1.0000	1.0000	3.6900	56.0000
CASE	152	7.0000	1.0000	1.0000	3.8100	57.0000
CASE	153	7.0000	1.0000	2.0000	0.8600	38.0000
CASE	154	7.0000	1.0000	1.0000	6.2100	62.0000
CASE	155	7.0000	1.0000	1.0000	4.0900	56.0000
CASE	156	7.0000	1.0000	2.0000	1.2300	36.0000
CASE	157	7.0000	2.0000	1.0000	4.2200	55.0000
CASE	158	7.0000	2.0000	1.0000	5.0100	62.0000
CASE	159	7.0000	2.0000	2.0000	4.0500	64.0000
CASE	160	7.0000	2.0000	1.0000	5.0600	58.0000
CASE	161	7.0000	2.0000	2.0000	1.0800	36.0000
CASE	162	7.0000	2.0000	1.0000	4.4500	57.0000
CASE	163	7.0000	2.0000	2.0000	2.1300	46.0000
CASE	164	7.0000	2.0000	1.0000	4.6100	58.0000

Chlopyrifos :
FO Non-Breeders at Day 199

ANOVA on Male Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: WT N: 78 MULTIPLE R: 0.548 SQUARED MULTIPLE R: 0.301
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	13.6131	6	2.2688	3.7569	0.0029
REP	0.0228	1	0.0228	0.0377	0.8467
TRT*REP	2.3910	6	0.3985	0.6599	0.6821

Post-hoc pairwise comparison of wt/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.
POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-1.3004	0.0000			
3	0.0055	1.3058	0.0000		
4	-0.3757	0.9246	-0.3812	0.0000	
5	-0.1086	1.1918	-0.1140	0.2671	0.0000
6	-0.4904	0.8100	-0.4958	-0.1146	-0.3818
7	0.2571	1.5575	0.2517	0.6329	0.3657

	6	7
6	0.0000	
7	0.7475	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	0.0113	1.0000			
3	1.0000	0.0100	1.0000		
4	1.0000	0.1784	1.0000	1.0000	
5	1.0000	0.0391	1.0000	1.0000	1.0000
6	1.0000	0.6962	1.0000	1.0000	1.0000
7	1.0000	0.0024	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	0.8996	1.0000

Chlopyrifos :
FO Non-Breeders at Days 199
ANOVA on Female Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: WT N: 76 MULTIPLE R: 0.363 SQUARED MULTIPLE R: 0.132

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.5737	6	0.0956	0.1238	0.9931
REP	0.1364	1	0.1364	0.1766	0.6757
TRT*REP	5.8548	6	0.9758	1.2634	0.2873

Post-hoc pairwise comparison of wt/Bonferroni.

COL/ ROW	TRT
1	1.0000
2	2.0000
3	3.0000
4	4.0000
5	5.0000
6	6.0000
7	7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	0.0837	0.0000			
3	-0.0175	-0.1013	0.0000		
4	-0.0175	-0.1013	0.0000	0.0000	
5	-0.1783	-0.2621	-0.1608	-0.1608	0.0000
6	0.0908	0.0071	0.1083	0.1083	0.2692
7	-0.0089	-0.0927	0.0086	0.0086	0.1694

	6	7
6	0.0000	
7	-0.0998	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
FO Non-Breeders at 199 Days
ANOVA on Male Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 78 MULTIPLE R: 0.532 SQUARED MULTIPLE R: 0.283

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	394.8667	6	65.8111	3.3250	0.0065
REP	10.7810	1	10.7810	0.5447	0.4632
TRT*REP	79.3817	6	13.2303	0.6684	0.6754

Post-hoc pairwise comparison of len/Bonferroni.

COL/ ROW	TRT
1	1.0000
2	2.0000
3	3.0000
4	4.0000
5	5.0000
6	6.0000
7	7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-6.2381	0.0000			
3	-1.0714	5.1667	0.0000		
4	-3.6339	2.6042	-2.5625	0.0000	
5	-0.2143	6.0238	0.8571	3.4196	0.0000
6	-5.4881	0.7500	-4.4167	-1.8542	-5.2738
7	-0.6964	5.5417	0.3750	2.9375	-0.4821

	6	7
6	0.0000	
7	4.7917	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	0.0690	1.0000			
3	1.0000	0.2808	1.0000		
4	0.8517	1.0000	1.0000	1.0000	
5	1.0000	0.1181	1.0000	1.0000	1.0000
6	0.1301	1.0000	0.5285	1.0000	0.2214
7	1.0000	0.2725	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	0.5019	1.0000

Chlopyrifos :

ANOVA on Female Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000

DEP VAR: LEN N: 76 MULTIPLE R: 0.351 SQUARED MULTIPLE R: 0.123
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	54.0204	6	9.0034	0.2132	0.9713
REP	33.1787	1	33.1787	0.7857	0.3788
TRT*REP	247.3161	6	41.2194	0.9762	0.4490

Post-hoc pairwise comparison of len/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	0.6875	0.0000			
3	0.1875	-0.5000	0.0000		
4	-2.1250	-2.8125	-2.3125	0.0000	
5	-1.2083	-1.8958	-1.3958	0.9167	0.0000
6	0.2083	-0.4792	0.0208	2.3333	1.4167
7	-0.1131	-0.8006	-0.3006	2.0119	1.0952

	6	7
6	0.0000	
7	-0.3214	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

89

Chlopyrifos :
FO Non-Breeders at 199 Days
ANOVA on Immature Fish Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT

1.0000	2.0000	3.0000	4.0000	5.0000	6.0000
7.0000					

DEP VAR: WT N: 10 MULTIPLE R: 0.675 SQUARED MULTIPLE R: 0.455

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	9.9490	6	1.6582	0.4181	0.8327

Post-hoc pairwise comparison of wt/Bonferroni.
COL/

ROW	TRT
1	1.0000
2	2.0000
3	3.0000
4	4.0000
5	5.0000
6	6.0000
7	7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	0.3300	0.0000			
3	2.7400	2.4100	0.0000		
4	0.4350	0.1050	-2.3050	0.0000	
5	0.0100	-0.3200	-2.7300	-0.4250	0.0000
6	0.3100	-0.0200	-2.4300	-0.1250	0.3000
7	0.3300	-0.0000	-2.4100	-0.1050	0.3200

	6	7
6	0.0000	
7	0.0200	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
FO Non-Breeders at 199 Days
ANOVA on Immature Fish Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000

DEP VAR: LEN N: 10 MULTIPLE R: 0.733 SQUARED MULTIPLE R: 0.537
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	461.6000	6	76.9333	0.5792	0.7396
ERROR	398.5000	3	132.8333		

Post-hoc pairwise comparison of len/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	7.0000	0.0000			
3	21.0000	14.0000	0.0000		
4	6.5000	-0.5000	-14.5000	0.0000	
5	1.0000	-6.0000	-20.0000	-5.5000	0.0000
6	6.0000	-1.0000	-15.0000	-0.5000	5.0000
7	7.0000	0.0000	-14.0000	0.5000	6.0000

	6	7
6	0.0000	
7	1.0000	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlopyrifos :
F0 Non-Breeders at 199 Days

