

US EPA ARCHIVE DOCUMENT



2002024

71-4 Quail Repro

DATA EVALUATION RECORD (6)

1. Chemical: CGA-64250
2. Formulation: 90.7% Technical
3. Citation: Beavers, J. B. (1982) One-Generation Reproduction Study - Bobwhite Quail, CGA-64250 Technical, Final Report. Wildlife International Ltd. Project No. 108-202. Acc. #072210.
4. Reviewed by: Carol M. Natella
Wildlife Biologist
EEB/HED
5. Date Reviewed: March 1, 1984
6. Test Type: Avian Reproduction - Bobwhite Quail
7. Reported Results: No effect ≤ 1000 ppm
8. Reviewer's Conclusions: The study is scientifically sound and indicates that CGA-64250 causes no reproductive impairment to bobwhite quail at levels up to 1000 ppm. The study does fulfill the requirements for an avian reproductive study.

MED # 00133369

Materials/Methods

Test Procedures

Test animals and housing: Bobwhite quail (Colinus virginianus), age at initiation of study, 9 weeks. Source, Wildlife International's production flock. The birds were determined to be disease free, were previously untreated and approaching their first breeding season. The birds were housed indoors in Georgia Quail Farm Breeding Pens (Model 206). Average temperature for the study was $72^{\circ}\text{F} \pm 4^{\circ}\text{F}$, with an average relative humidity of 77 percent. The photoperiod for the first seven weeks of the study was eight hours of light per day. It was then increased to 17 hours of light per day, and was maintained at that duration until termination of the study.

Eggs: Collected daily and stored at 56°F . Weekly, the eggs were placed in an incubator and maintained at 99.5°F . On day 21 of incubation, eggs were transferred to the hatcher and the temperature was lowered to 99°F (wet bulb humidity index 85°F).

Hatchlings: Removed from hatcher on day 25 of incubation and housed in Beacon (Model 7350) battery brooders until 14 days of age.

Testing: 12 pens/concentration; 1 cock and 1 hen/pen. Test concentrations were 1,000, 300, 100, and 25 ppm plus a control. The test material was incorporated into corn oil prior to mixing with an appropriate amount of game bird breeder ration. Adults were exposed to the test material for 11 weeks prior to egg laying. Eggs were collected for 9 weeks.

Date of Testing: 8/4/81-12/9/82.

Statistical Analysis:

Analysis of variance was used to analyze body weight data and other "measurement variables." The analysis on the egg data and other "count variables" is based on the method of Cochran (analysis of variance for percentages based on unequal numbers). To facilitate the analysis, raw numbers, such as the number of eggs laid per pen, must be converted to a percentage. Statistical analysis was utilized to evaluate the differences between each of the reproductive parameters listed in Table 2A.

Author's Discussion/Results

"Mortalities: There was one mortality at the 1000 ppm concentration level during Week 20. Upon necropsy this cock was found to be emaciated, weighing only 90 grams. Externally, the bird exhibited a ragged feather coat, with some edema and areas of hyperemia between the left nostril and eye. There was some evidence of enteritis in the lower intestinal tract, but no other overt internal lesions were observed. No mortalities occurred in any other test group.

"Observations: In the control group, one hen was noted with a lacerated scalp during Week 11, and an additional hen was observed during Week 12 with a lacerated scalp and walking in circles. All other birds in the control group were normal in appearance and behavior throughout the test period. In the 25 ppm and 100 ppm treatment groups, all birds appeared normal during the course of the study. At the 300 ppm treatment level, one hen was observed with head lesions during Week 15. At the 1000 ppm treatment level during Week 11, one hen was observed with a lacerated scalp, and an additional hen was observed with extensive foot lesions. All other birds in all treatment groups appeared normal throughout the test period. *with a lacerated scalp during Week 11, and a cock was also observed*

"Adult Body Weight and Feed Consumption: There was ^a statistical significant difference ($p < .05$) in the adult body weight at all levels. The difference does not appear to be biologically meaningful, and no difference was observed at any treatment level in body weight gain during the course of the study. There was a very slight, though statistically significant ($p < .05$) difference in feed consumption at the 100 ppm treatment level. The effect does not appear to be biologically meaningful.

"Reproductive Data: Evaluation of the reproductive data in tables 2, 2A, 3, 3A, 4 and 4A, and statistical analysis of the reproductive parameters, eggs laid, viable embryos, live three-week embryos, normal hatchlings, and 14-day old survivors, demonstrate that CGA-64250 caused no statistically significant reproductive impairment at concentration levels up to 1000 ppm. A statistically significant increase in cracked eggs (8%) was observed at the 300 ppm treatment level. The increase in cracked eggs was not concentration related, is considered to be an anomaly, and therefore not biologically meaningful.

"In conclusion, under the conditions of a One-Generation Reproduction Study, CGA-64250 had no effect on the reproductive success of bobwhite quail at dietary concentrations of 25 ppm, 100 ppm, 300 ppm and 1000 ppm."

← Reviewer's Evaluation

← A. Test Procedure

- ← The test procedure complies with the recommended
- ← U.S. EPA protocol.

B. Statistical Analysis

Statistical analyses were verified using EEB's statistical computer program (Big Bird). An ANOVA was performed on each of the reproductions parameters. The author found a statistically significant difference in the percentage of eggs cracked of eggs laid at the 300 ppm concentration. Our ANOVA of "eggs not cracked" showed no significant difference (0.05) for this parameter. However, our ANOVA of eggs set/eggs laid (which would be a function of the number of eggs cracked) showed a significant difference in the means (0.03). The reviewer agrees with the author's conclusion that the increase in cracked eggs at the 300 ppm level was not concentration related and was therefore not biologically meaningful.

C. Conclusions:

1. Category: Core
2. Rationale: N/A
3. Repairability: N/A

4

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