

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Avian Species *Anas platyrhynchos*

PMRA Submission Number

EPA MRID Number 46369201

Data Requirement:

| | |
|-----------------|----------|
| PMRA DATA CODE | |
| EPA DP Barcode | D309280 |
| OECD Data Point | |
| EPA MRID | 46369201 |
| EPA Guideline | §71-4b |

Test material: Acetamiprid (NI-25) **Purity:** 100%
Common name: Acetamiprid
Chemical name: IUPAC: *N*¹-[(6-chloro-3-pyridyl)methyl]-*N*²-cyano-*N*¹-methylacetamidine
CAS name: Not reported
CAS No.: Not reported
Synonyms: None reported


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Reference/Submission No.:

Company Code:
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Date Evaluation Completed: 8/9/2005

CITATION: Stafford, J.M. 2004. Acetamiprid (NI-25) - Reproductive Toxicity Test with Mallard Duck (*Anas platyrhynchos*). Unpublished study performed by Springborn Smithers Laboratories, Snow Camp, NC. Laboratory Project ID No. 13798.4105. Study sponsored by Nippon Soda Co., Ltd., Chiyoda-ku, Tokyo, Japan. Study initiated October 30, 2003 September 10, 2004.



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EXECUTIVE SUMMARY:

The one-generation reproductive toxicity of acetamiprid (100% purity) to groups (17 pens/treatment level) of 1 male and 1 female of 20-week-old Mallard duck was assessed over approximately 22 weeks. Acetamiprid was administered to the birds in the diet at nominal concentrations of 0 (solvent control), 62.5, 125, 250, and 500 ppm a.i. diet. Mean-measured concentrations were <6.37(<LOQ, control), 60.2, 134, 258, and 461 ppm a.i. diet and it was reported in homogeneity assessments that the test substance was evenly distributed in the basal diet.

Both male and female Mallard body weight gain were statistically-reduced compared to the controls; the male body weights were affected at all treatment levels, while female body weight gains were reduced at the 258 and 461 ppm a.i. treatment levels. No other effect on any adult parameter was observed. The number of eggs laid was statistically-reduced at the 461 ppm a.i. level compared to the control (673 versus 896 eggs for 17 laying pairs). In addition, the number of eggs set, the number of viable embryos, and hatchling weights were statistically-reduced at the 461 ppm a.i. treatment level. No other effect on any reproductive endpoint was observed.

Based on treatment-related effects on adult male body weight gain (the most sensitive endpoint), the NOEC could not be determined and the LOEC level was 60.2 ppm a.i..

This toxicity study is scientifically sound. However, because a NOEC could not be defined, this study does not fulfill guideline requirements for an avian reproduction study using the Mallard duck (§71-4b) and it is classified as SUPPLEMENTAL.

Results Synopsis

Test Organism Size/Age: 20 weeks + 2 days old at test initiation (826-1361 g)

NOEC: <60.2 ppm a.i.

LOEC: 60.2 ppm a.i.

Endpoint(s) Affected: Adult male and female body weights, the numbers of eggs laid and set, viable embryos, and hatchling weight.

Most sensitive endpoint(s): Adult male body weight gain

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: The study protocol was based on procedures outlined in the the U.S. EPA FIFRA Pesticides Assessment Guidelines, §71-4 (1982); U.S. EPA OPPTS No. 850.2300 (*draft*, 1996); and OECD Guidelines for Testing of Chemicals, No. 206 (1984). Deviations from §71-4b are:

1. Two different formulations of feed were used during the definitive study. During quarantine, acclimation, and until approximately 1 week prior to photo-stimulation (i.e., Week 10), adult Mallard were fed Purina Game Bird Flight Conditioner. Thereafter, Mallard received Purina Layena game bird ration (p. 16 and Appendix 2, pp. 67 and 69).
2. Homogeneity assessments revealed that the test substance was not consistently mixed homogeneously into the basal diet, especially for feed prepared for Week 1. Based on the dates provided on p. 19, homogeneity samples were collected from treated feed prepared for Weeks 1, 10, and 16. The reviewer-

calculated coefficients of variation (C.V.) were 19.1, 2.4, and 4.8% for the three batches analyzed for the 62.5 ppm a.i. level, and 19.5, 5.9 and 8.0% for the three batches analyzed for the 500 ppm a.i. level (Table 1, pp. 32-33). The C.V. should not exceed 5.0%. Although not reported, the first batch may have been the only batch prepared using Purina Game Bird Flight Conditioner (prior to switching over the Purina Layena game bird ration).

3. A NOEC could not be determined for this study because significant adverse effects on male body weight gain were observed at all treatment levels.
4. It was not specified how long the opened eggshells (used for thickness measurements) were dried.
5. Signs of toxicity (or lack of) in chicks during the 14-day maintenance period were not described.

These deviations did not affect the scientific validity of the study. However, because a NOEC could not be determined, this study does not fulfill guideline requirements.

COMPLIANCE:

Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided. This study was conducted in accordance with all pertinent U.S. EPA and OECD GLP regulations with the following exceptions: routine water and food contaminant screening analyses and histopathology exams (i.e., no distinct protocol, Study Director, etc.).

A. MATERIALS:

1. Test Material

Acetamiprid (NI-25)

Description:

Pale yellow powder (p. 52)

Lot No./Batch No.:

NNI-03

Purity:

100% a.i.

Stability of Compound

Under Test Conditions:

Verified. After 42 days of ambient storage in treated feed prepared at 62.5 (low) and 500 ppm a.i. (high), recoveries averaged 83 and 103% of initial concentrations, respectively (reviewer-calculated from data provided in Tables 2-3, pp. 34-36). After 42 days of frozen storage, recoveries averaged 94 and 95% of initial concentrations, respectively.

Storage conditions

of test chemical:

Upon receipt, the test substance was stored at room temperature in a dark ventilated cabinet; 6 days later, it was placed in a freezer (<0°C).

OECD requires water solubility, stability in water and light, pK_a, P_{ow}, and vapor pressure of the test compound. The following OECD requirements were reported in the protocol (p. 52):

Water solubility:

2.95 x 10³ mg/L at 20°C and pH 7

Vapor pressure: $<1 \times 10^{-8}$ Pa

Specific gravity: 1.330 g/cm³

2. Test organism:

Table 1: Test organism.

| Parameter | Details | Remarks |
|--|---|--|
| | | Criteria |
| Species (common and scientific names): | Mallard duck (<i>Anas platyrhynchos</i>) | <i>EPA requires: a wild waterfowl species, preferably the mallard, Anas platyrhynchos, or an upland game species, preferably the northern bobwhite, Colinus virginianus.</i> |
| Age at Study Initiation: | 20 weeks + 2 days | The young adult birds were approaching their first breeding season. <i>EPA requires: birds should be approaching their first breeding season.</i> |
| Body Weight: (mean and range) | Overall range of 826-1361 g at study initiation. Group means at study initiation were 1132.8-1170.1 g for males and 965.5-1003.2 g for females (Table 6, p. 41). | Individual body weights were recorded at Weeks -2 (start of acclimation), 0, 2, 4, 6, 8, 11 (start of photo-stimulation), and 22 (test termination). Individual body weights are provided on pp. 82-87. All males lost wt during acclimation; females gained or maintained. <i>EPA requires that body weights should be recorded at test initiation and at biweekly intervals up to week eight or up to the onset of egg laying and at termination.</i> |
| Source: | Whistling Wings, Inc., Hanover, IL | Birds were phenotypically indistinguishable from wild birds. <i>EPA requires that all birds should be from the same source.</i> |

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding Study - None reported. The nominal test concentrations for the definitive study were selected by the Study Sponsor (p. 17).

b. Definitive Study

Table 2: Experimental Parameters.

| Parameter | Details | Remarks |
|------------------------------------|---|--|
| | | Criteria |
| Acclimation period: | 14 Days | Just prior to study initiation, one acclimated male was noted as having inflamed sinuses and labored breathing (p. 15). Because the remainder of the colony appeared healthy, this was considered an isolated case and the affected individual was euthanized. <i>EPA recommends a 2-3 week health observation period prior to selection of birds for treatment. Birds must be generally healthy without excess mortality. Feeding should be <u>ad libitum</u>, and sickness, injuries or mortality be noted.</i> |
| Conditions (same as test or not): | Same as test | |
| Feeding: | During acclimation and until photo-stimulation (Week 10), Mallard were offered Purina Game Bird Flight Conditioner (lot nos. 063APR0803 and 063OCT2703). Thereafter, Mallard were offered Purina Layena game bird ration (lot no. 063OCT2803). All feed was offered <i>ad libitum</i> . | |
| Health (any mortality observed): | No signs of illness, disease, or mortality were observed during the 72 hour period preceding the definitive study. | |
| Test duration pre-laying exposure: | Approximately 12 weeks | Photo-stimulation was initiated at the beginning of Week 11. |

egg-laying exposure: Approximately 10 weeks

withdrawal period, if used: None

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| Parameter | Details | Remarks |
|---|--|---|
| | | Criteria |
| | | <p><i>EPA requires</i></p> <p><u>Pre-laying exposure duration</u> At least 10 weeks prior to the onset of egg-laying.</p> <p><u>Exposure duration with egg-laying</u> At least 10 weeks.</p> <p><u>Withdrawal period</u> If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.</p> |
| <p>Pen (for parental and offspring) size:</p> <p>construction materials:</p> <p>number:</p> | <p>Parents (one pair) were housed in breeding cages measuring 76 x 83 x 44 cm. Offspring (by set and group) were housed in 61 x 91 x 46 cm brooders.</p> <p>Parental and offspring pens were constructed of polycarbonate-coated galvanized welded wire mesh.</p> <p>17 parental pens (replicates) per treatment level</p> | <p>Parental pens had slanted floors for egg collection.</p> <p><u>Pens</u> Adequate room and arranged to prevent cross contamination</p> <p><u>Materials</u> Nontoxic material and nonbinding material, such as galvanized steel.</p> <p><u>Number</u> At least 5 replicate pens are required for mallards housed in groups of 7. For other arrangements, at least 12 pens are required, but considerably more may be needed if birds are kept in pairs. Chicks are to be housed according to parental grouping.</p> |
| Number of birds per pen (male:female) | 2 birds/pen (1 male:1 female) | <p><i>EPA requires one male and 1 female per pen. For quail, 1 male and 2 females is acceptable. For ducks, 2 males and 5 females is acceptable.</i></p> |
| <p>Number of pens per group/treatment negative control:</p> <p>solvent control:</p> <p>treated:</p> | <p>17 pens</p> <p>N/A</p> <p>17 pens/treatment</p> | <p><i>EPA requires at least 12 pens, but considerably more if birds are kept in pairs. At least 16 is strongly recommended.</i></p> |

| Parameter | Details | Remarks |
|---|--|---|
| | | Criteria |
| Test concentrations (ppm diet) nominal: measured: | 0 (negative control), 62.5, 125, 250, and 500 ppm a.i. diet <6.37(<LOQ, control), 60.2, 134, 258, and 461 ppm a.i. diet | Measured concentrations were determined from treated diets prepared for all treatment levels on 11/17/03, 1/26/04, and 3/8/04 (Table 4, pp. 37-39). Mean-measured concentrations were determined by the reviewer using the means from each analysis. <i>EPA requires at least two concentrations other than the control are required; three or more are recommended.</i> |
| Maximum labeled field residue anticipated and source of information: | Not specified | <i>EPA requires that the highest test concentrations should show a significant effect or be at or above the actual or expected field residue level. The source [i.e., maximum label rate (in lb ai/A & ppm), label registration no., label date, and site should be cited]</i> |
| Solvent/vehicle, if used type: amount: | Acetone 0.045% (v:w) | Reviewer-calculated from treated feed components listed on p. 18. <i>EPA requires corn oil or other appropriate vehicle not more than 2% of diet by weight</i> |
| Was detailed description and nutrient analysis of the basal diet provided? (Yes/No) | Yes. From acclimation through 1 week prior to photo-stimulation, adult birds were fed Purina Game Bird Flight Conditioner, containing 19.0% protein, 2.0% crude fat, 12.0% crude fiber, and 0.85-1.35% calcium (Appendix 2, p. 69). Thereafter, test birds were fed Purina Layena game bird ration, containing 20.0% protein, 2.5% crude fat, 7.0% crude fiber, and 2.5-3.5% calcium (Appendix 2, p. 67). | Two different formulations of feed were used during the definitive study (p. 16). Offspring received free access to Purina Game Bird Starter, without the addition of test substance (Appendix 2, p. 68). |

| Parameter | Details | Remarks |
|---|--|---|
| | | Criteria |
| | | <i>EPA requires a commercial breeder feed (or its equivalent) that is appropriate for the test species.</i> |
| Preparation of test diet | The appropriate amount of test material was ground using a mortar and pestle and mechanical grinder, then quantitatively transferred with acetone to a portion of basal diet (p. 17). The treated feed was mixed for approximately 20 minutes using a Hobart mixer. Three sub-samples were prepared for each batch. The sub-samples were combined into one bulk batch and mixed in a Stow mixer for an additional 5 minutes. Treated diets were prepared every 14 to 20 days (11 total batches), and were stored at ambient conditions until needed (pp. 17-19). | Although it was not reported if the acetone was completely evaporated prior to offering, the volume of acetone used in the preparation of the treated diets was minimal and likely evaporated during the mixing procedure. <i>A premixed containing the test substance should be mechanically mixed with basal diet. If an evaporative vehicle is used, it must be completely evaporated prior to feeding.</i> |
| Indicate whether stability and homogeneity of test material in diet determined (Yes/No) | Yes | |
| Were concentrations in diet verified by chemical analysis? | Yes | Samples were analyzed from batches prepared at each toxicant level on 11/17/03, 1/26/04, and 3/8/04 (p. 19). |