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000

TOTAL OBSERVATIONS: 21

	WT	LEN
N OF CASES	21	21
MINIMUM	0.4100	29.0000
MAXIMUM	5.3400	63.0000
MEAN	3.2100	51.8095
STANDARD DEV	1.5977	9.8925

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000

TOTAL OBSERVATIONS: 23

	WT	LEN
N OF CASES	23	23
MINIMUM	0.5600	35.0000
MAXIMUM	4.2800	60.0000
MEAN	2.3370	47.3913
STANDARD DEV	0.9395	6.9331

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000

TOTAL OBSERVATIONS: 26

	WT	LEN
N OF CASES	26	26
MINIMUM	0.7200	36.0000
MAXIMUM	6.1300	65.0000
MEAN	3.0996	50.9615
STANDARD DEV	1.7410	9.5853

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000

TOTAL OBSERVATIONS: 25

	WT	LEN
N OF CASES	25	25
MINIMUM	0.7400	34.0000
MAXIMUM	5.2600	62.0000
MEAN	3.0244	49.2800
STANDARD DEV	1.4200	9.3208

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000

TOTAL OBSERVATIONS: 24

	WT	LEN
N OF CASES	24	24
MINIMUM	0.4200	30.0000
MAXIMUM	5.2700	62.0000
MEAN	2.7950	49.6250
STANDARD DEV	1.4728	9.4077

92

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000

TOTAL OBSERVATIONS: 25

	WT	LEN
N OF CASES	25	25
MINIMUM	0.7200	35.0000
MAXIMUM	4.4800	58.0000
MEAN	2.6348	47.6400
STANDARD DEV	1.0874	6.7693

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	0.6200	35.0000
MAXIMUM	6.2100	64.0000
MEAN	2.9220	49.1000
STANDARD DEV	1.7778	10.5377

SUMMARY STATISTICS FOR WT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 13.5506 DF= 6 PROBABILITY = 0.0351

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	12.4788	6	2.0798	0.9807	0.4403
WITHIN GROUPS	332.9621	157	2.1208		

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 7.4494 DF= 6 PROBABILITY = 0.2813

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	358.8959	6	59.8160	0.7429	0.6159
WITHIN GROUPS	12641.9029	157	80.5217		

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000
SEX = 1.000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	3.290	54.000
MAXIMUM	5.340	63.000
MEAN	4.328	58.667
STANDARD DEV	0.682	3.025

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000
SEX = 2.000

TOTAL OBSERVATIONS: 8

	WT	LEN
N OF CASES	8	8
MINIMUM	0.640	36.000
MAXIMUM	3.730	55.000
MEAN	1.883	44.375
STANDARD DEV	1.133	6.865

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000
SEX = 3.000

TOTAL OBSERVATIONS: 1

	WT	LEN
N OF CASES	1	1
MINIMUM	0.410	29.000
MAXIMUM	0.410	29.000
MEAN	0.410	29.000
STANDARD DEV	.	.

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000
SEX = 1.000

TOTAL OBSERVATIONS: 9

	WT	LEN
N OF CASES	9	9
MINIMUM	2.200	43.000
MAXIMUM	4.280	60.000
MEAN	3.062	52.333
STANDARD DEV	0.676	5.612

94

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000
SEX = 2.000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	1.110	38.000
MAXIMUM	3.030	53.000
MEAN	2.059	45.583
STANDARD DEV	0.670	5.089

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000
SEX = 3.000

TOTAL OBSERVATIONS: 2

	WT	LEN
N OF CASES	2	2
MINIMUM	0.560	35.000
MAXIMUM	0.920	37.000
MEAN	0.740	36.000
STANDARD DEV	0.255	1.414

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.000
SEX = 1.000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	2.870	50.000
MAXIMUM	6.130	65.000
MEAN	4.308	57.500
STANDARD DEV	1.126	4.852

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.000
SEX = 2.000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	0.720	36.000
MAXIMUM	4.650	62.000
MEAN	1.883	44.583
STANDARD DEV	1.157	7.645

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.000
SEX = 3.000

TOTAL OBSERVATIONS: 2

	WT	LEN
N OF CASES	2	2
MINIMUM	0.720	36.000
MAXIMUM	5.580	64.000
MEAN	3.150	50.000
STANDARD DEV	3.437	19.799

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.000
SEX = 1.000

TOTAL OBSERVATIONS: 15

	WT	LEN
N OF CASES	15	15
MINIMUM	3.140	43.000
MAXIMUM	5.260	60.000
MEAN	3.933	54.867
STANDARD DEV	0.607	4.291

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.000
SEX = 2.000

TOTAL OBSERVATIONS: 8

	WT	LEN
N OF CASES	8	8
MINIMUM	0.930	36.000
MAXIMUM	4.680	62.000
MEAN	1.865	42.250
STANDARD DEV	1.228	9.099

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.000
SEX = 3.000

TOTAL OBSERVATIONS: 2

	WT	LEN
N OF CASES	2	2
MINIMUM	0.740	34.000
MAXIMUM	0.950	37.000
MEAN	0.845	35.500
STANDARD DEV	0.148	2.121

9e

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.000
SEX = 1.000

TOTAL OBSERVATIONS: 11

	WT	LEN
N OF CASES	11	11
MINIMUM	2.700	53.000
MAXIMUM	5.270	62.000
MEAN	4.201	58.455
STANDARD DEV	0.735	3.012

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.000
SEX = 2.000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	0.740	35.000
MAXIMUM	2.610	50.000
MEAN	1.704	43.167
STANDARD DEV	0.507	4.282

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.000
SEX = 3.000

TOTAL OBSERVATIONS: 1

	WT	LEN
N OF CASES	1	1
MINIMUM	0.420	30.000
MAXIMUM	0.420	30.000
MEAN	0.420	30.000
STANDARD DEV	.	.

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.000
SEX = 1.000

TOTAL OBSERVATIONS: 10

	WT	LEN
N OF CASES	10	10
MINIMUM	2.790	37.000
MAXIMUM	4.480	58.000
MEAN	3.784	53.500
STANDARD DEV	0.579	6.205

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.000
SEX = 2.000

TOTAL OBSERVATIONS: 14

	WT	LEN
N OF CASES	14	14
MINIMUM	1.320	40.000
MAXIMUM	2.550	49.000
MEAN	1.951	44.357
STANDARD DEV	0.386	2.763

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.000
SEX = 3.000

TOTAL OBSERVATIONS: 1

	WT	LEN
N OF CASES	1	1
MINIMUM	0.720	35.000
MAXIMUM	0.720	35.000
MEAN	0.720	35.000
STANDARD DEV	.	.

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.000
SEX = 1.000

TOTAL OBSERVATIONS: 9

	WT	LEN
N OF CASES	9	9
MINIMUM	3.690	45.000
MAXIMUM	6.210	62.000
MEAN	4.572	55.556
STANDARD DEV	0.778	5.940

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.000
SEX = 2.000

TOTAL OBSERVATIONS: 10

	WT	LEN
N OF CASES	10	10
MINIMUM	0.620	35.000
MAXIMUM	4.050	64.000
MEAN	1.655	42.500
STANDARD DEV	1.048	9.168

Chlopyrifos : Fathead Minnow

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.000
SEX = 3.000

TOTAL OBSERVATIONS: 1

	WT	LEN
N OF CASES	1	1
MINIMUM	0.740	36.000
MAXIMUM	0.740	36.000
MEAN	0.740	36.000
STANDARD DEV	.	.

