

CQR FINAL REPORT

Study Title

**Comparison of Broiler Performance and Carcass Parameters When
Fed Diets Containing Canola Meal Produced from MON 88302, Control, or
Reference Canola**

Director

[REDACTED]

Study Completed On

August 18, 2011
(Amended Final Report)

Performing Laboratories

Colorado Quality Research, Inc. (CQR)
400 East County Road 72
Wellington, CO 80549

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

[REDACTED]

University of Missouri
Experiment Station Chemical Laboratories
Room 4, Agriculture Building
Columbia, MO 65211-7170

Monsanto Company
Quality Assurance Unit
800 N. Lindbergh Boulevard
St. Louis, MO 63167

Study Project ID

CQR Study Number: MN-10-3
Monsanto Study Number: CQR-10-323

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).

The inclusion of this page in all studies is for quality assurance purposes and does not necessarily indicate that this study has been submitted to the U.S. EPA.

Statement of No Data Confidentiality Claim

No claim of data confidentiality is made for any information contained in this study on the basis of its falling within the scope of FIFRA section 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: _____

Company Agent: _____

Title: _____

Signature: _____ Date: _____

Statement of Compliance

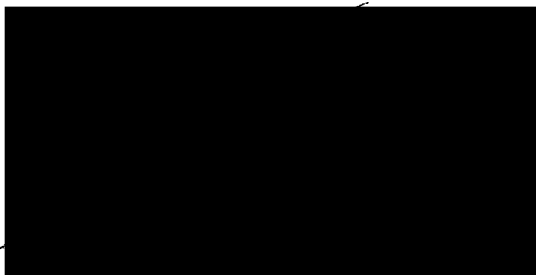
The in-life portion of the study meets the Good Laboratory Practice (GLP) requirements for 21 CFR Part 58. Portions of the study conducted by Monsanto meet the GLP requirements for 40 CFR Part 160. Specific items that were not conducted under GLP include:

- Semi-annual water analysis (total coliforms) by Stewart Environmental Consultants
- Northern Colorado Water Association water testing
- Starter and grower/finisher diet formulation
- Feed and meat sample analysis at the University of Missouri Experiment Station Chemical Laboratories
- Yearly scale licensing by the State of Colorado
- Stability of the test, control, and reference substances and the stability, uniformity, and concentration of the test, control, and reference substances in the diets were not determined.

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

Submitter

Date



Aug 18, 2011
Date

18 AUG 11
Date

Copyright Information Page

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Quality Assurance Statement

Study Title: Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing Canola Meal Produced from MON 88302, Control, or Reference Canola

Study Number: MN-10-3/CQR-10-323

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 for the portion of the study conducted by Colorado Quality Research, Inc. (CQR).

Following is a list of reviews conducted by Integrated Quality Management on the study reported herein. The original Quality Assurance Reports will be retained with the Monsanto QAU Record.

Dates of Inspection/Audit	Phase	Date Reported To:	
		Study Director	Management
08/31/2010- 09/01/2010	Treatment diets -preparation & sampling	09/08/2010	09/06/2010
09/21/2010	In-progress inspection- Bird recount (Day 7)	09/28/2010	09/28/2010
10/21/2010	Treatment diets -preparation & sampling (restart)	10/22/2010	10/22/2010
11/02/2010	In-progress inspection- Bird recount (Day 7) (restart)	11/03/2010	11/03/2010
12/07/2010	Study end inspection- Pre-processing body weights and feed intake final weights (Day 42)	12/15/2010	12/15/2010
012/09/2010	Study end inspection- Processing (Day 44)	12/15/2010	12/15/2010
09/06/2010	Raw Data Audit	09/07/2010	09/07/2010
07/19/2011	Draft Final Report Inspection	07/20/2011	07/20/2011
8/17/11	Amended Final Report	8/18/11	8/18/11

Following is a list of reviews conducted by Monsanto Company on the statistical analysis and sub-report phase of the study.

Dates of Inspection/Audit	Phase	Date Reported To:	
		Study Director	Management
07/06/2011	Statistical Analysis and Sub-report	07/06/2011	07/06/2011



18 AUG 2011
Date

Study Number: CQR Number MN-10-3
Monsanto Number CQR-10-323

Title: Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing Canola Meal Produced from MON 88302, Control, or Reference Canola

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

Study Director: 

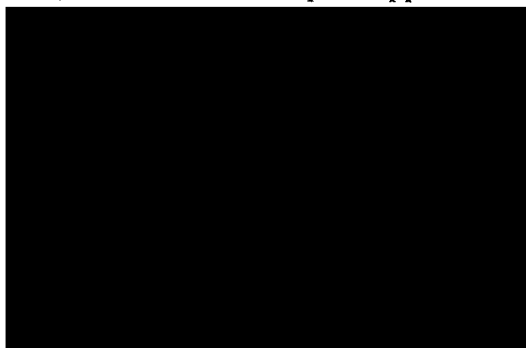
In – Life Study Dates: Start Date: October 26, 2010
Completion Date: December 9, 2010

Date Protocol Signed: August 5, 2010
Date Final Report Signed: August 3, 2011
Amended Final Report Signed: August 18, 2011

Records Retention: Originals of study specific raw data generated at Colorado Quality Research, Inc., and the Statistician's report are retained at Monsanto Company, St. Louis, MO. Original records from the University of Missouri Experiment Station Chemical Laboratories (ESCL) are retained at ESCL, Columbia, MO.

Sample Storage: Retention samples of canola meal, treatment diets, and meat samples are located at Monsanto Company, St. Louis, MO. Any unused canola meal was disposed of by landfill burial.

Signatures of Final Report Approval:



8/18/2011
Date

Aug 18, 2011
Date

18 AUG 11
Date

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Final Report Amendment

Project # MN-10-3 CQR-10-323

Requested by: [REDACTED] - Study Monitor

Report Modifications and /or Additions:

Appendix I - Table 2.

Corrected the data in the table and modified footnotes

Study Director's Certification
of Comments/StatementAddition of Amendment 2 to the description
the Protocol Amendment matrixReport Cover
Signature PageDate change reflecting completion of this
amended Final Report, August 18, 2011.

Quality Assurance Statement

The QA Statement has been updated to
reflect review of this amended Final Report.

Table of Contents

Page numbering was changed to reflect the
addition of this amendment to the Study
Final Report. See Table of Contents for
page changes to report pages throughout the
report.

Reason for changes:

This amendment was issued to correct the data in Appendix I - Table 2 and to document all changes to the final report. The Sponsor calculated the purity of the test substance incorrectly. The corrected table was provided to CQR by the Sponsor. Purity results are archived at Monsanto. This amendment has no impact on the original final report conclusions or GLP compliance statement.

Approved By: [REDACTED]18 AUG 11
Date

**CQR Final Report
Project No. MN-10-3
(Monsanto Study No. CQR-10-323)**

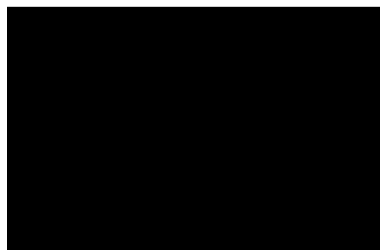
I. TITLE

**Comparison of Broiler Performance and Carcass Parameters When
Fed Diets Containing Canola Meal Produced from MON 88302, Control, or
Reference Canola**

SPONSOR:

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

STUDY MONITOR:



SPONSOR MANAGEMENT PERSONNEL:

Sponsor Representative

Regulatory Affairs Team

TEST FACILITY MANAGEMENT:



STUDY DIRECTOR:



STUDY DATES:

Study Initiation (Protocol signed):	August 5, 2010
Study Completion (Report signed):	August 3, 2011
Amended Final Report Signed:	August 18, 2011
In-life Start:	October 26, 2010
In-life Completion:	December 9, 2010

II. BACKGROUND INFORMATION AND OBJECTIVE

Monsanto Company has developed a second-generation glyphosate-tolerant canola product, MON 88302, designed to provide growers with improved weed control through greater flexibility for glyphosate herbicide application. MON 88302 produces the same 5-enolpyruvylshikimate-3-phosphate synthase (CP4 EPSPS) protein that is produced in commercial Roundup Ready®¹ crop products, via the incorporation of a *cp4 epsps* coding sequence. The CP4 EPSPS protein confers tolerance to the herbicide glyphosate, the active ingredient in the family of Roundup agricultural herbicides.

This study was conducted to evaluate the nutritional value of diets containing canola meal produced from MON 88302 as compared to diets containing canola meal produced from conventional control or reference canola.

¹ ® Roundup Ready is a registered trademark of Monsanto Technology, LLC.

III. MATERIALS AND METHODS

A. Testing/Support Facilities

Facility / Contact

Purpose

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

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

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

Supplier of canola meal, characterization of test, control and reference articles, and archives (originals)

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

Statistical analyses

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

Quality Assurance

[REDACTED]

Consulting nutritionist, diet formulation

University of Missouri
Experiment Station Chemical Laboratories
Room 4, Agriculture Building
University of Missouri
Columbia, MO 65211-7170

Diet and meat analysis

B. Test, Control and Reference Canola Meal

Test Article: MON 88302, Orion ID 11265344

Control Article: Ebony, Orion ID 11265339

Reference Articles: Hyola 401, Orion ID 11265340
Croplan 601, Orion ID 11265343
Q2, Orion ID 11265341
SP Armada, Orion ID 11265342

The test, control and reference canola meals were produced from canola grown under Monsanto Production Plans PPN-08-463 (Idaho and North Dakota locations). Processing of canola into test, control and reference meal to be evaluated in this study was conducted under Monsanto Processing Plans PPN-10-007. Information regarding production of the canola and subsequent processing to yield oil and meal is available from and archived at Monsanto Company, St. Louis, MO.

Classification: Feed ingredient

Chain-of-Custody: Monsanto provided the chain-of-custody records for each canola meal lot delivered.

Shipping: Monsanto was responsible for shipping the test, control and reference articles and ensuring that the products were shipped in compliance with existing regulations.

Storage Requirements: Ambient temperature during shipment and upon storage at CQR, in a secure area

Method of Administration: Orally via complete feed

Frequency of Administration: *Ad libitum* for ~42 days starting at placement of chicks (study Day 0)

Justification: Feed was the route of administration

Preparation Before Use: The respective canola meal was added to the feed and was thoroughly mixed with the other ingredients to ensure uniform dispersion.

Analyses: Characterization of test, control, and reference canola meal is reported on Monsanto certificate of

analysis (COA), COA-2010-305. Analyses included pesticide profile, microbiological screen, and nutrient / anti-nutrient analyses. Verification of identity of the test, control and reference canola lots was conducted on canola grain prior to processing by event-specific PCR. Results are archived at Monsanto.

Accounting:

All quantities of test, control and reference articles (canola meal) received, used, and disposed of were documented. Excess canola meal was disposed of by burial in a local commercial landfill.

C. Test System

1. Justification

Commercial broiler chickens are one of the target animals and feed is the route of administration.

2. Specifications

One-day-old male and female Cobb × Cobb 500 chicks were obtained from Simmons Foods Hatchery for use in this study. All birds were received from the same hatchery at the same time. Birds were transported from the hatchery directly to the test facility via ground transportation. After receipt at the test facility, the chicks were observed by a veterinarian and only healthy chicks were placed in the study.

Species:	Chicken (<i>Gallus domesticus</i>)
Strain:	Commercial production broiler
Breed:	Cobb × Cobb 500
Sex:	Male and Female (vent sexed at hatchery)
Supplier:	Simmons Foods Hatchery, Pineville, MO
Age:	Newly hatched chicks, ~1 day of age at placement (study Day 0)
Identification:	Pen cards bearing treatment number and treatment color code. Birds were individually identified with numbered wing tags 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 study Day 7)
Number of birds/treatment:	100
Total number of pens:	60

3. Day 7 recount and adjustment

On Day 7 all birds within a pen were counted. If greater than 10 birds were present, extra birds were removed. If extra birds were present, unthrifty birds (cull birds that were much smaller than the other birds, or showing signs of leg problems, crooked beak, swollen eyes, or other abnormal conditions) were removed first. If additional birds still needed to be removed, they were selected arbitrarily (i.e., the first bird within reach). After all pens had been adjusted to 10 birds, pens were rechecked (without knowledge of pen treatment) and, if there were any unthrifty birds remaining in pens, they were replaced with healthy birds from the appropriate pool (within sex and treatment) to optimize health status of birds in all pens for best performance assessment. Removed birds were euthanized by cervical dislocation. Removed birds were weighed and recorded, and animal disposal was as described in Section IX.C.

IV. EXPERIMENTAL DESIGN

A. Treatment Description

Treatments were assigned to pens using a randomized complete block design. The test facility was divided into five 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 ¹	Canola meal ID	No. Pens of Each Sex	No. Males/ Pen ²	No. Females/ Pen ²	Total No. Birds/ Sex	Total No. Birds/ Treatment
1	Croplan 601	5	10	10	50	100
2	SP Armada	5	10	10	50	100
3	Q2	5	10	10	50	100
4	Hyola 401	5	10	10	50	100
5	Ebony	5	10	10	50	100
6	MON 88302	5	10	10	50	100
Total		30			300	600

¹ Treatment identity remained blinded until the in-life phase of the study was completed.

² Two extra birds were started in each pen to compensate for losses incurred due to mortality, starve-outs, and cull birds during the first 7 days. Any extra birds remaining were removed on Day 7 as described in Section III.C. 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 canola meal lots were 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 (Appendix II – Table 1). Personnel conducting day-to-day management of birds were blinded to the treatment identification. Test, control, and reference canola meal lots were handled identically to minimize bias.

V. FEED AND WATER

A. Canola meal - Preparation and Samples

Characterization of the canola meal, including nutrient/anti-nutrient, microbiological, and pesticide analyses, is reported on Monsanto COA-2010-305.