| Parameter | Details | Remarks |
|--|---|---|
| | | <i>Criteria</i> |
| <p>Did chemical analysis confirm that diet was stable?</p> <p>and homogeneous?</p> | <p>Yes</p> <p>Yes, generally. Week one assessment revealed a 20% variability, with improvement in subsequent samples.</p> | <p>The stability of the test material was assessed prior to the definitive study (on 11/11/03) in diet prepared at 62.5 (low) and 500 ppm a.i. diet (high; pp. 19). Samples were stored under ambient or frozen conditions for up to 42 days. After 42 days of ambient storage, recoveries averaged 83 and 103% of initial concentrations, respectively, for the 62.5 and 500 ppm a.i. levels (reviewer-calculated from data provided in Tables 2-3, pp. 34-36). After 42 days of frozen storage, recoveries averaged 94 and 95% of initial concentrations, respectively.</p> <p>Homogeneity was assessed three times during the definitive study [on 11/17/03 (for Week 1), 1/26/04 (Week 10), and 3/8/04 (Week 16)] in treated feed prepared at 62.5 and 500 ppm a.i. (p. 19). Samples of treated feed were collected from the top right, top left, middle, and bottom for each treatment level. Reviewer-calculated coefficients of variation were 19.1, 2.4, and 4.8% for the three batches analyzed for the 62.5 ppm a.i. level, and 19.5, 5.9, and 8.0% for the three batches analyzed for the 500 ppm a.i. level (Table 1, pp. 32-33).</p> |
| <p>Feeding and husbandry</p> | <p>Feeding and husbandry conditions appeared to be adequate, given guideline recommendations.</p> | |

| Parameter | Details | Remarks |
|--|---|--|
| | | Criteria |
| Test conditions (pre-laying) temperature: relative humidity: photo-period: | 15-29°C (mean not reported) 34-97% 7 hr light/day up through Week 10; 17 hr light/day thereafter. | Light intensity during the study averaged 11.1 foot candles at pen level (p. 15). <hr/> EPA Requires Temperature: About 21°C (70°F) Relative humidity: About 55% Lighting First 8 weeks: 7 h per day. Thereafter: 16-17 h per day. At least 6 foot candles at bird level. |
| Egg Collection and Incubation | | |
| Egg collection and storage collection interval: storage temperature: storage humidity: | Daily 15.9-16.6°C 64.7-65.9% | <hr/> EPA requires eggs to be collected daily; egg storage temperature approximately 16°C (61°F); humidity approximately 65%. |
| Were eggs candled for cracks prior to setting for incubation? | Yes | <hr/> EPA requires eggs to be candled on day 0 |
| Were eggs set weekly? | Yes | |
| Incubation conditions temperature: humidity: | 37.4-37.6°C 52-54% | |
| When candling was done for fertility? | Day 14 for embryo development and Day 21 for embryo survival. | <hr/> EPA requires: Quail: approx. day 11 Ducks: approx. day 14 |

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| Parameter | Details | Remarks |
|--|--|--|
| | | Criteria |
| When were the eggs transferred to the hatcher? | Day 23 | <i>EPA requires: Bobwhite: day 21 Mallard: day 23</i> |
| Hatching conditions temperature: humidity: photoperiod: | 36.9-37.1°C 39-77% 14 hours light/day (brooders, p. 30) | <i>EPA requires: temperature of 39°C (102°F) humidity of 70%</i> |
| Day the hatched eggs were removed and counted | Chicks were removed over a 24-hour period starting on Day 27. | <i>EPA requires Bobwhite: day 24 Mallard: day 27</i> |
| Were egg shells washed and dried for at least 48 hrs before measuring? | Opened egg shells were opened and dried for an unspecified period of time. | |
| Egg shell thickness no. of eggs used: intervals: mode of measurement: | All newly laid eggs on a single day. Once every 2 weeks during the egg production period. Five points around the equatorial circumference were measured to the nearest 0.001 mm. | <i>EPA requires newly hatched eggs be collected at least once every two weeks. Thickness of the shell plus membrane should be measured to the nearest 0.01 mm; 3 - 4 measurements per shell.</i> |
| Reference chemical, if used | None used | |

2. Observations:

Table 3: Observations.

| Parameter | Details | Remarks/Criteria |
|--|--|---|
| Parameters measured | | |
| Parental: (mortality, body weight, mean feed consumption) | - mortality - body weight - food consumption - signs of toxicity - necropsy | |
| Egg collection and subsequent development: (no. of eggs laid, no. of eggs cracked, shell thickness, no. of eggs set, no. of viable embryos, no. of live 3 week embryos, no. hatched, no. of 14-day survivors, average weight of 14-day-old survivors, mortality, gross pathology, others) | - eggs laid - eggs cracked - eggshell thickness - eggs set - number of fertile eggs - number of viable embryos - number of hatchlings - number of 14-day survivors - hatchling body weight at 0 and 14 days | EPA requires: <ul style="list-style-type: none"> • Eggs laid/pen • Eggs cracked/pen • Eggs set/pen • Viable embryos/pen • Live 3-week embryos/pen • Normal hatchlings/pen • 14-day-old survivors/pen • 14-day-old survivors/pen • Weights of 14-day-old survivors (mean per pen) • Egg shell thickness • Food consumption (mean per pen) • Initial and final body weight (mean per pen) |
| Indicate if the test material was regurgitated | No indications of dietary regurgitation. | |
| Observation intervals (for various parameters) | Adult: mortality and signs of toxicity were recorded once daily; body weights were recorded at Weeks-2 (start of acclimation), 0, 2, 4, 6, 8, 11 (start of photo-stimulation), and 22 (test termination); and food consumption was determined weekly. Hatchlings were observed daily for 14 days post-hatch. | Body weights and food consumption must be measured at least biweekly. |
| Were raw data included? | Yes, sufficient. | |

I. RESULTS AND DISCUSSION:

A. MORTALITY:

No treatment-related mortality was observed in adult birds during the study (pp. 26-27). However, three incidental mortalities occurred during the study, one in each of the 125, 250, and 500 ppm a.i. groups (Table 5, p. 40). One male from the 125 ppm a.i. group exhibited continuous penile extrusion and infection during the beginning of egg production and was subsequently euthanized. One female from the 250 ppm a.i. group was found dead during Week 20 (Week 8 of egg collection). Necropsy determined that the cause of death was ascites with right ventricular failure. One female from the 500 ppm a.i. group was found dead during Week 21 (Week 9 of egg collection). Necropsy results revealed amyloidosis. The study author concluded that since no other birds were observed to have similar symptoms during the study or at post-mortem, it is not likely that these mortalities were related to acetamiprid exposure.

Table 4: Effect of Acetamiprid on Mortality of *Anas platyrhynchos*.

| Treatment, ppm a.i. measured (and nominal) concentrations | Observation Period | | | | | |
|---|--------------------|-----------------|---------------|-----------------|---------------|-----------------|
| | Week 7 | | Week 14 | | Week 22 | |
| | No. Dead Male | No. Dead Female | No. Dead Male | No. Dead Female | No. Dead Male | No. Dead Female |
| Control | 0 | 0 | 0 | 0 | 0 | 0 |
| 60.2 (62.5) | 0 | 0 | 0 | 0 | 0 | 0 |
| 134 (125) | 0 | 0 | 1* | 0 | 0 | 0 |
| 258 (250) | 0 | 0 | 0 | 0 | 0 | 1 |
| 461 (500) | 0 | 0 | 0 | 0 | 0 | 1 |

*Pen mates subsequently sacrificed

B. REPRODUCTIVE AND OTHER ENDPOINTS:

Abnormal Effects/Behavior: No treatment-related clinical effects were observed (p. 27).

Food Consumption: No treatment-related effects on food consumption were observed (p. 28). Statistically-significant decreases compared to the control group were observed during Week 1 in the 125 and 500 ppm a.i. treatment levels; however, these differences were considered incidental to treatment since no other statistical differences were observed throughout the study (Table 7, p. 42). Overall feed consumption averaged 229.5, 226.1, 222.2, 219.7, and 218.9 g/cage/day for the control, 62.5, 125, 250, and 500 ppm a.i. test groups, respectively.

Body Weight: Treatment-related statistically-significant reductions on terminal body weight were observed in male and female birds at the 250 and 500 ppm a.i. treatment levels compared to the controls (pp. 27-28, and Table 6, p. 41). Furthermore, statistically-significant reductions of female body weights were observed (using Dunnett's post-hoc test) during Weeks 4 and 6. Aside from terminal differences, no statistically-significant differences were otherwise observed in males. Terminal body weights of males averaged 1242.3, 1193.1,

1190.0, 1146.5, and 1090.8 g and of females averaged 1162.4, 1113.7, 1109.0, 1059.0, and 1029.8 g for the control, 62.5, 125, 250, and 500 ppm a.i. test levels, respectively.

Necropsy: No treatment-related findings were observed upon necropsy of animals sacrificed at study termination (p. 27 and Table 5, p. 40). It was reported that the minor symptoms of *Mycoplasma gallisepticum* infection and treatment caused no apparent alteration of behavior or reproductive performance. A detailed post-mortem pathological report was not provided.

Reproductive Effects: Compared to controls, statistically-significant reductions were observed in the total number of eggs laid at the 500 ppm a.i. level (673 versus 896 eggs for the control) and in the total number of eggs set to the incubator at the 250 and 500 ppm a.i. levels (724 and 662 eggs, respectively, versus 884 eggs for the control; Table 8, p. 43). No other statistical differences were observed in reproductive count data. For normalized comparisons, a statistically-significant reduction in the proportion of 14-day old survivors of hatchlings was observed at the 125 ppm a.i. level (0.97 versus 1.00 for the control; Table 9, p. 44). Since similar decreases were not observed at the next two higher levels, this difference was considered incidental to treatment. No other statistical differences were observed in normalized parameters.

Signs of toxicity in chicks were not reported. A statistically-significant decrease in hatchling body weight was observed at the 500 ppm a.i. test level compared to the control (31.0 versus 33.2 g; Table 10, p. 45). No differences were observed in 14-day survivors.

Table 5: Reproductive and other parameters (mean-measured concentrations; study author-reported).

| Parameter | Control | 62.5 ppm | 125 ppm | 250 ppm | 500 ppm | NOEC/ LOEC |
|-----------------------------|------------------|------------------|------------------|------------------|------------------|---------------------|
| Eggs laid | 896 | 785 | 855 | 750 | 673* | 250 ppm 500 ppm |
| Eggs laid/hen/day | 0.75 | 0.66 | 0.75 | 0.64 | 0.57 | 500 ppm >500 ppm |
| Eggs cracked | 10 | 18 | 7 | 18 | 8 | N/A |
| Eggs defective/eggs laid | 0.01 | 0.03 | 0.01 | 0.03 | 0.02 | 500 ppm >500 ppm |
| Shell thickness (mm ± SD) | 0.334 ± 0.024 | 0.342 ± 0.021 | 0.349 ± 0.179 | 0.340 ± 0.020 | 0.332 ± 0.019 | 500 ppm >500 ppm |
| Eggs set | 884 | 765 | 845 | 724* | 662* | 125 ppm 250 ppm |
| Fertile eggs/egg set | 0.91 | 0.94 | 0.95 | 0.91 | 0.88 | 500 ppm >500 ppm |
| Viable embryos | 758 | 700 | 777 | 637 | 566 | N/A |
| Viable embryos/fertile eggs | 0.95 | 0.97 | 0.97 | 0.96 | 0.98 | 500 ppm >500 ppm |

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| Parameter | Control | 62.5 ppm | 125 ppm | 250 ppm | 500 ppm | NOEC/ LOEC |
|--|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|---------------------|
| No. of hatchlings | 663 | 634 | 726 | 583 | 532 | N/A |
| No. of hatchlings/eggs set | 0.75 | 0.83 | 0.86 | 0.81 | 0.80 | 500 ppm >500 ppm |
| No. of hatchlings/viable embryos | 0.87 | 0.91 | 0.93 | 0.92 | 0.94 | 500 ppm >500 ppm |
| Hatchling weight (g) | 33.2 | 32.7 | 32.0 | 32.5 | 31.0* | 250 ppm 500 ppm |
| No. of 14-day old survivors | 660 | 628 | 707 | 580 | 523 | N/A |
| No. of 14-day old survivors/eggs set | 0.75 | 0.82 | 0.84 | 0.80 | 0.79 | 500 ppm >500 ppm |
| No. of 14-day old survivors/No. of hatchlings | 1.00 | 0.99 | 0.97 | 0.99 | 0.98 | 500 ppm >500 ppm |
| 14-day old survivors weight (g) | 660 | 628 | 707 | 580 | 523 | 500 ppm >500 ppm |
| Mean adult food consumption (g/pair) | 229.5 | 226.1 | 222.2 | 219.7 | 218.9 | 500 ppm >500 ppm |
| Weight of adult males, g at start of treatment: at Week 10: at Week 22 (study termination): | 1162.9 1146.6 1242.3 | 1170.1 1176.8 1193.1 | 1146.9 1109.0 1190.0 | 1138.4 1118.4 1146.5* | 1132.8 1086.5 1090.8* | 125 ppm 250 ppm |
| Weight of adult females, g at start of treatment: at Week 10: at Week 22 (study termination): | 1003.2 1016.3 1162.4 | 992.9 1016.8 1113.7 | 991.9 1011.6 1109.0 | 999.4 1014.0 1059.0* | 965.5 974.7 1029.8* | 125 ppm 250 ppm |
| Gross pathology (proportion of birds with pathological incidents) | Raw data not provided. | | | | | 500 ppm >500 ppm |

N/A = Not statistically-analyzed.