Chlorpyrifos : F1 Lengths and Weights
TRT 1 = Solvent Control

TRT 2 = Dilution Water Control

TRT 3 = 83 ng/l

TRT 4 = 144 ng/l

TRT 5 = 300 ng/l

TRT 6 = 568 ng/l

TRT 7 = 1093 ng/l

		TRT	REP	LEN	WT
CASE	1	1.0000	1.0000	15.0000	58.0000
CASE	2	1.0000	1.0000	18.0000	99.0000
CASE	3	1.0000	1.0000	17.0000	80.0000
CASE	4	1.0000	1.0000	22.0000	181.0000
CASE	5	1.0000	1.0000	17.0000	78.0000
CASE	6	1.0000	1.0000	17.0000	76.0000
CASE	7	1.0000	1.0000	15.0000	57.0000
CASE	8	1.0000	1.0000	17.0000	77.0000
CASE	9	1.0000	1.0000	20.0000	148.0000
CASE	10	1.0000	1.0000	20.0000	133.0000
CASE	11	1.0000	1.0000	19.0000	114.0000
CASE	12	1.0000	1.0000	17.0000	86.0000
CASE	13	1.0000	1.0000	19.0000	140.0000
CASE	14	1.0000	1.0000	18.0000	100.0000
CASE	15	1.0000	1.0000	20.0000	126.0000
CASE	16	1.0000	1.0000	15.0000	60.0000
CASE	17	1.0000	1.0000	16.0000	63.0000
CASE	18	1.0000	1.0000	15.0000	53.0000
CASE	19	1.0000	1.0000	15.0000	52.0000
CASE	20	1.0000	1.0000	15.0000	59.0000
CASE	21	1.0000	2.0000	14.0000	38.0000
CASE	22	1.0000	2.0000	20.0000	144.0000
CASE	23	1.0000	2.0000	17.0000	70.0000
CASE	24	1.0000	2.0000	18.0000	76.0000
CASE	25	1.0000	2.0000	15.0000	50.0000
CASE	26	1.0000	2.0000	20.0000	144.0000
CASE	27	1.0000	2.0000	17.0000	75.0000
CASE	28	1.0000	2.0000	14.0000	35.0000
CASE	29	1.0000	2.0000	19.0000	102.0000
CASE	30	1.0000	2.0000	20.0000	118.0000
CASE	31	1.0000	2.0000	14.0000	40.0000
CASE	32	1.0000	2.0000	16.0000	65.0000
CASE	33	1.0000	2.0000	17.0000	77.0000
CASE	34	1.0000	2.0000	18.0000	103.0000
CASE	35	1.0000	2.0000	19.0000	112.0000
CASE	36	1.0000	2.0000	16.0000	53.0000
CASE	37	1.0000	2.0000	16.0000	57.0000
CASE	38	1.0000	2.0000	17.0000	67.0000
CASE	39	1.0000	2.0000	18.0000	97.0000
CASE	40	1.0000	2.0000	18.0000	84.0000
CASE	41	1.0000	3.0000	18.0000	104.0000
CASE	42	1.0000	3.0000	19.0000	141.0000
CASE	43	1.0000	3.0000	17.0000	89.0000
CASE	44	1.0000	3.0000	17.0000	85.0000
CASE	45	1.0000	3.0000	16.0000	71.0000
CASE	46	1.0000	3.0000	16.0000	71.0000
CASE	47	1.0000	3.0000	15.0000	50.0000
CASE	48	1.0000	3.0000	16.0000	74.0000
CASE	49	1.0000	3.0000	18.0000	96.0000
CASE	50	1.0000	3.0000	20.0000	117.0000
CASE	51	1.0000	3.0000	20.0000	133.0000
CASE	52	1.0000	3.0000	18.0000	95.0000
CASE	53	1.0000	3.0000	17.0000	70.0000
CASE	54	1.0000	3.0000	18.0000	91.0000
CASE	55	1.0000	3.0000	17.0000	83.0000
CASE	56	1.0000	3.0000	15.0000	53.0000

CASE	57	1.0000	3.0000	17.0000	88.0000
CASE	58	1.0000	3.0000	13.0000	30.0000
CASE	59	1.0000	3.0000	14.0000	32.0000
CASE	60	1.0000	4.0000	18.0000	88.0000
CASE	61	1.0000	4.0000	17.0000	95.0000
CASE	62	1.0000	4.0000	16.0000	67.0000
CASE	63	1.0000	4.0000	17.0000	80.0000
CASE	64	1.0000	4.0000	19.0000	117.0000
CASE	65	1.0000	4.0000	14.0000	41.0000
CASE	66	1.0000	4.0000	16.0000	72.0000
CASE	67	1.0000	4.0000	19.0000	120.0000
CASE	68	1.0000	4.0000	18.0000	114.0000
CASE	69	1.0000	4.0000	17.0000	84.0000
CASE	70	1.0000	4.0000	17.0000	82.0000
CASE	71	1.0000	4.0000	19.0000	103.0000
CASE	72	1.0000	4.0000	16.0000	59.0000
CASE	73	1.0000	4.0000	15.0000	55.0000
CASE	74	1.0000	4.0000	18.0000	103.0000
CASE	75	1.0000	4.0000	15.0000	48.0000
CASE	76	1.0000	4.0000	17.0000	90.0000
CASE	77	1.0000	4.0000	17.0000	69.0000
CASE	78	1.0000	4.0000	18.0000	89.0000
CASE	79	1.0000	4.0000	20.0000	141.0000
CASE	80	2.0000	1.0000	18.0000	94.0000
CASE	81	2.0000	1.0000	17.0000	86.0000
CASE	82	2.0000	1.0000	15.0000	58.0000
CASE	83	2.0000	1.0000	17.0000	78.0000
CASE	84	2.0000	1.0000	16.0000	65.0000
CASE	85	2.0000	1.0000	16.0000	67.0000
CASE	86	2.0000	1.0000	18.0000	106.0000
CASE	87	2.0000	1.0000	19.0000	120.0000
CASE	88	2.0000	1.0000	17.0000	79.0000
CASE	89	2.0000	1.0000	16.0000	59.0000
CASE	90	2.0000	1.0000	15.0000	49.0000
CASE	91	2.0000	1.0000	17.0000	71.0000
CASE	92	2.0000	1.0000	15.0000	56.0000
CASE	93	2.0000	1.0000	17.0000	82.0000
CASE	94	2.0000	1.0000	18.0000	92.0000
CASE	95	2.0000	1.0000	14.0000	40.0000
CASE	96	2.0000	1.0000	13.0000	35.0000
CASE	97	2.0000	1.0000	18.0000	97.0000
CASE	98	2.0000	2.0000	17.0000	70.0000
CASE	99	2.0000	2.0000	17.0000	85.0000
CASE	100	2.0000	2.0000	14.0000	46.0000
CASE	101	2.0000	2.0000	15.0000	50.0000
CASE	102	2.0000	2.0000	19.0000	128.0000
CASE	103	2.0000	2.0000	19.0000	108.0000
CASE	104	2.0000	2.0000	17.0000	90.0000
CASE	105	2.0000	2.0000	17.0000	78.0000
CASE	106	2.0000	2.0000	18.0000	93.0000
CASE	107	2.0000	2.0000	17.0000	92.0000
CASE	108	2.0000	2.0000	13.0000	32.0000
CASE	109	2.0000	2.0000	15.0000	53.0000
CASE	110	2.0000	2.0000	16.0000	68.0000
CASE	111	2.0000	2.0000	18.0000	110.0000
CASE	112	2.0000	2.0000	16.0000	75.0000
CASE	113	2.0000	2.0000	17.0000	81.0000
CASE	114	2.0000	2.0000	17.0000	83.0000
CASE	115	2.0000	2.0000	18.0000	111.0000
CASE	116	2.0000	2.0000	17.0000	83.0000
CASE	117	2.0000	2.0000	16.0000	68.0000
CASE	118	2.0000	3.0000	18.0000	104.0000
CASE	119	2.0000	3.0000	15.0000	54.0000
CASE	120	2.0000	3.0000	18.0000	101.0000
CASE	121	2.0000	3.0000	17.0000	87.0000
CASE	122	2.0000	3.0000	19.0000	110.0000
CASE	123	2.0000	3.0000	15.0000	55.0000
CASE	124	2.0000	3.0000	17.0000	84.0000
CASE	125	2.0000	3.0000	17.0000	74.0000
CASE	126	2.0000	3.0000	18.0000	91.0000
CASE	127	2.0000	3.0000	18.0000	108.0000
CASE	128	2.0000	3.0000	17.0000	82.0000

