

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Data Requirement:

PMRA DATA CODE	
EPA DP Barcode	D318037
OECD Data Point	
EPA MRID	465556-01
EPA Guideline	§71-4a

Test material: Acetamiprid **Purity:** 99.46%
Common name: Acetamiprid
Chemical name: IUPAC: (E)-N¹-[(6-chloro-3-pyridyl)methyl]-N²-cyano-N²-methylacetamidine
CAS name: Not reported
CAS No.: Not reported
Synonyms: NI-25

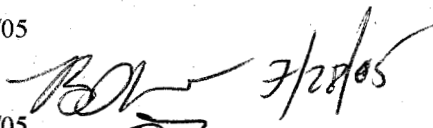
Primary Reviewer: Christie E. Padova
Staff Scientist, Dynamac Corporation

Signature:
Date: 6/14/05

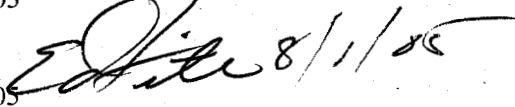
QC Reviewer: Teri Myers
Staff Scientist, Dynamac Corporation

Signature:
Date: 6/21/05

Primary Reviewer: Brian D. Kiernan, Biologist
OPP/EFED/ERBIV

Signature: 
Date: 7/22/05

Secondary Reviewer(s): Edward Fite, PhD, Senior Biologist
OPP/EFED/ERBIV

Signature: 
Date: 7/28/05

Reference/Submission No.:

Company Code:
Active Code:
EPA PC Code: 099050

Date Evaluation Completed:

CITATION: Temple, D.L., *et al.* 2005. Acetamiprid: A Reproduction Study with the Northern Bobwhite. Unpublished study performed by Wildlife International Ltd., Easton, MD. Laboratory Project No. 437-104. Study sponsored and submitted by Nippon Soda Co., Ltd., Chiyoda-ku, Tokyo, Japan. Experimental start date June 17, 2004 and experimental termination date January 5, 2005. Final report submitted March 17, 2005.



EXECUTIVE SUMMARY:

The one-generation reproductive toxicity of acetamiprid to groups (16 pens/treatment level) of 1 male and 1 female, 24-week-old northern bobwhite quail (*Colinus virginianus*) was assessed over 21 weeks. Acetamiprid was administered to the birds in the diet at nominal concentrations of 0 (control), 100, 200, 400, and 800 ppm a.i. (adjusted for purity). Mean-measured concentrations were <25 (<LOD, control), 89.7, 184, 385, and 775 ppm a.i., respectively. Treated diets were homogeneously mixed and stable under actual use conditions.

No treatment-related effects were observed on adult survival or food consumption, or upon terminal necropsy of all decedent and surviving birds. The reviewer's analysis detected a significant reduction (18%) in adult female body weight change at the highest treatment level. No treatment-related effects were observed on egg production or quality, fertility, embryonic development, hatchability, or survival of hatchlings at the 89.7, 184, or 385 ppm a.i. treatment levels, or on clinical signs of toxicity in hatchlings at any treatment level.

The study authors noted a slight treatment-related reduction in numbers of eggs laid per hen at the 775 ppm a.i. level compared to the control: the number of eggs laid/hen/day averaged 0.45 for the control group and 0.34 for the 775 ppm a.i. group, and the number of eggs laid as a percentage of maximum eggs laid averaged 63% for the control group and 48% for the 775 ppm a.i. group. The difference in egg production observed was the result of a decrease in the number of hens laying a high number of eggs, i.e., hens laying ≥ 50 eggs was 6 in the control group and 0 in the 800 ppm a.i. group. The reviewer's analysis did not detect a similar reduction in egg production, however, the reviewer's analysis did detect significant reductions in several other reproductive parameters at the highest treatment level, including eggs set, viable embryos, viable embryos to eggs set, live embryos, number hatched, number of hatchlings to eggs laid, hatchling survival (also detected by the study author's analysis), hatchling survival to eggs set, and hatchling survival to number hatched. Furthermore, the reviewer's analysis detected a significant reduction in hatchling body weight at the 184, 385, and 775 ppm a.i. treatment levels. Based on this endpoint, the NOEC and LOEC for the study are 89.7 and 184 ppm a.i..

This study is scientifically sound, fulfills guideline requirements for the reproductive toxicity of acetamiprid to northern bobwhite quail (§71-4a), and is classified as ACCEPTABLE.

Results Synopsis

Test Organism Size/Age: 24 weeks old at test initiation (181-229 g)

NOEC: 89.7 ppm a.i.

LOEC: 184 ppm a.i.

Endpoint(s) Affected: eggs set, viable embryos, viable embryos to eggs set, live embryos, number hatched, number hatched to eggs laid, hatchling survival, hatchling survival to eggs set, hatchling survival to number hatched, **hatchling body weight (most sensitive)**, and adult female weight gain

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED:

The study protocol was based on procedures of the U.S. EPA Pesticide Assessment Guidelines, §71-4 (1982) and the U.S. EPA Ecological Effects Test Guidelines, OPPTS No. 850.2300 (*draft*, 1996). Deviations from FIFRA Guideline §71-4 are:

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1. Mortality of the quail during acclimation was not reported.
2. Although effects on reproduction were observed, a withdrawal period was not incorporated into the test design.
3. The average egg storage temperature (prior to setting for incubation) was 13.1°C, lower than the recommended level of 16°C.

These deviations do not affect the scientific validity or acceptability of the study.

COMPLIANCE:

Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided. This study was conducted in accordance with U.S. EPA, OECD, and Japan MAFF GLP standards.

A. MATERIALS:

1. Test Material Acetamiprid

Description: White powder

Lot No./Batch No.: NNI-02

Purity: 99.46%

Stability of Compound

Under Test Conditions: The stability of acetamiprid in the treated feed was verified at each test concentration level under actual use conditions. Samples of treated feed were collected from the feed troughs on Days 0 and 7 of Week 1. Recoveries were 81-92% of initial values.

Storage conditions

of test chemical: Under freezer conditions in locked storage.

OECD requires water solubility, stability in water and light, pK_a , P_{ow} and vapor pressure of the test compound. OECD requirements were not reported.

2. Test organism:

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Table 1: Test organism.

Parameter	Details	Remarks
		Criteria
Species (common and scientific names):	Northern bobwhite quail (<i>Colinus virginianus</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:	24 weeks	It was stated that birds were approaching their first breeding season. <i>EPA requires: birds should be approaching their first breeding season.</i>
Body Weight: (mean and range)	Males: Overall range (n=80) 181 to 229 g, with group means of 205 to 207 g. Females: Overall range (n=80) 182 to 225 g, with group means of 201 to 206 g.	Individual body weights were recorded at Weeks 0, 2, 4, 6, 8 and 21 (test termination). <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:	K & L Quail, Oroville, CA	Birds were from the same hatch, and 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 test concentrations were selected in consultation with the Sponsor, based upon toxicity information provided by the Sponsor.
- b. Definitive Study

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Table 2: Experimental Parameters.

Parameter	Details	Remarks
		<i>Criteria</i>
Acclimation period: Conditions (same as test or not): Feeding: Health (any mortality observed):	9 weeks Same as test Water and feed were provided <i>ad libitum</i> . Pre-test mortality was not reported.	The study author reported that at test initiation, all birds were examined for physical injuries and general health, and birds that did not appear healthy or were outside the desired weight range were excluded from the study. Quail were fed a basal game-bird diet formulated by Agway Inc., to meet laboratory specifications, and provided public tap water from the city of Easton. Feed was supplemented with limestone to increase Ca in diet. <hr/> 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 <i>ad libitum</i> , and sickness, injuries or mortality be noted.
Test duration pre-laying exposure: egg-laying exposure: withdrawal period, if used:	Approximately 10 weeks Approximately 11 weeks None	Although effects on reproduction were observed, a withdrawal period was not incorporated into the test design. <hr/> EPA requires <u>Pre-laying exposure duration</u> At least 10 weeks prior to the onset of egg-laying. <u>Exposure duration with egg-laying</u> At least 10 weeks. <u>Withdrawal period</u> If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.

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Parameter	Details	Remarks
		Criteria
Pen (for parental and offspring) size: construction materials: number:	Parents (one pair) were housed in battery breeding cages measuring 27 x 51 x 20/25 cm (sloping floors). Offspring (by set and group) were housed in 72 x 90 x 23 cm battery brooders. Parental and offspring pens were constructed of galvanized wire mesh and galvanized sheeting. 16 parental pens/treatment level	Sisal ropes were added to each parental pen for animal enrichment. <hr/> <u>Pens</u> Adequate room and arranged to prevent cross contamination <u>Materials</u> Nontoxic material and nonbinding material, such as galvanized steel. <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.
Number of birds per pen (male:female)	2 birds/pen (1 male:1 female)	<hr/> 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.
Number of pens per group/treatment negative control: solvent control: treated:	N/A 16 pens 16 pens/treatment	<hr/> EPA requires at least 12 pens, but considerably more if birds are kept in pairs. At least 16 is strongly recommended.