C. REPORTED STATISTICS:

The endpoints statistically analyzed included adult male body weight, adult female body weight, adult feed consumption, number of eggs laid, eggs cracked of laid, eggs defective of laid, eggs set, eggs fertile of set, eggs viable of fertile, successful hatchlings of viable eggs, survivors of successful hatches, average hatch weight, average 14-day survivor weight, and egg shell thickness (Table 12, pp. 47-48).

Data sets were tested for normality using a Chi-square test and for homogeneity of variance using a Levene's test (p. 23). Proportional data were Arcsine or Anscombe Arcsine transformed. Each data set was then analyzed using ANOVA, followed by Dunnett's test (equal size data set) or Bonferroni's test (unequal size data set). If the data set was not normal and/or not homogenous, it was tested with a non-parametric Steel's Many One-Rank (equal replicates) or Kruskal Wallis (unequal replicates) test. All statistical analyses were conducted with TOXSTAT version 3.4 (1995).

The unit of analysis was defined as the individual cage (pair) within each group, except for adult body weights, where the unit of analysis was the individual bird. Nominal concentrations were used in all calculations.

D. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: Analysis was conducted using "chicks.sas" (Ver. 3.1; March 2002), a SAS program used by EFED/OPP/USEPA. Data for all endpoints were examined graphically using box plots to determine if they exhibited a dose-dependent response, which was ultimately used to select the multiple comparison test to detect LOAEC and NOAEC. Data for each endpoint were tested to determine if their distributions were normal and if their variances were homogeneous using Shapiro-Wilk's and Levene's tests, respectively. Data that satisfied these assumptions were subjected to Dunnett's or William's tests and data that did not satisfy these assumptions were subjected to the non-parametric Mann-Whitney-U (with a Bonferroni adjustment) or Jonckheere's tests. Data for dead birds were excluded from the analyses. See Appendix I for output of reviewer's statistical verification and graphs for affected endpoints to support any reviewer-generated conclusions that may differ from those reported in the study.

Table 6. Reproductive and other parameters (mean-measured concentrations; reviewer-reported).

| Parameter | Control | 60.2 ppm | 134 ppm | 258 ppm | 461 ppm | NOEC/ LOEC |
|--------------------------------|---------|----------|---------|---------|---------|---------------------|
| Eggs laid/pen | 52.7 | 46.2 | 52.8 | 45.2 | 41.8 | 258 ppm 461 ppm |
| Eggs cracked/pen | 0.7 | 1.1 | 0.6 | 1.1 | 0.6 | 461 ppm >461 ppm |
| Eggs not cracked/eggs laid (%) | 98.7 | 97.7 | 99.0 | 97.3 | 98.4 | 461 ppm >461 ppm |
| Eggs set/pen | 52.0 | 45.0 | 52.1 | 43.7 | 41.1 | 258 ppm 461 ppm |
| Shell thickness | 0.34 | 0.34 | 0.34 | 0.34 | 0.33 | 461 ppm >461 ppm |
| Eggs set/eggs laid (%) | 98.7 | 97.6 | 98.9 | 96.1 | 98.4 | 461 ppm >461 ppm |
| Viable embryo/pen | 47.2 | 42.2 | 49.6 | 40.0 | 36.1 | 258 ppm 461 ppm |

| Parameter | Control | 60.2 ppm | 134 ppm | 258 ppm | 461 ppm | NOEC/ LOEC |
|--|---------|----------|---------|---------|---------|-----------------------|
| Viable embryos/eggs set (%) | 90.4 | 93.4 | 95.1 | 91.7 | 87.6 | 461 ppm >461 ppm |
| Live embryos/pen | 44.6 | 41.2 | 48.0 | 38.7 | 35.2 | 461 ppm >461 ppm |
| Live embryo/viable embryo (%) | 94.2 | 97.0 | 96.4 | 96.4 | 97.5 | 461 ppm >461 ppm |
| No. of hatchlings/pen | 39.0 | 37.3 | 45.0 | 35.4 | 33.1 | 461 ppm >461 ppm |
| No. of hatchlings/eggs laid (%) | 73.9 | 79.7 | 84.6 | 77.8 | 78.6 | 461 ppm >461 ppm |
| No. of hatchlings/eggs set (%) | 74.8 | 81.6 | 85.5 | 80.7 | 80.0 | 461 ppm >461 ppm |
| No. of hatchlings/live embryos (%) | 87.1 | 89.6 | 93.2 | 90.4 | 93.4 | 461 ppm >461 ppm |
| Hatchling survival/pen | 37.0 | 36.9 | 43.8 | 35.2 | 32.5 | 461 ppm >461 ppm |
| Hatchling survival/eggs set (%) | 70.8 | 80.8 | 83.3 | 80.3 | 78.6 | 461 ppm >461 ppm |
| Hatchling survival/no. of hatchlings (%) | 94.0 | 99.0 | 97.5 | 99.5 | 98.2 | 461 ppm >461 ppm |
| Hatchling weight (g) | 33.1 | 32.8 | 32.1 | 32.3 | 31.0 | 258 ppm 461 ppm |
| Survivor weight (g) | 257.6 | 266.8 | 261.3 | 253.0 | 248.7 | 461 ppm >461 ppm |
| Mean food consumption (g/bird/day) | 229.5 | 226.1 | 221.8 | 342.5 | 220.6 | 461 ppm >461 ppm |
| Male weight gain (g) | 79.5 | 23.0 | 34.3 | 4.6 | -28.3 | <60.2 ppm 60.2 ppm |
| Female weight gain (g) | 159.1 | 120.9 | 115.8 | 69.0 | 63.5 | 134 ppm 258 ppm |

E. STUDY DEFICIENCIES:

- Two different formulations of feed were used during the definitive study. During quarantine, acclimation,

and until approximately 1 week prior to photo-stimulation (i.e., Week 10), adult Mallard were fed Purina Game Bird Flight Conditioner. Thereafter, Mallard received Purina Layena game bird ration (p. 16 and Appendix 2, pp. 67 and 69).

- Homogeneity assessments revealed that the test substance was not consistently mixed homogeneously into the basal diet for feed prepared for Week 1. Based on the dates provided on p. 19, homogeneity samples were collected from treated feed prepared for Weeks 1, 10, and 16. The reviewer-calculated coefficients of variation (C.V.) were 19.1, 2.4, and 4.8% for the three batches analyzed for the 62.5 ppm a.i. level, and 19.5, 5.9 and 8.0% for the three batches analyzed for the 500 ppm a.i. level (Table 1, pp. 32-33). The C.V. should not exceed 5.0%. Although not reported, the first batch may have been the only batch prepared using Purina Game Bird Flight Conditioner (prior to switching over the Purina Layena game bird ration).
- A NOEC could not be determined for this study because significant adverse effects on male body weight gain were observed at all treatment levels.
- It was not specified how long the opened eggshells (used for thickness measurements) were dried.
- Signs of toxicity (or lack of) in chicks during the 14-day maintenance period were not described.

F. REVIEWER'S COMMENTS:

Results of the reviewer's statistical analyses differed slightly from those of the study author. The reviewer's analysis detected significant reductions in male body weight gain at all treatment levels, which was an endpoint not assessed by the study author. The study author's analysis of terminal weights only suggested significant reductions at the two highest treatment levels. Furthermore, the reviewer's analysis additionally detected a significant reduction in viable embryos at the highest treatment level. Results from the analysis of all other endpoints were identical to the study author's.

Quality control (QC) samples were prepared (50-500 ppm) at the analytical laboratory at each sampling interval of the stability, homogeneity, and concentration verification determinations and remained with the set of dietary feed samples throughout the analytical process (p. 19). Recoveries ranged from 81.1-118% of nominal concentrations for homogeneity and stability assessments (Tables 1 and 2, pp. 32-35). QC results were not provided for the concentration verification assessments.

A method validation study conducted prior to initiation of the definitive test established an average recovery of $87.6 \pm 3.90\%$ for acetamiprid from Flight Conditioner feed (Table 1A, p. 76).

G. CONCLUSIONS:

This toxicity study is scientifically sound. However, because a NOEC could not be defined, this study does not fulfill guideline requirements for an avian reproduction study using the Mallard duck (§71-4b) and it is classified as SUPPLEMENTAL.

Results Synopsis

NOEC: <60.2 ppm a.i.

LOEC: 60.2 ppm a.i.

Endpoint(s) Affected: Adult male and female body weights, the numbers of eggs laid and set, viable embryos, and hatchling weight.