Canola meal for this study was shipped by Monsanto from St. Louis, MO to Colorado Quality Research, Inc. (CQR) in containers suitable to maintain the identity of the different canola meal lots. Upon receipt, the canola meal was handled in a manner (SOP FM-2) to maintain the identity of the different canola meal lots and to ensure that there was no mixing among the different canola meal lots. Each lot of canola meal was sampled prior to mixing the diet according to CQR feed sampling procedures (i.e., for each lot, two representative composite sub-samples were collected). The two ~300 g sub-samples were labeled with the study number and canola meal lot number. One set of sub-samples was sent, under ambient

temperature and humidity, to the Sponsor to be retained. The second set of sub-samples was retained at CQR, at ambient temperature and humidity, until the in-life phase of the study was completed. Upon completion, the second set of sub-samples was sent, under ambient temperature and humidity, to the Sponsor for long term storage. None of the test, control, or reference processed canola meal or diet samples shipped by CQR during this study were regulated materials requiring compliance with USDA regulations for movement of regulated plant material.

The test, control, and reference canola meal were labeled and packaged to preserve identity throughout the study. The label included the CQR Study Number and the canola meal identification (the same identification of the canola meal as provided by the Sponsor).

B. Treatment Diets – Formulation, Preparation, and Samples

Diets were formulated so the canola meal component of the diets was supplied entirely from one of the six respective canola meal lots evaluated in the study. Each diet consisted predominantly of the test, control, or reference canola meal, corn grain and soybean meal. Corn grain and soybean meal included in the diets were analyzed for protein, moisture, and amino acids prior to diet formulation. For each diet type (starter and grower/finisher), the treatment diets were formulated to be isocaloric and contained the same amount of canola meal. Diets were formulated to maximize the amount of canola meal included, while meeting the above diet specifications.

The sources of dietary protein used in this study were primarily from canola meal, corn grain and soybean meal. Diets conformed as closely as possible to industry standards and/or the nutritional recommendations set forth in the publication “Nutritional Requirements of Poultry, 9th revised edition” by the National Research Council (NRC, 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. Ingredient composition of the diets is presented in Appendix II – Tables 2 and 3.

Treatment diets were mixed at the CQR feed mill. Vertical mixers (500-lb and 4000-lb capacity depending upon required batch size) and a California Pellet Mill system were used to prepare the diets. Feed was pelleted through a ~5-mm die with live steam addition. Starter diets were fed as crumbles and the grower/finisher diets were fed as pellets.

After the starter diets were pelleted and crumbled and grower/finisher diets were pelleted, samples were collected as the feed flowed into bulk feed storage boxes. For each of the starter and grower/finisher diets, the collected sample was thoroughly mixed by hand prior to collecting two sub-samples of approximately 300 g each. One of the 300 g samples was sent to the University of Missouri for analyses listed

in the table in Section V.C. The second set of 300 g samples was retained at CQR until the in-life phase of the study was completed and was then sent to Monsanto for long-term storage. Samples were stored and shipped 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 that were expected to interfere with the conduct of this study.

Laboratory	Sample type	Analytes
University of Missouri	Complete diets	Crude 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

D. Water

A copy of Colorado Quality Research, Inc. facility semi-annual water analysis report for total coliforms, conducted by Stewart Environmental Associates, and a copy of the most recent water analysis report from the Northern Colorado Water Association are archived with the original CQR study records. Based on the water results, the water was potable and suitable for human consumption, and therefore acceptable for use in this study.

VI. HOUSING AND MANAGEMENT

A. Housing

Assignment of treatments to pens was conducted using Microsoft Office Excel 2003² to generate random numbers for treatment assignments as shown in the following table.

² Microsoft Office Excel 2003. Copyright © 1985-2003 by Microsoft Corporation, Redmond, WA, USA.

	Treatment Assignment to Pens in Block - Females					Treatment Assignment to Pens in Block - Males				
Trt	1	2	3	4	5	1	2	3	4	5
1	9	27	35	49	75	4	17	30	43	79
2	6	19	37	53	72	3	26	31	50	74
3	11	18	36	47	73	12	22	39	42	76
4	7	14	28	45	77	2	15	33	44	70
5	13	23	29	52	71	8	24	34	48	68
6	10	16	32	51	78	5	25	38	46	69

Birds were housed within an environmentally-controlled facility in concrete floor pens (~3 ft × 5 ft) providing ~1.25 ft² per bird (excluding feeder and waterer space). Birds were placed in clean pens containing an appropriate depth of wood shavings to provide a comfortable environment. Lighting was provided via incandescent lights according to the following commercial lighting program.

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 – study end	16	0.2 – 0.3

Environmental conditions of floor space, temperature, lighting, bird density, feeder and waterer space were similar for all pens.

In order to prevent bird migration, each pen was checked to ensure no openings greater than 1 inch existed 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 Marek's 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 1091193A, expiration date 28May11). A record of the vaccination is included with the data package for this report. No other vaccinations were administered during the study.

2. Water

Water was provided *ad libitum* throughout the study via automatic nipple drinkers (four per pen). Drinkers were checked twice daily and cleaned as needed to ensure 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 tube feeder per pen. A feeder tray was placed in each pen for the first 4 days of the study. 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 to 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.

5. Mortality, Culls and Sex-slips

From study Day 0 to Day 42, any bird that was removed and euthanized or found dead was weighed and recorded on the pen mortality record. Birds that died after collection of Day-42 pen weights, but before collection of individual bird weights on Day 43 or 44, were recorded on the individual live bird weight data form as Dead Prior to Individual Weights (DPIW) and were not weighed, necropsied or listed on the pen mortality record. Birds that died after collection of individual bird weights on Day 43 or Day 44 were recorded as Dead on Arrival (DOA) at processing on the processing trailer documentation form and on the chilled weight data form for clarity of bird accounting. These birds were not necropsied or listed on the pen mortality record. Cull birds (birds unable to reach feed or water, or generally unthrifty birds) were removed by technicians blinded to treatment identification. When sex-slips (mis-sexed birds) were noted, they were removed, euthanized, weighed, and recorded on the pen mortality record. Mortalities were necropsied to the extent necessary to determine the probable cause of death. Probable cause of death and necropsy findings were 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 Day 42 (end of performance evaluation phase). Pens were weighed by block, and two blocks were weighed at the same time. Birds were wing-tagged and individually weighed immediately prior to slaughter for processing. The feed remaining in the feeder at Day 21 and 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 were calculated and summarized by average weight gain per bird per pen on Day 42. The average feed:gain was calculated for the period from Day 0 to Day 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 the weight gain of birds that died or were removed from that pen. For example: Adjusted feed:gain Day 0 to Day 42 = Feed intake during Days 0 to Day 42 ÷ [(Day 42 pen weight – Day 0 pen weight) + (mortality/removal weights Day 0 to Day 42 – average bird weight Day 0) {this is conducted on an individual bird basis and then totaled}]. If the dead 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 were 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 on Day 43 and the females were processed on Day 44.

All surviving birds in each pen were processed. Birds were processed by: killing the bird by severing the jugular, scalding, plucking, 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 ~7 °C (~45 to 55 minutes in chill tank), the birds were removed from the chill tank and placed upright into a plastic barrel container. A bag of ice was placed on the top and

bottom of the container. After the birds had drained for a minimum of ~15 minutes the individual bird chilled weight was obtained, the bird was deboned, the individual parts were weighed and recorded, and samples collected.

A. Yield Data

Yield data included the following data for individual birds:

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

Units of measure for the individual weights were either grams or kilograms as indicated on the respective data collection form. Calculations were conducted to express parts on a percentage basis. This was done by dividing the weight of the part by either the live weight or chilled weight and expressed as a percentage. For example, percent breast yield = breast weight ÷ chilled carcass weight × 100.

B. Samples

After the birds were processed and parts weighed, one bird from each pen was selected for collection of meat 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 analysis samples and the remaining half was used for retention samples.

1. Analysis Samples

One half-breast (skinless, boneless) and one thigh (with skin removed) 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 (~5 °C) prior to shipping. The chilled samples were sent (non-frozen, with wet ice) to the University of Missouri for protein, fat, and moisture analysis.

2. Retention Samples

The remaining half-breast (skinless, boneless) from the same bird from which chemical analysis samples were taken 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.

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 this final study report. Statistical analyses were conducted on performance, carcass yield, and meat composition parameters. SAS[®], version 9.2, was used to perform the analyses.

Each measurement to be statistically analyzed was processed by two different procedures (Models 1 and 2). The basic method (Model 1) was a two-factor analysis of variance under a randomized complete block structure. The two factors were diet and gender of birds. 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 Least Significant Difference (LSD) at a 0.05 level of significance. In addition to tables, the results of these analyses were graphically summarized in two sets of plots (mean $\pm \frac{1}{2}$ the LSD and mean \pm one standard error of the mean) for bird weight Day 42, feed intake, adjusted feed conversion, percent chilled weight, and breast weight. An example of the mean $\pm \frac{1}{2}$ the LSD plot is presented below (Figure 1). The second analysis conducted (Model 2) 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.

[®] SAS is a registered trademark of SAS Institute Inc., Cary, N.C.

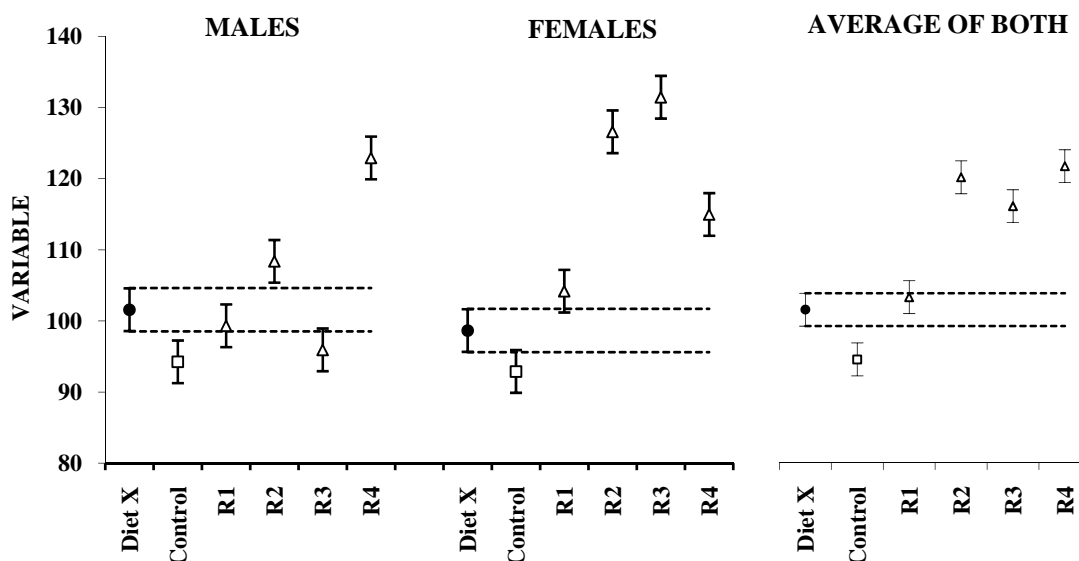


Figure 1. Simulated example of a statistical summary plot comparing diet X to its control and to each of four commercial reference diets, in the presence of a diet-by-gender interaction. Note that the 'error' bars on these plots are 5% statistical significance intervals. They are the mean \pm $\frac{1}{2}$ the Least Significant Difference (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 canola meal received and used was documented. Any canola meal not used to mix the complete feed was disposed of by burial at a local commercial landfill. Canola meal retention samples were sent to the Sponsor for archiving at study end (sent under ambient temperature and humidity in compliance with SOP FM-8). The meat retention samples were sent (frozen, with wet ice) to the Sponsor at study end.

B. Feed

An accounting was maintained of all treatment diets. The amounts mixed, used, and discarded were documented. Unused feed was disposed of by placing into a dumpster for commercial transport to a local landfill for burial. Feed retention 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 on Day 43 or Day 44 for processing (the meat from these birds was not used for human consumption). Carcasses, meat, mortalities and removed birds were transported to a commercial landfill for burial. Documentation of disposition is archived with this final study report.

D. Records and Report

Audited data (Excel workbook file) were sent to Monsanto 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 and all other information required by the GLP regulations, was prepared by the Study Director and sent to the Sponsor. Any revision to the signed report will be documented as a Report Amendment(s).

The Study Director's final study report, original data and study records, statistician's report and Sponsor's data and reports (analysis of test, control, and reference articles) are stored in the Monsanto Company Regulatory archives, St. Louis, Missouri. An exact copy of the final report and all study records are being kept for five years at the CQR archive. The CQR archive is located at 400 East County Road 72, Wellington, Colorado.

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

X. CONDUCT OF STUDY AND TEST MONITORING

On September 14, 2010, birds were placed on study. On October 7, 2010 a thermostat malfunctioned causing the heaters to run continuously in the barn resulting in the death of about 75% of the birds. All birds were removed from the study. Another group of birds was obtained and the study was reinitiated on October 26, 2010. Study data from the first start were placed into the study file and were not included in this report. This study was conducted in accordance with the study protocol, CQR Standard Operating Procedures, and the principles and guidelines for the care and use of agricultural animals in research (FASS, 2010). This study was conducted in compliance with the Food and Drug Administration's Good Laboratory Practice for Nonclinical Laboratory Studies regulation (21CFR, Part 58). The Monsanto Quality Assurance Unit (QAU) conducted in-life phase inspections, and the study data and report were audited to ensure the integrity of the data generated by CQR. The portion of the study conducted by Monsanto was conducted in compliance with the United States Environmental Protection Agency Good

Laboratory Practice Standards (40CFR, Part 160). Monsanto QAU provided oversight for data generated at CQR and Monsanto, and statistical analysis of data by the Monsanto Statistics Technology Center.

