

## Amended CQR Final Report

### Study Title

**Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn**

### Study Director

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### Study Completed On (Amendment 1)

September 8, 2006

### Performing Laboratories

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St. Louis, MO 63167

### Study Project ID

**CQR Study Number: MN-05-2**  
**Monsanto Study No. 05-01-50-13**

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**The text below applies only to the use of the data by the United States Environmental Protection Agency (U.S. EPA) in connection with the provisions of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).**

**Statement of No Data Confidentiality Claim**

No claim of confidentiality is made for any information contained in this study on the basis of its falling within the scope of FIFRA § 10(d) (1)(A), (B), or (C).

We submit this material to the U.S. EPA specifically under the requirements set forth in FIFRA as amended, and consent to the use and disclosure of this material by the EPA strictly in accordance with FIFRA. By submitting this material to the EPA in accordance with the method and format requirements contained in PR Notice 86-5, we reserve and do not waive any rights involving this material that are or can be claimed by the company notwithstanding this submission to the EPA.

Company: Monsanto Company

Company Agent: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Statement of Compliance

The in-life portion of the study meets the Food and Drug Administration's Good Laboratory Practice Regulations for Nonclinical Laboratory Studies as specified in 21 CFR Part 58. Portions of the study conducted by Monsanto meet the U.S. EPA's Good Laboratory Practice Requirements as specified in 40 CFR Part 160. Specific items that were not conducted under GLP include:

- Semi-annual water analysis (total coliforms) by Stewart Environmental Consultants
- Northern Colorado Water Association water testing
- Starter and grower/finisher diet formulations by Global Poultry Consulting, Inc.
- Diet and meat sample analyses at the University of Missouri Experiment Station Chemical Laboratories
- Yearly scale licensing by the State of Colorado
- Test, control and reference corn grain containers were not retained for the duration of the study

These exceptions had no effect on the integrity or quality of the study.

\_\_\_\_\_  
Submitter

\_\_\_\_\_  
Date

*Stephen W. Dan*  
\_\_\_\_\_  
Study Director, Colorado Quality Research

08SEP06  
\_\_\_\_\_  
Date

*S. A.*  
\_\_\_\_\_  
Sponsor Representative, Monsanto

11-Sept-2006  
\_\_\_\_\_  
Date

**Copyright Information Page**

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**FINAL REPORT AMENDMENT – NO. 1**

**Project No.:** MN-05-2 (Monsanto Study No. 05-01-50-13)  
 “Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn

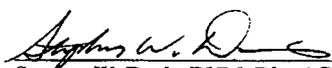
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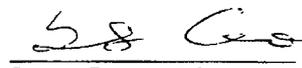
**Effective Date:** June 26, 2006

The following changes do not effect the quality or integrity of the data. “Amendment 1” was added to the footer of pages with the revisions outlined below.

Amended Report	Original Report	Amendments
1. Title Page (Page 1)	1. Title Page (Page 1)	Added “Amended” to CQR Final Report and Amendment 1 after “Study Completed On” and revised study completion date
2. Statement of Compliance (Page 3)	2. Statement of Compliance (Page 3)	Added new signatures and dates
3. Report Amendment 1 and Copyright Information Page (Page 4)	3. Copyright Information Page (Page 4)	Report Amendment 1 added to Copyright Information Page
4. Quality Assurance Statement (Page 5)	4. Quality Assurance Statement (Page 5)	Updated QA statement to include amended report audit with dates
5. Signatures of Approval (Page 6)	5. Signatures of Approval (Page 6)	Amended “Date Final Report Signed” and added new signatures and dates
6. Study Dates (Page 8)	6. Study Dates (Page 8)	Amended Study Completion (Report signed) Date
7. Appendix I – Table 1: page 28	7. Appendix I – Table 1: page 28	Amended entries for the control corn grain composition data (transcription errors)
8. Appendix III – Table 3: page 40	8. Appendix III – Table 3: page 40	Amended entries for the adjusted feed conversion for Asgrow RX772, DKC60-15, and DKC57-01 (transcription errors)

  
 Stephen W. Davis, DVM, Dip. ACPV  
 Study Director

08SEP06  
 Date

  
 Sponsor Representative

11-Sept-2006  
 Date

## Quality Assurance Statement

**Study Title:** Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn

**CQR Study Number:** MN-05-2

**Monsanto Study Number:** 05-01-50-13

Monsanto Company monitored the in-life phase of the study at Colorado Quality Research, Inc., and also audited the study data and final report. Reviews conducted by the Quality Assurance Unit confirm that the final report accurately describes the methods and standard operating procedures followed and accurately reflects the raw data of the study.

Following is a list of reviews conducted by Monsanto Regulatory Quality Assurance Unit on the portion of the study reported herein.

Dates of Inspection/ Audit	Phase	Date Reported To:	
		Study Director	Management
09/21/2005	In-Phase Inspection	01/04/2006	01/04/2006
01/11/2006	Raw Data Audit	01/27/2006	01/27/2006
02/03/2006	Statistical Data and Draft Report Review	02/14/2006	02/14/2006
03/06/2006	Raw Data and Draft Report Review	03/28/2006	03/28/2006
09/07/2006	Draft Report Amendment Review	09/07/2006	09/07/2006

Patricia A. Thomas  
Patricia A. Thomas  
Quality Assurance Unit  
Monsanto Regulatory, Monsanto Company

09/07/2006  
Date

©01

**Signatures of Approval**

**Study Number:** CQR Number MN-05-2  
Monsanto Number 05-01-50-13

**Title:** Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn

**Testing Facility:** Colorado Quality Research, Inc.  
400 East County Road 72  
Wellington, CO 80549

**Study Director:** Stephen W. Davis, DVM, Dip. APCV

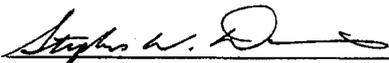
**In – Life Study Dates:** Study Initiation Date: August 31, 2005  
Study Completion Date: October 14, 2005

**Date Protocol Signed:** August 12, 2005  
**Date Final Report Signed:** September 8, 2006

**Records Retention:** Originals of study specific raw data generated at Colorado Quality Research, Inc., and the Statistician's report are retained at Monsanto. Original records from the University of Missouri Experiment Station Chemical Laboratories are retained at the respective facilities.

**Sample Storage:** Retention samples of maize grain, basal feed premix, treatment diets and retention meat samples are located at Monsanto Company, St. Louis, MO. Any unused corn grain was disposed of by landfill burial after grinding.

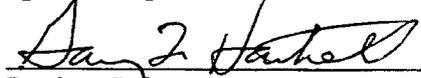
**SIGNATURES of Final Report Approval:**

  
Study Director

08SEP06  
Date

  
Sponsor Representative

11-Sept-2006  
Date

  
Product Safety Center Representative

11SEP2006  
Date

**Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn**

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**I. TITLE**

©

**Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing MON 89034, Control or Commercial Corn**

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**STUDY DATES:**

Study Initiation (Protocol signed): August 12, 2005  
Study Completion (Report signed): September 8, 2006

In-life Start: August 31, 2005  
In-life Completion: October 14, 2005

## II. BACKGROUND INFORMATION AND OBJECTIVE

Monsanto has developed lepidopteran-protected corn MON 89034 that produces the *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins and is protected from feeding damage caused by European corn borer (*Ostrinia nubilalis*) and other lepidopteran insect pests. The combination of the Cry2Ab2 and Cry1A.105 insecticidal proteins in a single plant provides better insect control and offers an additional insect-resistance management tool.

The purpose of this study was to evaluate the nutritional wholesomeness of diets containing MON 89034 in comparison to conventional corn.

## III. MATERIALS AND METHODS

### A. Testing/Support Facilities

#### *Facility / Contact*

#### *Purpose*

Colorado Quality Research, Inc.  
400 E. County Road 72  
Wellington, CO 80549

Test, control and reference  
article storage, feed preparation,  
archives, test animal housing,  
in-life phase study conduct, including bird  
processing

Monsanto Company  
800 N. Lindbergh Blvd.  
St. Louis, MO 63167

Supplier of corn grain  
Characterization of test, control  
and reference articles

Dr. Margaret Nemeth  
Monsanto Company - QSD  
800 N. Lindbergh Blvd.  
St. Louis, MO 63167

Statistical analyses

Kristina Berman  
Monsanto Quality Assurance  
Monsanto Company  
800 N. Lindbergh Blvd.  
St. Louis, MO 63167

Quality Assurance Contact

Dr. Wayne McWard  
Global Poultry Consulting, Inc.  
3308 Aberron Place  
Buford, GA 30519

Consulting nutritionist, diet formulations



**Frequency of Administration:** *Ad libitum* for ~42 days starting at receipt of chicks (approximately 1 day of age)

**Justification:** Feed was the route of administration

**Preparation Before Use:** The corn grain was finely ground. The total quantity of ground corn to be added to the feed was thoroughly mixed with the other ingredients to assure uniform dispersion.

**Analyses:** Characterization of grain was reported on Monsanto COA-2004-128 and COA-2005-009. Analyses included pesticide profile, mycotoxin analyses and compositional analyses. Verification of identity of the test, control and reference corn was conducted and the results were filed under Production Plans 04-01-39-22 and 04-01-72-10.

**Accounting:** All quantities of test, control and reference articles (corn grain) received, used and disposed of were documented. Excess grain was disposed of according to the Sponsor's directions.

### C. Test System

#### Justification:

Commercial broiler chickens were the target animals and feed was the route of administration.

#### Specifications:

Day-old male and female chicks were obtained from Welp's hatchery for use in this test. All birds were received from the same hatchery at the same time. Birds were transported from the hatchery location to the test facility via commercial airlines and ground transportation. Upon receipt and randomization to the test pens, the chicks were visually observed by a poultry veterinarian and only healthy chicks were placed in the study. Prior to placement in the study, the gender of each chick was checked according to SOP B-74. Any chick of questionable sex was not placed on the study.

**Species:** Chicken (*Gallus domesticus*)

**Strain:** Commercial production broiler

**Breed:** Ross × Ross 308

**Sex:** Male and Female (sexed at hatchery and again upon receipt at CQR before placing into the pens)

**Supplier:** Welp's Hatchery, Inc. Bancroft, IA

**Age:** ~1 day of age upon receipt (study Day 0)  
42 days of age at final weights

43-44 days of age at processing

Identification: Pens were identified by cards bearing treatment number and treatment color code. Birds were individually identified with numbered wing bands prior to obtaining individual weights for yield data.

Number of birds: 600 (start 720)

Number of treatments: 6

Number of pens/treatment: 10 (five males, five females)

Number of birds/pen: 10 (12 started - reduced to 10/pen at seven days of age)

Number of birds/treatment: 100

Total number of pens: 60

**Day 7 recount and adjustment:**

On Day 7 all birds within a pen were counted. If greater than 10 birds were present then extra birds were removed. Extra birds which were unthrifty (cull birds that were smaller than other birds, showed signs of leg problems, or other abnormal conditions) were removed first. If a pen had less than the required number of thrifty birds, then extra thrifty birds from another pen in the same treatment were relocated to bring the count in each pen to 10 birds. If additional birds still needed to be removed, they were selected arbitrarily (i.e., the first bird within reach). Removed birds were killed by cervical dislocation. All removed birds were weighed and recorded.

**IV. EXPERIMENTAL DESIGN**

**A. Treatment Description**

Treatments were assigned to pens using a randomized complete block design. The test facility was divided into 5 blocks of 12 pens each. Birds were assigned to the pens randomly according to CQR SOP B-10. Specific treatments were designated as follows:

Treatment	Corn ID*	No. of Pens of Each Sex	**No. of Males /Pen	**No. of Females /Pen	Total No. of Birds/Sex	Total No. Birds/ Treatment
1	ASGROW RX690	5	10	10	50	100
2	DKC60-15	5	10	10	50	100
3	MON 89034	5	10	10	50	100
4	DKC57-01	5	10	10	50	100
6	ASGROW RX772	5	10	10	50	100
8	13250.23	5	10	10	50	100
Total						600

\*Treatment identity remained blinded until the in-life phase of the study was completed.

\*\*Two extra birds were started in each pen to compensate for losses incurred due to mortality, starve-outs, and cull birds during the first seven days. Any extra birds remaining were removed on Day 7 as described above. This is a standard practice for research trials when feed conversion and body weights are the primary study data. Mortality due to starve-outs and cull chicks commonly occurs in broiler feeding trials.

## B. Control of Bias

The test, control and reference corn was assigned to a specific treatment group by the Study Director. The assignment was placed in the study file and is part of this final report. Only the Study Director and Feed Mill Manager knew the treatment identification. Personnel conducting day-to-day management of birds were blinded to the treatment identification. Test, control and reference corn were handled identically to minimize bias.

## V. FEED AND WATER

### A. Corn - Preparation and Samples

Analysis of the corn used in this study is reported on COA-2004-128 and COA-2005-009. Grain analyses included pesticide, mycotoxin, and nutrient analyses. The presence and absence of test article(s) in test and control/reference grain, respectively, was confirmed by Monsanto using event-specific PCR and results are filed with grain Production Plan 04-01-39-22 and 04-01-72-10.