Most sensitive endpoint(s): Adult male body weight gain

III. REFERENCES:

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EPA MRID Number 46369201

APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

Mallard repro, Acetamiprid, MRID 46369201

PRINTOUT OF RAW DATA

| Obs | TRT | EL | EC | ENC | EL | ES | ES | EL | VE | VE | ES | LE | LE | VE | NH | NH | EL | NH | ES |
|-----|-------|----|----|--------|----|--------|----|--------|----|--------|----|--------|--------|----|----|----|----|----|----|
| 1 | Ctrl | 64 | 0 | 100.00 | 64 | 100.00 | 55 | 85.94 | 52 | 94.55 | 50 | 78.13 | 78.13 | | | | | | |
| 2 | Ctrl | 57 | 0 | 100.00 | 57 | 100.00 | 55 | 96.49 | 55 | 100.00 | 37 | 64.91 | 64.91 | | | | | | |
| 3 | Ctrl | 51 | 0 | 100.00 | 51 | 100.00 | 50 | 98.04 | 49 | 98.00 | 45 | 88.24 | 88.24 | | | | | | |
| 4 | Ctrl | 51 | 1 | 98.04 | 50 | 98.04 | 42 | 84.00 | 41 | 97.62 | 35 | 68.63 | 70.00 | | | | | | |
| 5 | Ctrl | 54 | 0 | 100.00 | 54 | 100.00 | 53 | 98.15 | 53 | 100.00 | 47 | 87.04 | 87.04 | | | | | | |
| 6 | Ctrl | 63 | 2 | 96.83 | 61 | 96.83 | 58 | 95.08 | 56 | 96.55 | 54 | 85.71 | 88.52 | | | | | | |
| 7 | Ctrl | 45 | 1 | 97.78 | 44 | 97.78 | 34 | 77.27 | 33 | 97.06 | 30 | 66.67 | 68.18 | | | | | | |
| 8 | Ctrl | 30 | 0 | 100.00 | 30 | 100.00 | 27 | 90.00 | 25 | 92.59 | 24 | 80.00 | 80.00 | | | | | | |
| 9 | Ctrl | 55 | 1 | 98.18 | 54 | 98.18 | 50 | 92.59 | 46 | 92.00 | 37 | 67.27 | 68.52 | | | | | | |
| 10 | Ctrl | 58 | 1 | 98.28 | 57 | 98.28 | 56 | 98.25 | 53 | 94.64 | 44 | 75.86 | 77.19 | | | | | | |
| 11 | Ctrl | 48 | 0 | 100.00 | 48 | 100.00 | 35 | 72.92 | 30 | 85.71 | 18 | 37.50 | 37.50 | | | | | | |
| 12 | Ctrl | 54 | 0 | 100.00 | 54 | 100.00 | 54 | 100.00 | 53 | 98.15 | 51 | 94.44 | 94.44 | | | | | | |
| 13 | Ctrl | 50 | 1 | 98.00 | 49 | 98.00 | 49 | 100.00 | 49 | 100.00 | 46 | 92.00 | 93.88 | | | | | | |
| 14 | Ctrl | 53 | 1 | 98.11 | 52 | 98.11 | 48 | 92.31 | 44 | 91.67 | 34 | 64.15 | 65.38 | | | | | | |
| 15 | Ctrl | 52 | 0 | 100.00 | 52 | 100.00 | 50 | 96.15 | 50 | 100.00 | 48 | 92.31 | 92.31 | | | | | | |
| 16 | Ctrl | 47 | 1 | 97.87 | 46 | 97.87 | 34 | 73.91 | 30 | 88.24 | 26 | 55.32 | 56.52 | | | | | | |
| 17 | Ctrl | 64 | 3 | 95.31 | 61 | 95.31 | 52 | 85.25 | 39 | 75.00 | 37 | 57.81 | 60.66 | | | | | | |
| 18 | Dose1 | 45 | 3 | 93.33 | 42 | 93.33 | 40 | 95.24 | 40 | 100.00 | 38 | 84.44 | 90.48 | | | | | | |
| 19 | Dose1 | 31 | 2 | 93.55 | 29 | 93.55 | 26 | 89.66 | 25 | 96.15 | 22 | 70.97 | 75.86 | | | | | | |
| 20 | Dose1 | 57 | 0 | 100.00 | 57 | 100.00 | 56 | 98.25 | 54 | 96.43 | 50 | 87.72 | 87.72 | | | | | | |
| 21 | Dose1 | 52 | 0 | 100.00 | 52 | 100.00 | 52 | 100.00 | 51 | 98.08 | 50 | 96.15 | 96.15 | | | | | | |
| 22 | Dose1 | 55 | 0 | 100.00 | 55 | 100.00 | 51 | 92.73 | 49 | 96.08 | 49 | 89.09 | 89.09 | | | | | | |
| 23 | Dose1 | 38 | 0 | 100.00 | 38 | 100.00 | 33 | 86.84 | 32 | 96.97 | 29 | 76.32 | 76.32 | | | | | | |
| 24 | Dose1 | 39 | 0 | 100.00 | 39 | 100.00 | 39 | 100.00 | 37 | 94.87 | 30 | 76.92 | 76.92 | | | | | | |
| 25 | Dose1 | 50 | 1 | 98.00 | 49 | 98.00 | 47 | 95.92 | 47 | 100.00 | 45 | 90.00 | 91.84 | | | | | | |
| 26 | Dose1 | 58 | 2 | 96.55 | 56 | 96.55 | 56 | 100.00 | 54 | 96.43 | 49 | 84.48 | 87.50 | | | | | | |
| 27 | Dose1 | 35 | 1 | 97.14 | 34 | 97.14 | 25 | 73.53 | 20 | 80.00 | 14 | 40.00 | 41.18 | | | | | | |
| 28 | Dose1 | 48 | 2 | 95.83 | 45 | 93.75 | 44 | 97.78 | 44 | 100.00 | 28 | 58.33 | 62.22 | | | | | | |
| 29 | Dose1 | 48 | 0 | 100.00 | 48 | 100.00 | 44 | 91.67 | 44 | 100.00 | 36 | 75.00 | 75.00 | | | | | | |
| 30 | Dose1 | 59 | 2 | 96.61 | 57 | 96.61 | 52 | 91.23 | 52 | 100.00 | 48 | 81.36 | 84.21 | | | | | | |
| 31 | Dose1 | 49 | 0 | 100.00 | 49 | 100.00 | 49 | 100.00 | 49 | 100.00 | 49 | 100.00 | 100.00 | | | | | | |
| 32 | Dose1 | 57 | 6 | 89.47 | 51 | 89.47 | 44 | 86.27 | 44 | 100.00 | 43 | 75.44 | 84.31 | | | | | | |
| 33 | Dose1 | 33 | 0 | 100.00 | 33 | 100.00 | 29 | 87.88 | 28 | 96.55 | 25 | 75.76 | 75.76 | | | | | | |
| 34 | Dose1 | 31 | 0 | 100.00 | 31 | 100.00 | 31 | 100.00 | 30 | 96.77 | 29 | 93.55 | 93.55 | | | | | | |
| 35 | Dose2 | 46 | 0 | 100.00 | 46 | 100.00 | 36 | 78.26 | 36 | 100.00 | 36 | 78.26 | 78.26 | | | | | | |
| 36 | Dose2 | 64 | 1 | 98.44 | 63 | 98.44 | 61 | 96.83 | 60 | 98.36 | 60 | 93.75 | 95.24 | | | | | | |
| 37 | Dose2 | 51 | 1 | 98.04 | 50 | 98.04 | 49 | 98.00 | 46 | 93.88 | 45 | 88.24 | 90.00 | | | | | | |
| 38 | Dose2 | 46 | 1 | 97.83 | 45 | 97.83 | 40 | 88.89 | 38 | 95.00 | 28 | 60.87 | 62.22 | | | | | | |
| 39 | Dose2 | 60 | 0 | 100.00 | 60 | 100.00 | 60 | 100.00 | 59 | 98.33 | 56 | 93.33 | 93.33 | | | | | | |
| 40 | Dose2 | 61 | 2 | 96.72 | 58 | 95.08 | 52 | 89.66 | 51 | 98.08 | 46 | 75.41 | 79.31 | | | | | | |
| 41 | Dose2 | 51 | 1 | 98.04 | 50 | 98.04 | 49 | 98.00 | 49 | 100.00 | 48 | 94.12 | 96.00 | | | | | | |
| 42 | Dose2 | 60 | 0 | 100.00 | 60 | 100.00 | 57 | 95.00 | 57 | 100.00 | 57 | 95.00 | 95.00 | | | | | | |
| 43 | Dose2 | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | |
| 44 | Dose2 | 60 | 0 | 100.00 | 60 | 100.00 | 60 | 100.00 | 56 | 93.33 | 53 | 88.33 | 88.33 | | | | | | |
| 45 | Dose2 | 18 | 0 | 100.00 | 18 | 100.00 | 18 | 100.00 | 16 | 88.89 | 14 | 77.78 | 77.78 | | | | | | |
| 46 | Dose2 | 48 | 0 | 100.00 | 48 | 100.00 | 46 | 95.83 | 42 | 91.30 | 37 | 77.08 | 77.08 | | | | | | |
| 47 | Dose2 | 55 | 0 | 100.00 | 55 | 100.00 | 52 | 94.55 | 50 | 96.15 | 47 | 85.45 | 85.45 | | | | | | |
| 48 | Dose2 | 55 | 1 | 98.18 | 54 | 98.18 | 52 | 96.30 | 50 | 96.15 | 47 | 85.45 | 87.04 | | | | | | |
| 49 | Dose2 | 53 | 0 | 100.00 | 53 | 100.00 | 50 | 94.34 | 50 | 100.00 | 49 | 92.45 | 92.45 | | | | | | |
| 50 | Dose2 | 55 | 2 | 96.36 | 53 | 96.36 | 51 | 96.23 | 48 | 94.12 | 46 | 83.64 | 86.79 | | | | | | |
| 51 | Dose2 | 61 | 0 | 100.00 | 61 | 100.00 | 61 | 100.00 | 60 | 98.36 | 51 | 83.61 | 83.61 | | | | | | |
| 52 | Dose3 | 39 | 0 | 100.00 | 39 | 100.00 | 39 | 100.00 | 37 | 94.87 | 34 | 87.18 | 87.18 | | | | | | |
| 53 | Dose3 | 55 | 0 | 100.00 | 55 | 100.00 | 55 | 100.00 | 55 | 100.00 | 52 | 94.55 | 94.55 | | | | | | |
| 54 | Dose3 | 49 | 1 | 97.96 | 48 | 97.96 | 46 | 95.83 | 46 | 100.00 | 45 | 91.84 | 93.75 | | | | | | |
| 55 | Dose3 | 42 | 1 | 97.62 | 41 | 97.62 | 39 | 95.12 | 37 | 94.87 | 34 | 80.95 | 82.93 | | | | | | |
| 56 | Dose3 | 16 | 2 | 87.50 | 13 | 81.25 | 13 | 100.00 | 12 | 92.31 | 12 | 75.00 | 92.31 | | | | | | |

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| | | | | | | | | | | | | | |
|----|-------|----|---|--------|----|--------|----|--------|----|--------|----|-------|-------|
| 57 | Dose3 | 54 | 0 | 100.00 | 54 | 100.00 | 53 | 98.15 | 52 | 98.11 | 49 | 90.74 | 90.74 |
| 58 | Dose3 | 17 | 0 | 100.00 | 17 | 100.00 | 15 | 88.24 | 15 | 100.00 | 13 | 76.47 | 76.47 |
| 59 | Dose3 | 45 | 0 | 100.00 | 45 | 100.00 | 42 | 93.33 | 42 | 100.00 | 38 | 84.44 | 84.44 |
| 60 | Dose3 | 59 | 1 | 98.31 | 58 | 98.31 | 56 | 96.55 | 54 | 96.43 | 52 | 88.14 | 89.66 |
| 61 | Dose3 | 55 | 1 | 98.18 | 54 | 98.18 | 53 | 98.15 | 51 | 96.23 | 51 | 92.73 | 94.44 |
| 62 | Dose3 | 48 | 0 | 100.00 | 48 | 100.00 | 41 | 85.42 | 41 | 100.00 | 37 | 77.08 | 77.08 |
| 63 | Dose3 | 52 | 1 | 98.08 | 51 | 98.08 | 34 | 66.67 | 31 | 91.18 | 21 | 40.38 | 41.18 |
| 64 | Dose3 | 52 | 0 | 100.00 | 52 | 100.00 | 45 | 86.54 | 45 | 100.00 | 45 | 86.54 | 86.54 |
| 65 | Dose3 | 43 | 0 | 100.00 | 43 | 100.00 | 38 | 88.37 | 35 | 92.11 | 35 | 81.40 | 81.40 |
| 66 | Dose3 | . | . | . | . | . | . | . | . | . | . | . | . |
| 67 | Dose3 | 52 | 3 | 94.23 | 42 | 80.77 | 37 | 88.10 | 35 | 94.59 | 26 | 50.00 | 61.90 |
| 68 | Dose3 | 46 | 7 | 84.78 | 39 | 84.78 | 34 | 87.18 | 31 | 91.18 | 22 | 47.83 | 56.41 |
| 69 | Dose4 | . | . | . | . | . | . | . | . | . | . | . | . |
| 70 | Dose4 | 43 | 0 | 100.00 | 43 | 100.00 | 41 | 95.35 | 40 | 97.56 | 36 | 83.72 | 83.72 |
| 71 | Dose4 | 37 | 1 | 97.30 | 36 | 97.30 | 35 | 97.22 | 34 | 97.14 | 32 | 86.49 | 88.89 |
| 72 | Dose4 | 47 | 0 | 100.00 | 47 | 100.00 | 42 | 89.36 | 41 | 97.62 | 41 | 87.23 | 87.23 |
| 73 | Dose4 | 27 | 1 | 96.30 | 26 | 96.30 | 24 | 92.31 | 23 | 95.83 | 22 | 81.48 | 84.62 |
| 74 | Dose4 | 45 | 0 | 100.00 | 45 | 100.00 | 37 | 82.22 | 36 | 97.30 | 34 | 75.56 | 75.56 |
| 75 | Dose4 | 42 | 0 | 100.00 | 42 | 100.00 | 37 | 88.10 | 37 | 100.00 | 36 | 85.71 | 85.71 |
| 76 | Dose4 | 38 | 0 | 100.00 | 38 | 100.00 | 6 | 15.79 | 6 | 100.00 | 5 | 13.16 | 13.16 |
| 77 | Dose4 | 41 | 3 | 92.68 | 38 | 92.68 | 36 | 94.74 | 33 | 91.67 | 32 | 78.05 | 84.21 |
| 78 | Dose4 | 40 | 1 | 97.50 | 39 | 97.50 | 36 | 92.31 | 36 | 100.00 | 35 | 87.50 | 89.74 |
| 79 | Dose4 | 52 | 1 | 98.08 | 51 | 98.08 | 48 | 94.12 | 47 | 97.92 | 40 | 76.92 | 78.43 |
| 80 | Dose4 | 27 | 1 | 96.30 | 26 | 96.30 | 26 | 100.00 | 24 | 92.31 | 21 | 77.78 | 80.77 |
| 81 | Dose4 | 49 | 1 | 97.96 | 48 | 97.96 | 45 | 93.75 | 43 | 95.56 | 41 | 83.67 | 85.42 |
| 82 | Dose4 | 40 | 1 | 97.50 | 39 | 97.50 | 37 | 94.87 | 36 | 97.30 | 33 | 82.50 | 84.62 |
| 83 | Dose4 | 42 | 0 | 100.00 | 42 | 100.00 | 34 | 80.95 | 34 | 100.00 | 33 | 78.57 | 78.57 |
| 84 | Dose4 | 57 | 0 | 100.00 | 57 | 100.00 | 54 | 94.74 | 54 | 100.00 | 51 | 89.47 | 89.47 |
| 85 | Dose4 | 41 | 0 | 100.00 | 41 | 100.00 | 39 | 95.12 | 39 | 100.00 | 37 | 90.24 | 90.24 |