XI. PERSONNEL

Key personnel involved in this study were as follows:

Study Monitor	[REDACTED]
Sponsor Representative	Regulatory Affairs Team
Sponsor Quality Assurance	[REDACTED]
Statistician	[REDACTED]
University of MO – feed and meat analysis	[REDACTED]
Testing Facility Management	[REDACTED]
Study Director	[REDACTED]
Research Data Manager	[REDACTED]
Feed Mill Manager	[REDACTED]
Farm Manager	[REDACTED]
Research Technician	[REDACTED]
Processing Supervisor	[REDACTED]
Consulting Nutritionist	[REDACTED]

XII. RESULTS AND CONCLUSIONS

A. Results

The results of compositional, pesticidal, and microbial analyses of canola meal lots prior to use in this study were provided by the sponsor and presented in Appendix I – Table 1. Results of event-specific PCR testing of MON 88302, control and reference canola lots to verify the identity of test, control and reference articles prior to processing were provided by the sponsor and presented in Appendix I – Table 2. Analytical results for corn grain and soybean meal lots used in all study diets are presented in Appendix I – Tables 3 and 4.

Dietary treatment assignments for the six canola lots are presented in Appendix II – Table 1. The starter and grower/finisher diet formulations and calculated nutrient composition are shown in Appendix II – Tables 2 and 3. The nutrient assay results for the starter and grower/finisher diets (Appendix II – Tables 4 and 5, respectively) were acceptable based on a review conducted by the consulting nutritionist.

Initial (Day 0) bird weights (12 birds placed per pen) are summarized by treatment and pen in Appendix III – Table 1. Chick mortality by dietary treatment ranged from 0 to 0.83% (average of 0.3% across all dietary treatments) during the first 7 days of the study (Appendix III – Table 2). This mortality, attributed predominantly to bacterial infection, occurs commonly in chicks in commercial production conditions and was random without apparent relationship to dietary treatment. Pen size was normalized to 10 birds per pen on Day 7. In an effort to increase the sensitivity of the growth-based experiment, the first criterion for bird removal was slow growth, followed by random selection for the majority of birds removed. From Day 7 to 42 bird mortality averaged 1.5% and ranged from 0 to 3.0% across all treatment groups (Appendix III – Table 2). 2.0% mortality occurred from Day 7 to 42 for birds receiving diets containing canola meal produced from MON 88302. The apparent causes of death identified at necropsy for most birds that died after Day 7, ascites and bacterial infection, occur commonly in chickens. The birds in all groups were in good health based on twice daily pen observations.

Pen data including live weight (kg/pen) determined on Day 0 and Day 42, and pen feed consumption (starter diet from Day 0 to Day 21 and grower/finisher diet from Day 22 to Day 42) were evaluated directly or used to calculate the set of performance parameters at the study days or for the intervals indicated in the following table. Also listed are bird processing data and meat analyses, as well as parameters calculated from those data.

Parameter	Times or Intervals
<i>Performance</i>	
Average Bird Weight (g/bird)	Day 0
Average Bird Weight (kg/bird)	Day 42
Feed Intake (kg/bird)	Day 0-42
Average Bird Gain (kg)	Day 0-42
Feed:Gain (kg/kg)	Day 0-42
Adjusted Feed:Gain (kg/kg)	Day 0-42
<i>Carcass Yield</i>	
Processing Live Weight (kg/bird)	Day 43 or 44
Chilled Carcass Weight (kg and % live weight)	At processing ^a
Fat Pad Weight (kg and % live wt.)	At processing
Breast Weight (kg and % chilled weight)	At processing
Drum Weight (kg and % chilled weight)	At processing
Thigh Weight (kg and % chilled weight)	At processing
Wing Weight (kg and % chilled weight)	At processing
<i>Meat Analyses</i>	
Breast -- fat, moisture and protein (g/100g)	Processing samples
Thigh -- fat, moisture and protein (g/100g)	Processing samples

^a Day 43 (males) or 44 (females)

Summary statistics for bird performance, processing (yield) and meat analysis parameters, and results of statistical analyses are presented in tabular and graphical form in Appendix III – Tables 3 and 4, and Figures 1 and 2. The statistical analysis sub-report, including graphs of selected parameter data, is appended (Appendix IV).

1. MON 88302 Performance Parameters

Performance data for birds fed diets containing canola meal produced from MON 88302, conventional control, and conventional reference canola are presented in Appendix III – Tables 3 and 4, and Figures 1 and 2. Performance over the 42-day test period of broilers fed diets containing MON 88302 canola meal was not different ($p \geq 0.05$) than that of broilers fed diets formulated with control canola meal produced from conventional canola with similar background genetics to that of MON 88302 (Appendix III – Table 3). Performance was not different ($p \geq 0.05$) for birds fed diets containing canola meal produced from MON 88302 compared to the population of birds fed diet containing control or reference canola meal (Appendix III – Table 4). A diet \times gender interaction was detected ($p < 0.15$) for average bird weight (day 0); however, within gender analyses detected no difference ($p \geq 0.05$) in average bird weight (day 0) of test and control birds for males or females (Appendix IV – Table 1). Measures of bird performance were of similar magnitude for birds fed diets formulated to the same nutrient specifications with the canola meal component of the diet provided by MON 88302, conventional control,

or four conventional reference canola meal lots (Appendix III - Table 4).

No unexpected effects on broiler performance were observed when broilers were fed diets containing canola meal produced from MON 88302 compared to diets containing control or reference canola meal.

2. MON 88302 Carcass Measurements

Bird processing data and results of meat analyses are presented in Appendix III – Tables 3 and 4.

Carcass yield measurements were not different ($p \geq 0.05$) for broilers fed diets containing canola meal produced from MON 88302 compared to those fed diets containing conventional control canola meal (Appendix III – Table 3). Carcass yield measurements were not different ($p \geq 0.05$) for birds fed diets containing canola meal produced from MON 88302 compared to the population of those fed diets containing conventional control or reference canola meal (Appendix III – Table 4). A diet \times gender interaction was detected ($p < 0.15$) for breast weight (percent of chilled weight); however, within gender analyses detected no difference ($p \geq 0.05$) in breast weight of test and control birds for males and females (Appendix IV – Table 16). Average carcass measurements were of similar magnitude for birds fed diets formulated to the same nutrient specifications with the canola meal component of the diet provided by canola meal produced from MON 88302, conventional control, or four conventional reference canola varieties (Appendix III – Table 3).

Meat analysis results (fat, moisture and protein) for skinless breast and thigh meat samples collected during bird processing were not different ($p \geq 0.05$) for birds fed diets containing canola meal produced from MON 88302 versus those of birds fed diets containing control or reference canola meal based on individual diet comparisons or comparison to the population of control and reference canola meal diets (Appendix III – Tables 3 and 4). A diet \times gender interaction was detected ($p < 0.15$) for thigh fat (g/100g); within gender analyses detected no difference ($p \geq 0.05$) in thigh fat of test and control or reference birds for males or females (Appendix IV – Table 25).

B. Conclusions

There were no biologically relevant differences in broiler performance, carcass yield or meat composition between broilers fed diets containing canola meal produced from MON 88302 and those fed diets containing conventional control canola meal. The diets containing canola meal produced from MON 88302 were as wholesome as the diets containing conventional control or reference canola meal regarding their

ability to support the rapid growth of broiler chickens. These data support the conclusion that canola meal produced from MON 88302 is as nutritious as conventional canola meal.

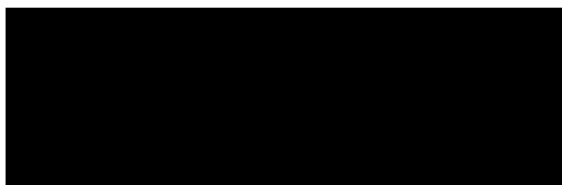
XIII. STUDY DIRECTOR'S COMMENTS/CERTIFICATION STATEMENT

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

I, [REDACTED] Study Director, attest that Study No. MN-10-3 (Monsanto No. CQR-10-323) was conducted according to the Protocol and that the data were collected and recorded in accordance with the applicable Food and Drug Administration, Center for Veterinary Medicine (CVM) Guidelines.

Description of Protocol Amendments and Deviations

Item	Purpose	Impact on study
Amendment # 1	[REDACTED]	None
Deviation No. 1	During processing, the carcass weight of was not obtained for bird #9098 from pen #52 due to human error.	None
Amendment # 2	Corrected the data and modified footnotes in Appendix I - Table 2.	None

18AUG11

Date

XIV. LISTING OF APPENDICES

Appendix I. Pre-study Data from Monsanto Study No. CQR-10-323 Pages 35 – 42

Appendix I – Table 1.	Canola meal compositional analyses - including pesticides (as-is basis)
Appendix I – Table 2.	Verification of identity of test, control, and reference canola prior to processing
Appendix I – Table 3.	Corn grain and soybean meal analyses for starter diet (as-is basis)
Appendix I – Table 4.	Corn grain and soybean meal analyses for grower/finisher diet (as-is basis)

Note: Appendix I, Tables 1 and 2 contain data reported on Monsanto COA-2010-305 used to formulate the diets for this study (Monsanto Study No. CQR-10-323)

Appendix II. Diet Composition and Analyses Pages 43 – 52

Appendix II – Table 1.	Treatment assignment of canola meal 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.	Analyzed nutrient composition of starter diets (as-is basis)
Appendix II – Table 5.	Analyzed nutrient composition of grower/finisher diets (as-is basis)

Appendix III. Bird Performance and Processing Data Pages 53 – 61

Appendix III – Table 1.	Day 0 body weights
Appendix III - Table 2.	Summary of mortality, removal and probable cause of death (Day 0 to 7 and Day 7 to 42)
Appendix III - Table 3.	Performance, carcass yield, and meat composition of broilers fed diets formulated with MON 88302, conventional control, and reference canola meal (means combined across males and females)
Appendix III - Table 4.	Performance, carcass yield, and meat composition of broilers fed diets formulated with MON 88302 canola meal versus that of the population of broilers fed diets formulated with conventional control and reference canola meal (means \pm SEM combined across males and females)
Appendix III - Figure 1.	Average Bird Weight Day 42 (kg/bird, males and females combined) for broilers fed diets containing MON 88302, control or reference canola meal

Appendix III - Figure 2. Adjusted Feed:Gain Day 0 to 42 (kg/kg, males and females combined) for broilers fed diets containing MON 88302, control or reference canola meal

Appendix IV. Statistical Report (including Data Listing) Pages 62– 122

XV. LISTING OF APPLICABLE SOPS

SOP No.	Title
B-1	House Preparation
B-2	Care and Management of Poultry
B-6	Vaccination of Poultry
B-7	Feeding Poultry
B-9	Scale & Thermometer Accuracy Checks and Certification of Standard Weights
B-10	Randomization of Treatments to Pens and Test Animals to Pens
B-12	Emergency Power During Electrical Failure
B-13	Sanitation and Restricted Access
B-16	Necropsy of Mortality
B-21	Weighing Poultry
B-22	Euthanasia and Disposal of Avian Species
B-29	Probable Mortality Causes
B-34	Culling and Sacrifice of Moribund Test Animals
B-64	Facility Logs and Daily Observations
B-66	Lighting Program
B-71	Processing Poultry
B-72	Bird Recount and Adjustment
B-73	Test Animal Receipt, Accounting & Disposition
M-5	Quality Control of Data and Final Report
M-7	Final Report and Amendment
M-10	Preparation of Written Standard Operating Procedures
M-11	Data Recording & Correction of Errors
M-12	Study Protocol Development and Implementation
M-14	Definition of "Management"
M-16	Deviations from Protocol and/or Written Procedures and/or GLP Regulations
FM-2	Test Article Receipt, Handling During Use, Accounting and Final Disposition
FM-3	Feed Receipt, Mixing, Storage and Accounting
FM-4	Feed Sampling Procedures
FM-5	Test Article Weights and Premix Preparation
FM-6	Flushing Feed Mill

XVI. REFERENCES

FASS. 2010. Guide for the care and use of agricultural animals in research and teaching, Third edn., Federation of Animal Science Societies.

NRC. 1994. Nutrient Requirements of Poultry, Ninth Revised edn., National Academy Press, Washington, D.C.