101

CASE	129	2.0000	3.0000	18.0000	92.0000
CASE	130	2.0000	3.0000	18.0000	94.0000
CASE	131	2.0000	3.0000	18.0000	90.0000
CASE	132	2.0000	3.0000	19.0000	112.0000
CASE	133	2.0000	3.0000	18.0000	93.0000
CASE	134	2.0000	3.0000	17.0000	83.0000
CASE	135	2.0000	3.0000	19.0000	115.0000
CASE	136	2.0000	4.0000	17.0000	96.0000
CASE	137	2.0000	4.0000	20.0000	146.0000
CASE	138	2.0000	4.0000	18.0000	99.0000
CASE	139	2.0000	4.0000	18.0000	94.0000
CASE	140	2.0000	4.0000	16.0000	73.0000
CASE	141	2.0000	4.0000	17.0000	81.0000
CASE	142	2.0000	4.0000	16.0000	64.0000
CASE	143	2.0000	4.0000	19.0000	121.0000
CASE	144	2.0000	4.0000	18.0000	95.0000
CASE	145	2.0000	4.0000	20.0000	133.0000
CASE	146	2.0000	4.0000	18.0000	94.0000
CASE	147	2.0000	4.0000	19.0000	122.0000
CASE	148	2.0000	4.0000	15.0000	60.0000
CASE	149	2.0000	4.0000	16.0000	75.0000
CASE	150	2.0000	4.0000	19.0000	103.0000
CASE	151	2.0000	4.0000	18.0000	102.0000
CASE	152	2.0000	4.0000	17.0000	73.0000
CASE	153	2.0000	4.0000	16.0000	57.0000
CASE	154	2.0000	4.0000	18.0000	97.0000
CASE	155	3.0000	1.0000	19.0000	121.0000
CASE	156	3.0000	1.0000	17.0000	88.0000
CASE	157	3.0000	1.0000	18.0000	121.0000
CASE	158	3.0000	1.0000	16.0000	68.0000
CASE	159	3.0000	1.0000	17.0000	81.0000
CASE	160	3.0000	1.0000	17.0000	85.0000
CASE	161	3.0000	1.0000	17.0000	88.0000
CASE	162	3.0000	1.0000	18.0000	95.0000
CASE	163	3.0000	1.0000	19.0000	126.0000
CASE	164	3.0000	1.0000	14.0000	44.0000
CASE	165	3.0000	1.0000	19.0000	101.0000
CASE	166	3.0000	1.0000	13.0000	35.0000
CASE	167	3.0000	1.0000	18.0000	98.0000
CASE	168	3.0000	1.0000	19.0000	118.0000
CASE	169	3.0000	1.0000	17.0000	93.0000
CASE	170	3.0000	1.0000	17.0000	89.0000
CASE	171	3.0000	1.0000	18.0000	99.0000
CASE	172	3.0000	1.0000	18.0000	101.0000
CASE	173	3.0000	1.0000	8.0000	14.0000
CASE	174	3.0000	2.0000	18.0000	88.0000
CASE	175	3.0000	2.0000	15.0000	49.0000
CASE	176	3.0000	2.0000	16.0000	75.0000
CASE	177	3.0000	2.0000	11.0000	32.0000
CASE	178	3.0000	2.0000	17.0000	83.0000
CASE	179	3.0000	2.0000	17.0000	88.0000
CASE	180	3.0000	2.0000	19.0000	120.0000
CASE	181	3.0000	2.0000	16.0000	72.0000
CASE	182	3.0000	2.0000	15.0000	45.0000
CASE	183	3.0000	2.0000	17.0000	82.0000
CASE	184	3.0000	2.0000	17.0000	87.0000
CASE	185	3.0000	2.0000	20.0000	131.0000
CASE	186	3.0000	2.0000	17.0000	88.0000
CASE	187	3.0000	2.0000	16.0000	87.0000
CASE	188	3.0000	2.0000	14.0000	43.0000
CASE	189	3.0000	2.0000	19.0000	117.0000
CASE	190	3.0000	2.0000	18.0000	115.0000
CASE	191	3.0000	2.0000	17.0000	89.0000
CASE	192	3.0000	2.0000	18.0000	106.0000
CASE	193	3.0000	2.0000	16.0000	67.0000
CASE	194	3.0000	3.0000	19.0000	129.0000
CASE	195	3.0000	3.0000	17.0000	98.0000
CASE	196	3.0000	3.0000	18.0000	118.0000
CASE	197	3.0000	3.0000	18.0000	105.0000
CASE	198	3.0000	3.0000	15.0000	44.0000
CASE	199	3.0000	3.0000	16.0000	64.0000
CASE	200	3.0000	3.0000	15.0000	49.0000

CASE	201	3.0000	3.0000	19.0000	111.0000
CASE	202	3.0000	3.0000	18.0000	91.0000
CASE	203	3.0000	3.0000	15.0000	55.0000
CASE	204	3.0000	3.0000	16.0000	65.0000
CASE	205	3.0000	3.0000	18.0000	99.0000
CASE	206	3.0000	3.0000	21.0000	138.0000
CASE	207	3.0000	3.0000	16.0000	68.0000
CASE	208	3.0000	3.0000	17.0000	77.0000
CASE	209	3.0000	3.0000	18.0000	110.0000
CASE	210	3.0000	3.0000	16.0000	65.0000
CASE	211	3.0000	3.0000	16.0000	68.0000
CASE	212	3.0000	3.0000	14.0000	44.0000
CASE	213	3.0000	3.0000	17.0000	87.0000
CASE	214	3.0000	4.0000	13.0000	39.0000
CASE	215	3.0000	4.0000	14.0000	45.0000
CASE	216	3.0000	4.0000	18.0000	92.0000
CASE	217	3.0000	4.0000	17.0000	86.0000
CASE	218	3.0000	4.0000	18.0000	109.0000
CASE	219	3.0000	4.0000	17.0000	83.0000
CASE	220	3.0000	4.0000	18.0000	102.0000
CASE	221	3.0000	4.0000	15.0000	53.0000
CASE	222	3.0000	4.0000	19.0000	122.0000
CASE	223	3.0000	4.0000	18.0000	109.0000
CASE	224	3.0000	4.0000	18.0000	117.0000
CASE	225	3.0000	4.0000	16.0000	68.0000
CASE	226	3.0000	4.0000	14.0000	48.0000
CASE	227	3.0000	4.0000	18.0000	100.0000
CASE	228	3.0000	4.0000	19.0000	122.0000
CASE	229	3.0000	4.0000	18.0000	92.0000
CASE	230	3.0000	4.0000	17.0000	79.0000
CASE	231	3.0000	4.0000	18.0000	89.0000
CASE	232	3.0000	4.0000	18.0000	90.0000
CASE	233	3.0000	4.0000	19.0000	103.0000
CASE	234	4.0000	1.0000	19.0000	128.0000
CASE	235	4.0000	1.0000	17.0000	80.0000
CASE	236	4.0000	1.0000	18.0000	90.0000
CASE	237	4.0000	1.0000	17.0000	88.0000
CASE	238	4.0000	1.0000	17.0000	82.0000
CASE	239	4.0000	1.0000	16.0000	77.0000
CASE	240	4.0000	1.0000	17.0000	88.0000
CASE	241	4.0000	1.0000	19.0000	120.0000
CASE	242	4.0000	1.0000	18.0000	101.0000
CASE	243	4.0000	1.0000	17.0000	74.0000
CASE	244	4.0000	1.0000	18.0000	110.0000
CASE	245	4.0000	1.0000	18.0000	97.0000
CASE	246	4.0000	1.0000	17.0000	76.0000
CASE	247	4.0000	1.0000	20.0000	133.0000
CASE	248	4.0000	1.0000	17.0000	87.0000
CASE	249	4.0000	1.0000	17.0000	82.0000
CASE	250	4.0000	1.0000	18.0000	94.0000
CASE	251	4.0000	1.0000	18.0000	96.0000
CASE	252	4.0000	2.0000	15.0000	55.0000
CASE	253	4.0000	2.0000	18.0000	106.0000
CASE	254	4.0000	2.0000	18.0000	113.0000
CASE	255	4.0000	2.0000	16.0000	68.0000
CASE	256	4.0000	2.0000	16.0000	72.0000
CASE	257	4.0000	2.0000	15.0000	70.0000
CASE	258	4.0000	2.0000	21.0000	138.0000
CASE	259	4.0000	2.0000	16.0000	78.0000
CASE	260	4.0000	2.0000	19.0000	120.0000
CASE	261	4.0000	2.0000	19.0000	118.0000
CASE	262	4.0000	2.0000	17.0000	74.0000
CASE	263	4.0000	2.0000	19.0000	103.0000
CASE	264	4.0000	2.0000	19.0000	123.0000
CASE	265	4.0000	2.0000	18.0000	96.0000
CASE	266	4.0000	2.0000	18.0000	92.0000
CASE	267	4.0000	2.0000	19.0000	116.0000
CASE	268	4.0000	2.0000	17.0000	77.0000
CASE	269	4.0000	2.0000	17.0000	82.0000
CASE	270	4.0000	2.0000	19.0000	116.0000
CASE	271	4.0000	2.0000	20.0000	135.0000
CASE	272	4.0000	3.0000	17.0000	86.0000