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Parameter	Details	Remarks
		<i>Criteria</i>
Test concentrations (ppm diet) nominal: measured:	0 (control), 100, 200, 400, and 800 ppm a.i. <25 (<LOD, control), 89.7, 184, 385, and 775 ppm a.i.	Concentrations of the test substance in the diet were adjusted for purity. Samples used for concentration verification analyses were collected from diets during Weeks 1, 4, 8, 12, 16, and 20. <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 Approx. 0.5% (v:w)	Percent of solvent in final diets was reviewer calculated: 43.9 mL acetone (in each 1000 g of premix) ÷ 9000 g (total weight of final diets) x 100. <i>EPA requires corn oil or other appropriate vehicle not more than 2% of diet by weight</i>

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Parameter	Details	Remarks
		Criteria
Was detailed description and nutrient analysis of the basal diet provided? (Yes/No)	Yes	Basal diets contained $\geq 27\%$ protein, $\geq 2.5\%$ fat, $\leq 5\%$ fiber, and 3% calcium. <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 substance was dissolved in acetone using a magnetic stir-bar for at least 1 minute. The test substance solution was then mixed with the entire portion of pre-mix basal ration using a Hobart mixer for approximately 20 minutes. Separate pre-mixes were prepared for each concentration level approximately every 4 weeks, and were stored frozen until needed. Final diets were prepared weekly. Portions of pre-mix were combined with additional basal ration and limestone and mixed for approximately 20 minutes in a Patterson-Kelly Twin Shell blender prior to offering.	<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 feed prepared during Weeks 1, 4, 8, 12, 16, and 20. Mean-measured concentrations were 90-97% of nominal concentrations.

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Parameter	Details	Remarks
		<i>Criteria</i>
Did chemical analysis confirm that diet was stable?	Yes	The stability of acetamiprid in the treated feed was assessed at each test concentration level under actual use conditions. Samples of treated feed were collected from the feed troughs on Days 0 and 7 of Week 1. Recoveries were 81-92% of initial values.
and homogeneous?	Yes	The homogeneity of acetamiprid was assessed in the treated feed prepared at the 100 (low) and 800 (high) ppm a.i. test levels; one sample per side was collected from the top, middle, and bottom of each batch. Coefficients of Variation among the six locations were 2.82 and 1.38%, respectively, for the 100 and 800 ppm a.i. levels.
Feeding and husbandry	Feeding and husbandry conditions appeared to be adequate, given guideline recommendations.	
Test conditions (pre-laying) temperature: relative humidity: photo-period:	23.8 ± 1.1°C 63 ± 14% 8 hr light/day up through Week 7; 17 hr light/day thereafter.	Light intensity averaged 181 lux (approx. 17 foot-candles). Illumination was provided by fluorescent lights which closely approximated noon-day sunlight. <i>EPA Requires</i> <i>Temperature:</i> <i>About 21°C (70°F)</i> <i>Relative humidity:</i> <i>About 55%</i> <i>Lighting</i> <i>First 8 weeks: 7 h per day.</i> <i>Thereafter: 16-17 h per day.</i> <i>At least 6 foot candles at bird level.</i>

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Parameter	Details	Remarks
		Criteria
Egg Collection and Incubation		
Egg collection and storage collection interval:	Daily	To reduce the possibility of pathogen contamination, the collected eggs were fumigated for 2 hours with formaldehyde gas prior to incubation. <i>EPA requires eggs to be collected daily; egg storage temperature approximately 16°C (61°F); humidity approximately 65%.</i>
storage temperature:	13.1 ± 0.3°C	
storage humidity:	86 ± 7%	
Were eggs candled for cracks prior to setting for incubation?	Yes	<i>EPA requires eggs to be candled on day 0</i>
Were eggs set weekly?	Yes	
Incubation conditions temperature:	37.4 ± 0.0°C	
humidity:	54 ± 0%	
When candling was done for fertility?	Days 11-12 for embryo viability and Day 21 for embryo survival.	<i>EPA requires: Quail: approx. day 11 Ducks: approx. day 14</i>
When the eggs were transferred to the hatcher?	Day 21	<i>EPA requires: Bobwhite: day 21 Mallard: day 23</i>
Hatching conditions temperature:	37.2 ± 0.0°C	<i>EPA requires: temperature of 39°C (102°F) humidity of 70%</i>
humidity:	Approx. 77%	
photo-period:	16 hours light/day (hatchlings)	
Day the hatched eggs were removed and counted	Day 25 or 26	<i>EPA requires Bobwhite: day 24 Mallard: day 27</i>

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Parameter	Details	Remarks
		Criteria
Were egg shells washed and dried for at least 48 hrs before measuring?	Yes, shells were washed and air-dried for at least 1 week.	
Egg shell thickness no. of eggs used: intervals: mode of measurement:	One egg was collected (when available) from each odd numbered cage during odd numbered weeks and from each even numbered cage during the even numbered weeks. Once weekly throughout the egg laying period. Five points around the equatorial circumference were measured to the nearest 0.002 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		

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Parameter	Details	Remarks/Criteria
Parental: (mortality, body weight, mean feed consumption) 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)	- mortality - body weight - food consumption - signs of toxicity - necropsy - eggs laid - eggs cracked - eggshell thickness - eggs set - viable embryos - live 3-week embryos - number of hatchlings - hatchling body weight - number of 14-day-old survivors - 14-day-old survivor body weight	EPA requires: • 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)	Parental and hatchling mortality and signs of toxicity were recorded once daily. Parental body weights were recorded at Weeks 1 (test initiation), 2, 4, 6, 8 and 21 (test termination). Parental food consumption was estimated weekly.	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 during the study; however, six incidental deaths occurred, one each in the control and 200 ppm a.i. groups, and two each in the 400 and 800 ppm a.i. groups.

The single mortality in the control group was a female that was found dead during Week 17. Prior to death, the bird had foot lesions, and was noted with lameness, ruffled appearance, wing droop, and lower limb weakness. At necropsy, the bird was thin (142 g), with a loss of muscle mass and prominent keel. Bruising on the right hip and thigh, pale kidneys, and a regressing ovary were also observed. Necropsy of the pen-mate noted lesions on both feet and small testes.

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The single mortality in the 200 ppm a.i. group was a female that was euthanized during Week 15. Prior to death, the bird was noted as thin, with head and foot lesions, a ruffled appearance, and exhibited lower limb weakness. At necropsy, lesions on both feet and legs, feather loss, nostril picking, and a healing head lesion were observed. The bird was emaciated (110 g) with a loss of muscle mass and prominent keel. In addition, a pale spleen, slightly pale kidneys, and gas-distended intestines were observed. Necropsy of the pen-mate was unremarkable.

At the 400 ppm a.i. level, a female was found dead during Week 16. Foot lesions were observed prior to death. At necropsy, lesions on both ankles and dried blood on the abdomen were observed, but the bird was in good condition otherwise (209 g). Internally, a small pale spleen, and pale kidneys and liver were observed. Necropsy of the pen-mate noted feather loss, but was otherwise unremarkable. The second mortality at this level was a male found dead during Week 20, without exhibiting prior clinical effects. Necropsy revealed that the bird's neck was broken at mid-length, with a hematoma at the site of the break, and bruising on the cranium. Otherwise, the bird was in good physical condition (245 g). Given the study was scheduled to terminate shortly, the pen-mate was maintained until study termination.

At the 800 ppm a.i. level, a male was euthanized during Week 16. Prior to death, the bird was noted with lethargy, a ruffled appearance, lameness, and foot lesions. The bird was also noted to have a wing fracture and wing droop that healed over Weeks 7 to 13. At necropsy, the bird was emaciated (93 g), with loss of muscle mass, and prominent keel with no coronary fat. Lesions on the right leg and both ankles, a small pale spleen, pale liver, and small testes were also observed. Necropsy of the pen-mate was unremarkable. The second mortality at this level was a female that was found dead during Week 20. Prior to death, the bird was noted with lethargy, a ruffled appearance, lameness, and foot lesions. At necropsy, the bird was emaciated (102 g), with a loss of muscle mass and prominent keel. Feather loss, foot lesions, necrotic digits, pale spleen and kidneys, firm fecal contents, and a regressing ovary were also noted at necropsy. Given the study was scheduled to terminate shortly, the pen-mate was maintained until study termination.

No other mortalities were observed during the study, and due to the nature of lesions observed at necropsy, none of the mortalities that occurred were considered to be treatment related.

Table 4: Effect of Acetamiprid on Mortality of *Colinus virginianus*.

Treatment, ppm a.i. measured (and nominal) concentrations	Observation Period					
	Weeks 1-7		Weeks 8-14		Weeks 15-21	
	No. Dead Male	No. Dead Female	No. Dead Male	No. Dead Female	No. Dead Male	No. Dead Female
Control	0	1	0	1	0	1
89.7 (100)	0	0	0	0	0	0
184 (200)	0	0	0	0	0	1
385 (400)	0	0	0	0	1	1
775 (800)	0	0	0	0	1	1

B. REPRODUCTIVE AND OTHER ENDPOINTS:

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Abnormal Effects/Behavior: No overt signs of toxicity were observed in any treatment group, and except for incidental clinical findings, all birds appeared normal throughout the study. Incidental clinical observations normally associated with pen wear and/or interactions among pen mates were observed and included feather loss, foot and head lesions, and wing droop due to a fracture. The LOEC for clinical signs of toxicity was >800 ppm a.i..

Food Consumption: No treatment-related effect on food consumption was observed at any treatment level. Although a statistically-significant difference in consumption was observed between the 100 ppm a.i. and control levels during Week 1, the difference was slight and neither consistent over time nor concentration responsive. Overall feed consumption averaged 17.4, 18.7, 18.0, 18.2, and 17.9 g/bird/day for the control, 100, 200, 400, and 800 ppm a.i. groups, respectively (reviewer-calculated). The LOEC for food consumption was >800 ppm a.i..

Body Weight: No treatment-related effects on body weight were observed, with no statistically-significant differences between the control and any treatment group at any interval. The LOEC for adult body weight was >800 ppm a.i..

Necropsy: There were no findings at necropsy that were related to treatment with acetamiprid. The LOEC for post-mortem findings was >800 ppm a.i..