CQR Final Report Project No. MN-10-3
(Monsanto Study No. CQR-10-323)

APPENDIX I

Pre-study Data from Monsanto Study No. CQR-10-323

Pages 35 - 42

Appendix I - Table 1. Canola meal compositional analyses - including pesticides (as-is basis)

Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
Proximate (%)						
Moisture	7.81	9.84	7.79	8.29	8.65	11.2
Crude protein	43.2	39.4	36.4	36.0	35.1	35.9
Total Fat	1.40	3.20	1.37	2.20	2.92	1.57
Ash	5.39	5.66	6.35	6.62	5.98	5.79
Crude Fiber	10.5	9.99	10.7	12.0	12.2	11.7
Carbohydrates	42.2	41.9	48.1	46.9	47.4	45.5
Minerals						
Calcium (%)	0.538	0.501	0.543	0.640	0.549	0.614
Phosphorus (%)	0.910	0.992	1.18	1.13	0.960	0.971
Potassium (%)	1.05	1.13	1.27	1.34	1.28	1.09
Sodium (%)	< 0.0100	< 0.0100	0.0114	0.0112	0.0116	0.0147
Chloride (%)	0.085	0.077	0.068	0.073	0.087	0.057
Magnesium (%)	0.540	0.551	0.662	0.620	0.633	0.569
Sulfur (%)	1.10	0.959	0.951	0.868	0.932	0.918
Copper (ppm)	6.90	6.10	6.15	5.57	5.29	4.97
Iron (ppm)	128	121	122	118	125	122
Manganese (ppm)	86.5	80.4	90.7	70.5	65.2	60.7
Molybdenum (ppm)	0.656	0.873	1.01	0.768	0.737	1.21
Selenium (ppm)	3.29	4.72	4.58	2.68	3.18	4.18
Zinc (ppm)	59.0	56.3	54.1	55.1	45.6	40.5

Appendix I - Table 1. Canola meal compositional analyses - including pesticides (as-is basis) (continued)

Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference

Amino Acids (g/100g of sample)

Aspartic Acid	3.07	2.80	2.58	2.66	2.45	2.57
Threonine	1.83	1.65	1.58	1.66	1.54	1.55
Serine	1.96	1.76	1.66	1.68	1.62	1.61
Glutamic Acid	7.94	7.10	6.23	6.07	5.93	6.26
Proline	2.84	2.50	2.32	2.19	2.13	2.24
Glycine	2.18	1.96	1.86	1.89	1.79	1.83
Alanine	1.91	1.73	1.62	1.69	1.60	1.60
Cystine	1.16	1.04	0.964	0.923	0.913	0.958
Valine	2.24	2.04	1.89	1.92	1.82	1.86
Methionine	0.909	0.828	0.782	0.786	0.755	0.781
Isoleucine	1.77	1.60	1.46	1.48	1.40	1.45
Leucine	3.10	2.80	2.57	2.63	2.49	2.55
Tyrosine	1.18	1.06	1.02	0.975	0.923	0.922
Phenylalanine	1.79	1.63	1.52	1.52	1.44	1.50
Lysine	2.55	2.26	2.21	2.21	2.14	2.14
Histidine	1.22	1.08	1.02	1.03	0.992	1.01
Arginine	2.78	2.51	2.25	2.19	2.10	2.17
Tryptophan	0.539	0.486	0.446	0.429	0.421	0.427

Appendix I - Table 1. Canola meal compositional analyses - including pesticides (as-is basis) (continued)

Orion ID Number	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
Pesticides (ppm)						
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
Antinutrients						
Phytic Acid (%)	2.25	2.63	3.14	2.99	2.47	2.66
Processing measures						
Protein Dispersibility Index (%)	36.1	25.9	30.2	26.3	27.8	29.2
Protein Solubility in 2% KOH (%)	31.0	22.6	26.9	22.6	22.8	25.8
Urease (pH difference)	0.08	0.07	0.10	0.08	0.08	0.10
Glucosinolates (μmole/g)						
Glucoiberin	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200
Progoitrin	2.25	2.25	4.21	3.40	3.81	4.73
Epi-progoitrin	0.0336	0.0368	0.0683	0.0557	0.0659	0.0749
Sinigrin	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200
Glucoraphanin	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200	< 0.0200
Gluconapoleiferin	0.0344	0.0374	0.165	0.0203	0.0711	0.112
Glucoalyssin	0.238	0.179	0.344	0.283	0.182	0.294
Gluconapin	1.87	1.46	2.71	1.54	1.62	2.20
Gluco Brassicanapin	0.187	0.152	0.482	0.154	0.151	0.359
Aliphatic Total	4.62	4.11	7.98	5.45	5.90	7.77

Appendix I - Table 1. Canola meal compositional analyses - including pesticides (as-is basis) (continued)

Orion ID Number	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
4-hydroxyglucobrassicin	3.99	1.74	3.11	2.37	3.49	2.55
Glucobrassicin	0.312	0.150	0.259	0.161	0.487	0.340
4-methoxyglucobrassicin	0.0504	0.0611	0.0879	0.0582	0.0659	0.0702
Neoglucobrassicin	0.0325	0.0122	0.0128	0.0577	0.0841	0.0306
Indolyl Total	4.38	1.96	3.47	2.65	4.13	3.00
Gluconasturtin	0.315	0.199	0.357	1.10	0.405	0.347
Aromatic Total	0.315	0.199	0.357	1.10	0.405	0.347
Total Glucosinolates	9.31	6.27	11.8	9.21	10.4	11.1
Fatty acids (%)						
22:1 Erucic	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Microbiological Screen						
Coliforms (MPN/g) ^a	7.4	< 3	1,100	< 3	38	> 1,100
<i>Escherichia coli</i> (CFU/g) ^b	NA	NA	NA	NA	NA	440
<i>Salmonella</i> (per 25 g)	Negative	Negative	Negative	Negative	Negative	Negative
Standard Plate Count (CFU/g)	8,800	4,800	11,000	3,800	3,000	20,000
Yeast Count (CFU/g)	< 10	< 10	< 10	< 10	< 10	< 10
Mold Count (CFU/g)	< 10	180	25	15	20	35

^a MPN – Most Probable Number^b CFU – Colony Forming Unit

Appendix I - Table 2. Verification of identity of test, control, and reference canola prior to processing

Article	MON 88302 Event-specific PCR test results
Test (MON 88302)	$\geq 92.96\%^1$
Conventional control (Ebony)	$\leq 0.99\%^2$
Hyola 401	$\leq 0.99\%^2$
Croplan 601	$\leq 0.99\%^2$
Q2	$\leq 0.99\%^2$
SP Armada	$\leq 0.99\%^2$

¹ Percentage value reported is statistically determined lower bound estimate of the purity for the test article with 95% confidence, based on test results on 718 seeds.

² Percentage values reported are statistically determined upper bound estimates of the presence of the events (MON88302 and two other MON events) in the control and reference articles with 95% confidence, based on test results for four pools of 75 seeds each (total of 300 seeds).

Appendix 1 - Table 3. Corn grain and soybean meal analyses for starter diet (as-is basis)

	Corn Grain	Soybean Meal
Moisture (%)	12.97	10.02
Crude Protein (%)	7.71	46.39
Crude Fat (%)	3.60	0.99
Amino Acids (g/100g of sample)		
Taurine	0.05	0.08
Hydroxyproline	0.01	0.05
Aspartic Acid	0.54	5.36
Threonine	0.27	1.78
Serine	0.32	1.83
Glutamic Acid	1.41	8.12
Proline	0.66	2.25
Lanthionine	0.02	0.10
Glycine	0.29	2.00
Alanine	0.59	2.05
Cysteine	0.17	0.69
Valine	0.39	2.43
Methionine	0.15	0.67
Isoleucine	0.29	2.26
Leucine	0.98	3.71
Tyrosine	0.25	1.73
Phenylalanine	0.39	2.42
Hydroxylysine	0.03	0.04
Ornithine	0.00	0.05
Lysine	0.23	3.02
Histidine	0.22	1.26
Arginine	0.34	3.41
Tryptophan	0.06	0.67

Appendix 1 - Table 4. Corn grain and soybean meal analyses for grower/finisher diet (as-is basis)

	Corn Grain	Soybean Meal
Moisture (%)	14.27	10.21
Crude Protein (%)	7.38	46.53
Crude Fat (%)	3.2	1.18
Amino Acids (g/100g of sample)		
Taurine	0.05	0.08
Hydroxyproline	0.00	0.02
Aspartic Acid	0.52	4.97
Threonine	0.26	1.65
Serine	0.33	1.90
Glutamic Acid	1.36	7.63
Proline	0.69	2.20
Lanthionine	0.01	0.05
Glycine	0.28	1.85
Alanine	0.56	1.99
Cysteine	0.15	0.58
Valine	0.38	2.22
Methionine	0.13	0.59
Isoleucine	0.28	2.10
Leucine	0.95	3.50
Tyrosine	0.24	1.55
Phenylalanine	0.37	2.22
Hydroxylysine	0.03	0.02
Ornithine	0.00	0.02
Lysine	0.24	2.74
Histidine	0.22	1.14
Arginine	0.33	3.12
Tryptophan	0.06	0.63

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APPENDIX II

Diet Composition and Analyses

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Appendix II – Table 1. Treatment assignment of canola meal lots

Treatment Number	Treatment Type¹	Formulation Number	Canola meal ID	Orion ID Number
Starter				
1	R	03T5343	Croplan 601	11265343
2	R	03T5342	SP Armada	11265342
3	R	03T5341	Q2	11265341
4	R	03T5340	Hyola 401	11265340
5	C	03T5339	Ebony	11265339
6	T	03T5344	MON 88302	11265344
Grower / Finisher				
1	R	03G5343	Croplan 601	11265343
2	R	03G5342	SP Armada	11265342
3	R	03G5341	Q2	11265341
4	R	03G5340	Hyola 401	11265340
5	C	03G5339	Ebony	11265339
6	T	03G5344	MON 88302	11265344

¹ T = test, C = control, and R = reference

Appendix II - Table 2. Starter diet formulation and calculated nutrient composition (as-is basis)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
<u>Ingredient</u>	Percent of Each Ingredient					
Corn	52.427	50.007	48.272	48.131	47.465	48.023
Canola Meal	20.000	20.000	20.000	20.000	20.000	20.000
Soybean Meal	19.439	21.480	23.061	23.257	23.756	23.318
Soybean Oil	4.852	5.215	5.442	5.442	5.559	5.466
Defluorinated Phosphate	1.752	1.717	1.653	1.666	1.712	1.711
Limestone	0.579	0.619	0.644	0.581	0.587	0.555
Salt	0.317	0.320	0.326	0.325	0.319	0.318
DL-Methionine	0.201	0.208	0.209	0.207	0.211	0.208
L-Lysine-HCL	0.041	0.044	0.001	0.000	0.000	0.009
Choline Chloride-60	0.150	0.150	0.150	0.150	0.150	0.150
Broiler Vitamin ¹	0.100	0.100	0.100	0.100	0.100	0.100
Broiler Mineral ²	0.100	0.100	0.100	0.100	0.100	0.100
Salinomycin Premix (60g/lb)	0.041	0.041	0.041	0.041	0.041	0.041

¹ Vitamin premix (DSM Nutritional Products, Inc., Parsippany, NJ) provided the following per kilogram of diet: vitamin A, 9350 IU from all trans-retinyl acetate; cholecalciferol D3, 3025 IU; vitamin E, 27.5 IU from dl- α -tocopherol; vitamin B12, 13.75 μ g; riboflavin, 7.7 mg; niacin, 49.5 mg; pantothenic acid, 12.1 mg; menadione, 1.925 mg; folic acid, 0.99 mg; ethoxyquin, 77 mg; biotin, 0.088 mg; thiamine, 1.925 mg, and pyridoxine, 3.08 mg.

² Trace mineral premix (SEM Minerals, Quincy, IL) contained 5-6% calcium and provided the following in milligrams per kilogram of diet: Mn, 120; Zn, 100; Fe, 40; Cu, 10; I, 1.4; Se, 0.3, and Mg, 26.

Appendix II - Table 2. Starter diet formulation and calculated nutrient composition (as-is basis) (continued)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
<i>Calculated Nutrient Composition</i>						
Calculated ME, (Kcal/kg) ¹	3080	3080	3080	3080	3080	3080
Moisture, %	10.39	10.69	10.22	10.32	10.36	10.89
Crude Protein, %	21.70	21.70	21.70	21.70	21.70	21.70
Crude Fat, %	7.11	7.76	7.57	7.74	7.98	7.63
Crude Fiber, %	3.68	3.59	3.75	4.01	4.05	3.95
Ash, %	5.42	5.58	5.76	5.78	5.72	5.63
Arginine, %	1.40	1.40	1.40	1.39	1.39	1.39
Glycine, %	0.98	0.97	0.97	0.98	0.97	0.97
Isoleucine, %	0.95	0.95	0.95	0.96	0.95	0.96
Leucine, %	1.85	1.85	1.84	1.86	1.84	1.85
Lysine, %	1.25	1.25	1.25	1.26	1.25	1.25
Methionine, %	0.59	0.59	0.59	0.59	0.59	0.59
Meth & Cysteine, %	1.05	1.03	1.02	1.02	1.02	1.02
Threonine, %	0.85	0.85	0.86	0.88	0.86	0.85
Tryptophan, %	0.27	0.27	0.27	0.27	0.27	0.27
Valine, %	1.12	1.12	1.13	1.14	1.13	1.13
Calcium, %	0.95	0.95	0.95	0.95	0.95	0.95
Phosphorus (total), %	0.75	0.77	0.80	0.80	0.77	0.77
Phosphorus (avail.), %	0.45	0.45	0.45	0.45	0.45	0.45
Potassium, %	0.74	0.79	0.84	0.86	0.85	0.81
Sodium, %	0.22	0.22	0.22	0.22	0.22	0.22
Chloride, %	0.24	0.24	0.24	0.24	0.24	0.23
Magnesium, %	0.21	0.21	0.24	0.23	0.23	0.22
Sulfur, %	0.35	0.32	0.33	0.31	0.33	0.32
Copper, PPM	19.14	19.48	19.87	19.80	19.87	19.69
Iodine, PPM	1.40	1.40	1.40	1.40	1.40	1.40
Iron, PPM	236.60	261.00	256.95	257.31	263.41	262.22
Manganese, PPM	151.26	150.49	152.81	148.67	147.82	146.75
Molybdenum, PPM	0.73	0.79	0.83	0.78	0.78	0.87
Selenium, PPM	1.03	1.32	1.29	0.91	1.01	1.21
Zinc, PPM	131.10	131.40	131.63	131.93	130.25	129.05

¹ [Kcal/lb × 2.2 = Kcal/kg]

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

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
<u>Ingredient</u>	Percent of Each Ingredient					
Corn	56.239	53.833	52.107	51.979	51.317	51.859
Canola Meal	20.000	20.000	20.000	20.000	20.000	20.000
Soybean Meal	15.494	17.509	19.073	19.265	19.757	19.327
Soybean Oil	5.109	5.474	5.702	5.698	5.816	5.727
Defluorinated Phosphate	1.612	1.577	1.514	1.527	1.573	1.572
Limestone	0.589	0.629	0.654	0.591	0.596	0.565
Salt	0.336	0.339	0.345	0.344	0.338	0.337
DL-Methionine	0.206	0.213	0.215	0.214	0.218	0.214
L-Lysine-HCL	0.064	0.075	0.039	0.032	0.035	0.048
Choline Chloride-60	0.110	0.110	0.110	0.110	0.110	0.110
Broiler Vitamin ¹	0.100	0.100	0.100	0.100	0.100	0.100
Broiler Mineral ²	0.100	0.100	0.100	0.100	0.100	0.100
Salinomycin Premix (60g/lb)	0.041	0.041	0.041	0.041	0.041	0.041

¹ Vitamin premix (DSM Nutritional Products, Inc., Parsippany, NJ) provided the following per kilogram of diet: vitamin A, 9350 IU from all trans-retinyl acetate; cholecalciferol D3, 3025 IU; vitamin E, 27.5 IU from dl- α -tocopherol; vitamin B12, 13.75 μ g; riboflavin, 7.7 mg; niacin, 49.5 mg; pantothenic acid, 12.1 mg; menadione, 1.925 mg; folic acid, 0.99 mg; ethoxyquin, 77 mg; biotin, 0.088 mg; thiamine, 1.925 mg, and pyridoxine, 3.08 mg.