CASE	273	4.0000	3.0000	19.0000	122.0000
CASE	274	4.0000	3.0000	18.0000	111.0000
CASE	275	4.0000	3.0000	19.0000	121.0000
CASE	276	4.0000	3.0000	18.0000	114.0000
CASE	277	4.0000	3.0000	16.0000	74.0000
CASE	278	4.0000	3.0000	17.0000	98.0000
CASE	279	4.0000	3.0000	17.0000	92.0000
CASE	280	4.0000	3.0000	17.0000	86.0000
CASE	281	4.0000	3.0000	18.0000	104.0000
CASE	282	4.0000	3.0000	18.0000	95.0000
CASE	283	4.0000	3.0000	17.0000	73.0000
CASE	284	4.0000	3.0000	13.0000	33.0000
CASE	285	4.0000	3.0000	17.0000	80.0000
CASE	286	4.0000	3.0000	13.0000	35.0000
CASE	287	4.0000	3.0000	18.0000	106.0000
CASE	288	4.0000	3.0000	17.0000	72.0000
CASE	289	4.0000	3.0000	18.0000	120.0000
CASE	290	4.0000	3.0000	20.0000	138.0000
CASE	291	4.0000	4.0000	20.0000	144.0000
CASE	292	4.0000	4.0000	19.0000	119.0000
CASE	293	4.0000	4.0000	17.0000	86.0000
CASE	294	4.0000	4.0000	19.0000	124.0000
CASE	295	4.0000	4.0000	18.0000	104.0000
CASE	296	4.0000	4.0000	15.0000	58.0000
CASE	297	4.0000	4.0000	18.0000	105.0000
CASE	298	4.0000	4.0000	19.0000	120.0000
CASE	299	4.0000	4.0000	17.0000	84.0000
CASE	300	4.0000	4.0000	17.0000	78.0000
CASE	301	4.0000	4.0000	18.0000	100.0000
CASE	302	4.0000	4.0000	19.0000	108.0000
CASE	303	4.0000	4.0000	18.0000	111.0000
CASE	304	4.0000	4.0000	19.0000	130.0000
CASE	305	4.0000	4.0000	18.0000	108.0000
CASE	306	4.0000	4.0000	17.0000	77.0000
CASE	307	4.0000	4.0000	12.0000	25.0000
CASE	308	4.0000	4.0000	17.0000	84.0000
CASE	309	4.0000	4.0000	16.0000	71.0000
CASE	310	4.0000	4.0000	17.0000	76.0000
CASE	311	5.0000	1.0000	12.0000	17.0000
CASE	312	5.0000	1.0000	10.0000	12.0000
CASE	313	5.0000	1.0000	21.0000	162.0000
CASE	314	5.0000	1.0000	16.0000	69.0000
CASE	315	5.0000	1.0000	18.0000	97.0000
CASE	316	5.0000	1.0000	19.0000	106.0000
CASE	317	5.0000	1.0000	19.0000	125.0000
CASE	318	5.0000	1.0000	16.0000	76.0000
CASE	319	5.0000	1.0000	15.0000	52.0000
CASE	320	5.0000	1.0000	18.0000	108.0000
CASE	321	5.0000	1.0000	20.0000	138.0000
CASE	322	5.0000	1.0000	22.0000	191.0000
CASE	323	5.0000	1.0000	20.0000	138.0000
CASE	324	5.0000	1.0000	15.0000	63.0000
CASE	325	5.0000	1.0000	17.0000	95.0000
CASE	326	5.0000	1.0000	18.0000	109.0000
CASE	327	5.0000	1.0000	18.0000	100.0000
CASE	328	5.0000	1.0000	17.0000	69.0000
CASE	329	5.0000	1.0000	17.0000	74.0000
CASE	330	5.0000	1.0000	18.0000	75.0000
CASE	331	5.0000	2.0000	15.0000	48.0000
CASE	332	5.0000	2.0000	13.0000	31.0000
CASE	333	5.0000	2.0000	17.0000	82.0000
CASE	334	5.0000	2.0000	15.0000	48.0000
CASE	335	5.0000	2.0000	17.0000	63.0000
CASE	336	5.0000	2.0000	16.0000	69.0000
CASE	337	5.0000	2.0000	18.0000	105.0000
CASE	338	5.0000	2.0000	15.0000	67.0000
CASE	339	5.0000	2.0000	14.0000	48.0000
CASE	340	5.0000	2.0000	16.0000	61.0000
CASE	341	5.0000	2.0000	19.0000	112.0000
CASE	342	5.0000	2.0000	21.0000	169.0000
CASE	343	5.0000	2.0000	17.0000	88.0000
CASE	344	5.0000	2.0000	18.0000	106.0000