Reproductive Effects: No treatment-related effects were observed on egg production or quality, fertility, embryonic development, hatchability, or survival of hatchlings at the 100, 200, or 400 ppm a.i. treatment levels. While there appeared to be a slight reduction in several reproductive parameters at the 400 ppm a.i. level (that were not statistically significant), the differences observed were strongly influenced by data from two pens (Pens 452 and 455). At necropsy, the adult hen from Pen 452 was noted as emaciated (116 g), which foot lesions, a loss of muscle mass, and a prominent keel. The adult hen from Pen 455 weighed 213 g and was noted with feather loss. In both cases, pen-mate aggression may have contributed to the lesions observed and the subsequent reduction in reproductive performance. Although not statistically-significant, there was a slight treatment-related reduction in numbers of eggs laid per hen at the 800 ppm a.i. level compared to the control: the number of eggs laid/hen/day averaged 0.45 for the control group and 0.34 for the 800 ppm a.i. group, and the number of eggs laid as a percentage of maximum eggs laid averaged 63% for the control group and 48% for the 800 ppm a.i. group. The difference in egg production observed was the result of a decrease in the number of hens laying a high number of eggs, i.e., hens laying ≥ 50 eggs was 6 in the control group and 0 in the 800 ppm a.i. group. Additionally, at the 800 ppm a.i. level there was a statistically-significant effect on offspring survival: the number of 14-day old survivors as a percentage of the number of hatchlings averaged 94% for the control group and 84% for the 800 ppm a.i. group. Furthermore, although not statistically-significant, reductions in reproductive parameters resulted in an impact on overall reproductive performance: the number of 14-day old survivors/hen averaged 34 for the control and 19 for the 800 ppm a.i. group.

No overt signs of toxicity in hatchlings were reported, and no treatment-related effect on offspring body weights were observed at any treatment level. There was a very slight, statistically-significant difference in mean body weight of hatchlings in the 400 ppm a.i. group compared to the control (6 ± 1 g for the 400 ppm a.i. group versus 6 ± 0 g for the control group). The difference was strongly influenced by the mean weight of offspring from the pair in Pen 452, where the 5 hatchlings had a mean hatch weight of 4 g. At necropsy, the adult hen was noted as emaciated (116 g), with foot lesions, a loss of muscle mass, a prominent keel, and a regressed ovary. Her debilitated condition, the results of pen-mate aggression, likely contributed to both the reduced number of offspring produced and the reduction in body weight of the offspring. When data from Pen 452 was excluded, the difference was not longer statistically significant. Therefore, the slight difference was not considered to be related to treatment. Based on reduced egg production and survival of hatchlings, the

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LOEC for reproduction was 800 ppm a.i..

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

Parameter	Control	100 ppm	200 ppm	400 ppm	800 ppm	NOEC/ LOEC
Eggs laid	663	687	617	518	472	N/A
Eggs laid/hen	44	43	41	37	34^	400 ppm 800 ppm
Eggs laid/hen/day	0.45	0.44	0.42	0.38	0.34^	400 ppm 800 ppm
Eggs laid/maximum laid (%)	63	61	59	53	48^	400 ppm 800 ppm
Eggs cracked	10	9	13	12	14	N/A
Eggs cracked/eggs laid (%)	2	1	2	2	3	800 ppm >800 ppm
Shell thickness (mm ± SD)	0.228 ± 0.014	0.231 ± 0.010	0.230 ± 0.019	0.222 ± 0.014	0.221 ± 0.020	800 ppm >800 ppm
Eggs set	576	609	532	452	385	N/A
Viable embryos	550	582	508	428	340	N/A
Viable embryos/eggs set (%)	94	94	93	92	89	800 ppm >800 ppm
Live 3-week embryos	548	578	505	426	338	N/A
Live 3-week embryos/viable embryos (%)	100	99	99	100	99	800 ppm >800 ppm
No. of hatchlings	532	549	488	408	318	N/A
No. of hatchlings/live 3-week embryos (%)	98	94	96	90	95	800 ppm >800 ppm
No. of hatchlings/eggs set (%)	92	88	89	85	83	800 ppm >800 ppm
Hatchling weight (g ± SD)	6 ± 0	6 ± 0	6 ± 0	6* ± 1	6 ± 0	800 ppm >800 ppm
No. of 14-day old survivors	506	534	465	379	271	N/A
No. of 14-day old survivors/hen	34	33	31	27	19^	400 ppm 800 ppm

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Parameter	Control	100 ppm	200 ppm	400 ppm	800 ppm	NOEC/ LOEC
No. of 14-day old survivors/No. of hatchlings (%)	94	96	95	91	84*	400 ppm 800 ppm
No. of 14-day old survivors/- eggs set (%)	86	85	84	77	70	800 ppm >800 ppm
14-day old survivors weight (g ± SD)	28 ± 3	28 ± 2	27 ± 3	27 ± 2	27 ± 2	800 ppm >800 ppm
Mean adult food consumption (g/pen/day) ¹	17.4	18.7	18.0	18.2	17.9	800 ppm >800 ppm
Weight of adult males, g at start of treatment: at Week 8: at Week 21 (study termination):	207 215 221	207 214 223	207 216 224	205 208 211	206 211 214	800 ppm >800 ppm
Weight of adult females, g at start of treatment: at Week 8: at Week 21 (study termination):	206 209 243	206 212 241	201 208 239	202 202 223	202 204 221	800 ppm >800 ppm
Gross pathology (pathological incidents at study termination)	No treatment-related abnormalities observed.					

N/A = Not statistically-analyzed.

^ Not statistically significant, but considered a treatment-related effect.

* Statistically different from the control at p<0.05.

¹ Reviewer-calculated from mean weekly data.

C. REPORTED STATISTICS:

The following variables were statistically analyzed: adult body weight, adult feed consumption, eggs laid of maximum laid, eggs cracked of eggs laid, viable embryos of eggs set, live 3-week embryos of viable embryos, hatchlings of 3-week embryos, 14-day old survivors of hatchlings, hatchlings of eggs set, 14-day old survivors of eggs set, hatchlings of maximum set, 14-day old survivors of maximum set, egg shell thickness, and offspring's body weight.

An analysis of variance (ANOVA) was performed to determine statistically-significant differences between groups. Dunnett's multiple comparison procedure was then used to compare the treatment means with the control group mean. Sample units were the individual pens within each experimental group, except adult body weights, where the sample unit was the individual bird. Percentage data were examined using Dunnett's method following arcsine square root transformation. Nominal concentrations were used for all estimations.

D. VERIFICATION OF STATISTICAL RESULTS:

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Statistical Method: Analysis was conducted using "chicks.sas" (Ver. 3; March 2002), a SAS program provided 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 and William's tests and data that did not satisfy these assumptions were subjected to the non-parametric MannWhitney-U (with a Bonferroni adjustment) and 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	89.7 ppm a.i.	184 ppm a.i.	385 ppm a.i.	775 ppm a.i.	NOEC/LOEC
Eggs laid/pen	44.2	42.9	41.1	37.0	33.7	775 ppm >775 ppm
Eggs cracked/pen	0.67	0.56	0.87	0.86	1.00	775 ppm >775 ppm
Eggs not cracked/eggs laid (%)	98.3	98.8	98.0	98.1	96.8	775 ppm >775 ppm
Eggs set/pen	38.4	38.1	35.5	32.3	27.5*	385 ppm 775 ppm
Shell thickness	0.23	0.23	0.23	0.22	0.22	775 ppm >775 ppm
Eggs set/eggs laid (%)	83.3	88.1	84.9	86.9	80.4	775 ppm >775 ppm
Viable embryo/pen	36.7	36.4	33.9	30.6	24.3*	385 ppm 775 ppm
Viable embryos/eggs set (%)	94.2	93.5	93.3	92.0	88.5*	385 ppm 775 ppm
Live embryos/pen	36.5	36.1	33.7	30.4	24.1*	385 ppm 775 ppm
Live embryo/viable embryo (%)	99.5	99.4	99.3	99.5	99.3	775 ppm >775 ppm
No. of hatchlings/pen	35.4	34.3	32.5	29.1	22.7*	385 ppm 775 ppm
No. of hatchlings/eggs laid (%)	76.7	77.6	75.8	73.0	67.0*	385 ppm 775 ppm

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Parameter	Control	89.7 ppm a.i.	184 ppm a.i.	385 ppm a.i.	775 ppm a.i.	NOEC/ LOEC
No. of hatchlings/eggs set (%)	91.6	87.8	88.8	85.0	83.4	775 ppm >775 ppm
No. of hatchlings/live embryos (%)	97.6	94.3	95.8	89.6	94.8	775 ppm >775 ppm
Hatchling survival/pen	33.7	33.4	31.0	27.1	19.4*	385 ppm 775 ppm
Hatchling survival/eggs set (%)	85.8	84.9	84.0	77.0	70.1*	385 ppm 775 ppm
Hatchling survival/no. of hatchlings (%)	94.0	96.3	94.8	90.9	83.9*	385 ppm 775 ppm
Hatchling weight (g)	6.1	6.1	5.7*	5.5*	5.4*	89.7 ppm 184 ppm
Survivor weight (g)	27.9	28.2	27.2	27.2	27.1	775 ppm >775 ppm
Mean food consumption (g/bird/day)	17.5	18.7	18.1	17.9	17.9	775 ppm >775 ppm
Male weight gain (g)	13.8	16.9	16.5	9.0	7.9	775 ppm >775 ppm
Female weight gain (g)	37.3	35.2	38.3	21.9	19.5*	385 ppm 775 ppm

*Statistically significant reduction ($p < 0.05$), as detected by multiple comparison tests.

E. STUDY DEFICIENCIES:

There were no significant deviations from U.S. EPA guideline §71-4(a) that affected the validity or acceptability of this study.