² Trace mineral premix (SEM Minerals, Quincy, IL) contained 5-6% calcium and provided the following in milligrams per kilogram of diet: Mn, 120; Zn, 100; Fe, 40; Cu, 10; I, 1.4; Se, 0.3, and Mg, 26.

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

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
<u>Calculated Nutrient Composition</u>						
Calculated ME, (Kcal/kg) ¹	3135	3135	3135	3135	3135	3135
Moisture, %	11.25	11.52	11.03	11.13	11.16	11.70
Crude Protein, %	20.00	20.00	20.00	20.00	20.00	20.00
Crude Fat, %	7.27	7.93	7.75	7.91	8.16	7.81
Crude Fiber, %	3.63	3.55	3.70	3.97	4.01	3.91
Ash, %	5.12	5.27	5.45	5.47	5.41	5.32
Arginine, %	1.23	1.23	1.22	1.21	1.21	1.21
Glycine, %	0.88	0.87	0.87	0.88	0.87	0.87
Isoleucine, %	0.84	0.84	0.84	0.85	0.84	0.84
Leucine, %	1.70	1.68	1.68	1.69	1.68	1.68
Lysine, %	1.12	1.12	1.12	1.12	1.12	1.12
Methionine, %	0.55	0.55	0.55	0.55	0.55	0.55
Meth & Cysteine, %	0.96	0.94	0.93	0.92	0.92	0.93
Threonine, %	0.77	0.76	0.77	0.79	0.77	0.76
Tryptophan, %	0.24	0.24	0.24	0.24	0.24	0.24
Valine, %	1.01	1.00	1.00	1.01	1.00	1.00
Calcium, %	0.90	0.90	0.90	0.90	0.90	0.90
Phosphorus (total), %	0.71	0.73	0.76	0.76	0.73	0.73
Phosphorus (avail.), %	0.42	0.42	0.42	0.42	0.42	0.42
Potassium, %	0.67	0.72	0.77	0.79	0.79	0.74
Sodium, %	0.22	0.22	0.22	0.22	0.22	0.22
Chloride, %	0.25	0.25	0.25	0.25	0.25	0.24
Magnesium, %	0.20	0.20	0.23	0.22	0.22	0.21
Sulfur, %	0.33	0.31	0.31	0.30	0.31	0.31
Copper, PPM	18.12	18.46	18.84	18.77	18.84	18.66
Iodine, PPM	1.40	1.40	1.40	1.40	1.40	1.40
Iron, PPM	246.92	244.32	240.26	240.62	246.71	245.53
Manganese, PPM	150.13	149.35	151.67	147.52	146.68	145.60
Molybdenum, PPM	0.69	0.75	0.79	0.74	0.74	0.83
Selenium, PPM	1.03	1.31	1.29	0.91	1.01	1.21
Zinc, PPM	129.24	129.53	129.75	130.05	128.36	127.17

¹ [Kcal/lb × 2.2 = Kcal/kg]

Appendix II – Table 4. Analyzed nutrient composition of starter diets (as-is basis)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
Assay Component						
Proximates						
Moisture, %	10.83	10.93	10.70	10.66	13.68	11.03
Crude Protein, %	23.33	23.03	22.97	23.11	22.92	22.67
Crude Fat, %	6.64	7.23	7.08	7.15	7.72	7.18
Ash, %	5.65	5.76	6.00	6.00	5.98	5.96
Crude Fiber, %	2.83	2.94	2.79	3.00	2.65	3.23
Acid detergent fiber, %	5.31	5.20	6.04	5.81	5.72	5.86
Neutral detergent fiber, %	10.42	9.81	11.88	10.77	9.82	11.22
Minerals						
Calcium, %	1.06	0.96	0.97	0.97	1.00	1.03
Phosphorus, %	0.80	0.80	0.84	0.81	0.82	0.84
Potassium, %	0.96	1.02	1.06	1.06	1.08	1.03
Sodium, %	0.20	0.22	0.22	0.18	0.21	0.22
Chloride, %	0.19	0.24	0.22	0.18	0.19	0.20
Magnesium, %	0.25	0.24	0.28	0.27	0.27	0.26
Sulfur, %	0.35	0.33	0.34	0.33	0.34	0.33
Copper (ppm)	15	16	33	18	15	13
Iron (ppm)	231	207	186	189	216	208
Manganese (ppm)	136	141	132	130	132	135
Molybdenum (ppm)	1.3	1.4	1.5	1.3	1.3	1.3
Zinc (ppm)	114	96	97	98	95	98

Appendix II – Table 4. Analyzed nutrient composition of starter diets (as-is basis) (continued)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Assay Component						
Amino Acids (g/100g of sample)						
Taurine	0.06	0.06	0.06	0.07	0.07	0.07
Hydroxyproline	0.10	0.10	0.08	0.09	0.10	0.08
Aspartic Acid	2.07	2.08	2.09	2.04	2.14	2.07
Threonine	0.89	0.89	0.90	0.88	0.94	0.86
Serine	0.85	0.90	0.90	0.87	0.96	0.83
Glutamic Acid	4.04	3.88	3.84	3.70	3.88	3.80
Proline	1.48	1.39	1.38	1.33	1.41	1.35
Lanthionine	0.00	0.00	0.04	0.00	0.00	0.05
Glycine	1.05	1.00	1.01	0.99	1.02	0.99
Alanine	1.14	1.11	1.11	1.09	1.13	1.09
Cysteine	0.46	0.41	0.42	0.39	0.42	0.41
Valine	1.22	1.14	1.15	1.14	1.10	1.16
Methionine	0.59	0.53	0.54	0.53	0.58	0.55
Isoleucine	1.02	0.97	0.97	0.96	0.93	0.98
Leucine	1.95	1.90	1.89	1.85	1.92	1.87
Tyrosine	0.71	0.72	0.72	0.71	0.76	0.71
Phenylalanine	1.08	1.06	1.07	1.04	1.08	1.06
Hydroxylysine	0.09	0.07	0.09	0.09	0.09	0.07
Ornithine	0.02	0.01	0.01	0.02	0.02	0.01
Lysine	1.38	1.32	1.33	1.30	1.34	1.31
Histidine	0.66	0.63	0.63	0.62	0.64	0.63
Arginine	1.50	1.47	1.46	1.42	1.49	1.44
Tryptophan	0.30	0.30	0.29	0.28	0.32	0.30

Appendix II – Table 5. Analyzed nutrient composition of grower/finisher diets (as-is basis)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Description	Test	Conventional Control	Reference	Reference	Reference	Reference
Assay Component						
Proximates						
Moisture, %	10.89	11.20	10.46	11.72	10.63	11.65
Crude Protein, %	21.24	20.91	21.00	21.27	21.10	21.15
Crude Fat, %	7.64	8.27	7.84	7.51	8.57	8.17
Ash, %	5.47	5.41	5.69	5.57	5.54	5.52
Crude Fiber, %	2.90	3.08	3.04	3.15	3.10	3.27
Acid detergent fiber, %	5.47	5.45	5.96	5.86	5.62	5.56
Neutral detergent fiber, %	10.90	10.27	11.08	10.41	10.45	10.80
Minerals						
Calcium, %	0.94	0.94	0.96	0.87	0.92	0.95
Phosphorus, %	0.76	0.80	0.80	0.78	0.78	0.82
Potassium, %	0.76	0.82	0.89	0.90	0.88	0.86
Sodium, %	0.24	0.20	0.21	0.20	0.20	0.21
Chloride, %	0.30	0.23	0.25	0.24	0.22	0.24
Magnesium, %	0.22	0.23	0.25	0.25	0.24	0.24
Sulfur, %	0.36	0.34	0.36	0.34	0.35	0.35
Copper (ppm)	12	14	12	12	12	15
Iron (ppm)	230	226	213	213	204	210
Manganese (ppm)	155	148	154	145	144	153
Molybdenum (ppm)	1.20	1.49	1.57	1.38	1.51	1.73
Zinc (ppm)	114	120	124	113	119	117

Appendix II – Table 5. Analyzed nutrient composition of grower/finisher diets (as-is basis) (continued)

Treatment Number	6	5	1	2	3	4
Orion ID	11265344	11265339	11265343	11265342	11265341	11265340
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401
Assay Component						
Amino Acids (g/100g of sample)						
Taurine	0.08	0.08	0.08	0.08	0.07	0.07
Hydroxyproline	0.11	0.09	0.09	0.08	0.08	0.09
Aspartic Acid	1.70	1.70	1.77	1.77	1.71	1.78
Threonine	0.78	0.77	0.80	0.80	0.77	0.78
Serine	0.82	0.80	0.78	0.81	0.77	0.76
Glutamic Acid	3.69	3.59	3.51	3.47	3.41	3.58
Proline	1.31	1.25	1.28	1.25	1.22	1.27
Lanthionine	0.01	0.01	0.02	0.02	0.02	0.02
Glycine	0.93	0.89	0.91	0.91	0.88	0.92
Alanine	1.03	1.00	1.01	1.03	1.00	1.02
Cysteine	0.42	0.38	0.39	0.38	0.36	0.40
Valine	1.08	1.05	1.05	1.05	1.04	1.10
Methionine	0.52	0.52	0.52	0.52	0.51	0.51
Isoleucine	0.90	0.89	0.89	0.88	0.87	0.92
Leucine	1.77	1.73	1.76	1.76	1.72	1.77
Tyrosine	0.63	0.62	0.65	0.66	0.63	0.65
Phenylalanine	0.94	0.93	0.95	0.94	0.92	0.97
Hydroxylysine	0.09	0.07	0.08	0.09	0.08	0.07
Ornithine	0.01	0.01	0.01	0.01	0.01	0.01
Lysine	1.20	1.17	1.21	1.20	1.17	1.23
Histidine	0.60	0.58	0.61	0.59	0.58	0.60
Arginine	1.29	1.27	1.28	1.28	1.25	1.31
Tryptophan	0.24	0.22	0.24	0.26	0.26	0.23

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APPENDIX III

Bird Performance and Processing Data

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Appendix III – Table 1. Day 0 body weights

Day 0						
Treatment	Canola			Number		Avg
Number	Meal ID	Sex	Pen	of Birds	Pen Wt	Bird
				Weighed	(kg)	Wt (kg)
1	Croplan 601	f	9	12	0.462	0.039
1		f	27	12	0.480	0.040
1		f	35	12	0.460	0.038
1		f	49	12	0.464	0.039
1		f	75	12	0.468	0.039
Total & Average				60	0.467	0.039
Standard Deviation					0.0079	0.0007
CV					1.7%	1.7%

Day 0						
Treatment	Canola			Number		Avg
Number	Meal ID	Sex	Pen	of Birds	Pen Wt	Bird
				Weighed	(kg)	Wt (kg)
1	Croplan 601	m	4	12	0.482	0.040
1		m	17	12	0.490	0.041
1		m	30	12	0.486	0.041
1		m	43	12	0.480	0.040
1		m	79	12	0.460	0.038
Total & Average				60	0.480	0.040
Standard Deviation					0.0116	0.0010
CV					2.4%	2.4%

2	SP Armada	f	6	12	0.476	0.040
2		f	19	12	0.480	0.040
2		f	37	12	0.468	0.039
2		f	53	12	0.462	0.039
2		f	72	12	0.478	0.040
Total & Average				60	0.473	0.039
Standard Deviation					0.0076	0.0006
CV					1.6%	1.6%

2	SP Armada	m	3	12	0.494	0.041
2		m	26	12	0.482	0.040
2		m	31	12	0.470	0.039
2		m	50	12	0.468	0.039
2		m	74	12	0.480	0.040
Total & Average				60	0.479	0.040
Standard Deviation					0.0104	0.0009
CV					2.2%	2.2%

3	Q2	f	11	12	0.472	0.039
3		f	18	12	0.466	0.039
3		f	36	12	0.460	0.038
3		f	47	12	0.470	0.039
3		f	73	12	0.492	0.041
Total & Average				60	0.472	0.039
Standard Deviation					0.0121	0.0010
CV					2.6%	2.6%

3	Q2	m	12	12	0.494	0.041
3		m	22	12	0.486	0.041
3		m	39	12	0.490	0.041
3		m	42	12	0.492	0.041
3		m	76	12	0.484	0.040
Total & Average				60	0.489	0.041
Standard Deviation					0.0041	0.0003
CV					0.8%	0.8%

Appendix III – Table 1. Day 0 body weights (continued)

Treatment Number	Canola Meal ID	Sex	Pen	Number of Birds Weighed	Day 0	
					Pen Wt (kg)	Avg Bird Wt (kg)
4	Hyola 401	f	7	12	0.474	0.040
4		f	14	12	0.486	0.041
4		f	28	12	0.484	0.040
4		f	45	12	0.488	0.041
4		f	77	12	0.464	0.039
Total & Average				60	0.479	0.040
Standard Deviation					0.0101	0.0008
CV					2.1%	2.1%