CASE	345	5.0000	2.0000	15.0000	58.0000
CASE	346	5.0000	2.0000	20.0000	137.0000
CASE	347	5.0000	2.0000	15.0000	57.0000
CASE	348	5.0000	2.0000	17.0000	80.0000
CASE	349	5.0000	2.0000	17.0000	73.0000
CASE	350	5.0000	2.0000	14.0000	54.0000
CASE	351	5.0000	3.0000	19.0000	118.0000
CASE	352	5.0000	3.0000	17.0000	78.0000
CASE	353	5.0000	3.0000	15.0000	63.0000
CASE	354	5.0000	3.0000	14.0000	40.0000
CASE	355	5.0000	3.0000	17.0000	85.0000
CASE	356	5.0000	3.0000	11.0000	21.0000
CASE	357	5.0000	3.0000	15.0000	50.0000
CASE	358	5.0000	3.0000	18.0000	111.0000
CASE	359	5.0000	3.0000	18.0000	117.0000
CASE	360	5.0000	3.0000	14.0000	48.0000
CASE	361	5.0000	3.0000	15.0000	52.0000
CASE	362	5.0000	3.0000	13.0000	35.0000
CASE	363	5.0000	3.0000	15.0000	66.0000
CASE	364	5.0000	3.0000	19.0000	124.0000
CASE	365	5.0000	3.0000	19.0000	123.0000
CASE	366	5.0000	3.0000	18.0000	88.0000
CASE	367	5.0000	3.0000	18.0000	108.0000
CASE	368	5.0000	3.0000	19.0000	121.0000
CASE	369	5.0000	3.0000	17.0000	84.0000
CASE	370	5.0000	4.0000	17.0000	81.0000
CASE	371	5.0000	4.0000	22.0000	196.0000
CASE	372	5.0000	4.0000	20.0000	146.0000
CASE	373	5.0000	4.0000	19.0000	129.0000
CASE	374	5.0000	4.0000	20.0000	163.0000
CASE	375	5.0000	4.0000	19.0000	115.0000
CASE	376	5.0000	4.0000	21.0000	165.0000
CASE	377	5.0000	4.0000	18.0000	110.0000
CASE	378	5.0000	4.0000	19.0000	133.0000
CASE	379	5.0000	4.0000	18.0000	112.0000
CASE	380	5.0000	4.0000	19.0000	118.0000
CASE	381	5.0000	4.0000	19.0000	121.0000
CASE	382	5.0000	4.0000	19.0000	125.0000
CASE	383	5.0000	4.0000	17.0000	97.0000
CASE	384	5.0000	4.0000	18.0000	110.0000
CASE	385	5.0000	4.0000	17.0000	91.0000
CASE	386	5.0000	4.0000	17.0000	83.0000
CASE	387	5.0000	4.0000	17.0000	76.0000
CASE	388	5.0000	4.0000	18.0000	105.0000
CASE	389	5.0000	4.0000	17.0000	98.0000
CASE	390	6.0000	1.0000	17.0000	80.0000
CASE	391	6.0000	1.0000	11.0000	29.0000
CASE	392	6.0000	1.0000	18.0000	122.0000
CASE	393	6.0000	1.0000	18.0000	97.0000
CASE	394	6.0000	1.0000	21.0000	157.0000
CASE	395	6.0000	1.0000	17.0000	75.0000
CASE	396	6.0000	1.0000	20.0000	165.0000
CASE	397	6.0000	1.0000	19.0000	125.0000
CASE	398	6.0000	1.0000	20.0000	132.0000
CASE	399	6.0000	1.0000	17.0000	88.0000
CASE	400	6.0000	1.0000	17.0000	101.0000
CASE	401	6.0000	1.0000	16.0000	71.0000
CASE	402	6.0000	1.0000	17.0000	77.0000
CASE	403	6.0000	1.0000	17.0000	94.0000
CASE	404	6.0000	1.0000	18.0000	98.0000
CASE	405	6.0000	1.0000	20.0000	135.0000
CASE	406	6.0000	1.0000	17.0000	88.0000
CASE	407	6.0000	1.0000	18.0000	98.0000
CASE	408	6.0000	1.0000	17.0000	88.0000
CASE	409	6.0000	1.0000	18.0000	100.0000
CASE	410	6.0000	2.0000	18.0000	116.0000
CASE	411	6.0000	2.0000	18.0000	111.0000
CASE	412	6.0000	2.0000	15.0000	58.0000
CASE	413	6.0000	2.0000	15.0000	55.0000
CASE	414	6.0000	2.0000	16.0000	66.0000
CASE	415	6.0000	2.0000	15.0000	56.0000
CASE	416	6.0000	2.0000	18.0000	110.0000

105

CASE	417	6.0000	2.0000	15.0000	62.0000
CASE	418	6.0000	2.0000	13.0000	45.0000
CASE	419	6.0000	2.0000	15.0000	63.0000
CASE	420	6.0000	2.0000	18.0000	104.0000
CASE	421	6.0000	2.0000	18.0000	106.0000
CASE	422	6.0000	2.0000	19.0000	144.0000
CASE	423	6.0000	2.0000	19.0000	122.0000
CASE	424	6.0000	2.0000	17.0000	96.0000
CASE	425	6.0000	2.0000	16.0000	55.0000
CASE	426	6.0000	2.0000	17.0000	79.0000
CASE	427	6.0000	2.0000	18.0000	118.0000
CASE	428	6.0000	2.0000	17.0000	80.0000
CASE	429	6.0000	2.0000	17.0000	83.0000
CASE	430	6.0000	3.0000	16.0000	74.0000
CASE	431	6.0000	3.0000	16.0000	76.0000
CASE	432	6.0000	3.0000	17.0000	90.0000
CASE	433	6.0000	3.0000	17.0000	88.0000
CASE	434	6.0000	3.0000	16.0000	76.0000
CASE	435	6.0000	3.0000	16.0000	71.0000
CASE	436	6.0000	3.0000	18.0000	123.0000
CASE	437	6.0000	3.0000	17.0000	85.0000
CASE	438	6.0000	3.0000	19.0000	118.0000
CASE	439	6.0000	3.0000	19.0000	116.0000
CASE	440	6.0000	3.0000	16.0000	65.0000
CASE	441	6.0000	3.0000	17.0000	92.0000
CASE	442	6.0000	3.0000	18.0000	107.0000
CASE	443	6.0000	3.0000	18.0000	110.0000
CASE	444	6.0000	3.0000	18.0000	115.0000
CASE	445	6.0000	3.0000	17.0000	96.0000
CASE	446	6.0000	3.0000	17.0000	86.0000
CASE	447	6.0000	3.0000	14.0000	48.0000
CASE	448	6.0000	3.0000	18.0000	96.0000
CASE	449	6.0000	4.0000	14.0000	50.0000
CASE	450	6.0000	4.0000	12.0000	42.0000
CASE	451	6.0000	4.0000	14.0000	42.0000
CASE	452	6.0000	4.0000	14.0000	44.0000
CASE	453	6.0000	4.0000	17.0000	91.0000
CASE	454	6.0000	4.0000	20.0000	151.0000
CASE	455	6.0000	4.0000	21.0000	169.0000
CASE	456	6.0000	4.0000	19.0000	122.0000
CASE	457	6.0000	4.0000	17.0000	85.0000
CASE	458	6.0000	4.0000	20.0000	119.0000
CASE	459	6.0000	4.0000	18.0000	110.0000
CASE	460	6.0000	4.0000	19.0000	99.0000
CASE	461	6.0000	4.0000	19.0000	109.0000
CASE	462	6.0000	4.0000	21.0000	145.0000
CASE	463	6.0000	4.0000	17.0000	92.0000
CASE	464	7.0000	1.0000	21.0000	155.0000
CASE	465	7.0000	1.0000	13.0000	34.0000
CASE	466	7.0000	1.0000	19.0000	122.0000
CASE	467	7.0000	1.0000	16.0000	69.0000
CASE	468	7.0000	1.0000	21.0000	176.0000
CASE	469	7.0000	1.0000	17.0000	93.0000
CASE	470	7.0000	1.0000	15.0000	58.0000
CASE	471	7.0000	1.0000	20.0000	157.0000
CASE	472	7.0000	1.0000	16.0000	70.0000
CASE	473	7.0000	1.0000	19.0000	153.0000
CASE	474	7.0000	1.0000	18.0000	115.0000
CASE	475	7.0000	1.0000	14.0000	53.0000
CASE	476	7.0000	1.0000	17.0000	92.0000
CASE	477	7.0000	1.0000	20.0000	144.0000
CASE	478	7.0000	1.0000	18.0000	106.0000
CASE	479	7.0000	1.0000	16.0000	64.0000
CASE	480	7.0000	1.0000	16.0000	65.0000
CASE	481	7.0000	1.0000	13.0000	42.0000
CASE	482	7.0000	2.0000	19.0000	165.0000
CASE	483	7.0000	2.0000	19.0000	153.0000
CASE	484	7.0000	2.0000	19.0000	138.0000
CASE	485	7.0000	2.0000	20.0000	167.0000
CASE	486	7.0000	2.0000	18.0000	127.0000
CASE	487	7.0000	2.0000	19.0000	153.0000
CASE	488	7.0000	2.0000	16.0000	79.0000