F. REVIEWER'S COMMENTS:

Results of the reviewer's statistical analysis differed from those of the study author. The study author's analysis only detected significant reductions in egg production and offspring survival at the highest treatment level. In contrast, the reviewer's analysis detected statistically (and biologically) significant reductions in several reproductive parameters at the highest treatment level, ranging from a 6% reduction in the ratio of viable embryos to eggs set to a 42% reduction in hatchling survival. Additionally, the reviewer's analysis detected a significant reduction in adult female body weight gain (48% reduction from control) at the highest treatment level. Among the endpoints affected, the reviewer concluded that hatchling body weight was the most sensitive parameter, exhibiting significant reductions at the three highest treatment levels, ranging from

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7-11% reductions from control. The discrepancies between the reviewer's conclusions and the study author's conclusions were due to differences in statistical methods (e.g., the study author excluded a pen considered to produce aberrant results because adult environmental factors were attributed to negatively impacted offspring performance) and tests used (e.g., the reviewer acknowledged several biologically significant effects detected by multiple comparison statistical tests, but not by ANOVA). Because the reviewer's conclusions were more conservative with respect to toxicity, these results based on mean-measured concentrations are reported in the Conclusions and Executive Summary sections.

Using mean body weights and mean feed consumption data, the estimated daily dietary dose was determined to be 8.7, 16.9, 35.2, and 68.9 mg/kg bw/day for the 100, 200, 400, and 800 ppm a.i. treatment levels, respectively.

Offspring received basal diet without the addition of test substance or limestone. In addition, offspring received a water-soluble vitamin and electrolyte mix in their water. Neither the adults nor offspring received any form of medication in their feed during the test.

G. CONCLUSIONS:

This study is scientifically sound, fulfills U.S. EPA guideline §71-4(a), and is classified as ACCEPTABLE.

NOEC: 89.7 ppm a.i.

LOEC: 184 ppm a.i.

Endpoint(s) Affected: eggs set, viable embryos, viable embryos to eggs set, live embryos, number hatched, number hatched to eggs laid, hatchling survival, hatchling survival to eggs set, hatchling survival to number hatched, hatchling weight (most sensitive), and adult female weight gain

III. REFERENCES:

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APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

Bobwhite repro, Acetamiprid, MRID 465556-01

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	49	0	100.00	44	89.80	43	97.73	43	100.00	42	85.71	95.45						
2	Ctrl	70	0	100.00	64	91.43	60	93.75	60	100.00	57	81.43	89.06						
3	Ctrl	.	.	.	.	.	.	.	.	.	.	.	.
4	Ctrl	60	2	96.67	51	85.00	48	94.12	48	100.00	46	76.67	90.20						
5	Ctrl	61	1	98.36	55	90.16	54	98.18	54	100.00	52	85.25	94.55						
6	Ctrl	43	4	90.70	34	79.07	34	100.00	34	100.00	33	76.74	97.06						
7	Ctrl	23	1	95.65	20	86.96	15	75.00	15	100.00	15	65.22	75.00						
8	Ctrl	57	0	100.00	52	91.23	51	98.08	50	98.04	48	84.21	92.31						
9	Ctrl	28	2	92.86	21	75.00	20	95.24	19	95.00	18	64.29	85.71						
10	Ctrl	17	0	100.00	5	29.41	4	80.00	4	100.00	4	23.53	80.00						
11	Ctrl	66	0	100.00	61	92.42	59	96.72	59	100.00	58	87.88	95.08						
12	Ctrl	16	0	100.00	13	81.25	13	100.00	13	100.00	13	81.25	100.00						
13	Ctrl	22	0	100.00	19	86.36	19	100.00	19	100.00	19	86.36	100.00						
14	Ctrl	63	0	100.00	58	92.06	55	94.83	55	100.00	53	84.13	91.38						
15	Ctrl	45	0	100.00	41	91.11	39	95.12	39	100.00	38	84.44	92.68						
16	Ctrl	43	0	100.00	38	88.37	36	94.74	36	100.00	36	83.72	94.74						
17	Dose1	54	1	98.15	48	88.89	47	97.92	46	97.87	46	85.19	95.83						
18	Dose1	44	0	100.00	39	88.64	39	100.00	39	100.00	38	86.36	97.44						
19	Dose1	58	0	100.00	53	91.38	53	100.00	53	100.00	49	84.48	92.45						
20	Dose1	66	0	100.00	61	92.42	59	96.72	59	100.00	59	89.39	96.72						
21	Dose1	57	0	100.00	51	89.47	50	98.04	50	100.00	48	84.21	94.12						
22	Dose1	53	4	92.45	43	81.13	41	95.35	40	97.56	29	54.72	67.44						
23	Dose1	54	0	100.00	49	90.74	48	97.96	48	100.00	46	85.19	93.88						
24	Dose1	40	3	92.50	32	80.00	31	96.88	31	100.00	31	77.50	96.88						
25	Dose1	54	0	100.00	50	92.59	50	100.00	49	98.00	48	88.89	96.00						
26	Dose1	44	0	100.00	38	86.36	28	73.68	28	100.00	27	61.36	71.05						
27	Dose1	19	0	100.00	16	84.21	11	68.75	11	100.00	11	57.89	68.75						
28	Dose1	13	0	100.00	11	84.62	9	81.82	9	100.00	7	53.85	63.64						
29	Dose1	0	0	.	0	.	0	.	0	.	0	.	.						
30	Dose1	44	0	100.00	39	88.64	38	97.44	38	100.00	35	79.55	89.74						
31	Dose1	25	0	100.00	23	92.00	23	100.00	23	100.00	23	92.00	100.00						
32	Dose1	62	1	98.39	56	90.32	55	98.21	54	98.18	52	83.87	92.86						
33	Dose2	34	4	88.24	25	73.53	25	100.00	24	96.00	21	61.76	84.00						
34	Dose2	52	0	100.00	47	90.38	46	97.87	46	100.00	44	84.62	93.62						
35	Dose2	61	0	100.00	56	91.80	55	98.21	55	100.00	54	88.52	96.43						
36	Dose2	7	0	100.00	5	71.43	3	60.00	3	100.00	3	42.86	60.00						
37	Dose2	58	1	98.28	52	89.66	51	98.08	51	100.00	51	87.93	98.08						
38	Dose2	.	.	.	.	.	.	.	.	.	.	.	.
39	Dose2	60	5	91.67	49	81.67	48	97.96	48	100.00	48	80.00	97.96						
40	Dose2	53	1	98.11	45	84.91	45	100.00	45	100.00	45	84.91	100.00						
41	Dose2	39	0	100.00	35	89.74	34	97.14	33	97.06	32	82.05	91.43						
42	Dose2	34	0	100.00	30	88.24	30	100.00	30	100.00	30	88.24	100.00						
43	Dose2	49	0	100.00	43	87.76	32	74.42	31	96.88	31	63.27	72.09						
44	Dose2	35	0	100.00	30	85.71	30	100.00	30	100.00	29	82.86	96.67						
45	Dose2	30	0	100.00	24	80.00	22	91.67	22	100.00	15	50.00	62.50						
46	Dose2	40	0	100.00	36	90.00	36	100.00	36	100.00	34	85.00	94.44						
47	Dose2	35	1	97.14	30	85.71	30	100.00	30	100.00	30	85.71	100.00						
48	Dose2	30	1	96.67	25	83.33	21	84.00	21	100.00	21	70.00	84.00						
49	Dose3	38	0	100.00	34	89.47	33	97.06	33	100.00	33	86.84	97.06						
50	Dose3	54	1	98.15	48	88.89	42	87.50	42	100.00	32	59.26	66.67						
51	Dose3	22	0	100.00	19	86.36	18	94.74	18	100.00	18	81.82	94.74						
52	Dose3	7	0	100.00	5	71.43	5	100.00	5	100.00	5	71.43	100.00						
53	Dose3	30	1	96.67	25	83.33	22	88.00	21	95.45	20	66.67	80.00						
54	Dose3	45	4	91.11	36	80.00	36	100.00	36	100.00	34	75.56	94.44						
55	Dose3	2	0	100.00	2	100.00	1	50.00	1	100.00	0	0.00	0.00						
56	Dose3	43	0	100.00	38	88.37	34	89.47	34	100.00	32	74.42	84.21						
57	Dose3	43	0	100.00	39	90.70	38	97.44	38	100.00	38	88.37	97.44						

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58	Dose3	25	0	100.00	22	88.00	21	95.45	21	100.00	21	84.00	95.45
59	Dose3	38	1	97.37	33	86.84	32	96.97	32	100.00	31	81.58	93.94
60	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
61	Dose3	53	0	100.00	48	90.57	46	95.83	45	97.83	45	84.91	93.75
62	Dose3	67	0	100.00	62	92.54	59	95.16	59	100.00	59	88.06	95.16
63	Dose3	51	5	90.20	41	80.39	41	100.00	41	100.00	40	78.43	97.56
64	Dose3	.	.	.	.	.	.	.	.	.	.	.	.
65	Dose4	.	.	.	.	.	.	.	.	.	.	.	.
66	Dose4	37	0	100.00	32	86.49	25	78.13	25	100.00	25	67.57	78.13
67	Dose4	47	0	100.00	42	89.36	42	100.00	42	100.00	40	85.11	95.24
68	Dose4	36	0	100.00	32	88.89	31	96.88	31	100.00	26	72.22	81.25
69	Dose4	39	0	100.00	33	84.62	23	69.70	22	95.65	22	56.41	66.67
70	Dose4	45	0	100.00	40	88.89	33	82.50	33	100.00	31	68.89	77.50
71	Dose4	42	5	88.10	31	73.81	29	93.55	29	100.00	25	59.52	80.65
72	Dose4	34	1	97.06	25	73.53	20	80.00	19	95.00	18	52.94	72.00
73	Dose4	.	.	.	.	.	.	.	.	.	.	.	.
74	Dose4	17	0	100.00	13	76.47	10	76.92	10	100.00	9	52.94	69.23
75	Dose4	28	3	89.29	18	64.29	17	94.44	17	100.00	17	60.71	94.44
76	Dose4	29	0	100.00	25	86.21	24	96.00	24	100.00	24	82.76	96.00
77	Dose4	19	0	100.00	17	89.47	17	100.00	17	100.00	17	89.47	100.00
78	Dose4	34	0	100.00	28	82.35	26	92.86	26	100.00	25	73.53	89.29
79	Dose4	21	3	85.71	12	57.14	11	91.67	11	100.00	11	52.38	91.67
80	Dose4	44	2	95.45	37	84.09	32	86.49	32	100.00	28	63.64	75.68