Corn grain for this study was shipped to Colorado Quality Research, Inc. (CQR) in containers suitable to maintain the identity of the different corn lots. Upon receipt, the different corn lots were handled in a manner (SOP FM-2) to maintain the identity of the respective corn lot and assure that there was no cross-contamination among the different corn lots. Each lot of corn grain was sampled prior to and after grinding according to CQR feed sampling procedures (i.e., for each lot, a representative composite sample was collected from the total amount of corn received and ground). The composite samples were mixed and two ~300 g sub-samples collected and labeled with the study number and corn lot number. One sub-sample was sent, under ambient temperature and humidity, to the Sponsor to be retained. Packaging and labeling complied with USDA regulations (SOP FM-8). The second sub-sample was retained at CQR, at ambient temperature and humidity, until the in-life phase of the study was completed. The second sub-samples were then sent, under ambient temperature and humidity, to the Sponsor for long term storage. Packaging and labeling complied with USDA regulations (SOP FM-8).

The corn was ground at the CQR research facility using a hammer mill with a 3/16" screen (SOP FM-7). The grinder was cleaned (flushed and/or blown out) between the processing of each grain lot (SOP FM-7). The control and reference grain lots were ground first and the test grain was ground last. The test, control and reference corn was labeled and packaged to preserve identity throughout the study. The label included the CQR Study Number and the corn identification (the same identification of the corn as provided by the shipper).

## **B. Treatment Diets – Formulation, Preparation and Samples**

Soybean meal used in formulating the diets was analyzed for protein, moisture and fat (additional analysis not originally intended) prior to diet formulation. Dr. Wayne McWard of Global Poultry Consulting, Inc. formulated the diets based on the assay results. The corn component of diets fed to broilers was supplied entirely with grain from the six corn hybrids included in the experiment. Each diet consisted predominantly of a mixture of either the test, control or reference corn grain and soybean meal. For each diet type (starter, grower/finisher) the treatment diets were formulated to be isocaloric and contain approximately the same amount of corn. The maximum amount of corn possible (approximately 55% for starter diets and 59% for grower/finisher diets) was formulated into the diets.

The sources of dietary protein used in this study were primarily from corn and soybean meal. Diets conformed as close as possible to the industry standards and/or the nutritional recommendations set forth in the publication "Nutritional Requirements of Poultry, 9th revised edition" by the National Research Council (1994). All starter and grower/finisher diets contained salinomycin (50 g/ton) as a coccidiostat. The diets were not expected to contain any known contaminants that would interfere with the study objectives.

Treatment diets were mixed at the CQR feed mill. Vertical mixers (500-lb and 4000-lb capacity) and a California Pellet Mill system were used to prepare the diets. The starter diets were mixed in the 500-lb capacity mixer and the grower/finisher diets were mixed in the 4000-lb capacity mixer. Feed was pelleted through a 5-mm die with live steam addition. Starter diets (400 lbs/treatment) were fed as crumbles and the grower/finisher diets (1000 lbs/treatment) were fed as pellets.

After the starter diets were pelleted then crumbled and grower/finisher diets were pelleted, samples were collected as the feed flowed into the bulk feed boxes. For each of the starter and grower/finisher diets, the collected sample was thoroughly mixed by hand prior to collecting two samples of approximately 300 g each. One 300 g sample was sent to the University of Missouri for analyses listed in the table in Section V.C. The second set of 300 g samples were retained at CQR until the in-life phase of the study was completed and then was sent to Monsanto for long-term storage. Samples were shipped and stored under ambient temperature and humidity conditions.

### C. Assays

Diets were assayed for analytes listed in the table below. Diets were not assayed for salinomycin (coccidiostat). There were no known contaminants in the feed or water that were expected to interfere with the conduct of this study.

Laboratory	Sample type	Analytes
Univ. of Missouri	Complete diets	Protein, amino acids, moisture, acid detergent fiber, neutral detergent fiber, crude fiber, crude fat, ash, calcium, phosphorus, magnesium, potassium, sodium, sulfur, chloride, iron, zinc, copper, manganese, and molybdenum

There were 12 diet samples (crumbled and pelleted) for analyses (6 starter diets and 6 grower/finisher diets). Results are reported in Appendix II – Tables 4 and 5.

### D. Water

A copy of Colorado Quality Research, Inc. research facility semi-annual water analyses report and a copy of the Northern Colorado Water Association yearly water analysis report are archived with the original CQR study records. The water source was from the Northern Colorado Water Association. The water analysis results showed that the water was potable and suitable for human consumption.

## VI. HOUSING AND MANAGEMENT

### A. Housing

Assignment of treatments to pens was conducted using the computer program Excel to generate random numbers for treatment assignments (below).

Trt	Treatment Assignment to Pens in Block - Females					Treatment Assignment to Pens in Block - Males				
	1	2	3	4	5	1	2	3	4	5
1	103	132	159	156	190	100	141	162	152	185
2	104	138	130	153	189	110	133	128	151	181
3	105	134	127	155	180	102	137	160	149	183
4	109	134	129	148	182	106	135	163	154	188
6	107	140	126	147	187	99	136	161	158	184
8	101	139	164	157	186	108	142	125	150	179

Birds were housed within an environmentally controlled facility in concrete floor pens (~4' × 4') providing ~1.45 ft<sup>2</sup> per bird. All birds were placed in clean pens containing approximately 4-5" depth of wood shavings. Lighting was via incandescent lights and a commercial lighting program was used as follows.

Approximate Bird Age (days)	Approximate Hours of Continuous Light Per 24 Hr Period	~Light Intensity (foot candles)
0 – 4	24	1.0 – 1.3
5 – 10	10	1.0 – 1.3
11 – 18	12	0.2 – 0.3
19 – market	16	0.2 – 0.3

Environmental conditions of floor space, temperature, lighting, bird density, feeder and water space were similar for all treatment groups.

In order to prevent bird migration, each pen was checked to assure no openings greater than 1 inch exists for approximately 12 inches in height between pens. To achieve this, a solid (wood or plastic) divider was in place for approximately the first 12 inches from the floor between each pen.

**B. Management**

**1. Vaccinations**

Birds were vaccinated for Mareks at the hatchery. Birds were vaccinated at CQR for Newcastle and Infectious Bronchitis by spray application on study Day 0. The vaccine was obtained from Fort Dodge Animal Health and identified as Newcastle-Bronchitis Vaccine B1 type B1 strain, Massachusetts type, live virus (lot number 1091136A, expiration dated 3/16/07). A record of the vaccination is included with the data package for this report. No other vaccinations or treatments (except the coccidiostat indicated above) were administered during the study.

**2. Water**

Water was provided *ad libitum* throughout the study via an automatic bell drinker (1/pen). Drinkers were checked twice daily and cleaned as needed to assure a clean and constant water supply to the birds.

**3. Feed**

Feed was provided *ad libitum* throughout the study (except for the pre-processing feed withdrawal period described in Section VII) via one hanging, ~17-inch diameter tube feeder per pen. A feeder tray was placed in each pen for the first 4 days. Birds were placed on their respective treatment diets upon receipt and diets were fed continuously during the study period. Feed added and removed from pens was weighed and recorded. Diet changes were conducted at the same time for all pens. The starter diet was fed from Day 0 – 21 and the grower/finisher diet was fed for the remainder of the study.

#### 4. Daily Observations

The test facility, pens and birds were observed at least twice daily for general flock condition, lighting, water, feed, ventilation, and unanticipated events. The minimum-maximum temperature of the test facility was recorded once daily. No abnormal bird behavior was observed throughout the study period.

#### 5. Mortality, Culls and Sex-slips

Starting on study Day 0, any bird that was removed, found dead or was sacrificed was weighed and recorded on the pen mortality record. All mortalities were necropsied to the extent necessary to determine the probable cause of death and results recorded on the pen mortality record.

#### 6. Body Weights and Feed Intake

Birds were weighed, by pen, on study Day 0 (receipt of chicks), and at study end (Day 42). Pens were weighed by block and two blocks were weighed at the same time. Birds were wing banded the afternoon following the Day 42 pen weighing. Birds were individually weighed immediately prior to slaughter for processing. The feed remaining in the feeder at Day 42 was weighed and the amount consumed per pen was calculated by subtracting the feed weighed out of the pen from the total amount of feed weighed into the pen.

#### 7. Weight Gain and Feed:Gain

Performance data was calculated and summarized by average weight gain per bird on Day 42. The average feed:gain was calculated for Days 0 - 42 by dividing the total feed consumption by the total weight gain of surviving birds for that pen. Adjusted feed:gain was calculated by dividing the total feed consumption by the weight gain of surviving birds plus weight gain of birds that died or were removed from that pen. For example: Adjusted feed:gain Day 0-42 = Feed intake during Days 0 - 42 ÷ [(Day 42 pen weight - Day 0 pen weight) + (mortality/removal weights Day 0-42 - average bird weight Day 0 {this is conducted on an individual bird basis and then totaled})]. If the mortality or removed bird(s) lost weight then no adjustment was made for that bird.

#### 8. Scales

Scales used in preparation of feed and weighing of feed and birds were licensed by the State of Colorado. At each use, the scales were checked using standard weights according to CQR Standard Operating Procedures. A copy of the State scale inspection and license is archived with the original study records.

## VII. PROCESSING – YIELD DATA AND SAMPLES FOR ANALYSIS

Processing was conducted according to CQR SOP B-71. After the final weight data had been collected on Day 42, the respective feed was returned to the pens. Feed was removed from the pens approximately 12 hours prior to the scheduled processing time. The processing took place over a two-day period. The males were processed the first day and the females processed the second day.

All surviving birds in each pen were processed. Birds were processed by: killing the bird by severing the jugular, scalding, plucking, and eviscerating and then placing the eviscerated bird in an aerated chill tank (ice and water). The fat pad was removed and weighed during the eviscerating process. After the birds were chilled to  $\sim 7^{\circ}\text{C}$  ( $\sim 45$  minutes in chill tank), the birds were removed from the chill tank and placed upright into a 30-gallon container. A bag of ice was placed on the top and bottom of the container. After the birds had drained for  $\sim 15$  minutes the individual bird chill weight was obtained and then the bird was deboned and the individual parts were weighed and recorded and samples collected.

### A. Yield Data – (includes the following data for individual birds)

- Live weight
- Fat pad weight
- Chill weight
- Breast meat weight –skinless, boneless
- Wings (bone in, skin on)
- Thighs (bone in, skin on)
- Drums (bone in, skin on)

Unit of measure for the individual weights were either gram or kilogram and were indicated on the data collection form. Calculations were conducted to express parts on a percentage basis. This was done by taking the weight of the part and dividing it by the weight of the part of which it was to be expressed as a percentage. For example, percent breast yield =  $\text{breast weight} \div \text{chill weight} \times 100$ .

### B. Samples

After the birds had been processed and parts weighed, one bird from each pen was selected for collection of meat (breast and thigh) samples. The bird was selected arbitrarily, i.e., for each pen the birds were sent through the processing line in no particular order and the meat was collected from birds in whatever order was convenient for the procedure. One-half of the bird was used for retention samples and the remaining half was used for analysis samples.

## 1. Retention Samples

One-half breast was placed in one bag and one thigh (with skin removed) was placed in another bag. The samples were labeled with the CQR study number, pen number, treatment number, bird number, sex, date of collection and either breast or thigh meat. The retention samples were kept frozen ( $\sim 20^{\circ}\text{C}$ ) at CQR until the samples for analysis were received at the University of Missouri analytical lab, at which time the retention samples were sent to the Sponsor (with wet ice) for long term storage.

## 2. Analysis Samples – for moisture, protein and fat at the University of Missouri

The remaining one-half breast and one thigh (without skin) were placed in separate bags. The samples were labeled with the CQR study number, pen number, treatment number, bird number, sex, date of collection and either breast or thigh meat. The samples were held refrigerated ( $\sim 5^{\circ}\text{C}$ ) for 0 – 3 days. The chilled samples were sent (non-frozen, with wet ice) to the University of Missouri for protein, fat and moisture analysis.

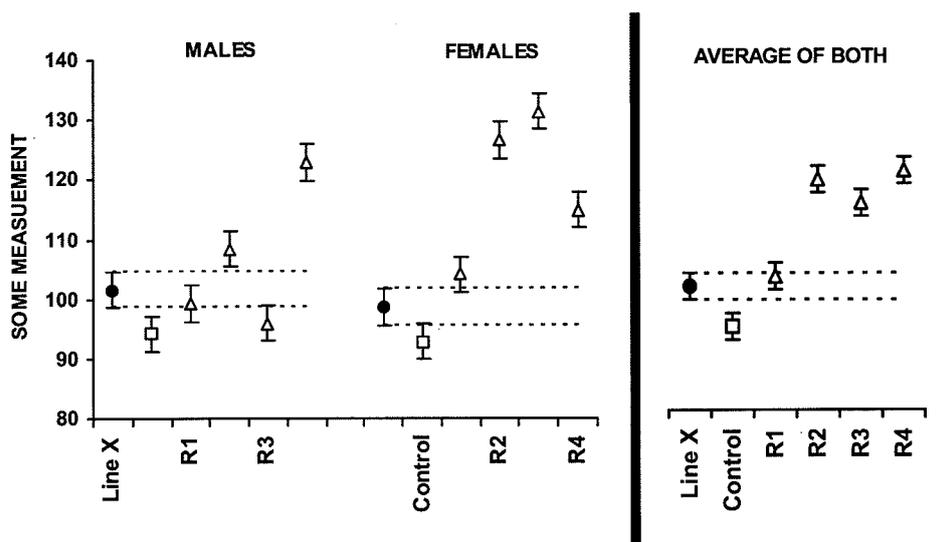
## VIII. STATISTICAL ANALYSIS

Statistical analyses of the data were conducted by the Monsanto Statistics Technology Center and a sub-report was provided for inclusion in the final report. Statistics were conducted on performance, carcass yield, and meat quality parameters. SAS<sup>®</sup>, version 9.1.3, was used to do the analyses.