Mallard repro, Acetamiprid, MRID 46369201

PRINTOUT OF RAW DATA (continued)

| Obs | TRT | NH | LE | HS | HS_ES | HS_NH | THICK | HATWT | SURVWT | FOOD | WTGAINM | WTGAINF |
|-----|-------|--------|----|-------|--------|-------|-------|-------|--------|------|---------|---------|
| 1 | Ctrl | 96.15 | 50 | 78.13 | 100.00 | 0.36 | 33 | 252 | 246 | 181 | 194 | |
| 2 | Ctrl | 67.27 | 36 | 63.16 | 97.30 | 0.37 | 32 | 277 | 287 | 180 | 225 | |
| 3 | Ctrl | 91.84 | 45 | 88.24 | 100.00 | 0.33 | 28 | 212 | 206 | -40 | 113 | |
| 4 | Ctrl | 85.37 | 35 | 70.00 | 100.00 | 0.37 | 38 | 284 | 248 | 104 | 99 | |
| 5 | Ctrl | 88.68 | 47 | 87.04 | 100.00 | 0.35 | 33 | 255 | 204 | 42 | 133 | |
| 6 | Ctrl | 96.43 | 54 | 88.52 | 100.00 | 0.34 | 38 | 290 | 226 | 7 | 260 | |
| 7 | Ctrl | 90.91 | 30 | 68.18 | 100.00 | 0.34 | 34 | 278 | 207 | 176 | 26 | |
| 8 | Ctrl | 96.00 | 22 | 73.33 | 91.67 | 0.34 | 31 | 264 | 248 | 194 | 97 | |
| 9 | Ctrl | 80.43 | 37 | 68.52 | 100.00 | 0.33 | 32 | 231 | 239 | 91 | 113 | |
| 10 | Ctrl | 83.02 | 44 | 77.19 | 100.00 | 0.37 | 34 | 252 | 229 | 0 | 180 | |
| 11 | Ctrl | 60.00 | 18 | 37.50 | 100.00 | 0.36 | 35 | 262 | 203 | 5 | 189 | |
| 12 | Ctrl | 96.23 | 51 | 94.44 | 100.00 | 0.31 | 33 | 261 | 250 | 52 | 210 | |
| 13 | Ctrl | 93.88 | 46 | 93.88 | 100.00 | 0.34 | 32 | 255 | 221 | 80 | 177 | |
| 14 | Ctrl | 77.27 | 3 | 5.77 | 8.82 | 0.35 | 35 | 277 | 232 | 134 | 210 | |
| 15 | Ctrl | 96.00 | 48 | 92.31 | 100.00 | 0.32 | 34 | 247 | 242 | 60 | 98 | |
| 16 | Ctrl | 86.67 | 26 | 56.52 | 100.00 | 0.30 | 31 | 228 | 195 | 72 | 299 | |
| 17 | Ctrl | 94.87 | 37 | 60.66 | 100.00 | 0.33 | 31 | 254 | 220 | 15 | 83 | |
| 18 | Dose1 | 95.00 | 38 | 90.48 | 100.00 | 0.34 | 37 | 297 | 191 | 15 | 197 | |
| 19 | Dose1 | 88.00 | 22 | 75.86 | 100.00 | 0.32 | 33 | 243 | 263 | 185 | 218 | |
| 20 | Dose1 | 92.59 | 50 | 87.72 | 100.00 | 0.36 | 34 | 283 | 251 | -15 | 89 | |
| 21 | Dose1 | 98.04 | 50 | 96.15 | 100.00 | 0.34 | 32 | 256 | 231 | 60 | 119 | |
| 22 | Dose1 | 100.00 | 49 | 89.09 | 100.00 | 0.31 | 32 | 268 | 245 | 23 | 64 | |
| 23 | Dose1 | 90.63 | 29 | 76.32 | 100.00 | 0.32 | 29 | 232 | 263 | 81 | 291 | |
| 24 | Dose1 | 81.08 | 29 | 74.36 | 96.67 | 0.36 | 33 | 262 | 189 | -95 | 227 | |
| 25 | Dose1 | 95.74 | 44 | 89.80 | 97.78 | 0.33 | 32 | 269 | 220 | 87 | 24 | |
| 26 | Dose1 | 90.74 | 47 | 83.93 | 95.92 | 0.36 | 31 | 277 | 224 | -97 | -60 | |
| 27 | Dose1 | 70.00 | 14 | 41.18 | 100.00 | 0.35 | 32 | 280 | 228 | 76 | 116 | |
| 28 | Dose1 | 63.64 | 27 | 60.00 | 96.43 | 0.36 | 33 | 259 | 228 | -46 | 94 | |

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PMRA Submission Number

EPA MRID Number 46369201

| | | | | | | | | | | | |
|----|-------|--------|----|--------|--------|------|----|-----|------|------|------|
| 29 | Dose1 | 81.82 | 36 | 75.00 | 100.00 | 0.37 | 34 | 273 | 232 | 62 | 164 |
| 30 | Dose1 | 92.31 | 48 | 84.21 | 100.00 | 0.32 | 30 | 253 | 183 | -50 | -14 |
| 31 | Dose1 | 100.00 | 49 | 100.00 | 100.00 | 0.33 | 33 | 284 | 240 | -165 | 14 |
| 32 | Dose1 | 97.73 | 43 | 84.31 | 100.00 | 0.33 | 35 | 277 | 211 | 53 | 266 |
| 33 | Dose1 | 89.29 | 25 | 75.76 | 100.00 | 0.33 | 34 | 252 | 195 | 93 | 70 |
| 34 | Dose1 | 96.67 | 28 | 90.32 | 96.55 | 0.37 | 33 | 272 | 251 | 124 | 175 |
| 35 | Dose2 | 100.00 | 36 | 78.26 | 100.00 | 0.34 | 31 | 247 | 189 | -8 | 206 |
| 36 | Dose2 | 100.00 | 59 | 93.65 | 98.33 | 0.32 | 31 | 255 | 216 | 38 | 130 |
| 37 | Dose2 | 97.83 | 44 | 88.00 | 97.78 | 0.31 | 33 | 278 | 242 | -41 | 140 |
| 38 | Dose2 | 73.68 | 27 | 60.00 | 96.43 | 0.35 | 30 | 243 | 229 | -3 | 9 |
| 39 | Dose2 | 94.92 | 56 | 93.33 | 100.00 | 0.35 | 35 | 256 | 241 | 190 | 103 |
| 40 | Dose2 | 90.20 | 46 | 79.31 | 100.00 | 0.36 | 35 | 280 | 239 | -123 | 40 |
| 41 | Dose2 | 97.96 | 47 | 94.00 | 97.92 | 0.35 | 32 | 268 | 237 | -17 | 84 |
| 42 | Dose2 | 100.00 | 56 | 93.33 | 98.25 | 0.34 | 28 | 238 | 191 | -7 | 107 |
| 43 | Dose2 | . | . | . | . | . | . | . | . | . | . |
| 44 | Dose2 | 94.64 | 52 | 86.67 | 98.11 | 0.33 | 34 | 277 | 251 | 65 | 128 |
| 45 | Dose2 | 87.50 | 14 | 77.78 | 100.00 | 0.29 | 36 | 248 | 208 | 277 | 109 |
| 46 | Dose2 | 88.10 | 37 | 77.08 | 100.00 | 0.35 | 32 | 247 | 240 | -11 | 147 |
| 47 | Dose2 | 94.00 | 46 | 83.64 | 97.87 | 0.37 | 33 | 301 | 246 | -40 | 58 |
| 48 | Dose2 | 94.00 | 45 | 83.33 | 95.74 | 0.33 | 32 | 273 | 219 | 54 | 153 |
| 49 | Dose2 | 98.00 | 43 | 81.13 | 87.76 | 0.34 | 30 | 242 | 188 | -3 | 114 |
| 50 | Dose2 | 95.83 | 46 | 86.79 | 100.00 | 0.34 | 34 | 272 | 206 | -26 | 131 |
| 51 | Dose2 | 85.00 | 47 | 77.05 | 92.16 | 0.46 | 30 | 259 | 208 | 205 | 196 |
| 52 | Dose3 | 91.89 | 34 | 87.18 | 100.00 | 0.36 | 32 | 259 | 207 | 146 | 124 |
| 53 | Dose3 | 94.55 | 52 | 94.55 | 100.00 | 0.34 | 31 | 228 | 246 | -77 | 147 |
| 54 | Dose3 | 97.83 | 45 | 93.75 | 100.00 | 0.32 | 36 | 285 | 213 | 13 | 146 |
| 55 | Dose3 | 91.89 | 33 | 80.49 | 97.06 | 0.36 | 30 | 248 | 224 | 64 | 59 |
| 56 | Dose3 | 100.00 | 12 | 92.31 | 100.00 | 0.36 | 33 | 250 | 246 | 36 | -8 |
| 57 | Dose3 | 94.23 | 49 | 90.74 | 100.00 | 0.36 | 34 | 264 | 2156 | -9 | 11 |
| 58 | Dose3 | 86.67 | 13 | 76.47 | 100.00 | 0.31 | 29 | 244 | 178 | 37 | -102 |
| 59 | Dose3 | 90.48 | 37 | 82.22 | 97.37 | 0.35 | 33 | 259 | 209 | 47 | 74 |
| 60 | Dose3 | 96.30 | 52 | 89.66 | 100.00 | 0.33 | 34 | 247 | 264 | -26 | 137 |
| 61 | Dose3 | 100.00 | 50 | 92.59 | 98.04 | 0.33 | 31 | 248 | 228 | -37 | 235 |
| 62 | Dose3 | 90.24 | 37 | 77.08 | 100.00 | 0.33 | 33 | 259 | 229 | -46 | -47 |
| 63 | Dose3 | 67.74 | 21 | 41.18 | 100.00 | 0.33 | 30 | 236 | 246 | -105 | 17 |
| 64 | Dose3 | 100.00 | 45 | 86.54 | 100.00 | 0.31 | 33 | 256 | 244 | -41 | 3 |
| 65 | Dose3 | 100.00 | 35 | 81.40 | 100.00 | 0.33 | 33 | 247 | 205 | -18 | 95 |
| 66 | Dose3 | . | . | . | . | . | . | . | . | . | . |
| 67 | Dose3 | 74.29 | 26 | 61.90 | 100.00 | 0.35 | 32 | 249 | 191 | 74 | 85 |
| 68 | Dose3 | 70.97 | 22 | 56.41 | 100.00 | 0.33 | 34 | 268 | 194 | 15 | 129 |
| 69 | Dose4 | . | . | . | . | . | . | . | . | . | . |
| 70 | Dose4 | 90.00 | 36 | 83.72 | 100.00 | 0.33 | 28 | 231 | 232 | 81 | 37 |
| 71 | Dose4 | 94.12 | 32 | 88.89 | 100.00 | 0.34 | 31 | 251 | 198 | -26 | 92 |
| 72 | Dose4 | 100.00 | 39 | 82.98 | 95.12 | 0.36 | 33 | 241 | 226 | -55 | 48 |
| 73 | Dose4 | 95.65 | 22 | 84.62 | 100.00 | 0.34 | 32 | 259 | 209 | -28 | 140 |
| 74 | Dose4 | 94.44 | 33 | 73.33 | 97.06 | 0.33 | 33 | 240 | 210 | -40 | -21 |
| 75 | Dose4 | 97.30 | 35 | 83.33 | 97.22 | 0.31 | 33 | 264 | 200 | -38 | 103 |
| 76 | Dose4 | 83.33 | 5 | 13.16 | 100.00 | 0.32 | 29 | 242 | 288 | -14 | 70 |
| 77 | Dose4 | 96.97 | 32 | 84.21 | 100.00 | 0.32 | 34 | 268 | 250 | -26 | 170 |
| 78 | Dose4 | 97.22 | 35 | 89.74 | 100.00 | 0.35 | 29 | 254 | 205 | 61 | 35 |
| 79 | Dose4 | 85.11 | 40 | 78.43 | 100.00 | 0.34 | 30 | 256 | 178 | 13 | 68 |
| 80 | Dose4 | 87.50 | 19 | 73.08 | 90.48 | 0.32 | 34 | 255 | 212 | -32 | 36 |
| 81 | Dose4 | 95.35 | 40 | 83.33 | 97.56 | 0.33 | 29 | 244 | 216 | -173 | -166 |
| 82 | Dose4 | 91.67 | 32 | 82.05 | 96.97 | 0.33 | 31 | 228 | 217 | -100 | 149 |
| 83 | Dose4 | 97.06 | 33 | 78.57 | 100.00 | 0.33 | 26 | 224 | 211 | -32 | 79 |
| 84 | Dose4 | 94.44 | 51 | 89.47 | 100.00 | 0.34 | 31 | 260 | 240 | -89 | 98 |
| 85 | Dose4 | 94.87 | 36 | 87.80 | 97.30 | 0.33 | 33 | 262 | 240 | 44 | 79 |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE EL (Eggs Laid)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.906 | <.001 | 0.864 | 0.490 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 52.71 | 8.14 | 1.97 | 15.44 | 48.52, | 56.89 |
| Dose1 | 17 | 46.18 | 9.87 | 2.39 | 21.37 | 41.10, | 51.25 |
| Dose2 | 16 | 52.75 | 10.84 | 2.71 | 20.55 | 46.97, | 58.53 |
| Dose3 | 16 | 45.25 | 12.44 | 3.11 | 27.50 | 38.62, | 51.88 |
| Dose4 | 16 | 41.75 | 7.78 | 1.95 | 18.65 | 37.60, | 45.90 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 53.00 | 30.00 | 64.00 | . | . |
| Dose1 | 48.00 | 31.00 | 59.00 | 87.61 | 12.39 |
| Dose2 | 55.00 | 18.00 | 64.00 | 100.08 | -0.08 |
| Dose3 | 48.50 | 16.00 | 59.00 | 85.85 | 14.15 |
| Dose4 | 41.50 | 27.00 | 57.00 | 79.21 | 20.79 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 19.03 | <.001 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 53.00 | . | . |
| Dose1 | 48.00 | 0.194 | 0.042 |
| Dose2 | 55.00 | 1.000 | 0.653 |
| Dose3 | 48.50 | 0.139 | 0.144 |
| Dose4 | 41.50 | 0.002 | 0.001 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|-------|
| MannWhit (Bonf adjust) | Dose3 | Dose4 |
| Jonckheere | Dose3 | Dose4 |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE NEG_EC (Eggs Cracked)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.763 | <.001 | 1.869 | 0.124 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|------|--------|--------|-------------|-------------------|------|
| Ctrl | 17 | 0.71 | 0.85 | 0.21 | 120.26 | 0.27, | 1.14 |
| Dose1 | 17 | 1.12 | 1.62 | 0.39 | 144.56 | 0.29, | 1.95 |
| Dose2 | 16 | 0.56 | 0.73 | 0.18 | 129.32 | 0.17, | 0.95 |
| Dose3 | 16 | 1.06 | 1.81 | 0.45 | 170.00 | 0.10, | 2.02 |
| Dose4 | 16 | 0.63 | 0.81 | 0.20 | 129.00 | 0.20, | 1.05 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|------|------|---------------------|--------------------|
| Ctrl | 1.00 | 0.00 | 3.00 | . | . |
| Dose1 | 0.00 | 0.00 | 6.00 | 158.33 | -58.33 |
| Dose2 | 0.00 | 0.00 | 2.00 | 79.69 | 20.31 |
| Dose3 | 0.50 | 0.00 | 7.00 | 150.52 | -50.52 |
| Dose4 | 0.50 | 0.00 | 3.00 | 88.54 | 11.46 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 0.73 | 0.948 |