106

CASE	489	7.0000	2.0000	17.0000	95.0000
CASE	490	7.0000	3.0000	17.0000	91.0000
CASE	491	7.0000	3.0000	12.0000	32.0000
CASE	492	7.0000	3.0000	17.0000	96.0000
CASE	493	7.0000	3.0000	17.0000	101.0000
CASE	494	7.0000	3.0000	18.0000	128.0000
CASE	495	7.0000	3.0000	17.0000	88.0000
CASE	496	7.0000	3.0000	18.0000	122.0000
CASE	497	7.0000	3.0000	18.0000	111.0000
CASE	498	7.0000	3.0000	18.0000	114.0000
CASE	499	7.0000	3.0000	18.0000	118.0000
CASE	500	7.0000	3.0000	17.0000	86.0000
CASE	501	7.0000	3.0000	18.0000	97.0000
CASE	502	7.0000	3.0000	18.0000	106.0000
CASE	503	7.0000	4.0000	16.0000	64.0000
CASE	504	7.0000	4.0000	17.0000	87.0000
CASE	505	7.0000	4.0000	17.0000	79.0000
CASE	506	7.0000	4.0000	18.0000	105.0000
CASE	507	7.0000	4.0000	17.0000	92.0000
CASE	508	7.0000	4.0000	17.0000	86.0000
CASE	509	7.0000	4.0000	15.0000	50.0000
CASE	510	7.0000	4.0000	19.0000	137.0000
CASE	511	7.0000	4.0000	20.0000	149.0000
CASE	512	7.0000	4.0000	21.0000	155.0000
CASE	513	7.0000	4.0000	16.0000	70.0000
CASE	514	7.0000	4.0000	17.0000	95.0000

Chlorpyrifos : F1 Lengths and Weights

ANOVA on Weights
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000 3.0000 4.0000

DEP VAR: WT N: 514 MULTIPLE R: 0.342 SQUARED MULTIPLE R: 0.117
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	22706.2388	6	3784.3731	4.2305	0.0004
REP	4060.6376	3	1353.5459	1.5131	0.2103
TRT*REP	32378.7743	18	1798.8208	2.0109	0.0082
ERROR	434751.8608	486	894.5512		

Post-hoc pairwise comparison of weight/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF WT

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-0.5577	0.0000			
3	0.3730	0.9308	0.0000		
4	9.8633	10.4211	9.4903	0.0000	
5	7.4855	8.0433	7.1125	-2.3778	0.0000
6	8.9046	9.4624	8.5316	-0.9587	1.4191
7	22.1263	22.6840	21.7533	12.2630	14.6408

	6	7
6	0.0000	
7	13.2217	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	0.8425	0.6804	1.0000	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	0.0015	0.0011	0.0019	0.5739	0.1715

	6	7
6	1.0000	
7	0.3892	1.0000

108

Chlorpyrifos : F1 Lengths and Weights

ANOVA on Lengths
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.0000 2.0000 3.0000 4.0000 5.0000 6.0000
7.0000
REP
1.0000 2.0000 3.0000 4.0000

DEP VAR: LEN N: 514 MULTIPLE R: 0.266 SQUARED MULTIPLE R: 0.071
ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	24.9851	6	4.1642	1.1670	0.3226
REP	19.9350	3	6.6450	1.8623	0.1351
TRT*REP	83.6837	18	4.6491	1.3029	0.1801
ERROR	1734.1343	486	3.5682		

Post-hoc pairwise comparison of length/Bonferroni.
COL/
ROW TRT
1 1.0000
2 2.0000
3 3.0000
4 4.0000
5 5.0000
6 6.0000
7 7.0000

USING LEAST SQUARES MEANS.

POST HOC TEST OF LEN

MATRIX OF PAIRWISE MEAN DIFFERENCES:

	1	2	3	4	5
1	0.0000				
2	-0.0658	0.0000			
3	-0.2638	-0.1980	0.0000		
4	0.4081	0.4739	0.6719	0.0000	
5	0.0309	0.0967	0.2947	-0.3772	0.0000
6	0.0811	0.1469	0.3450	-0.3270	0.0502
7	0.4127	0.4785	0.6765	0.0046	0.3818

	6	7
6	0.0000	
7	0.3316	0.0000

BONFERRONI ADJUSTMENT.
MATRIX OF PAIRWISE COMPARISON PROBABILITIES:

	1	2	3	4	5
1	1.0000				
2	1.0000	1.0000			
3	1.0000	1.0000	1.0000		
4	1.0000	1.0000	0.5646	1.0000	
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000

	6	7
6	1.0000	
7	1.0000	1.0000

Chlorpyrifos : F1 Lengths and Weights

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000

TOTAL OBSERVATIONS: 79

	WT	LEN
N OF CASES	79	79
MINIMUM	30.0000	13.0000
MAXIMUM	181.0000	22.0000
MEAN	85.2785	17.1392
STANDARD DEV	31.2562	1.8448

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000

TOTAL OBSERVATIONS: 75

	WT	LEN
N OF CASES	75	75
MINIMUM	32.0000	13.0000
MAXIMUM	146.0000	20.0000
MEAN	84.6933	17.0667
STANDARD DEV	23.3429	1.5008

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000

TOTAL OBSERVATIONS: 79

	WT	LEN
N OF CASES	79	79
MINIMUM	14.0000	8.0000
MAXIMUM	138.0000	21.0000
MEAN	85.5949	16.8734
STANDARD DEV	27.1461	2.0215

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000

TOTAL OBSERVATIONS: 77

	WT	LEN
N OF CASES	77	77
MINIMUM	25.0000	12.0000
MAXIMUM	144.0000	21.0000
MEAN	95.1558	17.5455
STANDARD DEV	24.4422	1.5606

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000

TOTAL OBSERVATIONS: 79

	WT	LEN
N OF CASES	79	79
MINIMUM	12.0000	10.0000
MAXIMUM	196.0000	22.0000
MEAN	92.8861	17.1772
STANDARD DEV	38.8531	2.3575

110

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000

TOTAL OBSERVATIONS: 74

	WT	LEN
N OF CASES	74	74
MINIMUM	29.0000	11.0000
MAXIMUM	169.0000	21.0000
MEAN	93.9324	17.2027
STANDARD DEV	30.3366	1.9583

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000

TOTAL OBSERVATIONS: 51

	WT	LEN
N OF CASES	51	51
MINIMUM	32.0000	12.0000
MAXIMUM	176.0000	21.0000
MEAN	104.0000	17.4314
STANDARD DEV	37.2317	1.9724

SUMMARY STATISTICS FOR WT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 32.6462 DF= 6 PROBABILITY = 0.0000

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	18743.3577	6	3123.8930	3.3439	0.0031
WITHIN GROUPS	473645.6248	507	934.2123		

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 21.6009 DF= 6 PROBABILITY = 0.0014

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	21.9835	6	3.6639	1.0074	0.4196
WITHIN GROUPS	1843.9484	507	3.6370		

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 1.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	52.0000	15.0000
MAXIMUM	181.0000	22.0000
MEAN	92.0000	17.3500
STANDARD DEV	37.0689	2.1095

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	35.0000	14.0000
MAXIMUM	144.0000	20.0000
MEAN	80.3500	17.1500
STANDARD DEV	32.4982	1.9541

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 3.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	30.0000	13.0000
MAXIMUM	141.0000	20.0000
MEAN	82.7895	16.8947
STANDARD DEV	29.6640	1.8528