Each measurement to be statistically analyzed was processed by two different procedures. The basic method was a two-factor analysis of variance under a randomized complete block structure. The two factors were diet and gender. The main effects of diet and gender along with the diet-by-gender interaction were tested and noted. If the interaction was not significant ( $P \geq 0.15$ ) then the comparisons among diets were done using the main effect for diets, i.e., diet means were averaged over gender. If the interaction was significant ( $P < 0.15$ ) then the diet comparisons were done separately for each gender. Mean separation procedures were performed using protected LSD at a 0.05 level of significance. In addition to tables, the results of these analyses were graphically summarized for live weight, feed intake, adjusted feed efficiency, and percent chill weight. An example of such a statistical summary plot is given below. The additional analysis conducted was a comparison of the test diet with the population of control and reference diets of which the five diets (control and the four commercial reference diets) were a sample. This required a mixed linear model analysis with an additional variance component for random between-diet effects. Analyses were averaged over gender unless there was a significant diet-by-gender interaction at which time analyses were broken out by gender.

Figure 1.

Simulated example of a statistical summary plot comparing diet X to its control and to each of four commercial reference diets, in the presence of a diet-by-gender interaction. Note that the 'error' bars on these plots are 5% statistical significance intervals. They are the mean  $\pm$   $\frac{1}{2}$  the Least Significant Difference (or LSD). Therefore, if the overall F-test is significant at  $P < 0.05$ , any two diets having non-overlapping bars are significantly different at the 5% level.



## IX. DISPOSITIONS

### A. Excess Test, Control and Reference Articles, and Duplicate Meat Samples

An accounting of corn grain received and used was documented. Any grain not used to mix the complete feed was disposed of by burial at a local commercial landfill. Any unused test corn grain not returned to the Sponsor was devitalized by grinding prior to disposal. Retained corn samples were sent to the Sponsor for archiving at study end (sent under ambient temperature and humidity in compliance with SOP FM-8). The retained duplicate meat samples were sent (frozen, with wet ice) to the Sponsor at study end.

### B. Feed

An accounting was maintained of all treatment diets. The amount mixed, used and discarded was documented. Unused feed was disposed of by placing into a dumpster for commercial transport to a local landfill for burial. Retained feed samples were sent to the Sponsor (under ambient temperature and humidity) for archiving at study end.

### C. Test Animals

An accounting was maintained of birds received for the study. Birds were sacrificed at study end for processing data (the meat from these birds were not used for human consumption). Carcasses, meat, mortalities and removed birds were composted at CQR or transported to a commercial landfill for burial. Documentation of disposition has been provided with this final report.

### D. Records and Report

Audited data (Excel workbook file) were sent to the Monsanto Statistics Technology Center for statistical analyses. After review of the draft reports and after the statistician's report was signed, a signed original final report including the signed QA statement, with all information required by the GLP regulations was prepared by the Study Director and sent to the Sponsor. Any revision to the report after completion of the study will be documented as a Report Amendment(s).

An exact copy of the final report and all records on the study will be kept for five years at the CQR archive from the study completion date. The CQR archive is located at 400 East County Road 72, Wellington, Colorado. The Study Director's report, original data and study records, statistician's report and Sponsor's data and reports (analysis of the grain) are stored at the archives of the Monsanto Company, St. Louis, Missouri.

All original data and records generated at the University of Missouri are retained at the University of Missouri facility for a minimum of 3 years.

## X. CONDUCT OF STUDY AND TEST MONITORING

This study was conducted in accordance with this protocol and CQR Standard Operating Procedures. This study was conducted in compliance with the Food and Drug Administration's "Good Laboratory Practice Regulations for Nonclinical Laboratory Studies" (21CFR, Part 58). The QAU conducted in-life phase inspections, and data and report were audited as necessary to ensure the integrity of the data generated by CQR. Portions of the study conducted by Monsanto were conducted in compliance with the EPA GLPs (40CFR, Part 160). Monsanto QA provided oversight for data generated at Monsanto.

If this study is reviewed by a regulatory agency, the Study Director will immediately notify the Sponsor Monitor.

## XI. PERSONNEL

Key personnel involved in this study were as follows:

Sponsor Monitor	Mary L. Taylor
Sponsor Monitor Assistant	Donald Lucas, Ph.D.
Sponsor Representative	Scott A. Huber
Product Safety Center Representative	Gary Hartnell, Ph.D.
Sponsor Quality Assurance Statistician	Kristina Berman, or designee Margaret Nemeth, Ph.D. or designee
University of MO – Feed and meat analysis	Thomas W. Mawhinney, Ph.D.
Test Facility Management	Beverly George, Ph.D.
Study Director	Stephen W. Davis, DVM, Dip. APCV
Research Manager	Randy, S. Townsend, B.S.
Research Data Manager	Tamara Killip, B.S.
Research Data Manager	Alta Burns B.A
Research Farm Manager	Linde Dauner, B.S.
Feed Mill Manager	Ryan Eickman, B.S.
Research Technician	Tom Williams, B.S.
Research Technician	Claudia Schoenberger, B.S.
Research Technician	Deborah Davis
Research Technician	Crystal Shaeffer B.S.
Research Technician	Denise Spraker M.S.
Research Technician	Gabriel Yanez
Processing Supervisor	Dennis Madden, B.S.
Processing	Carol Mehaffy
Processing	Brenda Moody
Processing	Danny Walker, Ph.D.
Processing	Gene Schoonveld, M.S.
Processing	Rex Geske, M.S.
Processing	Cassi Townsend
Processing	Charles Ashlock, B.S
Processing	Sam Hendrix, DVM
Processing	Barbara Cynkar

## **XII. RESULTS AND CONCLUSIONS**

### **A. Results**

The results from the analysis of the grain prior to use in this study are shown in Appendix I, Tables 1 and 2. No unusual values were observed. The levels of fumonisin reported for the corn in Table 2 were considered acceptable for the purposes of this study (U.S. Food and Drug Administration, Center for Food Safety and Nutrition, Guidance for Industry. Fumonisin Levels in Human Foods and Animal Feeds, June 6, 2000; <http://vm.cfsan.fda.gov/~dms/>). The identities of the test, control, and reference corn grain were confirmed as expected at Monsanto and are archived under Monsanto production plans 04-01-39-22 and 04-01-72-10. The starter and grower/finisher diet calculations, formulations, and nutrient compositions are shown in Appendix II, Tables 2, 3, 4 and 5. The nutrient assay results for the starter and grower/finisher diets were acceptable, but in some cases were slightly lower than NRC guidelines, based on a review conducted by the consulting nutritionist, Dr. McWard of Global Poultry Consulting, Inc.

Performance data for the study are presented in Appendix III, Tables 1- 7. Mortality and cause of death during days 0 – 7 and 7 – 42 are presented in Appendix III, Tables 2. Broiler performance data are presented in Appendix III, Tables 3 and 4. Processing data are presented in Appendix III, Tables 5 - 6. Appendix III, Table 7 summarizes the moisture, protein and fat analysis of chicken breasts and thighs.

Chick mortality (29 birds, 4.0%) mostly related to bacterial infection, dehydration, and starve-out was observed during the first 7 days of the study. This mortality, which occurs commonly in chicks in commercial feeding trials, was random and without any relationship to treatment. Pen sizes were normalized to 10 birds/pen on Day 7. The number of birds that died from Day 7 to study termination (Appendix III, Table 2) varied by treatment groups. Deaths across treatments averaged 4.5% and ranged from 0% to 8% among treatment groups. The MON 89034 treatment group had a lower than average mortality rate of 3.0% from 7 – 42 days. Similar to the circumstances of the first 7 days, the mortality for Day 7 to Day 42 was random and without any relationship to treatment and commonly observed in chicks in commercial feeding trials. The most frequently identified apparent causes of death (sudden death syndrome and ascites) occur commonly in chickens. The majority of the mortality occurred in the males (20 males vs. 7 females); this is expected because the males grow faster and are heavier. The birds in all groups were in good health based on twice daily pen observations.

Performance measurements of body weight at Day 0 (g/bird and kg/pen) and Day 42 (kg/bird and kg/pen), total feed intake (kg/bird and kg/pen), feed conversion (kg/kg) and carcass measurements of chill weight (kg and % of live weight), fat pad (kg and % of live weight), breast (kg and % of chill weight), wing (kg and % chill weight), drum (kg and % of chill weight) and thigh weight (kg and % of chill weight) were similar ( $P > 0.05$ ) across treatments for the broilers fed diets containing MON 89034, the control, and commercial

corn (Appendix III, Table 3). A significant difference ( $P < 0.05$ ) was noted for adjusted feed conversion between MON 89034 and control birds (1.593 kg/kg and 1.636 kg/kg, respectively). However, individual treatment comparisons detected no difference between the MON 89034 and three of the four commercial corn diets. Therefore, the small difference was not considered biologically meaningful. No differences among diets were observed in the percentage of moisture, protein, and fat in thigh and breast meat of broilers. Comparisons of the MON 89034 diet to the population of all other diets showed no difference in any performance, carcass, or meat quality parameters measured.

### **B. Conclusions**

In conclusion, there were no biologically relevant differences in the parameters measured between broilers fed the MON 89034 diet and the control diet. In addition, in the individual treatment comparisons, broilers in general had similar performance values and carcass yield and meat composition regardless of whether the diets contained the test, control, or commercial corn. The MON 89034 corn diet was as wholesome as the control corn diet and commercially available reference corn diets based on its ability to support the rapid growth of broiler chickens. These data support the conclusion that the MON 89034 corn is as safe and nutritious as conventional corn.

### **XIII. STUDY DIRECTOR'S COMMENTS/CERTIFICATION STATEMENT**

No adverse effects were observed. There were no known circumstances that may have affected the data quality or integrity.

I, Dr. Stephen W. Davis, Study Director, attest that Study No. MN-05-2 (Monsanto No. 05-01-50-13) was conducted according to the Protocol, Protocol Deviations #1 and 2, and Protocol Amendments #1, 2, 3 and 4 and that the data were collected and recorded in accordance with the applicable Food and Drug Administration, Center for Veterinary Medicine (CVM) Guidelines.

\_\_\_\_\_  
Stephen W. Davis, DVM, Dip. ACPV    Date  
Study Director

#### **XIV. LIST OF APPENDICES**

##### **Appendix I. Pre-study Data from Monsanto Study No. 05-01-50-13 Pages 27 - 29**

Appendix I - Table 1. Corn grain compositional analyses (including pesticides) as-is basis  
Appendix I - Table 2. Corn grain mycotoxin analyses (as-is basis)

*Note: Appendix I, Tables 1 and 2 contain data reported on Monsanto COA-2005-009 and COA-2004-128 and used to formulate the diets for this study (Monsanto Study No. 05-01-50-13)*

##### **Appendix II. Diet Composition and Analyses Pages 30 - 35**

Appendix II - Table 1. Treatment assignment of corn grain lots  
Appendix II - Table 2. Starter diet formulation and calculated nutrient composition (as-is basis)  
Appendix II - Table 3. Grower/finisher diet formulation and calculated nutrient composition (as-is basis)  
Appendix II - Table 4. Nutrient composition of the starter treatment diets (as-is basis)  
Appendix II - Table 5. Nutrient composition of the grower/finisher treatment diets (as-is basis)

##### **Appendix III. Bird Performance and Processing Data Pages 36 - 53**

Appendix III - Table 1. Day 0 body weights (8/31/05)  
Appendix III - Table 2. Summary of mortality and removal and probable cause of death (Day 0 - 7 and Day 7 - 42)  
Appendix III - Table 3. Performance of broilers, carcass yield, and moisture, protein, and fat composition of breast and thigh meat (mean values of males and females combined) comparison of the MON 89034 corn with its control and commercial corn  
Appendix III - Table 4. Broiler Performance Data  
Appendix III - Table 5. Broiler Process Data (weights, by pen)  
Appendix III - Table 6. Broiler Process Data (percentages, by pen)  
Appendix III - Table 7. Moisture, protein & fat analysis of breast and thigh meat

##### **Appendix IV. Statistical Report (Pages 54 - 96)**

**XV. LISTING OF APPLICABLE SOPS and REFERENCES**

<b>SOP No.</b>	<b>Title</b>	<b>Revision Number</b>	<b>Effective Date</b>
B-1	House Preparation	6	2-16-05
B-2	Care and Management of Poultry	10	2-16-05
B-6	Vaccination of Poultry	7	2-16-05
B-7	Feeding Poultry	7	2-16-05
B-9	Scale & Thermometer Accuracy Checks and Certification of Standard Weights	11	2-16-05
B-10	Randomization of Treatments to Pens and Test Animals to Pens	7	2-16-05
B-12	Emergency Power During Electrical Failure	14	2-16-05
B-13	Sanitation and Restricted Access	5	2-04-04
B-16	Necropsy of Mortality	5	2-16-05
B-21	Weighing Poultry	6	2-16-05
B-22	Euthanasia and Disposal of Avian Species	4	8-11-01
B-29	Probable Mortality Causes	4	2-18-02
B-34	Culling and Sacrifice of Moribund Test Animals	2	11-18-03
B-64	Facility Logs and Daily Observations	3	10-01-02
B-66	Lighting Program	3	5-02-01
B-71	Processing Poultry	2	2-04-04
B-72	Bird Recount and Adjustment	1	7-02-02
B-73	Test Animal Receipt, Accounting & Disposition		7-02-02
B-74	Sexing Poultry		2-20-03
M-5	Quality Control of Data and Final Report	2	7-02-02
M-7	Final Report and Amendment	1	7-02-02
M-10	Preparation of Written Standard Operating Procedures	1	12-21-98
M-11	Data Recording & Correction of Errors	3	7-02-02
FM-2	Test Article Receipt, Handling During Use, Accounting and Final Disposition	5	2-25-05
FM-3	Feed Receipt, Mixing, Storage and Accounting	8	2-25-05
FM-4	Feed Sampling Procedures	3	2-04-04
FM-5	Test Article Weights and Premix Preparation	5	2-25-05
FM-6	Flushing Feed Mill	3	2-25-05
FM-7	Grinding Corn and Other Ingredients	3	2-25-05
FM-8	Handling of Regulated Materials	2	7-22-05

**References:**

National Research Council (NRC). 1994. Nutritional Requirements of Poultry, 9<sup>th</sup> revised edition.