MannWhit(Bon) - testing each trt median signif. greater than control

Jonckheere - test assumes dose-response relationship, testing positive trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 1.00 | . | . |
| Dose1 | 0.00 | 1.000 | 0.355 |
| Dose2 | 0.00 | 1.000 | 0.659 |
| Dose3 | 0.50 | 1.000 | 0.552 |
| Dose4 | 0.50 | 1.000 | 0.625 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Avian Species *Anas platyrhynchos*

PMRA Submission Number

EPA MRID Number 46369201

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE ENC_EL ((EL-EC)/EL (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.788 | <.001 | 3.903 | 0.006 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|-------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 98.73 | 1.41 | 0.34 | 1.43 | 98.01, 99.45 |
| Dose1 | 17 | 97.68 | 3.14 | 0.76 | 3.22 | 96.06, 99.29 |
| Dose2 | 16 | 98.98 | 1.30 | 0.32 | 1.31 | 98.28, 99.67 |
| Dose3 | 16 | 97.29 | 4.64 | 1.16 | 4.77 | 94.82, 99.77 |
| Dose4 | 16 | 98.35 | 2.08 | 0.52 | 2.12 | 97.24, 99.46 |

| Level | Median | Min | Max | %of Control(means) | %Reduction(means) |
|-------|--------|-------|--------|--------------------|-------------------|
| Ctrl | 98.28 | 95.31 | 100.00 | . | . |
| Dose1 | 100.00 | 89.47 | 100.00 | 98.93 | 1.07 |
| Dose2 | 100.00 | 96.36 | 100.00 | 100.25 | -0.25 |
| Dose3 | 99.15 | 84.78 | 100.00 | 98.54 | 1.46 |
| Dose4 | 99.04 | 92.68 | 100.00 | 99.62 | 0.38 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 1.32 | 0.858 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 98.28 | . | . |
| Dose1 | 100.00 | 1.000 | 0.254 |
| Dose2 | 100.00 | 1.000 | 0.657 |
| Dose3 | 99.15 | 1.000 | 0.539 |
| Dose4 | 99.04 | 1.000 | 0.416 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE ES (Eggs Set)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.912 | <.001 | 0.883 | 0.478 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 52.00 | 7.83 | 1.90 | 15.07 | 47.97, | 56.03 |
| Dose1 | 17 | 45.00 | 9.51 | 2.31 | 21.13 | 40.11, | 49.89 |
| Dose2 | 16 | 52.13 | 10.68 | 2.67 | 20.48 | 46.44, | 57.81 |
| Dose3 | 16 | 43.69 | 12.69 | 3.17 | 29.05 | 36.93, | 50.45 |
| Dose4 | 16 | 41.13 | 8.02 | 2.00 | 19.49 | 36.85, | 45.40 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 52.00 | 30.00 | 64.00 | . | . |
| Dose1 | 48.00 | 29.00 | 57.00 | 86.54 | 13.46 |
| Dose2 | 53.50 | 18.00 | 63.00 | 100.24 | -0.24 |
| Dose3 | 46.50 | 13.00 | 58.00 | 84.01 | 15.99 |
| Dose4 | 41.50 | 26.00 | 57.00 | 79.09 | 20.91 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 20.03 | <.001 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 52.00 | . | . |
| Dose1 | 48.00 | 0.100 | 0.020 |
| Dose2 | 53.50 | 1.000 | 0.609 |
| Dose3 | 46.50 | 0.076 | 0.101 |
| Dose4 | 41.50 | 0.002 | <.001 |

SUMMARY

MannWhit (Bonf adjust)
 Jonckheere

NOEC
 Dose3
 Dose3

LOEC
 Dose4
 Dose4

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE ES_EL (EggsSet/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.760 | <.001 | 8.886 | <.001 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|-------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 98.73 | 1.41 | 0.34 | 1.43 | 98.01, 99.45 |
| Dose1 | 17 | 97.55 | 3.26 | 0.79 | 3.34 | 95.88, 99.23 |
| Dose2 | 16 | 98.87 | 1.53 | 0.38 | 1.55 | 98.06, 99.69 |
| Dose3 | 16 | 96.06 | 6.95 | 1.74 | 7.23 | 92.36, 99.76 |
| Dose4 | 16 | 98.35 | 2.08 | 0.52 | 2.12 | 97.24, 99.46 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 98.28 | 95.31 | 100.00 | . | . |
| Dose1 | 100.00 | 89.47 | 100.00 | 98.81 | 1.19 |
| Dose2 | 100.00 | 95.08 | 100.00 | 100.15 | -0.15 |
| Dose3 | 99.15 | 80.77 | 100.00 | 97.30 | 2.70 |
| Dose4 | 99.04 | 92.68 | 100.00 | 99.62 | 0.38 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 1.17 | 0.883 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 98.28 | . | . |
| Dose1 | 100.00 | 1.000 | 0.242 |
| Dose2 | 100.00 | 1.000 | 0.628 |
| Dose3 | 99.15 | 1.000 | 0.505 |
| Dose4 | 99.04 | 1.000 | 0.403 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE VE (Viable Embryo(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.932 | <.001 | 0.212 | 0.931 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 47.18 | 9.28 | 2.25 | 19.67 | 42.40, | 51.95 |
| Dose1 | 17 | 42.24 | 10.27 | 2.49 | 24.31 | 36.96, | 47.51 |
| Dose2 | 16 | 49.63 | 11.07 | 2.77 | 22.32 | 43.72, | 55.53 |
| Dose3 | 16 | 40.00 | 12.45 | 3.11 | 31.13 | 33.36, | 46.64 |
| Dose4 | 16 | 36.06 | 10.87 | 2.72 | 30.13 | 30.27, | 41.85 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 50.00 | 27.00 | 58.00 | . | . |
| Dose1 | 44.00 | 25.00 | 56.00 | 89.53 | 10.47 |
| Dose2 | 51.50 | 18.00 | 61.00 | 105.19 | -5.19 |
| Dose3 | 40.00 | 13.00 | 56.00 | 84.79 | 15.21 |
| Dose4 | 37.00 | 6.00 | 54.00 | 76.44 | 23.56 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 15.62 | 0.004 |

MannWhit(Bon) - testing each trt median signif. less than control
 Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 50.00 | . | . |
| Dose1 | 44.00 | 0.269 | 0.060 |
| Dose2 | 51.50 | 1.000 | 0.757 |
| Dose3 | 40.00 | 0.236 | 0.187 |
| Dose4 | 37.00 | 0.023 | 0.004 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|-------|
| MannWhit (Bonf adjust) | Dose3 | Dose4 |
| Jonckheere | Dose3 | Dose4 |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE VE_ES (ViableEmbryo/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.667 | <.001 | 1.412 | 0.238 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 90.37 | 9.02 | 2.19 | 9.98 | 85.73, | 95.01 |
| Dose1 | 17 | 93.35 | 7.12 | 1.73 | 7.63 | 89.69, | 97.01 |
| Dose2 | 16 | 95.12 | 5.61 | 1.40 | 5.90 | 92.13, | 98.11 |
| Dose3 | 16 | 91.73 | 8.54 | 2.14 | 9.31 | 87.18, | 96.28 |
| Dose4 | 16 | 87.56 | 19.79 | 4.95 | 22.60 | 77.01, | 98.11 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 92.59 | 72.92 | 100.00 | . | |
| Dose1 | 95.24 | 73.53 | 100.00 | 103.30 | -3.30 |
| Dose2 | 96.26 | 78.26 | 100.00 | 105.25 | -5.25 |
| Dose3 | 94.23 | 66.67 | 100.00 | 101.50 | -1.50 |
| Dose4 | 93.93 | 15.79 | 100.00 | 96.89 | 3.11 |

NON-PARAMETRIC ANALYSES

- use alpha-level=0.05 for all tests
 Kruskal-Wallis test - equality among treatment groups
 Degrees of Freedom TestStat P-value
 4 4.89 0.299

MannWhit(Bon) - testing each trt median signif. less than control
 Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 92.59 | | |
| Dose1 | 95.24 | 1.000 | 0.850 |
| Dose2 | 96.26 | 1.000 | 0.935 |
| Dose3 | 94.23 | 1.000 | 0.720 |
| Dose4 | 93.93 | 1.000 | 0.290 |

SUMMARY

| | | |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | NOEC | LOEC |
| Jonckheere | Dose4 | >highest dose |
| | Dose4 | >highest dose |

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Avian Species *Anas platyrhynchos*
PMRA Submission Number **EPA MRID Number 46369201**

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE LE (Live Embryo(d21))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.942 | 0.001 | 0.313 | 0.868 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 44.59 | 9.89 | 2.40 | 22.17 | 39.50, | 49.67 |
| Dose1 | 17 | 41.18 | 10.71 | 2.60 | 26.00 | 35.67, | 46.68 |
| Dose2 | 16 | 48.00 | 11.21 | 2.80 | 23.35 | 42.03, | 53.97 |
| Dose3 | 16 | 38.69 | 12.55 | 3.14 | 32.45 | 32.00, | 45.38 |
| Dose4 | 16 | 35.19 | 10.85 | 2.71 | 30.82 | 29.41, | 40.97 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 49.00 | 25.00 | 56.00 | . | |
| Dose1 | 44.00 | 20.00 | 54.00 | 92.35 | 7.65 |
| Dose2 | 50.00 | 16.00 | 60.00 | 107.65 | -7.65 |
| Dose3 | 39.00 | 12.00 | 55.00 | 86.77 | 13.23 |
| Dose4 | 36.00 | 6.00 | 54.00 | 78.92 | 21.08 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 13.28 | 0.010 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 49.00 | | |
| Dose1 | 44.00 | 0.600 | 0.142 |
| Dose2 | 50.00 | 1.000 | 0.818 |
| Dose3 | 39.00 | 0.445 | 0.255 |
| Dose4 | 36.00 | 0.055 | 0.011 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose3 | Dose4 |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE LE_VE (LiveEmbryo/ViableEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.837 | <.001 | 2.035 | 0.098 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|-------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 94.22 | 6.52 | 1.58 | 6.92 | 90.87, 97.57 |
| Dose1 | 17 | 96.96 | 4.74 | 1.15 | 4.89 | 94.52, 99.40 |
| Dose2 | 16 | 96.37 | 3.38 | 0.85 | 3.51 | 94.57, 98.17 |
| Dose3 | 16 | 96.37 | 3.45 | 0.86 | 3.58 | 94.53, 98.20 |
| Dose4 | 16 | 97.51 | 2.65 | 0.66 | 2.72 | 96.10, 98.93 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 96.55 | 75.00 | 100.00 | . | . |
| Dose1 | 96.97 | 80.00 | 100.00 | 102.91 | -2.91 |
| Dose2 | 97.12 | 88.89 | 100.00 | 102.28 | -2.28 |
| Dose3 | 96.33 | 91.18 | 100.00 | 102.28 | -2.28 |
| Dose4 | 97.59 | 91.67 | 100.00 | 103.49 | -3.49 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 3.63 | 0.459 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 96.55 | . | . |
| Dose1 | 96.97 | 1.000 | 0.920 |
| Dose2 | 97.12 | 1.000 | 0.733 |
| Dose3 | 96.33 | 0.919 | 0.634 |
| Dose4 | 97.59 | 1.000 | 0.837 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE NH (Number Hatched)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.955 | 0.006 | 0.895 | 0.471 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 39.00 | 10.35 | 2.51 | 26.54 | 33.68, | 44.32 |
| Dose1 | 17 | 37.29 | 11.59 | 2.81 | 31.06 | 31.34, | 43.25 |
| Dose2 | 16 | 45.00 | 11.60 | 2.90 | 25.79 | 38.82, | 51.18 |
| Dose3 | 16 | 35.38 | 13.42 | 3.36 | 37.94 | 28.22, | 42.53 |
| Dose4 | 16 | 33.06 | 10.30 | 2.57 | 31.15 | 27.57, | 38.55 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 37.00 | 18.00 | 54.00 | . | . |
| Dose1 | 38.00 | 14.00 | 50.00 | 95.63 | 4.37 |
| Dose2 | 47.00 | 14.00 | 60.00 | 115.38 | -15.38 |
| Dose3 | 36.00 | 12.00 | 52.00 | 90.71 | 9.29 |
| Dose4 | 34.50 | 5.00 | 51.00 | 84.78 | 15.22 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 9.98 | 0.041 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 37.00 | . | . |
| Dose1 | 38.00 | 1.000 | 0.365 |
| Dose2 | 47.00 | 1.000 | 0.940 |
| Dose3 | 36.00 | 1.000 | 0.523 |
| Dose4 | 34.50 | 0.221 | 0.084 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Avian Species *Anas platyrhynchos*