Bobwhite repro, Acetamiprid, MRID 465556-01

PRINTOUT OF RAW DATA (continued)

Obs	TRT	NH	LE	HS	HS	ES	HS	NH	THICK	HATWT	SURVWT	FOOD	WTGAINM	WTGAINF
1	Ctrl	97.67	42	95.45	100.00	0.22	6	26	18	3	38			
2	Ctrl	95.00	54	84.38	94.74	0.24	7	32	19	0	61			
3	Ctrl	.	.	.	.	.	.	.	.	.	.
4	Ctrl	95.83	43	84.31	93.48	0.26	6	33	19	19	63			
5	Ctrl	96.30	49	89.09	94.23	0.24	6	28	17	3	32			
6	Ctrl	97.06	31	91.18	93.94	0.20	6	27	18	-1	33			
7	Ctrl	100.00	14	70.00	93.33	0.23	6	29	16	15	7			
8	Ctrl	96.00	47	90.38	97.92	0.23	6	26	17	27	35			
9	Ctrl	94.74	17	80.95	94.44	0.22	7	32	16	18	44			
10	Ctrl	100.00	4	80.00	100.00	0.22	6	23	20	33	-32			
11	Ctrl	98.31	54	88.52	93.10	0.25	6	31	19	16	79			
12	Ctrl	100.00	9	69.23	69.23	0.20	5	22	16	15	44			
13	Ctrl	100.00	17	89.47	89.47	0.23	6	26	17	33	8			
14	Ctrl	96.36	52	89.66	98.11	0.23	6	30	17	15	63			
15	Ctrl	97.44	37	90.24	97.37	0.23	6	27	17	14	35			
16	Ctrl	100.00	36	94.74	100.00	0.23	6	27	16	-3	49			
17	Dose1	100.00	46	95.83	100.00	0.22	7	26	30	20	30			
18	Dose1	97.44	36	92.31	94.74	0.24	6	25	23	5	48			
19	Dose1	92.45	45	84.91	91.84	0.23	6	29	17	22	16			
20	Dose1	100.00	56	91.80	94.92	0.25	5	27	18	-5	53			
21	Dose1	96.00	47	92.16	97.92	0.22	6	26	17	11	33			
22	Dose1	72.50	29	67.44	100.00	0.23	7	28	20	24	46			
23	Dose1	95.83	46	93.88	100.00	0.22	6	31	18	26	41			
24	Dose1	100.00	31	96.88	100.00	0.23	6	24	17	-12	41			
25	Dose1	97.96	46	92.00	95.83	0.22	6	29	19	4	38			
26	Dose1	96.43	27	71.05	100.00	0.24	6	29	17	13	72			
27	Dose1	100.00	11	68.75	100.00	0.24	6	28	16	39	-45			
28	Dose1	77.78	5	45.45	71.43	0.23	5	26	16	12	3			
29	Dose1	.	0	.	.	.	.	.	19	18	19
30	Dose1	92.11	35	89.74	100.00	0.22	6	32	17	44	39			
31	Dose1	100.00	23	100.00	100.00	0.24	7	32	18	11	47			
32	Dose1	96.30	51	91.07	98.08	0.25	6	31	17	38	82			
33	Dose2	87.50	20	80.00	95.24	0.21	5	26	17	12	13			
34	Dose2	95.65	43	91.49	97.73	0.26	6	27	18	22	59			
35	Dose2	98.18	54	96.43	100.00	0.24	6	31	19	4	45			
36	Dose2	100.00	3	60.00	100.00	0.25	5	22	18	20	6			

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37	Dose2	100.00	50	96.15	98.04	0.21	6	29	21	12	41
38	Dose2
39	Dose2	100.00	48	97.96	100.00	0.22	6	26	19	32	30
40	Dose2	100.00	45	100.00	100.00	0.21	6	25	17	14	74
41	Dose2	96.97	32	91.43	100.00	0.23	6	30	17	14	11
42	Dose2	100.00	29	96.67	96.67	0.21	5	22	17	-3	44
43	Dose2	100.00	27	62.79	87.10	0.23	5	25	16	17	52
44	Dose2	96.67	28	93.33	96.55	0.27	6	28	18	11	36
45	Dose2	68.18	15	62.50	100.00	0.25	6	32	17	8	28
46	Dose2	94.44	31	86.11	91.18	0.22	6	32	16	41	54
47	Dose2	100.00	22	73.33	73.33	0.23	6	29	21	20	25
48	Dose2	100.00	18	72.00	85.71	0.22	5	24	20	23	56
49	Dose3	100.00	31	91.18	93.94	0.25	6	31	17	14	15
50	Dose3	76.19	30	62.50	93.75	0.22	6	25	19	-1	43
51	Dose3	100.00	15	78.95	83.33	0.21	5	27	15	5	25
52	Dose3	100.00	3	60.00	60.00	0.20	4	24	15	19	-75
53	Dose3	95.24	20	80.00	100.00	0.22	6	29	18	-6	15
54	Dose3	94.44	30	83.33	88.24	0.23	6	29	19	9	11
55	Dose3	0.00	0	0.00	.	.	.	.	18	5	4
56	Dose3	94.12	31	81.58	96.88	0.24	5	29	21	0	47
57	Dose3	100.00	36	92.31	94.74	0.24	5	27	19	6	27
58	Dose3	100.00	21	95.45	100.00	0.20	6	29	16	8	11
59	Dose3	96.88	28	84.85	90.32	0.23	5	26	17	-1	7
60	Dose3	.	.	.	.	.	.	.	.	.	56
61	Dose3	100.00	43	89.58	95.56	0.23	5	27	18	22	46
62	Dose3	100.00	53	85.48	89.83	0.22	6	28	20	44	32
63	Dose3	97.56	38	92.68	95.00	0.22	6	23	19	2	64
64	Dose3	.	.	.	.	.	.	.	.	.	.
65	Dose4	.	.	.	.	.	.	.	.	-4	.
66	Dose4	100.00	22	68.75	88.00	0.21	5	29	16	0	27
67	Dose4	95.24	39	92.86	97.50	0.23	6	28	17	9	36
68	Dose4	83.87	20	62.50	76.92	0.24	6	30	21	13	22
69	Dose4	100.00	22	66.67	100.00	0.22	5	27	22	0	13
70	Dose4	93.94	25	62.50	80.65	0.24	5	24	17	7	15
71	Dose4	86.21	17	54.84	68.00	0.20	5	25	19	4	3
72	Dose4	94.74	16	64.00	88.89	0.18	6	29	17	13	11
73	Dose4	.	.	.	.	.	.	.	.	.	.
74	Dose4	90.00	6	46.15	66.67	0.21	5	24	17	2	21
75	Dose4	100.00	16	88.89	94.12	0.19	6	29	16	21	-15
76	Dose4	100.00	22	88.00	91.67	0.23	5	29	18	10	24
77	Dose4	100.00	12	70.59	70.59	0.23	5	29	18	14	28
78	Dose4	96.15	22	78.57	88.00	0.24	5	23	17	16	30
79	Dose4	100.00	9	75.00	81.82	0.22	6	28	15	13	22
80	Dose4	87.50	23	62.16	82.14	0.24	5	25	21	0	36

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.964	0.034	1.638	0.175	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	44.20	18.82	4.86	42.57	33.78,	54.62
Dose1	16	42.94	19.03	4.76	44.33	32.79,	53.08
Dose2	15	41.13	14.52	3.75	35.30	33.09,	49.17
Dose3	14	37.00	18.23	4.87	49.28	26.47,	47.53
Dose4	14	33.71	9.75	2.60	28.91	28.09,	39.34

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	45.00	16.00	70.00	.	.
Dose1	48.50	0.00	66.00	97.14	2.86
Dose2	39.00	7.00	61.00	93.06	6.94
Dose3	40.50	2.00	67.00	83.71	16.29
Dose4	35.00	17.00	47.00	76.28	23.72

 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	69	1.00	0.411

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	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	44.20	.	44.20	.	1.000	0.986	0.768	0.438	.
Dose1	42.94	0.725	42.94	0.491	.	0.998	0.863	0.551	.
Dose2	41.13	0.600	41.13	0.391	.	.	0.962	0.748	.
Dose3	37.00	0.306	37.00	0.161	.	.	.	0.984	.
Dose4	33.71	0.134	33.71	0.059	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose4	>highest dose

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.690	<.001	0.503	0.733	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	0.67	1.18	0.30	176.27	0.02,	1.32
Dose1	16	0.56	1.21	0.30	214.99	0.00,	1.21
Dose2	15	0.87	1.55	0.40	179.11	0.01,	1.73
Dose3	14	0.86	1.61	0.43	187.88	0.00,	1.79
Dose4	14	1.00	1.62	0.43	161.72	0.07,	1.93

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	0.00	0.00	4.00	.	.
Dose1	0.00	0.00	4.00	84.38	15.62
Dose2	0.00	0.00	5.00	130.00	-30.00
Dose3	0.00	0.00	5.00	128.57	-28.57
Dose4	0.00	0.00	5.00	150.00	-50.00