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**APPENDIX I**

**Pre-study Data from Monsanto Study No. 05-01-50-13**

**Pages 27 - 29**

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Appendix 1- Table 1. Corn Grain Compositional Analyses (including Pesticides) –as is basis

Sample ID	04ZMGR00399P0 GLP-0404-15002-S	04ZMGR00393P0 GLP-0404-14916-S	04ZMGR00401P0 REF-0405-15097-S	04ZMGR00404P0 REF-0405-15098-S	04ZMGR00662P0 REF-0404-14940-S	04ZMGR00663P0 REF-0405-15094-S
Tissue	13250.23	MON 89034	Asgrow RX690	Asgrow RX772	DKC60-15	DKC57-01
Covance LIMS #	50102773	50102770	50102774	50102775	50204056	50204057
<b>Proximate (%)</b>						
Moisture	8.58	7.75	7.19	7.70	12.2	12.1
Protein	7.84	7.68	8.47	7.07	7.26	8.06
Total Fat	3.12	3.00	3.21	2.97	2.66	3.00
Ash	1.21	1.17	1.22	1.19	1.53	1.45
Carbohydrates	79.3	80.4	79.9	81.07	76.4	75.4
Acid Detergent Fiber (%)	4.51	4.99	5.61	4.11	5.11	4.80
Crude Fiber (%)	2.31	2.52	2.46	1.84	3.05	2.89
Neutral Detergent Fiber (%)	8.35	8.68	7.83	6.97	11.5	10.2
<b>Minerals (ppm)</b>						
Calcium	42.3	50.5	33.3	45.5	76.3	69.7
Copper	1.40	1.63	1.41	1.44	1.44	1.71
Iron	21.0	16.5	18.9	16.0	578	22.6
Magnesium	1060	1080	981	1070	817	962
Manganese	4.43	3.88	2.91	3.57	19.4	7.01
Molybdenum	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Phosphorus	2790	2820	2640	2290	2900	2900
Potassium	3400	3430	3400	3320	4410	4220
Sodium	<100	<100	<100	<100	<100	<100
Zinc	16.5	18.0	16.3	18.1	12.7	13.9
Cadmium (ppm)	<0.04	<0.04	<0.04	<0.04	<0.05	<0.05
Chloride (%)	0.048	0.050	0.060	0.053	0.040	0.042
Selenium (ppm)	0.145	0.355	0.315	0.353	<0.030	<0.030
Sulfur (%)	0.0708	0.0823	0.0745	0.0802	0.0658	0.0474
<b>Pesticides (ppb)</b>						
Organophosphates	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Organonitrogens	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Organochlorinated	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
N-Methylcarbamates	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
<b>Amino Acids (mg/g)</b>						
Aspartic Acid	5.22	5.14	5.59	5.00	4.84	5.39
Threonine	2.71	2.61	2.74	2.55	2.47	2.70
Serine	4.10	3.95	4.32	3.79	3.48	3.83
Glutamic Acid	14.7	14.5	15.7	13.8	12.6	14.3
Proline	7.11	7.04	7.34	6.79	6.53	6.94
Glycine	3.18	3.13	3.31	2.99	2.87	3.12
Alanine	5.84	5.71	6.34	5.45	5.16	5.88
Cystine	1.67	1.73	1.67	1.62	1.42	1.54
Valine	3.76	3.71	3.90	3.54	3.61	3.85
Methionine	1.54	1.66	1.40	1.56	1.34	1.54
Isoleucine	2.75	2.73	2.93	2.61	2.57	2.81
Leucine	9.69	9.39	10.3	9.11	8.43	9.53
Tyrosine	2.98	2.59	3.04	2.82	2.48	2.82
Phenylalanine	3.91	3.78	4.09	3.62	3.51	3.87
Histidine	2.43	2.45	2.46	2.35	2.28	2.38
Lysine	2.61	2.65	2.65	2.37	2.44	2.66
Arginine	3.79	3.61	4.02	3.30	3.25	3.51
Tryptophan	0.541	0.505	0.518	0.471	0.406	0.490
<b>Fatty Acids (%)</b>						
8:0 Caprylic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
10:0 Capric	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
12:0 Lauric	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
14:0 Myristic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
14:1 Myristoleic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
15:0 Pentadecanoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
15:1 Pentadecenoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
16:0 Palmitic	0.269	0.261	0.317	0.283	0.334	0.368
16:1 Palmitoleic	0.00399	0.00358	0.00406	<0.00300	<0.00500	<0.00500
17:0 Heptadecanoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
17:1 Heptadecenoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
18:0 Stearic	0.0539	0.0576	0.0621	0.0510	0.0352	0.0503
18:1 Oleic	0.709	0.699	0.718	0.591	0.491	0.748
18:2 Linoleic	1.73	1.65	1.80	1.70	1.61	1.68
18:3 Gamma Linolenic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
18:3 Linolenic	0.0352	0.0324	0.0347	0.0281	0.0320	0.0330
20:0 Arachidic	0.0112	0.0116	0.0117	0.0113	0.00869	0.0131
20:1 Eicosenoic	0.00870	0.00857	0.00869	0.00775	0.00680	0.0101
20:2 Eicosadienoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
20:4 Arachidonic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
20:3 Eicosatrienoic	<0.00400	<0.00300	<0.00400	<0.00300	<0.00500	<0.00500
22:0 Behenic	0.00424	0.00443	0.00473	0.00484	<0.00500	0.00538

Appendix 1 - Table 2. Grain mycotoxin analyses (as-is basis)

Test	Detection Limit	Grain ID					
		13250.23	MON 89034	Asgrow RX690	Asgrow RX772	DKC60-15	DKC57-01
Aflatoxin B1	1.0 ppb	ND	ND	ND	ND	ND	ND
Aflatoxin B2	1.0 ppb	ND	ND	ND	ND	ND	ND
Aflatoxin G1	1.0 ppb	ND	ND	ND	ND	ND	ND
Aflatoxin G2	1.0 ppb	ND	ND	ND	ND	ND	ND
Ochratoxin A	2 ppb	ND	ND	ND	ND	ND	ND
T-2 Toxin	0.1 ppm	ND	ND	ND	ND	ND	ND
HT-2 Toxin	0.1 ppm	ND	ND	ND	ND	ND	ND
Diacetoxyscirpenol	0.3 ppm	ND	ND	ND	ND	ND	ND
Neosolaniol	0.1 ppm	ND	ND	ND	ND	ND	ND
Fusarenon X	0.5 ppm	ND	ND	ND	ND	ND	ND
Deoxynivalenol	0.1 ppm	1.6 ppm	0.1 ppm	ND	1.6 ppm	ND	ND
15 Acetyl-DON	0.1 ppm	ND	ND	ND	ND	ND	ND
3 Acetyl-DON	0.1 ppm	ND	ND	ND	ND	ND	ND
Nivalenol	0.5 ppm	ND	ND	ND	ND	ND	ND
Zearalenone	100 ppb	ND	ND	271 ppb	ND	ND	ND
Fumonisin B1	0.1 ppm	0.9 ppm	ND	2.2 ppm	1.1 ppm	2.4 ppm	3.9 ppm
Fumonisin B2	0.1 ppm	0.3 ppm	ND	0.5 ppm	0.2	0.8 ppm	1.3 ppm
Fumonisin B3	0.1 ppm	ND	ND	ND	ND	ND	ND
Citrinin	267 ppb	ND	376 ppb	ND	ND	ND	ND
ND = none detected							

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**APPENDIX II**

**Diet Composition and Analyses**

**Pages 30 - 35**

Appendix II - Table 1. Treatment assignment of corn grain lots

Treatment <sup>1</sup> ID	Starter Formulation #	Grower Formulation #	Maize ID
1	601	602	ASGROW RX690 (REF-0405-15087-S)
2	603	604	DKC60-15 (REF-0404-14940-S)
3	605	606	MON 89034 (GLP-0404-14916-S)
4	607	608	DKC57-01 (REF-0405-15094-S)
6	611	612	ASGROW RX772 (REF-0405-15098-S)
8	615	616	13250.23(GLP-0404-15082-S)

<sup>1</sup>Treatments 5 and 7 were eliminated from the study by protocol amendment #1 signed 8/30/05

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Appendix II - Table 2. Starter diet formulation and calculated nutrient composition (as-is basis)  
 CQR Project No. MN-05-2 (Monsanto # 05-01-50-13)

CQR Treatment ID	1	2	3	4	6	8
	Asgrow RX690	DKC60-15	MON 89034	DKC57-01	Asgrow RX772	13250.23
<b>Ingredient</b>	<b>Percent of Each Ingredient</b>					
Corn**	55.374%	54.919%	55.092%	55.924%	54.694%	55.532%
Soybean Meal	37.400%	37.850%	37.800%	37.000%	38.050%	37.350%
Soybean Oil	3.700%	3.750%	3.700%	3.600%	3.800%	3.650%
Deflur. Phosphate	1.850%	1.800%	1.800%	1.800%	1.850%	1.800%
Limestone	0.750%	0.750%	0.700%	0.750%	0.700%	0.750%
Salt	0.289%	0.294%	0.292%	0.294%	0.285%	0.292%
DL Methionine	0.245%	0.245%	0.225%	0.240%	0.230%	0.235%
Choline Chloride-60	0.150%	0.150%	0.150%	0.150%	0.150%	0.150%
Broiler Vitamin	0.100%	0.100%	0.100%	0.100%	0.100%	0.100%
Broiler Mineral SE	0.100%	0.100%	0.100%	0.100%	0.100%	0.100%
Sacox	0.041%	0.041%	0.041%	0.041%	0.041%	0.041%
<b>Calculated Nutrient Composition</b>						
*Calculated ME, (Kcal/kg)	3080	3080	3079	3081	3080	3080
Digest Arginine, %	1.3314	1.3149	1.3232	1.3054	1.3145	1.3220
Digest Lysine, %	1.1404	1.1485	1.1516	1.1385	1.1438	1.1394
Digest Methionine, %	0.5571	0.5601	0.5524	0.5613	0.5539	0.5549
Digest Met + Cystine, %	0.8612	0.8588	0.8615	0.8615	0.8590	0.8602
Digest Tryptophan, %	0.2676	0.2660	0.2696	0.2653	0.2694	0.2688
Digest Threonine, %	0.7280	0.7279	0.7281	0.7282	0.7281	0.7281
Crude Protein, %	21.4563	21.2108	21.2168	21.3395	20.9806	21.1741
Moisture, %	11.6861	11.6922	11.7057	11.6975	11.6924	11.6978
Arginine, %	1.4153	1.3978	1.4067	1.3877	1.3975	1.4054
Lysine, %	1.2161	1.2246	1.2280	1.2144	1.2194	1.2151
Methionine, %	0.5717	0.5747	0.5680	0.5765	0.5691	0.5700
Meth & Cystine, %	0.9323	0.9290	0.9348	0.9327	0.9311	0.9321
Tryptophan, %	0.2852	0.2835	0.2874	0.2828	0.2871	0.2866
Glycine, %	0.8695	0.8622	0.8678	0.8627	0.8636	0.8646
Threonine, %	0.7760	0.7759	0.7760	0.7763	0.7760	0.7762
Valine, %	1.0090	1.0126	1.0077	1.0108	1.0029	1.0041
Proline, %	1.2007	1.1843	1.1943	1.1953	1.1834	1.1941
Crude Fat, %	6.1438	5.9858	6.0454	6.0318	6.1204	6.0767
Crude Fiber, %	2.5805	2.9864	2.6263	2.8927	2.2699	2.5214
Ash, %	4.1157	4.3469	4.0692	4.2645	4.0789	4.1168
Calcium, %	0.9569	0.9457	0.9489	0.9429	0.9405	0.9423
Phosphorus (total), %	0.7149	0.7299	0.7181	0.7271	0.6999	0.7162
Phosphorus (avail.), %	0.4519	0.4507	0.4468	0.4500	0.4468	0.4463
Salt, %	0.3270	0.3324	0.3299	0.3321	0.3231	0.3295
Sodium, %	0.2205	0.2202	0.2192	0.2201	0.2190	0.2190
Potassium, %	0.9652	1.0388	0.9753	1.0145	0.9734	0.9674
Manganese, PPM	134.7305	144.1472	135.3818	136.9869	135.2912	135.5502
Zinc, PPM	126.2885	124.9322	127.3765	125.3226	127.4759	126.5224
Copper, PPM	16.2772	16.3926	16.4483	16.4323	16.3807	16.2775
Selenium, PPM	0.5484	0.3833	0.5705	0.3814	0.5697	0.4599