5	Ebony	f	13	12	0.466	0.039
5		f	23	12	0.464	0.039
5		f	29	12	0.456	0.038
5		f	52	12	0.468	0.039
5		f	71	12	0.462	0.039
Total & Average				60	0.463	0.039
Standard Deviation					0.0046	0.0004
CV					1.0%	1.0%

6	MON 88302	f	10	12	0.466	0.039
6		f	16	12	0.460	0.038
6		f	32	12	0.460	0.038
6		f	51	12	0.472	0.039
6		f	78	12	0.454	0.038
Total & Average				60	0.462	0.039
Standard Deviation					0.0068	0.0006
CV					1.5%	1.5%

Treatment Number	Canola Meal ID	Sex	Pen	Number of Birds Weighed	Day 0	
					Pen Wt (kg)	Avg Bird Wt (kg)
4	Hyola 401	m	2	12	0.470	0.039
4		m	15	12	0.492	0.041
4		m	33	12	0.474	0.040
4		m	44	12	0.472	0.039
4		m	70	12	0.480	0.040
Total & Average				60	0.478	0.040
Standard Deviation					0.0089	0.0007
CV					1.9%	1.9%

5	Ebony	m	8	12	0.488	0.041
5		m	24	12	0.476	0.040
5		m	34	12	0.482	0.040
5		m	48	12	0.478	0.040
5		m	68	12	0.488	0.041
Total & Average				60	0.482	0.040
Standard Deviation					0.0055	0.0005
CV					1.2%	1.2%

6	MON 88302	m	5	12	0.474	0.040
6		m	25	12	0.470	0.039
6		m	38	12	0.476	0.040
6		m	46	12	0.470	0.039
6		m	69	12	0.480	0.040
Total & Average				60	0.474	0.040
Standard Deviation					0.0042	0.0004
CV					0.9%	0.9%

Appendix III - Table 2. Summary of mortality, removal and probable cause of death (Day 0 to 7 and Day 7 to 42)

Treatment	Sex	Pen No.	No. Birds Started	Day 0 - 7				Added ³	Number of Birds (Day 7 – 42)				
				Removed ¹	Mortality	Percent	Cause of Death ²		Removed	Reason	Mortality	Percent	Cause of Death ²
1	f	9	12	2		0.0%	2cd				1	10.0%	1act
1	f	27	12	2		0.0%	2cd					0.0%	
1	f	35	12	2		0.0%	2cd				1	10.0%	1act
1	f	49	12	2		0.0%	2cd		1	1cd/bl-fhn		0.0%	
1	f	75	12	2		0.0%	2cd		1	1cd/ss		0.0%	
1	m	4	12	2		0.0%	2cd					0.0%	
1	m	17	12	2		0.0%	2cd					0.0%	
1	m	30	12	2		0.0%	2cd					0.0%	
1	m	43	12	2		0.0%	2cd					0.0%	
1	m	79	12	2		0.0%	2cd				1	10.0%	1act
Total & Average			120	20	0	0.00%			2		3	3.00%	
2	f	6	12	1	1	8.3%	1bac 1cd					0.0%	
2	f	19	12	2		0.0%	2cd		1	1cd/bl/fhn		0.0%	
2	f	37	12	2		0.0%	2cd		1	1cd/ss		0.0%	
2	f	53	12	2		0.0%	2cd					0.0%	
2	f	72	12	2		0.0%	2cd					0.0%	
2	m	3	12	2		0.0%	2cd				1	10.0%	1act
2	m	26	12	2		0.0%	2cd					0.0%	
2	m	31	12	2		0.0%	2cd					0.0%	
2	m	50	12	2		0.0%	2cd					0.0%	
2	m	74	12	2		0.0%	2cd					0.0%	
Total & Average			120	19	1	0.83%			2		1	1.00%	
3	f	11	12	2		0.0%	2cd					0.0%	
3	f	18	12	2		0.0%	2cd					0.0%	
3	f	36	12	2		0.0%	2cd				1	10.0%	1bac
3	f	47	12	2		0.0%	2cd					0.0%	
3	f	73	12	2		0.0%	2cd					0.0%	
3	m	12	12	2		0.0%	2cd					0.0%	
3	m	22	12	2		0.0%	2cd					0.0%	
3	m	39	12	2		0.0%	2cd					0.0%	
3	m	42	12	2		0.0%	2cd					0.0%	
3	m	76	12	1	1	8.3%	1bac 1cd					0.0%	
Total & Average			120	19	1	0.83%			0		1	1.00%	

Appendix III - Table 2. Summary of mortality, removal and probable cause of death (Day 0 to 7 and Day 7 to 42)
(continued)

Treatment	Sex	Pen No.	No. Birds Started	Day 0 - 7				Added ³	Number of Birds (Day 7 – 42)				
				Removed ¹	Mortality	Percent	Cause of Death ²		Removed	Reason	Mortality	Percent	Cause of Death ²
4	f	7	12	2		0.0%	2cd		1	1cd/act		0.0%	
4	f	14	12	2		0.0%	2cd					0.0%	
4	f	28	12	2		0.0%	2cd					0.0%	
4	f	45	12	2		0.0%	2cd					0.0%	
4	f	77	12	2		0.0%	2cd					0.0%	
4	m	2	12	2		0.0%	2cd					0.0%	
4	m	15	12	2		0.0%	2cd					0.0%	
4	m	33	12	2		0.0%	2cd					0.0%	
4	m	44	12	2		0.0%	2cd					0.0%	
4	m	70	12	2		0.0%	2cd					0.0%	
Total & Average			120	20	0	0.00%			1		0	0.00%	
5	f	13	12	2		0.0%	1cd/dh 1cd					0.0%	
5	f	23	12	2		0.0%	2cd					0.0%	
5	f	29	12	2		0.0%	2cd		1	1cd/ss		0.0%	
5	f	52	12	2		0.0%	2cd					0.0%	
5	f	71	12	2		0.0%	2cd					0.0%	
5	m	8	12	2		0.0%	2cd		1	1cd/act		0.0%	
5	m	24	12	2		0.0%	2cd				1	10.0%	1act
5	m	34	12	2		0.0%	2cd				1	10.0%	1act
5	m	48	12	2		0.0%	2cd					0.0%	
5	m	68	12	2		0.0%	2cd					0.0%	
Total & Average			120	20	0	0.00%			2		2	2.00%	
6	f	10	12	2		0.0%	2cd					0.0%	
6	f	16	12	2		0.0%	2cd		1	1cd/ss		0.0%	
6	f	32	12	2		0.0%	2cd					0.0%	
6	f	51	12	2		0.0%	2cd				1	10.0%	1act
6	f	78	12	2		0.0%	2cd					0.0%	
6	m	5	12	2		0.0%	2cd					0.0%	
6	m	25	12	2		0.0%	2cd					0.0%	
6	m	38	12	2		0.0%	2cd				1	10.0%	1act
6	m	46	12	2		0.0%	2cd					0.0%	
6	m	69	12	2		0.0%	2cd					0.0%	
Total & Average			120	20	0	0.00%			1		2	2.00%	

¹ Removed = birds removed on day 7 to adjust the count to 10 birds/pen, removed birds were euthanized by cervical dislocation. ² Codes: act = ascites, bac = bacterial, bl = bad leg, bl-fhn = bad leg + femoral head necrosis, cd = cervical dislocation, dh = dehydrated, fhn = femoral head necrosis, ss = sex slip.

³ Number of birds added to pen from pool of birds removed from other pens of birds on the same treatment at the day 7 recount to adjust count to 10 birds/pen.

Appendix III - Table 3. Performance, carcass yield, and meat composition of broilers fed diets formulated with MON 88302, conventional control, and reference canola meal (means¹ combined across males and females)

Treatment Number	6	5	1	2	3	4	SEM ²	Treatment p-value ³	LSD ⁴ 5.0%
Canola Meal ID	MON 88302	Ebony	Croplan 601	SP Armada	Q2	Hyola 401			
Performance									
Average bird weight (g/bird), d0	39.017 ^C	39.400 ^{BC}	39.433 ^{ABC}	39.650 ^{AB}	40.050 ^A	39.867 ^{AB}	0.2198	0.0275 ⁸	0.627
Average bird weight (kg/bird), d42	2.786	2.758	2.756	2.710	2.729	2.768	0.0178	0.0585	0.051
Average bird gain (kg/bird), d0 to 42	2.747	2.719	2.717	2.671	2.689	2.728	0.0178	0.0541	0.051
Feed intake (kg/bird), d0 to 42	4.335	4.324	4.303	4.334	4.264	4.363	0.0290	0.2608	0.083
Feed gain (kg/kg), d0 to 42	1.629 ^{ABC}	1.642 ^{AB}	1.657 ^{AB}	1.666 ^A	1.590 ^C	1.615 ^{BC}	0.0174	0.0388	0.050
Adjusted feed gain ⁵ (kg/kg), d0 to 42	1.578 ^B	1.588 ^B	1.590 ^B	1.622 ^A	1.581 ^B	1.596 ^B	0.0068	0.0004	0.019
Carcass Yield									
Processing live weight ⁶ (kg)	2.761 ^A	2.713 ^{ABC}	2.720 ^{ABC}	2.669 ^C	2.700 ^{BC}	2.729 ^{AB}	0.0178	0.0219	0.051
Chilled carcass weight (kg)	2.015 ^A	1.976 ^{ABC}	1.980 ^{ABC}	1.944 ^C	1.960 ^{BC}	1.986 ^{AB}	0.0140	0.0200	0.040
Chilled carcass weight (% of live wt.)	73.001	72.836	72.794	72.831	72.642	72.778	0.1716	0.8069	0.489
Fat pad weight (kg)	0.039 ^A	0.039 ^A	0.037 ^{AB}	0.035 ^B	0.036 ^B	0.036 ^B	0.0010	0.0099	0.003
Fat pad weight (% of live wt.)	1.430 ^{AB}	1.456 ^A	1.375 ^{ABC}	1.309 ^C	1.350 ^{BC}	1.309 ^C	0.0364	0.0266	0.104
Breast meat weight (kg)	0.595	0.585	0.584	0.577	0.580	0.588	0.0060	0.3427	0.017
Breast meat weight (% of chilled wt.)	29.537	29.595	29.528	29.689	29.599	29.633	0.1705	0.9862 ⁸	0.486
Thigh weight (kg)	0.352 ^A	0.347 ^{AB}	0.345 ^{ABC}	0.336 ^D	0.338 ^{CD}	0.343 ^{BCD}	0.0030	0.0053	0.009
Thigh weight (% of chilled wt.)	17.434	17.576	17.388	17.272	17.209	17.252	0.1196	0.2699	0.341
Drum weight (kg)	0.266	0.261	0.262	0.257	0.259	0.262	0.0021	0.0739	0.006
Drum weight (% of chilled wt.)	13.184	13.169	13.218	13.194	13.211	13.194	0.0695	0.9970	0.198
Wing weight (kg)	0.210	0.208	0.207	0.205	0.208	0.209	0.0016	0.3617	0.005
Wing weight (% of chilled wt.)	10.443	10.520	10.452	10.572	10.598	10.539	0.0603	0.3820	0.172
Breast Meat Analysis⁷									
Moisture (%)	75.511	75.398	75.769	75.384	75.444	75.233	0.2185	0.6498	0.623
Protein (%; as is basis)	22.935	22.983	22.783	23.001	23.054	23.390	0.2237	0.5476	0.638
Fat (%; as is basis)	1.227	1.251	1.204	1.211	1.239	1.147	0.1026	0.9852	0.293
Thigh Meat Analysis⁷									
Moisture (%)	77.335	77.163	77.161	77.277	77.424	77.319	0.1977	0.9261	0.564
Protein (%; as is basis)	20.794	20.996	21.378	20.849	20.710	21.009	0.2583	0.5275	0.736
Fat (%; as is basis)	1.495	1.510	1.331	1.510	1.435	1.416	0.0952	0.7396 ⁸	0.271

¹ Each mean represents 10 observations (1/pen). ² SEM = standard error of the mean for respective parameter. ³ p-value for test of dietary treatment effect. ^{4,5} Individual treatment means in the same row with the same superscript are not statistically different ($p > 0.05$). ⁴ LSD = least significant difference between two means ($p < 0.05$). ⁵ Adjusted feed:gain is adjusted by adding the weight at removal of mortalities and culls to the weight of the live birds in a pen. ⁶ Processing live weight = pre-processing weight on d 43 (males) or d 44 (females). ⁷ Mean values for skinless breast and thigh meat analyses based on one bird per pen. ⁸ A diet \times sex interaction ($p < 0.15$) was detected, see appended statistical report (Appendix IV– Tables 1-25) for within sex analysis for the respective variable.