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.0000
REP = 4.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	41.0000	14.0000
MAXIMUM	141.0000	20.0000
MEAN	85.8500	17.1500
STANDARD DEV	25.8279	1.5313

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 1.0000

TOTAL OBSERVATIONS: 18

	WT	LEN
N OF CASES	18	18
MINIMUM	35.0000	13.0000
MAXIMUM	120.0000	19.0000
MEAN	74.1111	16.4444
STANDARD DEV	22.8650	1.5801

112

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	32.0000	13.0000
MAXIMUM	128.0000	19.0000
MEAN	80.2000	16.6500
STANDARD DEV	23.9640	1.5313

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 3.0000

TOTAL OBSERVATIONS: 18

	WT	LEN
N OF CASES	18	18
MINIMUM	54.0000	15.0000
MAXIMUM	115.0000	19.0000
MEAN	90.5000	17.5556
STANDARD DEV	17.3383	1.1490

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.0000
REP = 4.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	57.0000	15.0000
MAXIMUM	146.0000	20.0000
MEAN	93.9474	17.6316
STANDARD DEV	24.4483	1.4225

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 1.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	14.0000	8.0000
MAXIMUM	126.0000	19.0000
MEAN	87.6316	16.7895
STANDARD DEV	29.6577	2.6579

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	32.0000	11.0000
MAXIMUM	131.0000	20.0000
MEAN	83.2000	16.6500
STANDARD DEV	26.9182	1.9808

113

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 3.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	44.0000	14.0000
MAXIMUM	138.0000	21.0000
MEAN	84.2500	16.9500
STANDARD DEV	28.4418	1.7006

THE FOLLOWING RESULTS ARE FOR:
TRT = 3.0000
REP = 4.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	39.0000	13.0000
MAXIMUM	122.0000	19.0000
MEAN	87.4000	17.1000
STANDARD DEV	25.3552	1.7741

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 1.0000

TOTAL OBSERVATIONS: 18

	WT	LEN
N OF CASES	18	18
MINIMUM	74.0000	16.0000
MAXIMUM	133.0000	20.0000
MEAN	94.6111	17.6667
STANDARD DEV	17.6540	0.9701

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	55.0000	15.0000
MAXIMUM	138.0000	21.0000
MEAN	97.6000	17.8000
STANDARD DEV	24.4506	1.6416

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 3.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	33.0000	13.0000
MAXIMUM	138.0000	20.0000
MEAN	92.6316	17.2105
STANDARD DEV	27.7833	1.7505

THE FOLLOWING RESULTS ARE FOR:
TRT = 4.0000
REP = 4.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	25.0000	12.0000
MAXIMUM	144.0000	20.0000
MEAN	95.6000	17.5000
STANDARD DEV	27.7231	1.7622

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 1.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	12.0000	10.0000
MAXIMUM	191.0000	22.0000
MEAN	93.8000	17.3000
STANDARD DEV	44.2417	2.8488

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	31.0000	13.0000
MAXIMUM	169.0000	21.0000
MEAN	77.8000	16.4500
STANDARD DEV	33.7305	2.0641

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 3.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	21.0000	11.0000
MAXIMUM	124.0000	19.0000
MEAN	80.6316	16.3684
STANDARD DEV	33.6852	2.3383

THE FOLLOWING RESULTS ARE FOR:
TRT = 5.0000
REP = 4.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	76.0000	17.0000
MAXIMUM	196.0000	22.0000
MEAN	118.7000	18.5500
STANDARD DEV	30.5788	1.4318

115

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 1.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	29.0000	11.0000
MAXIMUM	165.0000	21.0000
MEAN	101.0000	17.6500
STANDARD DEV	31.4006	2.0590

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 2.0000

TOTAL OBSERVATIONS: 20

	WT	LEN
N OF CASES	20	20
MINIMUM	45.0000	13.0000
MAXIMUM	144.0000	19.0000
MEAN	86.4500	16.7000
STANDARD DEV	28.5537	1.6255

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 3.0000

TOTAL OBSERVATIONS: 19

	WT	LEN
N OF CASES	19	19
MINIMUM	48.0000	14.0000
MAXIMUM	123.0000	19.0000
MEAN	91.1579	17.0526
STANDARD DEV	20.2162	1.2236

THE FOLLOWING RESULTS ARE FOR:
TRT = 6.0000
REP = 4.0000

TOTAL OBSERVATIONS: 15

	WT	LEN
N OF CASES	15	15
MINIMUM	42.0000	12.0000
MAXIMUM	169.0000	21.0000
MEAN	98.0000	17.4667
STANDARD DEV	40.6096	2.8251

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 1.0000

TOTAL OBSERVATIONS: 18

	WT	LEN
N OF CASES	18	18
MINIMUM	34.0000	13.0000
MAXIMUM	176.0000	21.0000
MEAN	98.2222	17.1667
STANDARD DEV	44.5045	2.5263

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 2.0000

TOTAL OBSERVATIONS: 8

	WT	LEN
N OF CASES	8	8
MINIMUM	79.0000	16.0000
MAXIMUM	167.0000	20.0000
MEAN	134.6250	18.3750
STANDARD DEV	32.4695	1.3025

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 3.0000

TOTAL OBSERVATIONS: 13

	WT	LEN
N OF CASES	13	13
MINIMUM	32.0000	12.0000
MAXIMUM	128.0000	18.0000
MEAN	99.2308	17.1538
STANDARD DEV	24.1666	1.6251

THE FOLLOWING RESULTS ARE FOR:
TRT = 7.0000
REP = 4.0000

TOTAL OBSERVATIONS: 12

	WT	LEN
N OF CASES	12	12
MINIMUM	50.0000	15.0000
MAXIMUM	155.0000	21.0000
MEAN	97.4167	17.5000
STANDARD DEV	33.4812	1.7321

SUMMARY STATISTICS FOR WT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 49.3465 DF= 27 PROBABILITY = 0.0054

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	57637.1217	27	2134.7082	2.3863	0.0001
WITHIN GROUPS	434751.8608	486	894.5512		

SUMMARY STATISTICS FOR LEN

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES

CHI-SQUARE = 60.2399 DF= 27 PROBABILITY = 0.0002

ANALYSIS OF VARIANCE

SOURCE	SUM OF SQUARES	DF	MEAN SQUARE	F	PROBABILITY
BETWEEN GROUPS	131.7976	27	4.8814	1.3680	0.1047
WITHIN GROUPS	1734.1343	486	3.5682		

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

VARIABLE	N-OF-CASES	MAXDIF	PROBABILITY (2-TAIL)
WT	514.0000	1.0000	0.0000
LEN	514.0000	1.0000	0.0000

Ecological Effects Branch One-Liner Data Entry Form

Chemical Chlorpyrifos Shaughnessy No. 059101 Pesticide Use _____

AQUATIC VERTEBRATE TOX.	% AI	LC_{50} (95%CL) SLOPE	HRS/ TYPE	NOEC	STUDY/REVIEW DATES	MRID/ CATEGORY	LAB	RC
1.								
2.								
3.								
4.								
5.								
6.								
7.								
CHRONIC TOX.	**% AI**	**MATC**	**DAYS**	**AFFECTED PARA.**	**STUDY/ REVIEW DATES**	**MRID/ CATEGORY**	**LAB**	**RC**
1. *Pimephales promelas*	99.7	>144 <300 ng/l (geo. mean MATC = 209 ng/l)	216	% eggs hatched	1993/1993	42834401	DOW	RGM

18

COMMENTS: DOW=Environmental Toxicology and Chemistry Research Laboratory, The Dow Chemical Company. Results based on mean measured concentrations.