\*[Kcal/lb x 2.2 = Kcal/kg]

Appendix II - Table 3. Grower/Finisher diet formulation & calculated nutrient composition (as-is basis)

CQR Project No. MN-05-2 (Monsanto # 05-01-50-13)

CQR Treatment ID	1	2	3	4	6	8
	Asgrow RX690	DKC60-15	MON 89034	DKC57-01	Asgrow RX772	12250.23
<b>Ingredient</b>	<b>Percent of Each Ingredient</b>					
Corn**	59.451%	59.390%	59.569%	59.405%	59.460%	59.458%
Soybean Meal	33.500%	33.500%	33.500%	33.500%	33.500%	33.500%
Soybean Oil	3.800%	3.800%	3.750%	3.800%	3.800%	3.800%
Deflur. Phosphate	1.700%	1.700%	1.700%	1.700%	1.750%	1.700%
Limestone	0.650%	0.700%	0.600%	0.700%	0.600%	0.650%
Salt	0.308%	0.313%	0.310%	0.313%	0.303%	0.310%
DL Methionine	0.250%	0.255%	0.230%	0.240%	0.245%	0.240%
Choline Chloride-60	0.100%	0.100%	0.100%	0.100%	0.100%	0.100%
Broiler Vitamin	0.100%	0.100%	0.100%	0.100%	0.100%	0.100%
Broiler Mineral SE	0.100%	0.100%	0.100%	0.100%	0.100%	0.100%
Sacox	0.041%	0.041%	0.041%	0.041%	0.041%	0.041%
<b>Calculated Nutrient Composition</b>						
*Calculated ME, (Kcal/kg)	3135	3133	3134	3133	3135	3135
Digest Arginine, %	1.2280	1.1970	1.2076	1.2110	1.1910	1.2191
Digest Lysine, %	1.0442	1.0408	1.0456	1.0523	1.0305	1.0442
Digest Methionine, %	0.5418	0.5472	0.5360	0.5435	0.5458	0.5402
Digest Met + Cystine, %	0.8269	0.8242	0.8245	0.8264	0.8287	0.8268
Digest Tryptophan, %	0.2442	0.2395	0.2477	0.2441	0.2418	0.2457
Digest Threonine, %	0.6759	0.6691	0.6701	0.6813	0.6666	0.6765
Crude Protein, %	20.0277	19.5803	19.6085	20.0420	19.2585	19.7371
Moisture, %	11.6544	11.6472	11.6680	11.6490	11.6556	11.6553
Arginine, %	1.3052	1.2723	1.2836	1.2872	1.2660	1.2957
Lysine, %	1.1140	1.1103	1.1155	1.1228	1.0992	1.1140
Methionine, %	0.5556	0.5611	0.5508	0.5581	0.5602	0.5546
Meth & Cystine, %	0.8941	0.8900	0.8936	0.8941	0.8963	0.8949
Tryptophan, %	0.2603	0.2553	0.2599	0.2603	0.2578	0.2621
Glycine, %	0.8098	0.7941	0.8012	0.8084	0.7926	0.8050
Threonine, %	0.7207	0.7134	0.7145	0.7265	0.7106	0.7213
Valine, %	0.9402	0.9352	0.9311	0.9490	0.9212	0.9355
Proline, %	1.1441	1.1487	1.1306	1.1432	1.1150	1.1370
Crude Fat, %	6.2739	6.0523	6.1217	6.2487	6.1493	6.2503
Crude Fiber, %	2.5410	2.9731	2.5854	2.8726	2.1963	2.4757
Ash, %	3.8780	4.1114	3.7692	4.0641	3.7669	3.8406
Calcium, %	0.8624	0.8840	0.8702	0.8836	0.8590	0.8629
Phosphorus (total), %	0.6728	0.6966	0.6842	0.6964	0.6627	0.6837
Phosphorus (avail.), %	0.4206	0.4285	0.4244	0.4284	0.4233	0.4242
Salt, %	0.3415	0.3471	0.3440	0.3471	0.3370	0.3440
Sodium, %	0.2188	0.2210	0.2198	0.2210	0.2195	0.2198
Potassium, %	0.8983	0.9672	0.8995	0.9557	0.8928	0.8992
Manganese, PPM	133.4663	143.4898	134.0295	135.9958	133.8472	134.3584
Zinc, PPM	125.0701	123.4394	126.1069	124.1482	126.1419	125.3210
Copper, PPM	15.7648	15.8132	15.8813	15.9738	15.7726	15.7607
Selenium, PPM	0.5521	0.3737	0.5762	0.3737	0.5759	0.4569

\*[Kcal/lb x 2.2 = Kcal/kg]

Appendix II - Table 4. Nutrient composition of the starter treatment diets (as is basis)

Assay Component	Treatment ID					
	1	2	3	4	6	8
Moisture, %	11.19	11.74	10.81	12.20	13.08	12.50
Crude Protein, %	22.76	22.16	22.81	22.87	22.92	22.67
Crude Fat, %	5.88	5.57	5.91	5.51	5.97	6.05
Crude Fiber, %	1.73	1.81	2.05	1.79	1.73	1.92
ADF, %	3.31	3.43	3.34	3.20	3.47	3.29
NDF, %	7.80	7.90	8.92	8.45	8.44	9.03
Ash, %	5.77	5.98	5.78	5.89	5.73	5.74
Ca, %	0.77	0.80	0.81	0.71	0.73	0.76
Cl, %	0.24	0.20	0.22	0.19	0.26	0.23
Cu, ppm	16.7	14.9	16.1	15.4	16.4	13.9
Fe, ppm	279.6	285.0	280.7	272.0	263.4	273.2
Mg, %	0.17	0.16	0.17	0.18	0.19	0.17
Mn, ppm	115.4	130.0	115.0	118.2	118.4	119.1
Mo, ppm	1.6	1.4	1.5	1.6	1.8	1.8
P, %	0.66	0.66	0.70	0.64	0.61	0.65
K, %	1.06	0.94	1.05	1.12	1.08	1.06
Na, %	0.23	0.21	0.21	0.19	0.22	0.20
S, %	0.26	0.26	0.30	0.29	0.28	0.29
Zn, ppm	110.8	115.5	116.6	117.7	119.6	113.3
Taurine, %	0.04	0.04	0.04	0.04	0.04	0.03
Hydroxyproline, %	0.06	0.03	0.04	0.04	0.03	0.04
Aspartic Acid, %	2.38	2.28	2.32	2.38	2.33	2.35
Threonine, %	0.89	0.81	0.83	0.87	0.82	0.84
Serine, %	1.09	0.89	0.94	0.98	0.89	0.93
Glutamic Acid, %	4.07	3.84	3.93	4.00	3.99	4.01
Proline, %	1.32	1.25	1.26	1.29	1.24	1.27
Lanthionine, %	0.01	0.01	0.01	0.02	0.02	0.01
Glycine, %	0.96	0.93	0.95	0.97	0.95	0.96
Alanine, %	1.17	1.08	1.10	1.14	1.10	1.11
Cysteine, %	0.40	0.38	0.40	0.40	0.39	0.39
Valine, %	0.99	1.13	1.13	1.15	1.15	1.16
Methionine, %	0.60	0.56	0.57	0.59	0.58	0.56
Isoleucine, %	0.89	1.00	1.01	1.02	1.03	1.02
Leucine, %	2.00	1.89	1.94	1.98	1.93	1.95
Tyrosine, %	0.79	0.71	0.74	0.75	0.71	0.74
Phenylalanine, %	1.14	1.11	1.13	1.15	1.13	1.14
Hydroxylysine, %	0.01	0.00	0.00	0.00	0.00	0.00
Histidine, %	0.61	0.61	0.62	0.63	0.62	0.62
Ornithine, %	0.01	0.01	0.01	0.01	0.01	0.01
Lysine, %	1.33	1.33	1.34	1.37	1.34	1.36
Arginine, %	1.54	1.48	1.52	1.54	1.50	1.54
Tryptophan, %	0.30	0.29	0.30	0.30	0.30	0.30

1 = ASGROW RX690

2 = DKC60-15

3 = MON 89034

4 = DKC57-01

6 = ASGROW RX772

8 = 13250.23

Appendix II - Table 5. Nutrient composition of the grower/finisher treatment diets (as is basis)

Assay Component	Treatment ID					
	1	2	3	4	6	8
Moisture, %	11.31	11.90	10.33	11.91	12.31	12.69
Crude Protein, %	20.63	19.90	20.07	20.46	19.98	20.80
Crude Fat, %	6.87	5.76	6.08	6.15	6.12	6.42
Crude Fiber, %	1.62	1.68	1.88	1.81	1.64	1.65
ADF, %	3.09	3.10	3.25	3.03	3.14	3.15
NDF, %	7.54	8.31	8.49	7.72	8.04	8.67
Ash, %	5.54	5.73	5.55	5.76	5.64	5.67
Ca, %	0.80	0.78	0.79	0.80	0.78	0.80
Cl, %	0.21	0.23	0.19	0.23	0.25	0.24
Cu, ppm	14.2	15.4	17.3	16.3	17.2	15.8
Fe, ppm	290.3	306.1	287.4	322.9	297.4	273.0
Mg, %	0.17	0.16	0.17	0.17	0.17	0.17
Mn, ppm	117.0	127.1	122.8	127.7	124.4	124.4
Mo, ppm	1.7	1.5	1.6	1.5	1.5	1.5
P, %	0.70	0.65	0.65	0.67	0.63	0.66
K, %	1.14	1.01	0.96	1.01	0.93	0.97
Na, %	0.20	0.23	0.21	0.24	0.23	0.24
S, %	0.27	0.27	0.29	0.28	0.28	0.27
Zn, ppm	113.0	116.2	112.3	123.2	116.3	118.1
Taurine, %	0.04	0.04	0.05	0.05	0.04	0.04
Hydroxyproline, %	0.03	0.04	0.03	0.03	0.02	0.04
Aspartic Acid, %	2.03	1.99	1.97	2.09	2.00	2.01
Threonine, %	0.74	0.73	0.71	0.78	0.74	0.75
Serine, %	0.85	0.82	0.78	0.89	0.85	0.85
Glutamic Acid, %	3.54	3.41	3.43	3.62	3.50	3.51
Proline, %	1.17	1.13	1.15	1.18	1.12	1.14
Lanthionine, %	0.01	0.02	0.01	0.02	0.01	0.01
Glycine, %	0.84	0.82	0.83	0.86	0.83	0.84
Alanine, %	1.03	0.98	1.00	1.05	0.99	1.00
Cysteine, %	0.35	0.34	0.34	0.35	0.35	0.35
Valine, %	1.01	0.99	1.01	1.01	0.98	0.99
Methionine, %	0.57	0.55	0.51	0.55	0.60	0.57
Isoleucine, %	0.91	0.87	0.88	0.89	0.86	0.88
Leucine, %	1.81	1.70	1.74	1.80	1.72	1.74
Tyrosine, %	0.67	0.63	0.62	0.69	0.65	0.66
Phenylalanine, %	1.02	0.97	0.98	1.02	0.98	1.00
Hydroxylysine, %	0.00	0.00	0.00	0.00	0.00	0.00
Histidine, %	0.55	0.54	0.54	0.56	0.54	0.55
Ornithine, %	0.01	0.01	0.01	0.01	0.01	0.01
Lysine, %	1.16	1.15	1.14	1.19	1.15	1.16
Arginine, %	1.33	1.29	1.29	1.36	1.30	1.33
Tryptophan, %	0.26	0.26	0.26	0.25	0.27	0.24

1 = ASGROW RX690

2 = DKC60-15

3 = MON 89034

4 = DKC57-01

6 = ASGROW RX772

8 = 13250.23

CQR Final Report Project No. MN-05-2  
(Monsanto Study No. 05-01-50-13)

### **APPENDIX III**

**Bird Performance and Processing Data**

**Pages 36 - 53**

Appendix III - Table 1 Day 0 body weights 8/31/05 CQR project No. MN-05-2 (Monsanto Study No. 05-05-50-13)

Treatment	Pen	Sex	Day 0		
			Number Of Birds Weighed	Pen Wt. Kg	Bird Average Wt.
1	103	F	12	0.482	0.040
1	132	F	12	0.458	0.038
1	156	F	12	0.468	0.039
1	159	F	12	0.468	0.039
1	190	F	12	0.454	0.038
Total and Average			60	0.466	0.039
Standard Deviation				0.011	0.001
CV				2.33%	2.33%

2	104	F	12	0.456	0.038
2	130	F	12	0.478	0.040
2	138	F	12	0.478	0.040
2	153	F	12	0.476	0.040
2	189	F	12	0.460	0.038
Total and Average			60	0.470	0.039
Standard Deviation				0.011	0.001
CV				2.28%	2.28%

3	105	F	12	0.484	0.040
3	127	F	12	0.460	0.038
3	131	F	12	0.462	0.039
3	155	F	12	0.456	0.038
3	180	F	12	0.460	0.038
Total and Average			60	0.464	0.039
Standard Deviation				0.011	0.001
CV				2.41%	2.41%

4	109	F	12	0.470	0.039
4	129	F	12	0.472	0.039
4	134	F	12	0.464	0.039
4	148	F	12	0.488	0.041
4	182	F	12	0.454	0.038
Total and Average			60	0.470	0.039
Standard Deviation				0.012	0.001
CV				2.65%	2.65%

6	107	F	12	0.474	0.040
6	126	F	12	0.489	0.041
6	140	F	12	0.472	0.039
6	147	F	12	0.472	0.039
6	187	F	12	0.486	0.041
Total and Average			60	0.476	0.040
Standard Deviation				0.008	0.001
CV				1.66%	1.66%