 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 0.84 0.933

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	0.00	.	.
Dose1	0.00	1.000	0.681
Dose2	0.00	1.000	0.367
Dose3	0.00	1.000	0.343
Dose4	0.00	1.000	0.289

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.738	<.001	2.080	0.093	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf. Interval	
Ctrl	15	98.28	3.00	0.77	3.05	96.62,	99.94
Dose1	15	98.77	2.62	0.68	2.66	97.31,	100.00
Dose2	15	98.01	3.53	0.91	3.60	96.05,	99.96
Dose3	14	98.11	3.36	0.90	3.42	96.17,	100.00
Dose4	14	96.83	5.18	1.39	5.35	93.84,	99.82

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	100.00	90.70	100.00	.	.
Dose1	100.00	92.45	100.00	100.49	-0.49
Dose2	100.00	88.24	100.00	99.72	0.28
Dose3	100.00	90.20	100.00	99.82	0.18
Dose4	100.00	85.71	100.00	98.52	1.48

 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	1.05	0.902

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	0.668
Dose2	100.00	1.000	0.350
Dose3	100.00	1.000	0.326
Dose4	100.00	1.000	0.229

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.974	0.125	1.715	0.157	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf. Interval	
Ctrl	15	38.40	18.91	4.88	49.24	27.93,	48.87
Dose1	16	38.06	17.43	4.36	45.79	28.77,	47.35
Dose2	15	35.47	13.44	3.47	37.89	28.03,	42.91
Dose3	14	32.29	16.51	4.41	51.15	22.75,	41.82
Dose4	14	27.50	9.62	2.57	34.99	21.94,	33.06

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	41.00	5.00	64.00	.	.
Dose1	41.00	0.00	61.00	99.12	0.88
Dose2	35.00	5.00	56.00	92.36	7.64
Dose3	35.00	2.00	62.00	84.08	15.92
Dose4	29.50	12.00	42.00	71.61	28.39

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

Analysator of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
4	69	1.23	0.307

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	38.40	.	38.40	.	1.000	0.986	0.829	0.339	.
Dose1	38.06	0.781	38.06	0.557	.	0.990	0.850	0.355	.
Dose2	35.47	0.597	35.47	0.388	.	.	0.982	0.647	.
Dose3	32.29	0.354	32.29	0.195	.	.	.	0.927	.
Dose4	27.50	0.098	27.50	0.041	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose3	Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.746	<.001	2.015	0.102	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	83.31	15.78	4.07	18.94	74.57,	92.05
Dose1	15	88.09	4.00	1.03	4.54	85.88,	90.31
Dose2	15	84.92	6.08	1.57	7.16	81.56,	88.29
Dose3	14	86.92	6.72	1.80	7.73	83.04,	90.80
Dose4	14	80.40	10.07	2.69	12.53	74.58,	86.22

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	88.37	29.41	92.42	.	.
Dose1	88.89	80.00	92.59	105.74	-5.74
Dose2	85.71	71.43	91.80	101.94	-1.94
Dose3	88.19	71.43	100.00	104.34	-4.34
Dose4	84.35	57.14	89.47	96.51	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	7.95	0.093

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	88.37	.	.
Dose1	88.89	1.000	0.712
Dose2	85.71	0.696	0.164
Dose3	88.19	1.000	0.260
Dose4	84.35	0.136	0.017

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.972	0.096	2.340	0.064	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	36.67	18.43	4.76	50.25	26.46,	46.87
Dose1	16	36.38	17.85	4.46	49.07	26.86,	45.89
Dose2	15	33.87	13.63	3.52	40.25	26.32,	41.42
Dose3	14	30.57	15.79	4.22	51.65	21.45,	39.69
Dose4	14	24.29	8.89	2.38	36.60	19.15,	29.42

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	39.00	4.00	60.00	.	.
Dose1	40.00	0.00	59.00	99.20	0.80
Dose2	32.00	3.00	55.00	92.36	7.64
Dose3	33.50	1.00	59.00	83.38	16.62
Dose4	24.50	10.00	42.00	66.23	33.77

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	69	1.60	0.183

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	36.67	.	36.67	.	1.000	0.987	0.824	0.207	.
Dose1	36.38	0.784	36.38	0.561	.	0.991	0.841	0.214	.
Dose2	33.87	0.605	33.87	0.395	.	.	0.978	0.458	.
Dose3	30.57	0.349	30.57	0.192	.	.	.	0.817	.
Dose4	24.29	0.055	24.29	0.021	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose3	Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01

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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.751	<.001	0.715	0.584	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	94.23	7.19	1.86	7.63	90.25,	98.21
Dose1	15	93.52	10.12	2.61	10.82	87.91,	99.12
Dose2	15	93.29	11.74	3.03	12.58	86.79,	99.79
Dose3	14	91.97	12.78	3.42	13.89	84.60,	99.35
Dose4	14	88.51	9.56	2.56	10.80	82.99,	94.03

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	95.24	75.00	100.00	.	.
Dose1	97.92	68.75	100.00	99.24	0.76
Dose2	98.08	60.00	100.00	99.00	1.00
Dose3	95.64	50.00	100.00	97.60	2.40
Dose4	92.26	69.70	100.00	93.93	6.07

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	7.51	0.111

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	95.24	.	.
Dose1	97.92	1.000	0.798
Dose2	98.08	1.000	0.895
Dose3	95.64	1.000	0.500
Dose4	92.26	0.141	0.049

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of Acetamidrid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamidrid, MRID 465556-01
 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
0.973	0.112	2.232	0.074	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	36.53	18.44	4.76	50.47	26.32,	46.74
Dose1	16	36.13	17.68	4.42	48.94	26.70,	45.55
Dose2	15	33.67	13.69	3.54	40.68	26.08,	41.25
Dose3	14	30.43	15.76	4.21	51.80	21.33,	39.53
Dose4	14	24.14	8.94	2.39	37.04	18.98,	29.31

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	39.00	4.00	60.00	.	.
Dose1	39.50	0.00	59.00	98.88	1.12
Dose2	31.00	3.00	55.00	92.15	7.85
Dose3	33.50	1.00	59.00	83.29	16.71
Dose4	24.50	10.00	42.00	66.08	33.92

 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	69	1.60	0.185

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	36.53	.	36.53	.	1.000	0.986	0.822	0.205	.
Dose1	36.13	0.777	36.13	0.552	.	0.992	0.849	0.220	.
Dose2	33.67	0.599	33.67	0.390	.	.	0.979	0.462	.
Dose3	30.43	0.348	30.43	0.191	.	.	.	0.816	.
Dose4	24.14	0.054	24.14	0.021	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose3	Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.543	<.001	0.426	0.790	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	99.54	1.35	0.35	1.36	98.79,	100.00
Dose1	15	99.44	0.97	0.25	0.97	98.91,	99.98
Dose2	15	99.33	1.41	0.36	1.42	98.55,	100.00
Dose3	14	99.52	1.31	0.35	1.31	98.77,	100.00
Dose4	14	99.33	1.70	0.45	1.71	98.35,	100.00

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	100.00	95.00	100.00		
Dose1	100.00	97.56	100.00	99.90	0.10
Dose2	100.00	96.00	100.00	99.79	0.21
Dose3	100.00	95.45	100.00	99.98	0.02
Dose4	100.00	95.00	100.00	99.80	0.20

 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 0.79 0.940

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	0.203
Dose2	100.00	1.000	0.275
Dose3	100.00	1.000	0.460
Dose4	100.00	1.000	0.526

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.977	0.189	2.365	0.061	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	35.47	17.66	4.56	49.79	25.69,	45.25
Dose1	16	34.31	17.30	4.32	50.41	25.10,	43.53
Dose2	15	32.53	14.15	3.65	43.50	24.70,	40.37
Dose3	14	29.14	15.45	4.13	53.02	20.22,	38.06
Dose4	14	22.71	8.02	2.14	35.32	18.08,	27.35

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	38.00	4.00	58.00	.	.
Dose1	36.50	0.00	59.00	96.75	3.25
Dose2	31.00	3.00	54.00	91.73	8.27
Dose3	32.00	0.00	59.00	82.17	17.83
Dose4	24.50	9.00	40.00	64.04	35.96

 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	69	1.68	0.164

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	35.47	.	35.47	.	1.000	0.983	0.789	0.163	.
Dose1	34.31	0.725	34.31	0.491	.	0.997	0.880	0.229	.
Dose2	32.53	0.588	32.53	0.379	.	.	0.974	0.407	.
Dose3	29.14	0.321	29.14	0.172	.	.	.	0.789	.
Dose4	22.71	0.042	22.71	0.015	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	Dose4
Williams	Dose3	Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01

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 Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.809	<.001	0.234	0.918	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	76.72	16.37	4.23	21.33	67.66,	85.78
Dose1	15	77.63	13.47	3.48	17.35	70.17,	85.09
Dose2	15	75.85	14.77	3.81	19.47	67.67,	84.03
Dose3	14	72.95	22.65	6.05	31.04	59.88,	86.03
Dose4	14	67.01	12.35	3.30	18.43	59.88,	74.14

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	83.72	23.53	87.88	.	.
Dose1	84.21	53.85	92.00	101.18	-1.18
Dose2	82.86	42.86	88.52	98.86	1.14
Dose3	80.01	0.00	88.37	95.09	4.91
Dose4	65.60	52.38	89.47	87.34	12.66

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	6.77	0.149

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	83.72	.	.
Dose1	84.21	1.000	0.668
Dose2	82.86	1.000	0.550
Dose3	80.01	1.000	0.335
Dose4	65.60	0.059	0.020