PMRA Submission Number

EPA MRID Number 46369201

Mallard repro, Acetamiprid, MRID 46369201

ANALYSIS RESULTS FOR VARIABLE NH_EL (NumberHatched/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks | Shapiro-Wilks | Levenes | Levenes | Conclusion |
|---------------|---------------|-----------|---------|--------------------------|
| Test Stat | P-value | Test Stat | P-value | |
| 0.856 | <.001 | 0.908 | 0.464 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 73.88 | 15.60 | 3.78 | 21.12 | 65.86, | 81.90 |
| Dose1 | 17 | 79.74 | 14.50 | 3.52 | 18.19 | 72.28, | 87.19 |
| Dose2 | 16 | 84.55 | 9.10 | 2.27 | 10.76 | 79.70, | 89.40 |
| Dose3 | 16 | 77.83 | 16.91 | 4.23 | 21.72 | 68.82, | 86.84 |
| Dose4 | 16 | 78.63 | 18.06 | 4.51 | 22.97 | 69.01, | 88.25 |

| Level | Median | Min | Max | %of Control(means) | %Reduction(means) |
|-------|--------|-------|--------|--------------------|-------------------|
| Ctrl | 75.86 | 37.50 | 94.44 | . | . |
| Dose1 | 81.36 | 40.00 | 100.00 | 107.93 | -7.93 |
| Dose2 | 85.45 | 60.87 | 95.00 | 114.44 | -14.44 |
| Dose3 | 82.92 | 40.38 | 94.55 | 105.34 | -5.34 |
| Dose4 | 83.09 | 13.16 | 90.24 | 106.43 | -6.43 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 4.51 | 0.342 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 75.86 | . | . |
| Dose1 | 81.36 | 1.000 | 0.876 |
| Dose2 | 85.45 | 1.000 | 0.984 |
| Dose3 | 82.92 | 1.000 | 0.913 |
| Dose4 | 83.09 | 1.000 | 0.841 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE NH_ES (NumberHatched/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.835 | <.001 | 0.728 | 0.575 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 74.79 | 15.49 | 3.76 | 20.71 | 66.83, | 82.75 |
| Dose1 | 17 | 81.65 | 14.12 | 3.42 | 17.29 | 74.39, | 88.91 |
| Dose2 | 16 | 85.49 | 8.96 | 2.24 | 10.48 | 80.72, | 90.27 |
| Dose3 | 16 | 80.69 | 15.27 | 3.82 | 18.93 | 72.55, | 88.82 |
| Dose4 | 16 | 80.02 | 18.35 | 4.59 | 22.93 | 70.25, | 89.80 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 77.19 | 37.50 | 94.44 | . | . |
| Dose1 | 84.31 | 41.18 | 100.00 | 109.18 | -9.18 |
| Dose2 | 86.91 | 62.22 | 96.00 | 114.31 | -14.31 |
| Dose3 | 85.49 | 41.18 | 94.55 | 107.88 | -7.88 |
| Dose4 | 84.62 | 13.16 | 90.24 | 107.00 | -7.00 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 4.67 | 0.323 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 77.19 | . | . |
| Dose1 | 84.31 | 1.000 | 0.896 |
| Dose2 | 86.91 | 1.000 | 0.981 |
| Dose3 | 85.49 | 1.000 | 0.933 |
| Dose4 | 84.62 | 1.000 | 0.843 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE NH_LE (NumberHatched/LiveEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.862 | <.001 | 1.872 | 0.124 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 87.12 | 10.74 | 2.60 | 12.33 | 81.60, | 92.64 |
| Dose1 | 17 | 89.60 | 10.26 | 2.49 | 11.45 | 84.33, | 94.88 |
| Dose2 | 16 | 93.23 | 7.00 | 1.75 | 7.51 | 89.50, | 96.96 |
| Dose3 | 16 | 90.44 | 10.52 | 2.63 | 11.63 | 84.84, | 96.05 |
| Dose4 | 16 | 93.44 | 4.71 | 1.18 | 5.04 | 90.93, | 95.95 |

| Level | Median | Min | Max | %of Control(means) | %Reduction(means) |
|-------|--------|-------|--------|--------------------|-------------------|
| Ctrl | 90.91 | 60.00 | 96.43 | . | . |
| Dose1 | 92.31 | 63.64 | 100.00 | 102.85 | -2.85 |
| Dose2 | 94.78 | 73.68 | 100.00 | 107.01 | -7.01 |
| Dose3 | 93.06 | 67.74 | 100.00 | 103.81 | -3.81 |
| Dose4 | 94.66 | 83.33 | 100.00 | 107.26 | -7.26 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 4.69 | 0.320 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 90.91 | . | . |
| Dose1 | 92.31 | 1.000 | 0.819 |
| Dose2 | 94.78 | 1.000 | 0.970 |
| Dose3 | 93.06 | 1.000 | 0.945 |
| Dose4 | 94.66 | 1.000 | 0.953 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE HS (Hatching Survival(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.947 | 0.002 | 0.980 | 0.423 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 37.00 | 13.66 | 3.31 | 36.92 | 29.98, | 44.02 |
| Dose1 | 17 | 36.94 | 11.57 | 2.81 | 31.31 | 30.99, | 42.89 |
| Dose2 | 16 | 43.81 | 11.29 | 2.82 | 25.76 | 37.80, | 49.83 |
| Dose3 | 16 | 35.19 | 13.34 | 3.34 | 37.92 | 28.08, | 42.30 |
| Dose4 | 16 | 32.50 | 10.28 | 2.57 | 31.62 | 27.02, | 37.98 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|-------|---------------------|--------------------|
| Ctrl | 37.00 | 3.00 | 54.00 | . | . |
| Dose1 | 38.00 | 14.00 | 50.00 | 99.84 | 0.16 |
| Dose2 | 46.00 | 14.00 | 59.00 | 118.41 | -18.41 |
| Dose3 | 36.00 | 12.00 | 52.00 | 95.10 | 4.90 |
| Dose4 | 34.00 | 5.00 | 51.00 | 87.84 | 12.16 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 8.35 | 0.080 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 37.00 | . | . |
| Dose1 | 38.00 | 1.000 | 0.432 |
| Dose2 | 46.00 | 1.000 | 0.902 |
| Dose3 | 36.00 | 1.000 | 0.509 |
| Dose4 | 34.00 | 0.349 | 0.086 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE HS_ES (HatchingSurvival/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.818 | <.001 | 1.391 | 0.245 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 70.79 | 22.71 | 5.51 | 32.08 | 59.11, | 82.46 |
| Dose1 | 17 | 80.85 | 14.07 | 3.41 | 17.40 | 73.62, | 88.09 |
| Dose2 | 16 | 83.33 | 8.82 | 2.20 | 10.58 | 78.64, | 88.03 |
| Dose3 | 16 | 80.28 | 15.13 | 3.78 | 18.84 | 72.22, | 88.34 |
| Dose4 | 16 | 78.55 | 18.15 | 4.54 | 23.11 | 68.87, | 88.22 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 73.33 | 5.77 | 94.44 | . | . |
| Dose1 | 84.21 | 41.18 | 100.00 | 114.22 | -14.22 |
| Dose2 | 83.48 | 60.00 | 94.00 | 117.73 | -17.73 |
| Dose3 | 84.38 | 41.18 | 94.55 | 113.41 | -13.41 |
| Dose4 | 83.33 | 13.16 | 89.74 | 110.96 | -10.96 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 3.64 | 0.457 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 73.33 | . | . |
| Dose1 | 84.21 | 1.000 | 0.918 |
| Dose2 | 83.48 | 1.000 | 0.959 |
| Dose3 | 84.38 | 1.000 | 0.944 |
| Dose4 | 83.33 | 1.000 | 0.848 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Avian Species *Anas platyrhynchos*

PMRA Submission Number

EPA MRID Number 46369201

Mallard repro, Acetamiprid, MRID 46369201

ANALYSIS RESULTS FOR VARIABLE HS_NH (HatchingSurvival/NumberHatched (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.310 | <.001 | 3.276 | 0.016 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|-------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 93.99 | 22.04 | 5.35 | 23.45 | 82.65, 100.00 |
| Dose1 | 17 | 99.02 | 1.60 | 0.39 | 1.62 | 98.20, 99.84 |
| Dose2 | 16 | 97.52 | 3.34 | 0.83 | 3.42 | 95.74, 99.30 |
| Dose3 | 16 | 99.53 | 1.03 | 0.26 | 1.03 | 98.98, 100.00 |
| Dose4 | 16 | 98.23 | 2.62 | 0.66 | 2.67 | 96.83, 99.63 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|-------|--------|---------------------|--------------------|
| Ctrl | 100.00 | 8.82 | 100.00 | . | . |
| Dose1 | 100.00 | 95.92 | 100.00 | 105.35 | -5.35 |
| Dose2 | 98.18 | 87.76 | 100.00 | 103.76 | -3.76 |
| Dose3 | 100.00 | 97.06 | 100.00 | 105.90 | -5.90 |
| Dose4 | 100.00 | 90.48 | 100.00 | 104.52 | -4.52 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 8.14 | 0.087 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 100.00 | . | . |
| Dose1 | 100.00 | 1.000 | 0.266 |
| Dose2 | 98.18 | 0.095 | 0.016 |
| Dose3 | 100.00 | 1.000 | 0.362 |
| Dose4 | 100.00 | 1.000 | 0.166 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE THICK (Eggshell thickness)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.870 | <.001 | 0.951 | 0.439 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 0.34 | 0.02 | 0.00 | 6.01 | 0.33, 0.35 |
| Dose1 | 17 | 0.34 | 0.02 | 0.00 | 4.99 | 0.33, 0.35 |
| Dose2 | 16 | 0.34 | 0.04 | 0.01 | 10.86 | 0.32, 0.36 |
| Dose3 | 16 | 0.34 | 0.02 | 0.00 | 5.14 | 0.33, 0.35 |
| Dose4 | 16 | 0.33 | 0.01 | 0.00 | 3.79 | 0.33, 0.34 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|------|------|---------------------|--------------------|
| Ctrl | 0.34 | 0.30 | 0.37 | . | . |
| Dose1 | 0.34 | 0.31 | 0.37 | 99.85 | 0.15 |
| Dose2 | 0.34 | 0.29 | 0.46 | 100.71 | -0.71 |
| Dose3 | 0.33 | 0.31 | 0.36 | 98.98 | 1.02 |
| Dose4 | 0.33 | 0.31 | 0.36 | 97.26 | 2.74 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 4.20 | 0.379 |

MannWhit (Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit (Bonf adjust)p-value | Jonckheere p-value |
|-------|--------|-------------------------------|--------------------|
| Ctrl | 0.34 | . | . |
| Dose1 | 0.34 | 1.000 | 0.438 |
| Dose2 | 0.34 | 1.000 | 0.422 |
| Dose3 | 0.33 | 1.000 | 0.291 |
| Dose4 | 0.33 | 0.180 | 0.039 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose3 | Dose4 |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE HATWT (Hatchling Weight)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|----------------------|
| 0.994 | 0.975 | 0.656 | 0.624 | USE PARAMETRIC TESTS |

BASIC STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval | |
|-------|----|-------|--------|--------|-------------|-------------------|-------|
| Ctrl | 17 | 33.14 | 2.43 | 0.59 | 7.34 | 31.88, | 34.39 |
| Dose1 | 17 | 32.78 | 1.74 | 0.42 | 5.32 | 31.89, | 33.68 |
| Dose2 | 16 | 32.13 | 2.17 | 0.54 | 6.74 | 30.97, | 33.28 |
| Dose3 | 16 | 32.33 | 1.81 | 0.45 | 5.59 | 31.37, | 33.29 |
| Dose4 | 16 | 30.99 | 2.25 | 0.56 | 7.26 | 29.79, | 32.19 |

| Level | Median | Min | Max | % of Control (means) | % Reduction (means) |
|-------|--------|-------|-------|----------------------|---------------------|
| Ctrl | 32.90 | 28.10 | 38.00 | . | . |
| Dose1 | 33.10 | 29.20 | 36.50 | 98.93 | 1.07 |
| Dose2 | 32.05 | 27.90 | 35.70 | 96.95 | 3.05 |
| Dose3 | 32.60 | 29.10 | 35.70 | 97.57 | 2.43 |
| Dose4 | 30.75 | 26.30 | 34.20 | 93.52 | 6.48 |

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

| Numerator df | Denominator df | F-stat | P-value |
|--------------|----------------|--------|---------|
| 4 | 77 | 2.49 | 0.050 |

Dunnett - testing each trt mean signif. less than control
 Williams - test assumes dose-response relationship, testing negative trend
 Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

| Level | Mean | Dunnett p-value | Isotonic mean | Williams p-value | Tukey p-values | | | | |
|-------|-------|-----------------|---------------|------------------|----------------|-------|-------|-------|-------|
| | | | | | Dose1 | Dose2 | Dose3 | Dose4 | Dose5 |
| Ctrl | 33.14 | . | 33.14 | . | 0.988 | 0.640 | 0.806 | 0.034 | . |
| Dose1 | 32.78 | 0.610 | 32.78 | 0.372 | . | 0.896 | 0.972 | 0.112 | . |
| Dose2 | 32.13 | 0.228 | 32.23 | 0.138 | . | . | 0.999 | 0.544 | . |
| Dose3 | 32.33 | 0.335 | 32.23 | 0.142 | . | . | . | 0.374 | . |
| Dose4 | 30.99 | 0.008 | 30.99 | 0.002 | . | . | . | . | . |