8	101	F	12	0.468	0.039
8	139	F	12	0.448	0.037
8	157	F	12	0.454	0.038
8	164	F	12	0.456	0.038
8	186	F	12	0.456	0.038
Total and Average			60	0.456	0.038
Standard Deviation				0.007	0.001
CV				1.59%	1.59%

Treatment	Pen	Sex	Day 0		
			Number Of Birds Weighed	Pen Wt. Kg	Bird Average Wt.
1	100	M	12	0.458	0.038
1	141	M	12	0.466	0.039
1	152	M	12	0.456	0.038
1	162	M	12	0.466	0.039
1	185	M	12	0.460	0.038
Total and Average			60	0.461	0.038
Standard Deviation				0.005	0.000
CV				1.08%	1.00%

2	110	M	12	0.476	0.040
2	128	M	12	0.452	0.038
2	133	M	12	0.472	0.039
2	151	M	12	0.456	0.038
2	181	M	12	0.472	0.039
Total and Average			60	0.466	0.039
Standard Deviation				0.011	0.001
CV				2.32%	2.32%

3	102	M	12	0.466	0.039
3	137	M	12	0.460	0.038
3	149	M	12	0.470	0.039
3	160	M	12	0.476	0.040
3	183	M	12	0.464	0.039
Total and Average			60	0.467	0.039
Standard Deviation				0.006	0.001
CV				1.31%	1.31%

4	106	M	12	0.474	0.040
4	135	M	12	0.478	0.040
4	154	M	12	0.438	0.037
4	163	M	12	0.466	0.039
4	188	M	12	0.494	0.041
Total and Average			60	0.470	0.039
Standard Deviation				0.021	0.002
CV				4.38%	4.38%

6	99	M	12	0.442	0.037
6	136	M	12	0.452	0.038
6	158	M	12	0.480	0.040
6	161	M	12	0.476	0.040
6	184	M	12	0.472	0.039
Total and Average			60	0.464	0.039
Standard Deviation				0.017	0.001
CV				3.56%	3.56%

8	108	M	12	0.470	0.039
8	125	M	12	0.468	0.039
8	142	M	12	0.488	0.041
8	150	M	12	0.472	0.039
8	179	M	12	0.468	0.039
Total and Average			60	0.473	0.039
Standard Deviation				0.008	0.001
CV				1.78%	1.78%

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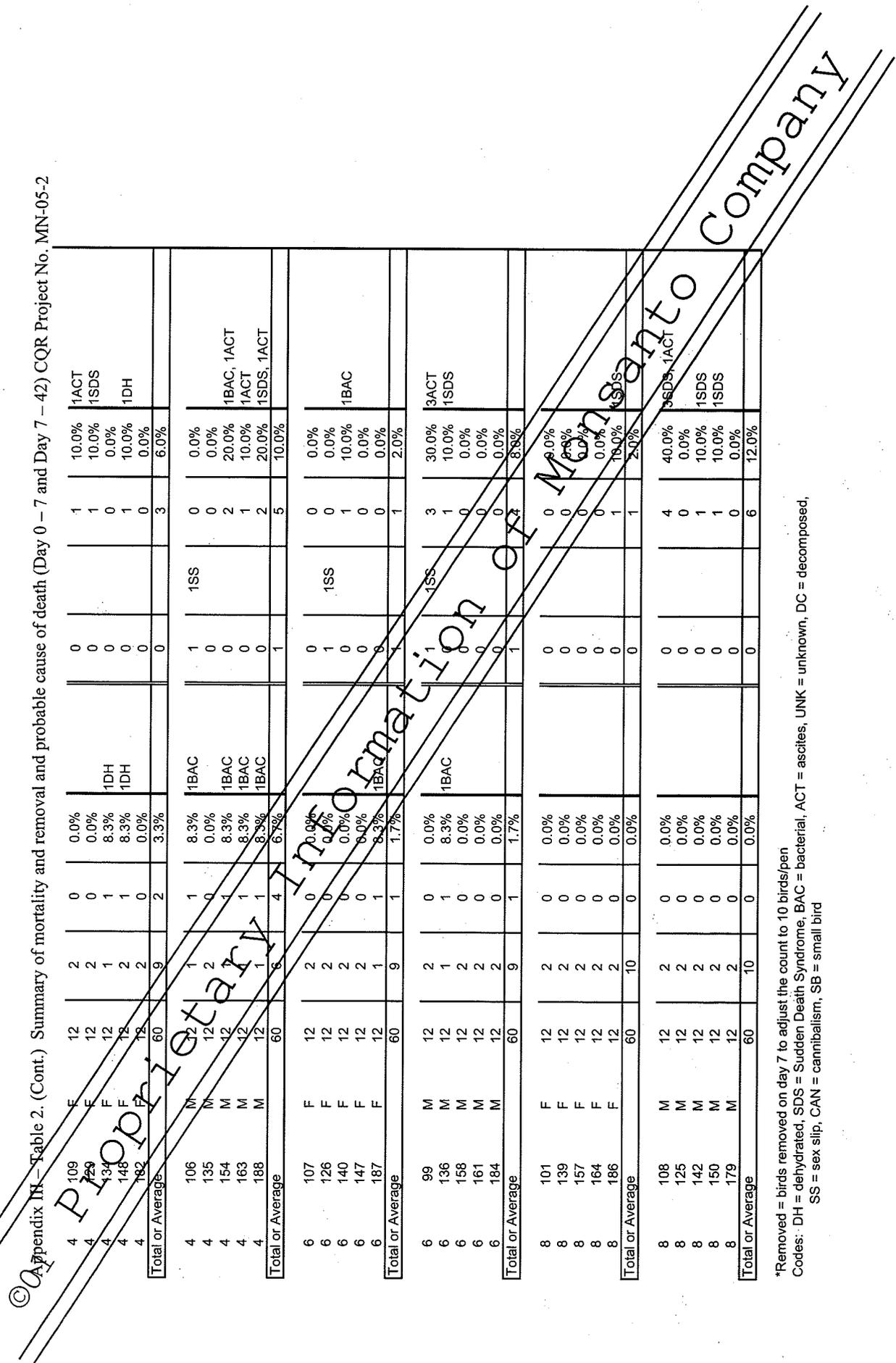
Appendix III Table 2. Summary of mortality and removal and probable cause of death (Day 0 - 7 and Day 7 - 42) CQR Project No. MN-05-2

Treatment	Pen No.	Sex	No. Birds		Day 0 - 7		Cause of Death		Number of Birds (day 7 - 42)			
			Started		Removed*	Mortality Percent**	Removed	Reason	Mortality	Percent**	Cause of Death	
1	103	F	12		1	8.3%	1DH	0		0	0.0%	
	132	F	12		0	0.0%		0		0	0.0%	
	156	F	12		2	0.0%		0		0	0.0%	
	159	F	12		1	8.3%	1UNK/DC	0		1	10.0%	1SDS
	190	F	12		1	8.3%	1BAC	0		0	0.0%	
Total or Average			60		7	5.0%		0		1	2.0%	
1	100	M	12		2	0.0%	1BAC, 1DH	0		0	0.0%	
	141	M	12		0	16.7%		0		1	10.0%	1ACT/CAN
	152	M	12		2	0.0%		0		1	10.0%	1SDS
	162	M	12		1	8.3%	1BAC	0		0	0.0%	
	185	M	12		1	8.3%	1BAC	1	1SS	1	10.0%	1ACT
Total or Average			60		6	6.7%		1		3	6.0%	
2	104	F	12		1	8.3%	1BAC	0		0	0.0%	
	130	F	12		2	0.0%		0		0	0.0%	
	138	F	12		0	33.3%	2DH, 2BAC	0		0	0.0%	
	153	F	12		2	0.0%		0		0	0.0%	
	189	F	12		0	16.7%	1DH, 1BAC	0		0	0.0%	
Total or Average			60		5	11.7%		0		0	0.0%	
2	110	M	12		1	8.3%	1BAC	0		0	0.0%	
	128	M	12		1	8.3%	1BAC	1	1SB	0	0.0%	
	133	M	12		1	8.3%	1DH	0		0	0.0%	
	151	M	12		1	8.3%	1DH	0		0	0.0%	
	181	M	12		2	0.0%		0		0	0.0%	
Total or Average			60		6	6.7%		1		0	0.0%	
3	105	F	12		2	0.0%		0		0	0.0%	
	127	F	12		2	0.0%		0		0	0.0%	
	131	F	12		2	0.0%		0		1	10.0%	1SDS/SS
	155	F	12		2	0.0%		0		0	0.0%	
	180	F	12		0	16.7%	2BAC	0		0	0.0%	
Total or Average			60		8	3.3%		0		1	2.0%	
3	102	M	12		2	0.0%		0		0	0.0%	
	137	M	12		2	0.0%		0		0	0.0%	
	149	M	12		2	0.0%		0		1	10.0%	1ACT
	160	M	12		1	8.3%	1UNK/DC	1	1SS	1	10.0%	1ACT
	183	M	12		2	0.0%		0		0	0.0%	
Total or Average			60		9	1.7%		1		2	4.0%	

Appendix III - Table 2. (Cont.) Summary of mortality and removal and probable cause of death (Day 0 - 7 and Day 7 - 42) CQR Project No. MN-05-2

4	109	F	12	2	0	0.0%		0	0	1	10.0%	1ACT
4	129	F	12	2	0	0.0%		0	0	1	10.0%	1SDS
4	134	F	12	1	1	8.3%	1DH	0	0	0	0.0%	1DH
4	148	F	12	2	1	8.3%	1DH	0	0	1	10.0%	1DH
4	182	F	12	2	0	0.0%		0	0	0	0.0%	
Total or Average			60	9	2	3.3%		0	0	3	6.0%	
4	106	M	12	1	1	8.3%	1BAC	1	1SS	0	0.0%	
4	135	M	12	2	0	0.0%		0	0	0	0.0%	
4	154	M	12	1	1	8.3%	1BAC	0	0	2	20.0%	1BAC, 1ACT
4	163	M	12	1	1	8.3%	1BAC	0	0	1	10.0%	1ACT
4	188	M	12	1	1	8.3%	1BAC	0	0	2	20.0%	1SDS, 1ACT
Total or Average			60	6	4	6.7%		1	1	5	10.0%	
6	107	F	12	2	0	0.0%		0	0	0	0.0%	
6	126	F	12	2	0	0.0%		1	1SS	0	0.0%	
6	140	F	12	2	0	0.0%		0	0	1	10.0%	1BAC
6	147	F	12	2	0	0.0%		0	0	0	0.0%	
6	187	F	12	1	1	8.3%	1BAC	0	0	0	0.0%	
Total or Average			60	9	1	1.7%		1	1	1	2.0%	
6	99	M	12	2	0	0.0%		1	1SS	3	30.0%	3ACT
6	136	M	12	1	1	8.3%	1BAC	0	0	1	10.0%	1SDS
6	158	M	12	2	0	0.0%		0	0	0	0.0%	
6	161	M	12	2	0	0.0%		0	0	0	0.0%	
6	184	M	12	2	0	0.0%		0	0	0	0.0%	
Total or Average			60	9	1	1.7%		1	1	4	8.0%	
8	101	F	12	2	0	0.0%		0	0	0	0.0%	
8	139	F	12	2	0	0.0%		0	0	0	0.0%	
8	157	F	12	2	0	0.0%		0	0	0	0.0%	
8	164	F	12	2	0	0.0%		0	0	0	0.0%	
8	186	F	12	2	0	0.0%		0	0	1	10.0%	1SS
Total or Average			60	10	0	0.0%		0	0	1	2.0%	
8	108	M	12	2	0	0.0%		0	0	4	40.0%	3SDS, 1ACT
8	125	M	12	2	0	0.0%		0	0	0	0.0%	
8	142	M	12	2	0	0.0%		0	0	1	10.0%	1SDS
8	150	M	12	2	0	0.0%		0	0	1	10.0%	1SDS
8	179	M	12	2	0	0.0%		0	0	0	0.0%	
Total or Average			60	10	0	0.0%		0	0	6	12.0%	

\*Removed = birds removed on day 7 to adjust the count to 10 birds/pen  
 Codes: DH = dehydrated, SDS = Sudden Death Syndrome, BAC = bacterial, ACT = ascites, UNK = unknown, DC = decomposed,  
 SS = sex slip, CAN = cannibalism, SB = small bird



Appendix III - Table 3. Performance of broilers, carcass yield, and moisture, protein, and fat composition of breast and thigh meat (mean values of males and females combined)  
 CQR Project No. MN-05-2 (Monsanto No. 05-01-50-13)