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01

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
0.741	<.001	1.890	0.122	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	91.55	6.92	1.79	7.56	87.71,	95.38
Dose1	15	87.79	12.83	3.31	14.62	80.68,	94.89
Dose2	15	88.75	13.56	3.50	15.28	81.24,	96.26
Dose3	14	85.03	26.05	6.96	30.64	69.99,	100.00
Dose4	14	83.41	10.90	2.91	13.07	77.12,	89.70

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	92.68	75.00	100.00	.	.
Dose1	93.88	63.64	100.00	95.89	4.11
Dose2	94.44	60.00	100.00	96.94	3.06
Dose3	94.59	0.00	100.00	92.88	7.12
Dose4	80.95	66.67	100.00	91.11	8.89

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	4.04	0.400

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	92.68	.	.
Dose1	93.88	1.000	0.459
Dose2	94.44	1.000	0.638
Dose3	94.59	1.000	0.648
Dose4	80.95	0.148	0.143

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01

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
0.522	<.001	3.199	0.018	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	97.65	1.95	0.50	2.00	96.56,	98.73
Dose1	15	94.32	8.26	2.13	8.76	89.74,	98.90
Dose2	15	95.84	8.38	2.16	8.74	91.20,	100.00
Dose3	14	89.60	26.54	7.09	29.62	74.28,	100.00
Dose4	14	94.83	5.78	1.55	6.10	91.49,	98.17

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	97.44	94.74	100.00	.	.
Dose1	96.43	72.50	100.00	96.59	3.41
Dose2	100.00	68.18	100.00	98.15	1.85
Dose3	98.78	0.00	100.00	91.76	8.24
Dose4	95.70	83.87	100.00	97.12	2.88

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	1.86	0.761

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	97.44	.	.
Dose1	96.43	0.982	0.236
Dose2	100.00	1.000	0.643
Dose3	98.78	1.000	0.608
Dose4	95.70	0.622	0.339

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.970	0.077	2.531	0.048	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	33.73	17.29	4.47	51.27	24.16,	43.31
Dose1	16	33.38	16.78	4.20	50.28	24.43,	42.32
Dose2	15	31.00	14.54	3.75	46.91	22.95,	39.05
Dose3	14	27.07	14.46	3.87	53.42	18.72,	35.42
Dose4	14	19.36	7.98	2.13	41.21	14.75,	23.96

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	37.00	4.00	54.00	.	.
Dose1	35.50	0.00	56.00	98.94	1.06
Dose2	29.00	3.00	54.00	91.90	8.10
Dose3	30.00	0.00	53.00	80.25	19.75
Dose4	21.00	6.00	39.00	57.38	42.62

 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 9.59 0.048

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	35.50	1.000	0.399
Dose2	29.00	1.000	0.240
Dose3	30.00	0.447	0.082
Dose4	21.00	0.099	0.002

SUMMARY
 MannWhit (Bonf adjust) NOEC LOEC
 Dose4 >highest dose
Jonckheere **Dose3** **Dose4**

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.845	<.001	1.582	0.189	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	85.84	7.91	2.04	9.21	81.46,	90.22
Dose1	15	84.88	15.00	3.87	17.68	76.58,	93.19
Dose2	15	84.01	14.34	3.70	17.07	76.07,	91.95
Dose3	14	76.99	24.52	6.55	31.85	62.84,	91.15
Dose4	14	70.11	13.37	3.57	19.07	62.39,	77.82

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	89.09	69.23	95.45	.	.
Dose1	91.80	45.45	100.00	98.89	1.11
Dose2	91.43	60.00	100.00	97.87	2.13
Dose3	84.09	0.00	95.45	89.69	10.31
Dose4	67.71	46.15	92.86	81.67	18.33

 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 12.81 0.012

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	89.09	.	.
Dose1	91.80	1.000	0.873
Dose2	91.43	1.000	0.806
Dose3	84.09	0.877	0.313
Dose4	67.71	0.007	0.004

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	Dose4
Jonckheere	Dose3	Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01

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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.830	<.001	1.317	0.273	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	93.96	7.50	1.94	7.98	89.80,	98.11
Dose1	15	96.32	7.36	1.90	7.64	92.24,	100.00
Dose2	15	94.77	7.58	1.96	8.00	90.57,	98.97
Dose3	13	90.89	10.38	2.88	11.42	84.62,	97.16
Dose4	14	83.93	10.60	2.83	12.63	77.80,	90.05

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	94.44	69.23	100.00	.	.
Dose1	100.00	71.43	100.00	102.51	-2.51
Dose2	97.73	73.33	100.00	100.86	-0.86
Dose3	93.94	60.00	100.00	96.74	3.26
Dose4	85.07	66.67	100.00	89.32	10.68

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	18.93	<.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	94.44	.	.
Dose1	100.00	1.000	0.976
Dose2	97.73	1.000	0.860
Dose3	93.94	0.826	0.216
Dose4	85.07	0.017	0.001

SUMMARY

MannWhit (Bonf adjust)
Jonckheere

NOEC

Dose3
Dose3

LOEC

Dose4
Dose4

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.991	0.871	2.205	0.078	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	0.23	0.01	0.00	6.07	0.22,	0.24
Dose1	15	0.23	0.01	0.00	4.42	0.23,	0.24
Dose2	15	0.23	0.02	0.00	8.25	0.22,	0.24
Dose3	13	0.22	0.01	0.00	6.74	0.21,	0.23
Dose4	14	0.22	0.02	0.01	9.02	0.21,	0.23

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	0.23	0.20	0.26	.	.
Dose1	0.23	0.22	0.25	101.23	-1.23
Dose2	0.23	0.21	0.27	100.55	-0.55
Dose3	0.22	0.20	0.25	97.27	2.73
Dose4	0.23	0.18	0.24	96.33	3.67

 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	67	1.35	0.260

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	0.23	.	0.23	.	0.989	0.999	0.839	0.618	.
Dose1	0.23	0.923	0.23	0.683	.	0.999	0.568	0.332	.
Dose2	0.23	0.867	0.23	0.709	.	.	0.726	0.482	.
Dose3	0.22	0.365	0.22	0.201	.	.	.	0.997	.
Dose4	0.22	0.217	0.22	0.106	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose4	>highest dose

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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	Shapiro-Wilks	Levenes	Levenes	Conclusion
Test Stat	P-value	Test Stat	P-value	
0.957	0.015	2.203	0.078	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	6.07	0.46	0.12	7.55	5.81,	6.32
Dose1	15	6.07	0.59	0.15	9.78	5.74,	6.40
Dose2	15	5.67	0.49	0.13	8.61	5.40,	5.94
Dose3	13	5.46	0.66	0.18	12.09	5.06,	5.86
Dose4	14	5.36	0.50	0.13	9.28	5.07,	5.64

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	6.00	5.00	7.00	.	.
Dose1	6.00	5.00	7.00	100.00	0.00
Dose2	6.00	5.00	6.00	93.41	6.59
Dose3	6.00	4.00	6.00	90.03	9.97
Dose4	5.00	5.00	6.00	88.30	11.70

 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	67	5.41	<.001

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	Dose1	Dose2	Tukey p-values		
							Dose3	Dose4	Dose5
Ctrl	6.07	.	6.07	.	1.000	0.266	0.034	0.007	.
Dose1	6.07	0.804	6.07	0.583	.	0.266	0.034	0.007	.
Dose2	5.67	0.074	5.67	0.028	.	.	0.855	0.542	.
Dose3	5.46	0.008	5.46	0.002	.	.	.	0.987	.
Dose4	5.36	0.001	5.36	<.001	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose1	Dose2

Data Evaluation Report on the Reproductive Effects of Acetamiprid on Northern Bobwhite Quail, *Colinus virginianus*

PMRA Submission Number

EPA MRID Number 465556-01

Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.977	0.202	1.062	0.382	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	27.93	3.24	0.84	11.60	26.14,	29.73
Dose1	15	28.20	2.54	0.66	9.01	26.79,	29.61
Dose2	15	27.20	3.30	0.85	12.13	25.37,	29.03
Dose3	13	27.23	2.28	0.63	8.37	25.85,	28.61
Dose4	14	27.07	2.37	0.63	8.75	25.70,	28.44

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	27.00	22.00	33.00	.	.
Dose1	28.00	24.00	32.00	100.95	-0.95
Dose2	27.00	22.00	32.00	97.37	2.63
Dose3	27.00	23.00	31.00	97.48	2.52
Dose4	28.00	23.00	30.00	96.91	3.09

 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	67	0.48	0.753

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	27.93	.	28.07	.	0.999	0.952	0.964	0.921	.
Dose1	28.20	0.878	28.07	0.638	.	0.864	0.891	0.814	.
Dose2	27.20	0.507	27.21	0.310	.	.	1.000	1.000	.
Dose3	27.23	0.533	27.21	0.331	.	.	.	1.000	.
Dose4	27.07	0.456	27.07	0.278	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnnett	Dose4	>highest dose
Williams	Dose4	>highest dose

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Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.840	<.001	1.247	0.299	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	17.47	1.30	0.34	7.45	16.75, 18.19
Dose1	16	18.69	3.48	0.87	18.61	16.83, 20.54
Dose2	15	18.07	1.62	0.42	8.99	17.17, 18.97
Dose3	14	17.93	1.77	0.47	9.90	16.90, 18.95
Dose4	14	17.93	2.09	0.56	11.67	16.72, 19.14

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	17.00	16.00	20.00	.	.
Dose1	17.50	16.00	30.00	106.99	-6.99
Dose2	18.00	16.00	21.00	103.44	-3.44
Dose3	18.00	15.00	21.00	102.64	-2.64
Dose4	17.00	15.00	22.00	102.64	-2.64