SUMMARY

Dunnett
 Williams

NOEC

Dose3
 Dose3

LOEC

Dose4
 Dose4

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE SURVWT (Survivor Wt (d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|----------------------|
| 0.993 | 0.945 | 0.997 | 0.414 | USE PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|--------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 257.60 | 20.75 | 5.03 | 8.05 | 246.93, 268.27 |
| Dose1 | 17 | 266.84 | 16.35 | 3.97 | 6.13 | 258.43, 275.24 |
| Dose2 | 16 | 261.31 | 17.56 | 4.39 | 6.72 | 251.95, 270.67 |
| Dose3 | 16 | 252.98 | 13.22 | 3.31 | 5.23 | 245.94, 260.03 |
| Dose4 | 16 | 248.72 | 13.42 | 3.35 | 5.40 | 241.57, 255.87 |

| Level | Median | Min | Max | %of Control (means) | %Reduction (means) |
|-------|--------|--------|--------|---------------------|--------------------|
| Ctrl | 255.30 | 211.50 | 290.10 | . | . |
| Dose1 | 268.60 | 232.40 | 296.90 | 103.59 | -3.59 |
| Dose2 | 257.15 | 237.60 | 300.50 | 101.44 | -1.44 |
| Dose3 | 249.15 | 228.40 | 285.40 | 98.21 | 1.79 |
| Dose4 | 252.25 | 223.80 | 268.30 | 96.55 | 3.45 |

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

| Numerator df | Denominator df | F-stat | P-value |
|--------------|----------------|--------|---------|
| 4 | 77 | 2.98 | 0.024 |

Dunnnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

| Level | Mean | Dunnnett p-value | Isotonic mean | Williams p-value | Tukey p-values | | | | |
|-------|--------|------------------|---------------|------------------|----------------|-------|-------|-------|-------|
| | | | | | Dose1 | Dose2 | Dose3 | Dose4 | Dose5 |
| Ctrl | 257.60 | . | 262.22 | . | 0.486 | 0.967 | 0.930 | 0.540 | . |
| Dose1 | 266.84 | 0.997 | 262.22 | 0.866 | . | 0.873 | 0.126 | 0.020 | . |
| Dose2 | 261.31 | 0.947 | 261.31 | 0.851 | . | . | 0.615 | 0.210 | . |
| Dose3 | 252.98 | 0.468 | 252.98 | 0.282 | . | . | . | 0.949 | . |
| Dose4 | 248.72 | 0.178 | 248.72 | 0.083 | . | . | . | . | . |

SUMMARY

| | NOEC | LOEC |
|----------|-------|---------------|
| Dunnnett | Dose4 | >highest dose |
| Williams | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE FOOD (Food Consumption)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|--------------------------|
| 0.260 | <.001 | 3.951 | 0.006 | USE NON-PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|--------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 229.48 | 23.29 | 5.65 | 10.15 | 217.50, 241.45 |
| Dose1 | 17 | 226.07 | 25.34 | 6.15 | 11.21 | 213.04, 239.10 |
| Dose2 | 16 | 221.82 | 21.61 | 5.40 | 9.74 | 210.30, 233.34 |
| Dose3 | 16 | 342.48 | 484.19 | 121.05 | 141.38 | 84.47, 600.49 |
| Dose4 | 16 | 220.65 | 25.56 | 6.39 | 11.59 | 207.03, 234.27 |

| Level | Median | Min | Max | %of Control(means) | %Reduction(means) |
|-------|--------|--------|---------|--------------------|-------------------|
| Ctrl | 228.80 | 194.60 | 286.50 | . | . |
| Dose1 | 228.30 | 182.60 | 263.00 | 98.52 | 1.48 |
| Dose2 | 224.05 | 187.70 | 251.20 | 96.66 | 3.34 |
| Dose3 | 226.10 | 178.00 | 2156.00 | 149.24 | -49.24 |
| Dose4 | 213.85 | 178.20 | 288.30 | 96.15 | 3.85 |

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

| Degrees of Freedom | TestStat | P-value |
|--------------------|----------|---------|
| 4 | 1.42 | 0.840 |

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

| Level | Median | MannWhit(Bon adjust)p-value | Jonckheere p-value |
|-------|--------|-----------------------------|--------------------|
| Ctrl | 228.80 | . | . |
| Dose1 | 228.30 | 1.000 | 0.432 |
| Dose2 | 224.05 | 0.975 | 0.241 |
| Dose3 | 226.10 | 1.000 | 0.297 |
| Dose4 | 213.85 | 0.592 | 0.157 |

SUMMARY

| | NOEC | LOEC |
|------------------------|-------|---------------|
| MannWhit (Bonf adjust) | Dose4 | >highest dose |
| Jonckheere | Dose4 | >highest dose |

Mallard repro, Acetamidrid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE WTGAINM (Male wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|----------------------|
| 0.987 | 0.563 | 1.561 | 0.193 | USE PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|--------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 79.47 | 72.66 | 17.62 | 91.43 | 42.11, 116.83 |
| Dose1 | 17 | 23.01 | 90.41 | 21.93 | 392.88 | -23.47, 69.50 |
| Dose2 | 16 | 34.33 | 104.46 | 26.11 | 304.26 | -21.33, 89.99 |
| Dose3 | 16 | 4.64 | 62.63 | 15.66 | 1350.43 | -28.73, 38.01 |
| Dose4 | 16 | -28.33 | 61.98 | 15.49 | -218.77 | -61.36, 4.69 |

| Level | Median | Min | Max | % of Control (means) | %Reduction (means) |
|-------|--------|---------|--------|----------------------|--------------------|
| Ctrl | 71.80 | -40.10 | 193.60 | . | . |
| Dose1 | 53.40 | -165.30 | 185.10 | 28.96 | 71.04 |
| Dose2 | -5.35 | -122.70 | 276.50 | 43.20 | 56.80 |
| Dose3 | 2.15 | -105.40 | 145.80 | 5.84 | 94.16 |
| Dose4 | -29.80 | -172.70 | 80.60 | -35.65 | 135.65 |

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

| Numerator df | Denominator df | F-stat | P-value |
|--------------|----------------|--------|---------|
| 4 | 77 | 4.03 | 0.005 |

Dunnnett - testing each trt mean signif. less than control
 Williams - test assumes dose-response relationship, testing negative trend
 Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

| Level | Mean | Dunnnett p-value | Isotonic mean | Williams p-value | Tukey p-values | | | | |
|-------|--------|------------------|---------------|------------------|----------------|-------|-------|-------|-------|
| | | | | | Dose1 | Dose2 | Dose3 | Dose4 | Dose5 |
| Ctrl | 79.47 | . | 79.47 | . | 0.252 | 0.492 | 0.067 | 0.002 | . |
| Dose1 | 23.01 | 0.069 | 28.50 | 0.039 | . | 0.994 | 0.965 | 0.360 | . |
| Dose2 | 34.33 | 0.157 | 28.50 | 0.044 | . | . | 0.833 | 0.187 | . |
| Dose3 | 4.64 | 0.016 | 4.64 | 0.005 | . | . | . | 0.772 | . |
| Dose4 | -28.33 | <.001 | -28.33 | <.001 | . | . | . | . | . |

| SUMMARY | NOEC | LOEC |
|----------|--------------|-------|
| Dunnnett | Dose2 | Dose3 |
| Williams | <lowest dose | Dose1 |

Mallard repro, Acetamiprid, MRID 46369201
 ANALYSIS RESULTS FOR VARIABLE WTGAINF (Female wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

| Shapiro-Wilks Test Stat | Shapiro-Wilks P-value | Levenes Test Stat | Levenes P-value | Conclusion |
|-------------------------|-----------------------|-------------------|-----------------|----------------------|
| 0.989 | 0.732 | 2.058 | 0.095 | USE PARAMETRIC TESTS |

BASIC SUMMARY STATISTICS

| Level | N | Mean | StdDev | StdErr | Coef of Var | 95% Conf.Interval |
|-------|----|--------|--------|--------|-------------|-------------------|
| Ctrl | 17 | 159.14 | 71.66 | 17.38 | 45.03 | 122.29, 195.98 |
| Dose1 | 17 | 120.86 | 100.15 | 24.29 | 82.86 | 69.37, 172.35 |
| Dose2 | 16 | 115.82 | 51.59 | 12.90 | 44.54 | 88.33, 143.31 |
| Dose3 | 16 | 69.04 | 85.99 | 21.50 | 124.56 | 23.21, 114.86 |
| Dose4 | 16 | 63.54 | 77.82 | 19.46 | 122.48 | 22.07, 105.01 |

| Level | Median | Min | Max | % of Control (means) | %Reduction (means) |
|-------|--------|---------|--------|----------------------|--------------------|
| Ctrl | 177.10 | 25.60 | 299.30 | . | . |
| Dose1 | 116.40 | -59.80 | 291.10 | 75.95 | 24.05 |
| Dose2 | 120.60 | 8.50 | 206.10 | 72.78 | 27.22 |
| Dose3 | 79.45 | -102.00 | 235.00 | 43.38 | 56.62 |
| Dose4 | 74.30 | -166.10 | 169.80 | 39.93 | 60.07 |

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

| Numerator df | Denominator df | F-stat | P-value |
|--------------|----------------|--------|---------|
| 4 | 77 | 4.13 | 0.004 |

Dunnnett - testing each trt mean signif. less than control
 Williams - test assumes dose-response relationship, testing negative trend
 Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

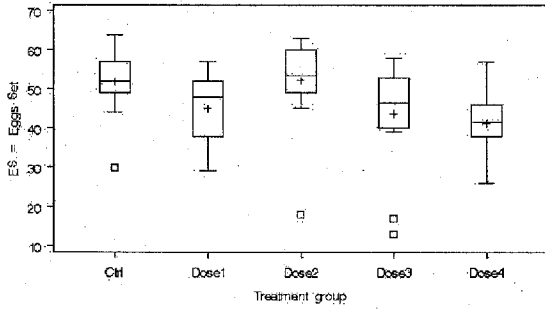
| Level | Mean | Dunnnett p-value | Isotonic mean | Williams p-value | Tukey p-values | | | | |
|-------|--------|------------------|---------------|------------------|----------------|-------|-------|-------|-------|
| | | | | | Dose1 | Dose2 | Dose3 | Dose4 | Dose5 |
| Ctrl | 159.14 | . | 159.14 | . | 0.625 | 0.522 | 0.014 | 0.008 | . |
| Dose1 | 120.86 | 0.220 | 120.86 | 0.096 | . | 1.000 | 0.339 | 0.241 | . |
| Dose2 | 115.82 | 0.170 | 115.82 | 0.075 | . | . | 0.459 | 0.345 | . |
| Dose3 | 69.04 | 0.003 | 69.04 | <.001 | . | . | . | 1.000 | . |
| Dose4 | 63.54 | 0.002 | 63.54 | <.001 | . | . | . | . | . |

SUMMARY
 Dunnnett
 Williams

NOEC
 Dose2
 Dose2

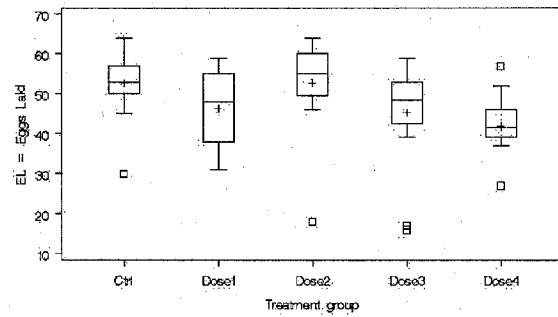
LOEC
 Dose3
 Dose3

Mallard repro, Acetamiprid, MRID 46369201



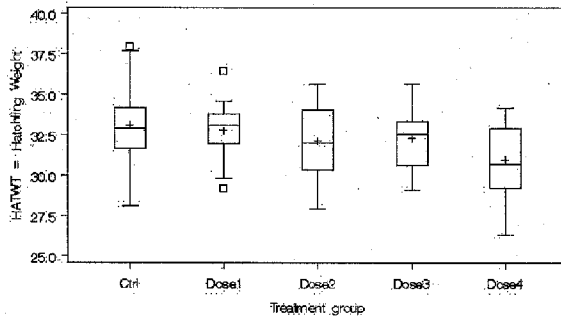
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Mallard repro, Acetamiprid, MRID 46369201

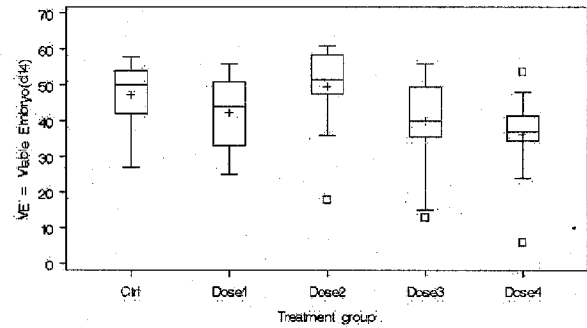


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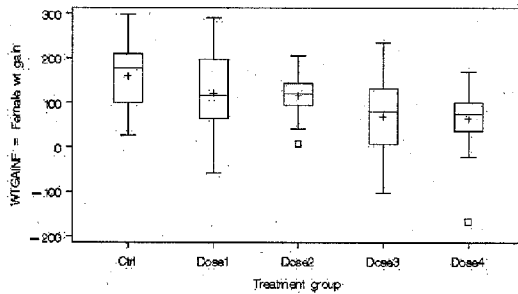
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Mallard repro, Acetamiprid, MRID 46369201



Mallard repro, Acetamiprid, MRID 46369201



Mallard repro, Acetamiprid, MRID 46369201