CQR Treatment ID Monsanto Corn ID	3		8		1		6		2		4		Treatments (T)		Sex (S)		Block		T x S		LSD <sup>2</sup> 5.0%
	MON 89034	13250.23	38.733	0.464	38.633	0.466	ASGROW RX690	ASGROW RX772	DKC60-15	DKC57-01	SSD <sup>1</sup>	SSD	SSD	SSD	SSD	SSD	SSD	SSD	SSD	SSD	
<b>Performance</b>																					
Live wt (g/bird) Day 0	38.817	38.733	38.733	0.456	38.633	0.466	39.283	0.478	38.967	0.470	39.150	0.470	NS	NS	NS	NS	NS	NS	NS	NS	0.891
Live wt (kg/pen) Day 0	0.464	0.456	0.456	2.796	0.466	2.744	2.809	2.796	2.775	2.810	2.810	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.011
Live wt (kg/bird) Day 42	26.785	25.875	25.875	4.377	26.010	4.312	26.050	4.377	27.460	4.320	25.465	4.320	NS	NS	NS	NS	NS	NS	NS	NS	0.096
Live wt (kg/pen) Day 42	43.285	43.100	43.100	4.377	42.515	4.312	43.650	4.377	43.525	4.320	41.520	4.320	NS	NS	NS	NS	NS	NS	NS	NS	2.533
Feed Intake (kg/bird)	1.650	1.710	1.710	1.669	1.608bc	1.608bc	1.730	1.617	1.663	1.591c	1.591c	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.145
Feed Intake (kg/pen)	1.593c	1.636a	1.636a	1.669	1.608bc	1.608bc	1.730	1.617	1.663	1.591c	1.591c	NS	NS	NS	NS	NS	NS	NS	NS	NS	2.503
Feed Conversion (kg/kg)	2.752	2.748	2.748	1.938	2.713	2.759	2.759	2.741	2.741	2.754	2.754	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.100
Adj. Feed Conversion (kg/kg)	1.970	1.973	1.973	1.938	1.938	1.977	1.977	1.968	1.968	1.977	1.977	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.026
<b>Carcass Yield</b>	71.591	71.809	71.809	0.045	71.337	0.046	71.624	0.044	71.794	0.046	71.736	0.046	NS	NS	NS	NS	NS	NS	NS	NS	0.086
Live wt (kg)	0.045	0.045	0.045	1.628	0.548	1.628	1.613	1.692	1.692	1.681	1.681	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.066
Chill wt (kg)	0.545	0.548	0.548	27.654	27.717	27.717	27.888	27.895	27.895	27.895	27.895	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.509
Chill wt (% of live wt.)	1.628	1.652	1.652	0.352	0.352	0.352	0.352	0.358	0.358	0.357	0.357	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.003
Fat pad wt (kg)	17.834	17.832	17.832	0.275	18.093	0.268	17.793	18.145	18.145	18.067	18.067	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.125
Fat pad wt (% of live wt.)	0.275	0.276	0.276	13.935	13.991	13.991	13.896	13.960	13.960	13.960	13.960	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.023
Breast wt (kg)	0.219	0.221	0.221	11.145	11.229	11.229	11.156	11.073	11.073	11.048	11.048	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.435
Breast wt (% of chill wt.)	11.145	11.229	11.229	0.352	0.352	0.352	0.352	0.358	0.358	0.357	0.357	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.016
Thigh wt (kg)	17.834	17.832	17.832	0.275	18.093	0.268	17.793	18.145	18.145	18.067	18.067	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.369
Thigh wt (% of chill wt.)	0.275	0.276	0.276	13.935	13.991	13.991	13.896	13.960	13.960	13.960	13.960	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.010
Drum wt (kg)	0.219	0.221	0.221	11.145	11.229	11.229	11.156	11.073	11.073	11.048	11.048	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.211
Drum wt (% of chill wt.)	11.145	11.229	11.229	0.219	0.221	0.221	0.220	0.218	0.218	0.218	0.218	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.008
Wing wt (kg)	74.941	75.335	75.335	23.804	23.537	23.537	23.688	23.555	23.555	23.875	23.875	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.167
Wing wt (% of chill wt.)	23.804	23.537	23.537	1.024	0.877	0.939	0.885	0.711	0.711	0.853	0.853	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.412
<b>Breast Meat Analysis</b>	74.941	75.335	75.335	23.804	23.537	23.537	23.688	23.555	23.555	23.875	23.875	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.493
Moisture (%)	23.804	23.537	23.537	1.024	0.877	0.939	0.885	0.711	0.711	0.853	0.853	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.241
Protein (% as is basis)	76.673	76.589	76.589	21.245	21.485	21.485	21.883	21.176	21.176	21.714	21.714	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.396
Fat (% as is basis)	21.245	21.485	21.485	1.941	1.856	1.856	1.773	1.765	1.765	1.439	1.439	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.586
<b>Thigh Meat Analysis</b>	2.171	1.941	1.941	1.856	1.773	1.773	1.765	1.765	1.765	1.439	1.439	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.545
Moisture (%)	76.673	76.589	76.589	21.245	21.485	21.485	21.883	21.176	21.176	21.714	21.714	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.396
Protein (% as is basis)	21.245	21.485	21.485	1.941	1.856	1.856	1.773	1.765	1.765	1.439	1.439	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.586
Fat (% as is basis)	2.171	1.941	1.941	1.856	1.773	1.773	1.765	1.765	1.765	1.439	1.439	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.545

<sup>1</sup>SSD, statistical significance of differences: NS, not significant (P>0.05), \* P<0.05

<sup>2</sup>LSD, least significant difference between two means (P<0.05).

Appendix III - Data Listing  
 Table 4. Broiler Performance Data  
 (Monsanto Study 05-01-50-13, CQR Study MN-05-2)

Trt #	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Pen Weight Day 0, kg/pen	Bird Weight Day 42, kg/bird	Pen Weight Day 42, kg/pen	Average Feed Intake, kg/bird	Feed Intake by Pen, kg	Feed Conversion (Feed Consumed/WT Gain)	R/M Weight removed and dead birds, kg	Adjusted Feed Conversion (adjusted for R/M birds)
1	1	ASGROW RX690	M	100	38.17	0.46	2.88	28.80	4.56	45.55	1.58	0.29	1.60
			F	108	40.17	0.48	2.56	25.55	4.24	42.35	1.66	0.17	1.68
1	2	ASGROW RX690	F	132	39.47	0.46	2.49	24.90	4.14	41.40	1.66	0.26	1.68
			M	141	38.83	0.47	2.91	26.15	4.39	42.60	1.63	1.61	1.57
1	3	ASGROW RX690	F	159	39.00	0.45	2.45	22.05	4.01	36.95	1.68	0.41	1.69
			M	162	38.83	0.47	3.02	30.20	4.61	46.10	1.53	0.16	1.55
1	4	ASGROW RX690	M	152	38.00	0.46	3.18	31.60	4.78	47.60	1.66	3.09	1.53
			F	156	39.00	0.47	2.53	25.23	4.04	40.35	1.60	0.22	1.62
1	5	ASGROW RX690	M	185	38.33	0.46	2.88	23.05	4.33	41.90	1.82	4.49	1.56
			F	190	37.83	0.45	2.56	25.55	4.04	40.15	1.58	0.062	1.61
2	1	DKC60-15	F	104	38.00	0.46	2.42	24.15	4.00	39.90	1.65	0.20	1.68
			M	110	39.67	0.48	3.21	32.10	4.98	49.80	1.55	0.19	1.57
2	2	DKC60-15	M	133	39.33	0.47	3.16	31.60	4.84	48.35	1.60	0.17	1.55
			F	138	39.83	0.48	2.51	25.10	4.03	40.25	1.60	0.98	1.56
2	3	DKC60-15	M	128	37.67	0.45	2.94	26.45	4.44	43.30	1.64	1.03	1.61
			F	130	39.83	0.48	2.55	25.50	4.13	41.25	1.62	0.28	1.64
2	4	DKC60-15	M	151	38.00	0.46	3.05	30.45	4.63	46.30	1.52	0.13	1.54
			F	153	39.67	0.48	2.48	24.75	4.00	39.95	1.61	0.28	1.63

Appendix III - Data Listing

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**Table 4. (Cont.) Broiler Performance Data  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Pen Weight Day 0, kg/pen	Bird Weight Day 42, kg/bird	Pen Weight Day 42, kg/pen	Average Feed Intake, kg/bird	Feed Intake by Pen, kg	Feed Conversion (Feed Consumed/ Wt Gain)	R/M Weight removed and dead birds, kg	Adjusted Feed Conversion (adjusted for R/M birds)
2	5	DKC60-15	M	181	39.33	0.47	3.02	30.15	4.70	46.95	1.56	0.27	1.57
			F	189	38.33	0.46	2.44	24.35	3.92	39.15	1.61	0.13	1.64
3	1	MON 89034	M	102	38.83	0.47	2.90	28.95	4.52	45.20	1.56	0.33	1.57
			F	105	40.33	0.48	2.71	27.10	4.49	44.90	1.66	0.26	1.68
3	2	MON 89034	F	131	38.50	0.46	2.59	23.30	4.05	39.60	1.70	2.36	1.58
			M	137	38.33	0.46	3.05	30.50	4.65	46.50	1.52	0.28	1.54
3	3	MON 89034	F	127	38.33	0.46	2.52	25.15	4.01	40.10	1.59	0.28	1.61
			M	160	39.67	0.48	3.09	24.70	4.52	43.75	1.77	4.27	1.54
3	4	MON 89034	M	149	39.17	0.47	3.01	27.10	4.56	43.20	1.59	1.56	1.54
			F	155	38.00	0.46	2.59	25.90	4.16	41.60	1.61	0.19	1.63
3	5	MON 89034	F	180	38.33	0.46	2.52	25.20	4.17	41.65	1.65	0.096	1.68
			M	183	38.67	0.46	3.00	29.95	4.64	46.35	1.55	0.30	1.56
4	1	DKC57-01	M	106	39.50	0.47	3.09	27.80	4.66	45.45	1.63	1.98	1.56
			F	109	39.17	0.47	2.63	23.65	4.11	39.65	1.68	1.08	1.64
4	2	DKC57-01	F	134	38.67	0.46	2.60	25.95	4.21	42.10	1.62	0.15	1.65
			M	135	39.83	0.48	2.84	28.35	4.50	45.00	1.59	0.29	1.60
4	3	DKC57-01	F	129	39.33	0.47	2.41	21.65	3.87	36.20	1.67	1.13	1.63
			M	163	38.83	0.47	3.12	28.05	4.52	44.50	1.59	1.73	1.52

**Appendix III - Data Listing**

**Table 4. (Cont.) Broiler Performance Data**  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)

Trt #	Block Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Pen Weight Day 0, kg/pen	Bird Weight Day 42, kg/bird	Pen Weight Day 42, kg/pen	Average Feed Intake, kg/bird	Feed Intake by Pen, kg	Feed Conversion (Feed Consumed/Wt Gain)	R/M Weight removed and dead birds, kg	Adjusted Feed Conversion (adjusted for R/M birds)
4 4	DKC57-01	M	148	40.67	0.49	2.57	23.15	4.05	37.00	1.60	0.16	1.63
		M	154	36.50	0.44	3.19	25.55	4.69	42.30	1.66	2.81	1.52
4 5	DKC57-01	F	142	37.83	0.45	2.57	25.70	4.10	41.00	1.60	0.26	1.61
		M	188	44.77	0.49	3.10	24.80	4.49	42.00	1.69	3.12	1.54
6 1	ASGROW RX772	M	99	36.83	0.44	3.10	18.60	4.55	40.30	2.17	7.27	1.60
		F	107	39.50	0.42	2.52	25.15	4.08	40.75	1.62	0.32	1.64
6 2	ASGROW RX772	M	136	37.67	0.45	2.03	27.30	4.69	45.90	1.68	2.53	1.57
		F	140	39.33	0.47	2.53	27.75	4.13	37.60	1.65	0.37	1.67
6 3	ASGROW RX772	F	126	40.67	0.49	2.47	22.20	4.22	41.10	1.85	2.74	1.69
		M	161	39.67	0.48	2.98	29.75	4.77	47.20	1.59	0.26	1.60
6 4	ASGROW RX772	F	147	39.33	0.47	2.56	25.60	4.24	42.55	1.65	0.29	1.67
		M	158	40.00	0.48	3.07	30.65	4.84	48.35	1.58	0.26	1.59
6 5	ASGROW RX772	M	184	39.33	0.47	3.23	32.30	5.02	50.15	1.55	0.28	1.57
		F	187	40.50	0.49	2.62	26.20	4.28	42.80	1.63	0.18	1.66
8 1	13250.23	F	101	39.00	0.47	2.67	26.70	4.37	43.70	1.64	0.29	1.65
		M	108	39.17	0.47	2.95	17.70	4.44	34.90	1.97	4.44	1.63
8 2	13250.23	F	139	37.33	0.45	2.38	23.80	3.89	38.85	1.63	0.29	1.65
		M	142	40.67	0.49	3.37	30.30	5.20	48.50	1.60	1.16	1.57

Appendix III - Data Listing

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**Table 4. (Cont.) Broiler Performance Data  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Pen Weight Day 0, kg/pen	Bird Weight Day 42, kg/bird	Pen Weight Day 42, kg/pen	Average Feed Intake, kg/bird	Feed Intake by Pen, kg	Feed Conversion (Feed Consumed/ Wt Gain)	R/M Weight (Wt of removed and dead birds), kg	Adjusted Feed Conversion (adjusted for R/M birds)
8 3	13250.23		M	125	39.00	0.47	2.83	28.25	4.59	45.85	1.62	0.32	1.64
			F	164	38.00	0.46	2.50	25.00	4.15	41.45	1.66	0.24	1.68
8 4	13250.23		M	150	39.33	0.47	3.16	28.40	4.81	47.75	1.68	2.95	1.55
			F	157	37.83	0.45	2.58	25.80	4.26	42.55	1.65	0.27	1.67
8 5	13250.23		M	179	39.00	0.47	3.00	30.00	4.79	47.90	1.60	0.32	1.61
			F	186	38.00	0.46	2.53	22.80	4.30	39.55	1.73	0.78	1.72

Appendix III - Data Listing

Table 5. Broiler Process Data (weights, by pen)  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)