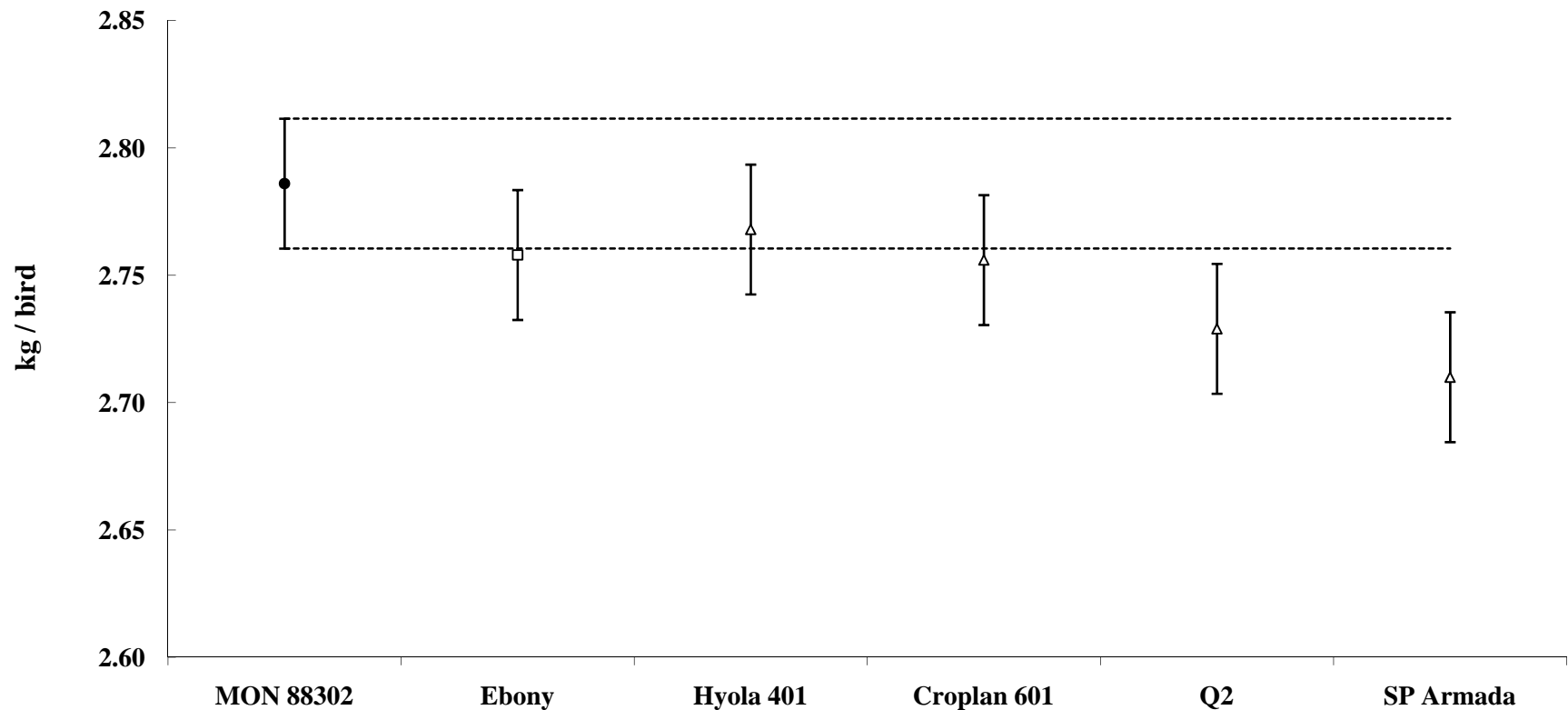
Proprietary Information of Monsanto Company

Appendix III - Table 4. Performance, carcass yield, and meat composition of broilers fed diets formulated with MON 88302 canola meal versus that of the population of broilers fed diets formulated with conventional control and reference canola meal (means¹ ± SEM² combined across males and females)

Parameter	Canola Meal Diets		Treatment p-value ³	LSD ⁴ 5%
	MON 88302	Conventional Control and References		
Performance				
Average bird weight (g/bird), d 0	39.017 ± 0.3200	39.680 ± 0.1431	0.0951 ⁸	0.808
Average bird weight (kg/bird), d 42	2.786 ± 0.0238	2.744 ± 0.0107	0.1895	0.073
Average bird gain (kg/bird), d 0 to 42	2.747 ± 0.0239	2.705 ± 0.0107	0.1850	0.073
Feed intake (kg/bird), d 0 to 42	4.335 ± 0.0367	4.317 ± 0.0164	0.6781	0.112
Feed:gain (kg/kg), d 0 to 42	1.629 ± 0.0313	1.634 ± 0.0140	0.8922	0.095
Adjusted feed:gain ⁵ (kg/kg), d 0 to 42	1.578 ± 0.0160	1.595 ± 0.0072	0.3803	0.049
Carcass Yield				
Processing live wt ⁶ (kg/bird)	2.761 ± 0.0233	2.706 ± 0.0104	0.0974	0.071
Chilled wt (kg/bird)	2.015 ± 0.0173	1.969 ± 0.0077	0.0724	0.052
Chilled wt (% of live wt.)	73.001 ± 0.1622	72.776 ± 0.0725	0.2115	0.356
Fat pad wt (kg/bird)	0.039 ± 0.0017	0.037 ± 0.0008	0.2288	0.005
Fat pad wt (% of live wt.)	1.430 ± 0.0607	1.360 ± 0.0271	0.3522	0.185
Breast wt (kg/bird)	0.595 ± 0.0070	0.583 ± 0.0031	0.1521	0.018
Breast wt (% of chilled wt)	29.537 ± 0.2070	29.609 ± 0.0926	0.7607 ⁸	0.523
Thigh wt (kg/bird)	0.352 ± 0.0048	0.342 ± 0.0022	0.1241	0.015
Thigh wt (% of chilled wt)	17.434 ± 0.1478	17.339 ± 0.0661	0.5885	0.450
Drum wt (kg/bird)	0.266 ± 0.0022	0.260 ± 0.0010	0.0852	0.007
Drum wt (% of chilled wt)	13.184 ± 0.0673	13.197 ± 0.0301	0.8567	0.148
Wing wt (kg/bird)	0.210 ± 0.0016	0.207 ± 0.0007	0.0974	0.004
Wing wt (% of chilled wt)	10.443 ± 0.0585	10.536 ± 0.0262	0.1506	0.129
Breast Meat Analysis⁷				
Moisture (%)	75.511 ± 0.2143	75.446 ± 0.0958	0.7817	0.471
Protein (% as is basis)	22.935 ± 0.2199	23.042 ± 0.0984	0.6794	0.669
Fat (% as is basis)	1.227 ± 0.1025	1.210 ± 0.0458	0.8830	0.225
Thigh Meat Analysis⁷				
Moisture (%)	77.335 ± 0.1902	77.269 ± 0.0851	0.7519	0.418
Protein (% as is basis)	20.794 ± 0.2496	20.988 ± 0.1116	0.5164	0.759
Fat (% as is basis)	1.495 ± 0.1249	1.440 ± 0.0558	0.7002 ⁸	0.315

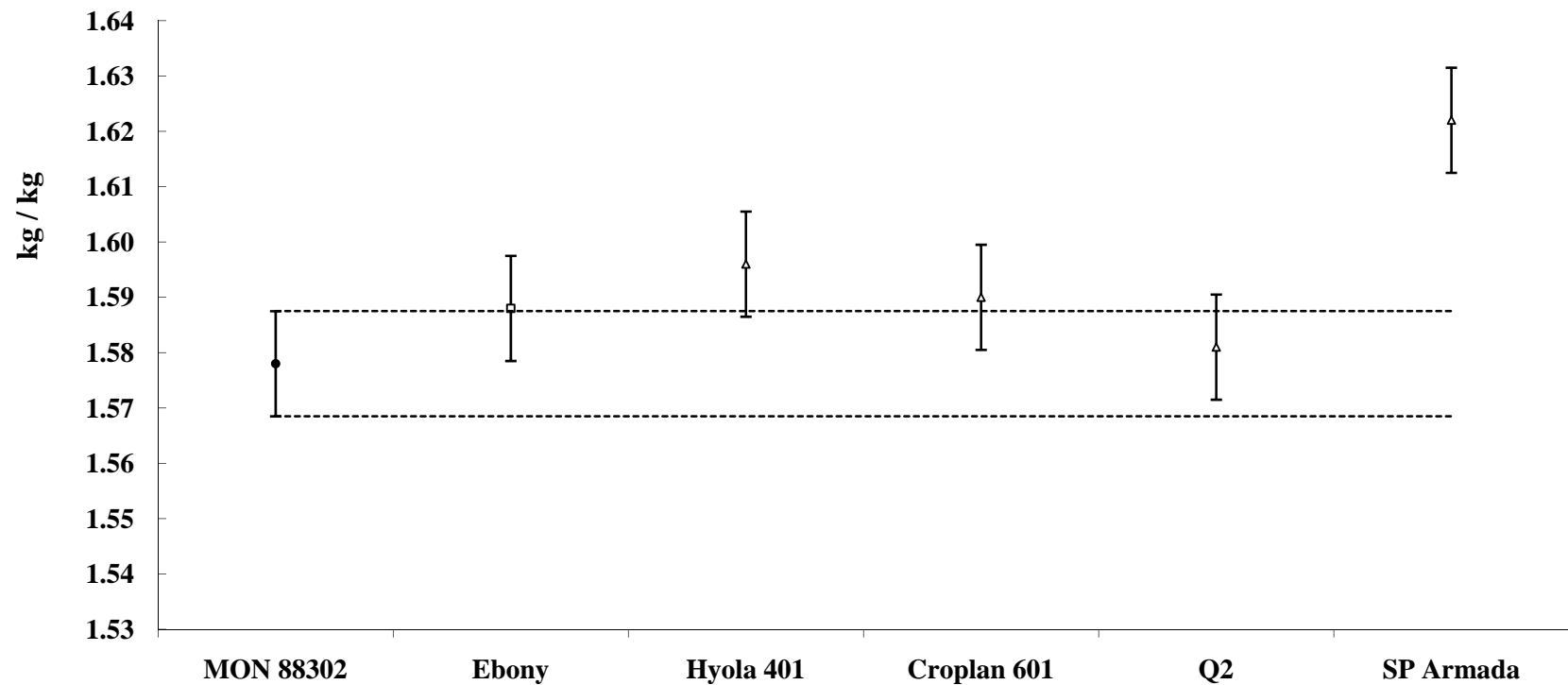
¹ Each mean for MON 88302 represents 10 observations (1/pen) and the that for the population of control and references represents 50 observations (1/pen). ² SEM = standard error of the mean for respective parameter. ³ MON 88302 diet versus the population of the control and four reference diets. ⁴ LSD = least significant difference between two means (p < 0.05). ⁵ Adjusted feed:gain is adjusted by adding the weight at removal of mortalities and culls to the weight of the live birds in a pen. ⁶ Processing live weight = pre-processing weight on d 43 (males) or d 44 (females). ⁷ Mean values for skinless breast and thigh meat analyses based on one bird per pen. ⁸ A diet × sex interaction (p < 0.15) was detected, see appended statistical report (Appendix IV – Tables 1-25) for within sex analysis.

Appendix III - Figure 1. Average Bird Weight Day 42¹ (kg/bird, males and females combined) for broilers fed diets containing MON 88302, control or reference canola meal



¹ Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping varieties are statistically different at the 5% level of significance.

Appendix III - Figure 2. Adjusted Feed:Gain Day 0 to 42¹ (kg/kg, males and females combined) for broilers fed diets containing MON 88302, control or reference canola meal



¹ Adjusted for mortality and culled birds. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping varieties are statistically different at the 5% level of significance.

CQR Final Report Project No. MN-10-3
(Monsanto Study No. CQR-10-323)

APPENDIX IV

Statistical Report (including Data Listing)

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Statistical Report
Monsanto Study No. CQR-10-323
CQR Study No. MN-10-3
Comparison of Broiler Performance and Carcass Parameters When Fed Diets Containing
Canola Meal Produced from MON 88302, Control, or Reference Canola

The purpose of this study was to evaluate the nutritional value of diets containing MON 88302, control, or reference Canola.

1. DATA

Equal numbers of male and female chicks were fed one of 6 diets/treatments, listed in Table A.1. These diets were statistically compared with respect to the 25 response variables listed in Table A.2. The raw data from this study were supplied by Colorado Quality Research (CQR) in the form of Excel files (see details in data package). The data were imported and organized using SAS 9.2 for statistical analysis. A data listing is provided in Appendix 1.

2. STATISTICAL ANALYSES

Pens were set up as a randomized complete block experimental design with 6 diets (treatments) in each of 5 replicated blocks of pens. Each block contained 12 pens (one for each diet and sex combination), with 10 birds per pen for a total of 600 birds (300 males and 300 females). The GLM and Mixed procedures in Release 9.2 of SAS[®] were used in analyzing the data.

Each measurement was statistically analyzed by two different procedures. The first method was a two-factor analysis of variance under a randomized complete block structure. The two factors were diet and sex. The main effects of diet and sex along with the diet-by-sex interaction were tested and noted. If the interaction was not significant ($p \geq 0.15$) then the comparisons of the diets were done using the main effect for diets, i.e., diet means were averaged over sex. If the interaction was significant then the diet comparisons were done separately for each sex. Mean separation procedures were performed using the protected LSD method at a 0.05 level of significance. The statistical model is as follows:

$$y_{ijk} = \mu + \tau_i + \beta_j + (\tau\beta)_{ij} + \gamma_k + \varepsilon_{ijk} \quad \text{model (1)}$$

where μ is the overall mean

τ_i is the effect for the i^{th} diet, $i = 1, \dots, 6$

β_j is the effect of j^{th} sex, $j = 1, 2$

$(\tau\beta)_{ij}$ is the interaction between the i^{th} diet and the j^{th} sex

γ_k is the effect of the k^{th} block, $k = 1, \dots, 5$

y_{ijk} is the measured response for the i^{th} diet and j^{th} sex in the k^{th} block

ε_{ijk} is the random error associated with the measurement for the i^{th} diet and j^{th} sex in the k^{th} block

Treatment means and results of statistical comparisons are presented in Tables 1-25. In addition to the tables, the results of these analyses (mean and least significant difference) for Bird Weight Day 42, Average Feed Intake, Adjusted Feed Conversion, Percent Chilled Weight and Average Breast Weight are graphically summarized in Figures 1-5. Figures 6-10 also show summary statistics (mean and standard error) for these variables. All figures are listed in Table A.3.