 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	1.36	0.851

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	17.00	.	.
Dose1	17.50	1.000	0.820
Dose2	18.00	1.000	0.835
Dose3	18.00	1.000	0.830
Dose4	17.00	1.000	0.687

SUMMARY

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

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Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.979	0.252	1.297	0.280	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	13.80	11.62	3.00	84.20	7.36,	20.24
Dose1	16	16.88	15.43	3.86	91.42	8.65,	25.10
Dose2	15	16.47	10.79	2.79	65.52	10.49,	22.44
Dose3	14	9.00	12.76	3.41	141.76	1.63,	16.37
Dose4	15	7.87	7.26	1.87	92.28	3.85,	11.89

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	15.00	-3.00	33.00	.	.
Dose1	15.50	-12.00	44.00	122.28	-22.28
Dose2	14.00	-3.00	41.00	119.32	-19.32
Dose3	5.50	-6.00	44.00	65.22	34.78
Dose4	9.00	-4.00	21.00	57.00	43.00

 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	70	1.85	0.130

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	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	13.80	.	15.74	.	0.952	0.973	0.814	0.653	.
Dose1	16.88	0.954	15.74	0.761	.	1.000	0.379	0.230	.
Dose2	16.47	0.941	15.74	0.792	.	.	0.449	0.288	.
Dose3	9.00	0.340	9.00	0.186	.	.	.	0.999	.
Dose4	7.87	0.233	7.87	0.117	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose4	>highest dose
Williams	Dose4	>highest dose

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Bobwhite repro, Acetamiprid, MRID 465556-01
 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
0.908	<.001	0.972	0.429	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	37.27	27.37	7.07	73.43	22.11,	52.42
Dose1	16	35.19	28.87	7.22	82.05	19.80,	50.57
Dose2	15	38.27	19.50	5.03	50.95	27.47,	49.06
Dose3	15	21.87	32.73	8.45	149.66	3.74,	39.99
Dose4	14	19.50	13.63	3.64	69.90	11.63,	27.37

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	38.00	-32.00	79.00	.	.
Dose1	40.00	-45.00	82.00	94.42	5.58
Dose2	41.00	6.00	74.00	102.68	-2.68
Dose3	25.00	-75.00	64.00	58.68	41.32
Dose4	22.00	-15.00	36.00	52.33	47.67

 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 10.64 0.031

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	38.00	.	.
Dose1	40.00	1.000	0.437
Dose2	41.00	1.000	0.460
Dose3	25.00	0.314	0.078
Dose4	22.00	0.033	0.002

SUMMARY
 MannWhit (Bonf adjust) NOEC LOEC
 Jonckheere Dose3 Dose4
 Dose3 Dose4

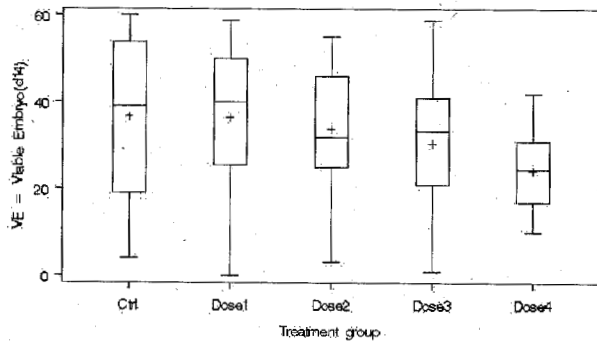
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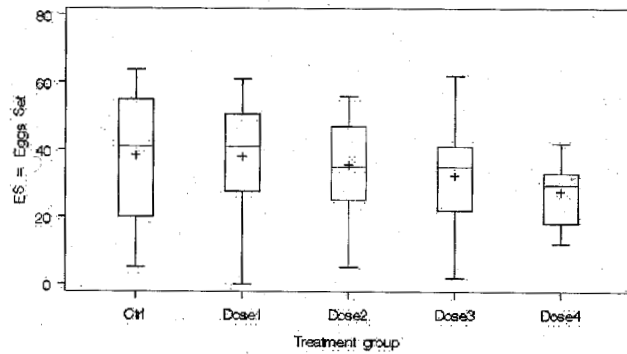
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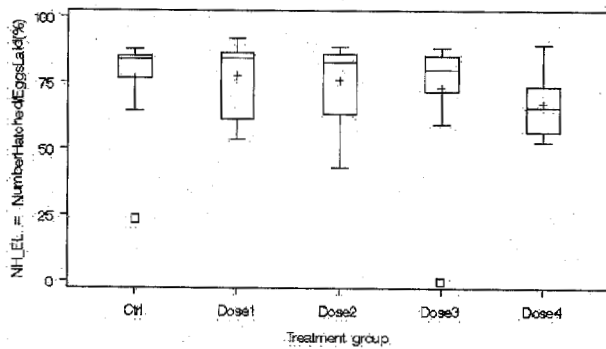
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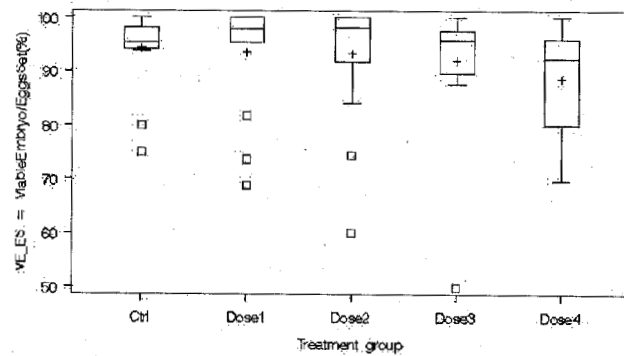
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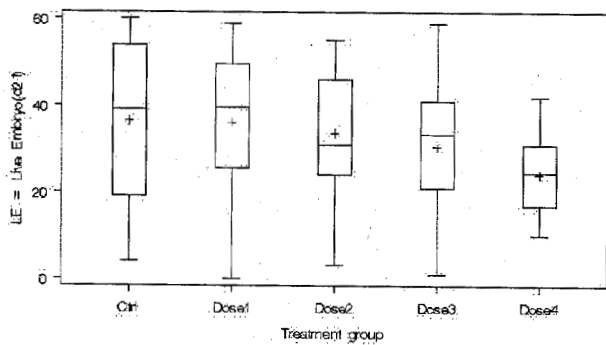
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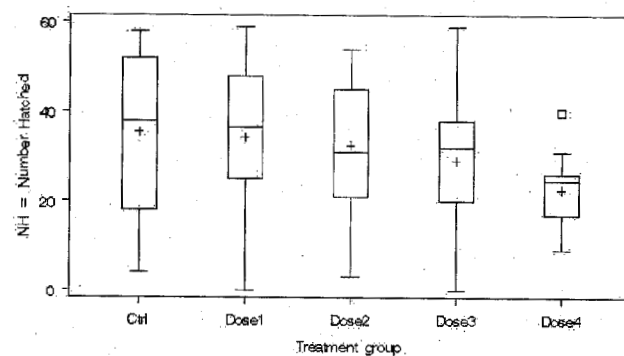
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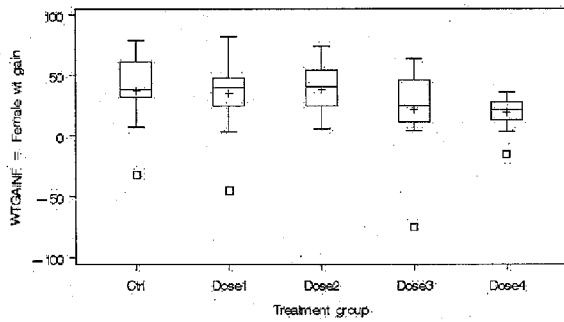


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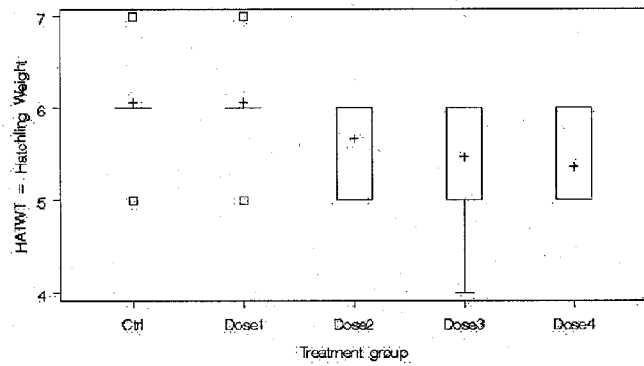
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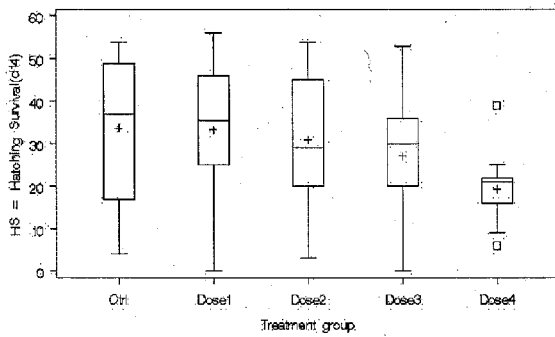
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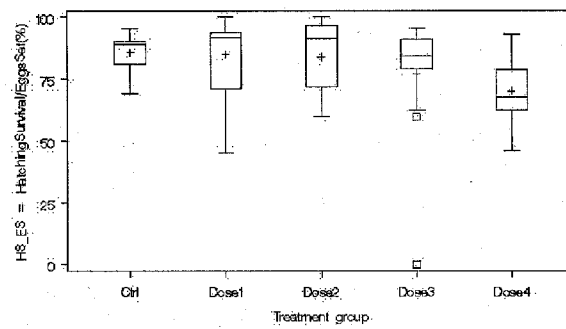
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