Treatment #	Block #	Gender	Pen #	Average Final Live Body Weight, kg/bird	Fat Pad Weight, kg/bird	Chill Weight, kg/bird	Average Wings Weight, kg/bird	Average Drum Weight, kg/bird	Average Thigh Weight, kg/bird	Average Breast Weight, kg/bird
1 1	ASGROW/RX690	F	103	2.58	0.049	1.84	0.21	0.24	0.32	0.52
		M	100	2.83	0.043	2.04	0.22	0.29	0.37	0.57
1 2	ASGROW/RX690	F	132	2.48	0.056	1.80	0.20	0.25	0.32	0.49
		M	141	2.92	0.041	2.10	0.23	0.30	0.39	0.59
1 3	ASGROW/RX690	F	159	2.44	0.050	1.73	0.19	0.24	0.32	0.47
		M	162	2.44	0.043	2.08	0.24	0.30	0.38	0.55
1 4	ASGROW/RX690	F	156	2.52	0.049	1.80	0.20	0.24	0.33	0.49
		M	152	3.08	0.050	2.20	0.24	0.31	0.41	0.61
1 5	ASGROW/RX690	F	190	2.55	0.048	1.82	0.21	0.25	0.33	0.51
		M	185	2.82	0.037	1.97	0.22	0.28	0.35	0.54
2 1	DKC60-15	F	104	2.46	0.045	1.78	0.20	0.25	0.32	0.50
		M	110	3.09	0.042	2.19	0.24	0.31	0.40	0.61
2 2	DKC60-15	F	138	2.53	0.045	1.84	0.20	0.25	0.33	0.52
		M	133	3.05	0.044	2.21	0.25	0.32	0.41	0.60
2 3	DKC60-15	F	130	2.55	0.053	1.84	0.21	0.25	0.33	0.50
		M	128	2.95	0.043	2.12	0.24	0.29	0.39	0.59
2 4	DKC60-15	F	153	2.47	0.049	1.78	0.20	0.25	0.32	0.48
		M	151	2.94	0.045	2.10	0.22	0.30	0.37	0.59
2 5	DKC60-15	F	189	2.44	0.046	1.75	0.19	0.23	0.31	0.50

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**Appendix III - Data Listing**  
**Table 5. (Cont.) Broiler Process Data (weights, by pen)**  
**(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Average Final Live Body Weight, kg/bird	Fat Pad Weight, kg/bird	Chill Weight, kg/bird	Average Wings Weight, kg/bird	Average Drum Weight, kg/bird	Average Thigh Weight, kg/bird	Average Breast Weight, kg/bird
3 1	MON 89034		M	181	2.92	0.047	2.09	0.23	0.30	0.38	0.59
			F	105	2.72	0.053	1.95	0.22	0.27	0.33	0.56
3 2	MON 89034		M	102	2.83	0.039	1.99	0.22	0.28	0.34	0.55
			F	131	2.59	0.041	1.88	0.21	0.26	0.34	0.52
3 3	MON 89034		M	137	2.96	0.042	2.13	0.23	0.31	0.40	0.58
			F	127	2.52	0.051	1.82	0.20	0.26	0.33	0.50
3 4	MON 89034		M	160	2.97	0.046	2.13	0.24	0.31	0.39	0.57
			F	155	2.58	0.046	1.87	0.20	0.25	0.34	0.52
3 5	MON 89034		M	149	2.89	0.036	2.05	0.24	0.29	0.35	0.56
			F	180	2.55	0.049	1.83	0.20	0.24	0.31	0.53
4 1	DKC57-01		M	183	2.90	0.043	2.06	0.23	0.29	0.38	0.56
			F	109	2.62	0.050	1.87	0.21	0.25	0.33	0.54
4 2	DKC57-01		M	106	3.00	0.044	2.13	0.23	0.30	0.39	0.59
			F	134	2.58	0.048	1.87	0.21	0.26	0.34	0.53
4 3	DKC57-01		M	135	2.75	0.038	1.96	0.22	0.28	0.35	0.53
			F	129	2.40	0.054	1.73	0.19	0.24	0.32	0.47
4 4	DKC57-01		M	163	3.01	0.043	2.16	0.24	0.31	0.39	0.60
			F	148	2.56	0.048	1.84	0.20	0.25	0.32	0.52
			M	154	3.07	0.048	2.21	0.24	0.31	0.41	0.60

Appendix III - Data Listing

Table 5. (Cont.) Broiler Process Data (weights, by pen)  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)

Tr #	Block	Treatment	Gender	Pen #	Average Final Live Body Weight, kg/bird	Fat Pad Weight, kg/bird	Chill Weight, kg/bird	Average Wings Weight, kg/bird	Average Drum Weight, kg/bird	Average Thigh Weight, kg/bird	Average Breast Weight, kg/bird
4	5	DKC5740	F	182	2.58	0.046	1.85	0.20	0.25	0.32	0.53
			M	188	2.98	0.040	2.15	0.24	0.31	0.39	0.61
6	1	ASGROW RX772	F	107	2.53	0.044	1.83	0.20	0.25	0.32	0.52
			M	99	3.06	0.041	2.20	0.24	0.31	0.39	0.64
6	2	ASGROW RX772	F	140	2.55	0.051	1.80	0.20	0.24	0.31	0.50
			M	136	2.88	0.048	2.11	0.24	0.30	0.38	0.59
6	3	ASGROW RX772	F	126	2.46	0.053	1.75	0.20	0.25	0.32	0.48
			M	161	2.88	0.038	2.07	0.23	0.30	0.38	0.54
6	4	ASGROW RX772	F	147	2.53	0.050	1.81	0.21	0.25	0.32	0.50
			M	158	2.96	0.045	2.12	0.24	0.30	0.37	0.58
6	5	ASGROW RX772	F	187	2.61	0.039	1.88	0.21	0.25	0.32	0.55
			M	184	3.08	0.038	2.21	0.24	0.30	0.40	0.63
8	1	13250.23	F	101	2.66	0.047	1.94	0.21	0.26	0.34	0.57
			M	108	2.85	0.042	2.04	0.23	0.29	0.35	0.57
8	2	13250.23	F	139	2.40	0.043	1.72	0.19	0.24	0.30	0.47
			M	142	3.25	0.045	2.34	0.26	0.33	0.43	0.65
8	3	13250.23	F	164	2.50	0.045	1.80	0.21	0.25	0.33	0.50
			M	125	2.78	0.040	1.97	0.22	0.28	0.36	0.55
8	4	13250.23	F	157	2.57	0.047	1.85	0.20	0.27	0.32	0.50

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**Appendix III - Data Listing**  
**Table 5. (Cont.) Broiler Process Data (weights, by pen)**  
**(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Average Final Live Body Weight, kg/bird	Fat Pad Weight, kg/bird	Chill Weight, kg/bird	Average Wings Weight, kg/bird	Average Drum Weight, kg/bird	Average Thigh Weight, kg/bird	Average Breast Weight, kg/bird
8	5	13250.23	M	150	3.08	0.045	2.21	0.25	0.31	0.40	0.60
			F	186	2.48	0.052	1.78	0.20	0.24	0.31	0.49
			M	179	2.91	0.043	2.08	0.23	0.30	0.38	0.56

**Appendix III - Data Listing**  
**Table 6. Broiler Process Data (percentages, by pen)**  
**(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Percent Chill Weight (Chill Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chill Wt x 100)	Percent Wing Weight (Wing Wt/ Chill Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chill Wt x 100)	Percent Drum Weight (Drum Wt/ Chill Wt x 100)
1	1	ASGROW RX690	F	103	71.13	1.92	28.06	11.32	17.11	13.16
			M	100	71.91	1.51	27.69	11.02	18.38	14.06
1	2	ASGROW RX690	F	132	72.73	2.24	27.41	11.25	17.82	13.63
			M	141	71.70	1.37	27.98	10.91	18.58	14.18
1	3	ASGROW RX690	F	159	70.84	2.05	26.90	11.06	18.38	13.84
			M	162	71.67	1.47	26.57	11.47	18.19	14.48
1	4	ASGROW RX690	F	156	71.31	1.97	27.28	11.12	18.24	13.66
			M	152	71.38	1.61	27.51	11.12	18.63	13.87
1	5	ASGROW RX690	F	190	71.21	1.69	27.93	11.40	18.03	13.46
			M	185	69.49	1.30	26.91	11.13	17.58	14.03
2	1	DKC60-15	F	104	72.18	1.80	28.16	11.16	18.09	14.07
			M	110	70.71	1.35	27.95	11.19	18.20	14.01
2	2	DKC60-15	F	168	72.39	1.79	28.39	10.98	18.25	13.75
			M	133	72.35	1.44	27.30	11.16	18.71	14.46
2	3	DKC60-15	F	130	72.02	2.05	27.33	11.46	18.01	13.64
			M	128	71.76	1.46	28.01	11.34	18.46	13.90
2	4	DKC60-15	F	153	71.87	2.00	27.24	10.99	18.06	13.88
			M	151	71.32	1.54	27.90	10.67	17.73	14.32
2	5	DKC60-15	F	189	71.57	1.88	28.41	10.89	17.72	13.41
			M	181	71.77	1.61	28.26	10.89	18.23	14.16
3	1	MON 89034	F	105	71.83	1.95	28.66	11.17	17.10	13.61
			M	102	70.19	1.37	27.74	11.29	17.10	13.97
3	2	MON 89034	F	131	72.44	1.60	27.81	11.10	18.28	13.95
			M	137	71.82	1.42	27.21	11.03	18.67	14.40
3	3	MON 89034	F	127	72.03	2.01	27.59	11.16	18.13	14.08
			M	160	71.49	1.54	26.76	11.21	18.32	14.51
3	4	MON 89034	F	155	72.15	1.81	27.76	10.82	18.37	13.63
			M	149	70.95	1.24	27.31	11.50	17.08	14.16

**Appendix III - Data Listing**  
**Table 6. (Cont.) Broiler Process Data (percentages, by pen)**  
**(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Percent Chill Weight (Chill Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chill Wt x 100)	Percent Wing Weight (Wing Wt/ Chill Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chill Wt x 100)	Percent Drum Weight (Drum Wt/ Chill Wt x 100)
					Wt x 100)	Wt x 100)	Chill Wt x 100)	Chill Wt x 100)	Chill Wt x 100)	Chill Wt x 100)
3	5	MON 89034	F	180	72.14	1.87	28.59	10.96	17.02	13.17
			M	183	70.88	1.48	27.11	11.21	18.27	13.85
4	1	DKC57-01	F	109	71.42	1.90	28.83	11.01	17.83	13.36
			M	106	71.02	1.46	27.80	10.93	18.26	14.11
4	2	DKC57-01	F	134	72.50	1.85	28.11	11.18	17.94	13.74
			M	135	71.38	1.38	27.06	11.16	17.92	14.33
4	3	DKC57-01	F	129	71.82	2.23	27.02	11.17	18.64	13.93
			M	163	71.60	1.42	27.71	10.96	18.12	14.20
4	4	DKC57-01	F	148	71.97	1.87	28.08	11.00	17.61	13.80
			M	154	71.84	1.56	27.37	10.84	18.51	13.98
4	5	DKC57-01	F	182	71.67	1.80	28.50	11.02	17.58	13.76
			M	188	72.13	1.34	28.42	11.21	18.26	14.39
6	1	ASGROW RX772	F	107	72.52	1.73	28.17	11.14	17.64	13.64
			M	99	71.89	1.32	28.93	10.85	17.65	14.07
6	2	ASGROW RX772	F	140	70.50	1.97	27.77	11.16	17.47	13.58
			M	136	71.88	1.46	27.83	11.25	18.17	14.21
6	3	ASGROW RX772	F	126	71.19	2.14	27.48	11.30	18.09	14.05
			M	161	71.73	1.30	26.20	11.32	18.43	14.53
6	4	ASGROW RX772	F	147	71.41	1.97	27.47	11.43	17.97	13.63
			M	158	71.56	1.52	27.56	11.25	17.34	14.13
6	5	ASGROW RX772	F	187	71.77	1.52	29.09	11.06	17.29	13.54
			M	184	71.78	1.21	28.39	10.81	17.86	13.59
8	1	13250.23	F	101	73.14	1.78	29.34	10.91	17.57	13.55
			M	108	71.28	1.46	27.94	11.46	17.23	14.31
8	2	13250.23	F	139	71.56	1.78	27.55	11.31	17.21	13.76
			M	142	71.92	1.37	27.94	11.22	18.57	14.12
8	3	13250.23	F	164	72.09	1.80	27.77	11.64	18.10	13.98
			M	125	71.05	1.43	27.70	11.17	18.13	14.19

**Appendix III - Data Listing**

**Table 6. (Cont.) Broiler Process Data (percentages, by pen)  
(Monsanto Study 05-01-50-13, CQR Study MN-05-2)**

Trt #	Block	Treatment	Gender	Pen #	Percent Chill Weight (Chill Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt / Chill Wt x 100)	Percent Wing Weight (Wing Wt / Chill Wt x 100)	Percent Thigh Weight (Thigh Wt / Chill Wt x 100)	Percent Drum Weight (Drum Wt / Chill Wt x 100)
8 4		13250.23	F	157	71.96	1.84	27.22	11.05	17.40	14.42
			M	150	71.70	1.48	27.15	11.32	18.19	14.11
8 5		13250.23	F	186	71.78	2.10	27.58	11.01	17.69	13.23
			M	179	71.60	1.50	26.98	11.20	18.24	14.24

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