The additional analysis compared test article with the population, of which the control and four reference diets (five diets in total) were considered as a sample. Analyses were averaged over sex unless there was a significant diet-by-sex interaction, in which case analyses were broken out by sex and included in the respective analysis summary table. The statistical model is as follows:

$$y_{ijkl} = \mu + \delta_i + \tau_j(\delta_i) + \beta_k + (\delta\beta)_{ik} + \tau_j(\delta_i)*\beta_k + \gamma_l + \varepsilon_{ijkl} \quad \text{model (2)}$$

where

μ is the overall mean

δ_i is the effect of i^{th} diet type (test or control/reference), $i = 1, 2$

$\tau_j(\delta_i)$ is the effect of j^{th} diet within the i^{th} diet type

β_k is the effect of the k^{th} sex

$(\delta\beta)_{ik}$ is the interaction between the i^{th} diet type and the k^{th} sex

$\tau_j(\delta_i)*\beta_k$ is the interaction between j^{th} diet within the i^{th} diet type and k^{th} sex

γ_l is the effect of the l^{th} block

y_{ijkl} is the measured response for the j^{th} diet, within the i^{th} diet type, and k^{th} sex in the l^{th} block

ε_{ijkl} is the random error associated with the measurement for the j^{th} diet, within the i^{th} diet type, and k^{th} sex in the l^{th} block

Standard errors of means from model (1) and (2) are provided in Appendix 2.

3. RESULTS

Treatment means and results of statistical comparisons of MON 88302, control and reference diets are summarized in Tables 1-25 for each of the 25 analysis variables listed in Table A.2. Following the analysis plan for model (1), the p-value for the Diet*Sex interaction term was checked for each of the 25 analysis variables. Because the interaction term was significant ($p < 0.15$) for 3 out of 25 variables, the results were summarized overall and by sex in Tables 1, 16 and 25. The p-values for the diet effect are found in Tables 1-25. Diet means followed by the same letter are not significantly different from each other.

References

SAS Software Release 9.2 (TS2M3). Copyright© 2002-2008 by SAS Institute Inc., Cary, NC.

Table A.1: Diets

Test Article	MON 88302
Control Article	Ebony
Reference Articles	Hyola 401 Croplan 601 Q2 SP Armada

Table A.2: Listing of Variables Statistically Analyzed

1. Bird Weight Day 0, g/bird
2. Bird Weight Day 42, kg/bird
3. Average Feed Intake, kg/bird
4. Average Bird Gain Day 42, kg/bird
5. Feed Conversion (Feed Consumed/Wt Gain)
6. Adjusted Feed Conversion (adjusted for R/M birds)
7. Average Pre-Processing Live Body Weight, kg/bird
8. Chilled Weight, kg/bird
9. Fat Pad Weight, kg/bird
10. Average Breast Weight, kg/bird
11. Average Wing Weight, kg/bird
12. Average Thigh Weight, kg/bird
13. Average Drum Weight, kg/bird
14. Percent Fat Pad Weight (Fat Pad Wt/Live Wt x 100)
15. Percent Chilled Weight (Chilled Wt/Live Wt x 100)
16. Percent Breast Weight (Breast Wt/Chilled Wt x 100)
17. Percent Wing Weight (Wing Wt/Chilled Wt x 100)
18. Percent Thigh Weight (Thigh Wt/Chilled Wt x 100)
19. Percent Drum Weight (Drum Wt/Chilled Wt x 100)
20. Breast Moisture (g/100g)
21. Breast Protein (g/100g)
22. Breast Fat (g/100g)
23. Thigh Moisture (g/100g)
24. Thigh Protein (g/100g)
25. Thigh Fat (g/100g)

Table A.3. List of Figures

Figure 1.	Comparison of Bird Weight Day 42 (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
Figure 2.	Comparison of Average Feed Intake (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
Figure 3.	Comparison of Adjusted Feed Conversion (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
Figure 4.	Comparison of Percent Chilled Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
Figure 5.	Comparison of Average Breast Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
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Figure 9.	Summary of Percent Chilled Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola
Figure 10.	Summary of Average Breast Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Table 1. Bird Weight Day 0, g/bird

	Summary	Overall		Males	Females	
ANOVA	p-value, Block	0.5010		0.5792	0.6140	
	p-value, Diet	0.0275		0.1279	0.0495	
	p-value, Sex	<.0001		.	.	
	p-value, Diet*Sex	0.0826		.	.	
	LSD 5%	0.627		0.905	0.963	
Diet Means	MON 88302	39.017	C	39.500	38.533	B
	Ebony	39.400	BC	40.200	38.600	B
	Hyola 401	39.867	AB	39.800	39.933	A
	Croplan 601	39.433	ABC	39.967	38.900	B
	Q2	40.050	A	40.767	39.333	AB
	SP Armada	39.650	AB	39.900	39.400	AB
Mixed Model	Control and References*	39.680		40.127	39.233	
	MON 88302*	39.017		39.500	38.533	
	Mixed Model p-value*	0.0951		0.2133	0.2784	
	Mixed Model 5% LSD*	0.808		1.177	1.551	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 2. Bird Weight Day 42, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.0223
	p-value, Diet	0.0585
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.7988
	LSD 5%	0.051
Diet Means	MON 88302	2.786
	Ebony	2.758
	Hyola 401	2.768
	Croplan 601	2.756
	Q2	2.729
	SP Armada	2.710
Mixed Model	Control and References*	2.744
	MON 88302*	2.786
	Mixed Model p-value*	0.1895
	Mixed Model 5% LSD*	0.073

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 3. Average Feed Intake, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.0003
	p-value, Diet	0.2608
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.7615
	LSD 5%	0.083
Diet Means	MON 88302	4.335
	Ebony	4.324
	Hyola 401	4.363
	Croplan 601	4.303
	Q2	4.264
	SP Armada	4.334
Mixed Model	Control and References*	4.317
	MON 88302*	4.335
	Mixed Model p-value*	0.6781
	Mixed Model 5% LSD*	0.112

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 4. Average Bird Gain Day 42, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.0225
	p-value, Diet	0.0541
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.8078
	LSD 5%	0.051
Diet Means	MON 88302	2.747
	Ebony	2.719
	Hyola 401	2.728
	Croplan 601	2.717
	Q2	2.689
	SP Armada	2.671
Mixed Model	Control and References*	2.705
	MON 88302*	2.747
	Mixed Model p-value*	0.1850
	Mixed Model 5% LSD*	0.073

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 5. Feed Conversion (Feed Consumed/ Wt Gain)

	Summary	Overall	
ANOVA	p-value, Block	0.4681	
	p-value, Diet	0.0388	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.4659	
	LSD 5%	0.050	
Diet Means	MON 88302	1.629	ABC
	Ebony	1.642	AB
	Hyola 401	1.615	BC
	Croplan 601	1.657	AB
	Q2	1.590	C
	SP Armada	1.666	A
Mixed Model	Control and References*	1.634	
	MON 88302*	1.629	
	Mixed Model p-value*	0.8922	
	Mixed Model 5% LSD*	0.095	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 6. Adjusted Feed Conversion (adjusted for R/M birds)

	Summary	Overall	
ANOVA	p-value, Block	0.0272	
	p-value, Diet	0.0004	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.9776	
	LSD 5%	0.019	
Diet Means	MON 88302	1.578	B
	Ebony	1.588	B
	Hyola 401	1.596	B
	Croplan 601	1.590	B
	Q2	1.581	B
	SP Armada	1.622	A
Mixed Model	Control and References*	1.595	
	MON 88302*	1.578	
	Mixed Model p-value*	0.3803	
	Mixed Model 5% LSD*	0.049	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 7. Average Pre-Processing Live Body Weight, kg/bird

	Summary	Overall	
ANOVA	p-value, Block	0.0093	
	p-value, Diet	0.0219	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.6527	
	LSD 5%	0.051	
Diet Means	MON 88302	2.761	A
	Ebony	2.713	ABC
	Hyola 401	2.729	AB
	Croplan 601	2.720	ABC
	Q2	2.700	BC
	SP Armada	2.669	C
Mixed Model	Control and References*	2.706	
	MON 88302*	2.761	
	Mixed Model p-value*	0.0974	
	Mixed Model 5% LSD*	0.071	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 8. Chilled Weight, kg/bird

	Summary	Overall	
ANOVA	p-value, Block	0.0461	
	p-value, Diet	0.0200	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.6857	
	LSD 5%	0.040	
Diet Means	MON 88302	2.015	A
	Ebony	1.976	ABC
	Hyola 401	1.986	AB
	Croplan 601	1.980	ABC
	Q2	1.960	BC
	SP Armada	1.944	C
Mixed Model	Control and References*	1.969	
	MON 88302*	2.015	
	Mixed Model p-value*	0.0724	
	Mixed Model 5% LSD*	0.052	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 9. Fat Pad Weight, kg/bird

	Summary	Overall	
ANOVA	p-value, Block	0.9377	
	p-value, Diet	0.0099	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.9499	
	LSD 5%	0.003	
Diet Means	MON 88302	0.039	A
	Ebony	0.039	A
	Hyola 401	0.036	B
	Croplan 601	0.037	AB
	Q2	0.036	B
	SP Armada	0.035	B
Mixed Model	Control and References*	0.037	
	MON 88302*	0.039	
	Mixed Model p-value*	0.2288	
	Mixed Model 5% LSD*	0.005	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 10. Average Breast Weight, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.0343
	p-value, Diet	0.3427
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.1503
	LSD 5%	0.017
Diet Means	MON 88302	0.595
	Ebony	0.585
	Hyola 401	0.588
	Croplan 601	0.584
	Q2	0.580
	SP Armada	0.577
Mixed Model	Control and References*	0.583
	MON 88302*	0.595
	Mixed Model p-value*	0.1521
	Mixed Model 5% LSD*	0.018

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 11. Average Wing Weight, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.5781
	p-value, Diet	0.3617
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.7917
	LSD 5%	0.005
Diet Means	MON 88302	0.210
	Ebony	0.208
	Hyola 401	0.209
	Croplan 601	0.207
	Q2	0.208
	SP Armada	0.205
Mixed Model	Control and References*	0.207
	MON 88302*	0.210
	Mixed Model p-value*	0.0974
	Mixed Model 5% LSD*	0.004

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 12. Average Thigh Weight, kg/bird

	Summary	Overall	
ANOVA	p-value, Block	0.0457	
	p-value, Diet	0.0053	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.6877	
	LSD 5%	0.009	
Diet Means	MON 88302	0.352	A
	Ebony	0.347	AB
	Hyola 401	0.343	BCD
	Croplan 601	0.345	ABC
	Q2	0.338	CD
	SP Armada	0.336	D
Mixed Model	Control and References*	0.342	
	MON 88302*	0.352	
	Mixed Model p-value*	0.1241	
	Mixed Model 5% LSD*	0.015	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 13. Average Drum Weight, kg/bird

	Summary	Overall
ANOVA	p-value, Block	0.4356
	p-value, Diet	0.0739
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.7921
	LSD 5%	0.006
Diet Means	MON 88302	0.266
	Ebony	0.261
	Hyola 401	0.262
	Croplan 601	0.262
	Q2	0.259
	SP Armada	0.257
Mixed Model	Control and References*	0.260
	MON 88302*	0.266
	Mixed Model p-value*	0.0852
	Mixed Model 5% LSD*	0.007

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 14. Percent Fat Pad Weight (Fat Pad Wt/Live Wt x 100)

	Summary	Overall	
ANOVA	p-value, Block	0.8849	
	p-value, Diet	0.0266	
	p-value, Sex	<.0001	
	p-value, Diet*Sex	0.9804	
	LSD 5%	0.104	
Diet Means	MON 88302	1.430	AB
	Ebony	1.456	A
	Hyola 401	1.309	C
	Croplan 601	1.375	ABC
	Q2	1.350	BC
	SP Armada	1.309	C
Mixed Model	Control and References*	1.360	
	MON 88302*	1.430	
	Mixed Model p-value*	0.3522	
	Mixed Model 5% LSD*	0.185	

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 15. Percent Chilled Weight (Chilled Wt/Live Wt x 100)

	Summary	Overall
ANOVA	p-value, Block	0.2159
	p-value, Diet	0.8069
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.9006
	LSD 5%	0.489
Diet Means	MON 88302	73.001
	Ebony	72.836
	Hyola 401	72.778
	Croplan 601	72.794
	Q2	72.642
	SP Armada	72.831
Mixed Model	Control and References*	72.776
	MON 88302*	73.001
	Mixed Model p-value*	0.2115
	Mixed Model 5% LSD*	0.356

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 16. Percent Breast Weight (Breast Wt/Chilled Wt x 100)

	Summary	Overall	Males	Females
ANOVA	p-value, Block	0.2661	0.3214	0.3184
	p-value, Diet	0.9862	0.3626	0.3234
	p-value, Sex	<.0001	.	.
	p-value, Diet*Sex	0.0645	.	.
	LSD 5%	0.486	0.673	0.738
Diet Means	MON 88302	29.537	28.865	30.209
	Ebony	29.595	29.418	29.772
	Hyola 401	29.633	28.749	30.518
	Croplan 601	29.528	28.801	30.256
	Q2	29.599	28.914	30.284
	SP Armada	29.689	28.828	30.550
Mixed Model	Control and References*	29.609	28.942	30.276
	MON 88302*	29.537	28.865	30.209
	Mixed Model p-value*	0.7607	0.8108	0.8549
	Mixed Model 5% LSD*	0.523	0.829	0.947

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 17. Percent Wing Weight (Wing Wt/Chilled Wt x 100)

	Summary	Overall
ANOVA	p-value, Block	0.2896
	p-value, Diet	0.3820
	p-value, Sex	0.0024
	p-value, Diet*Sex	0.9142
	LSD 5%	0.172
Diet Means	MON 88302	10.443
	Ebony	10.520
	Hyola 401	10.539
	Croplan 601	10.452
	Q2	10.598
	SP Armada	10.572
Mixed Model	Control and References*	10.536
	MON 88302*	10.443
	Mixed Model p-value*	0.1506
	Mixed Model 5% LSD*	0.129

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 18. Percent Thigh Weight (Thigh Wt/Chilled Wt x 100)

	Summary	Overall
ANOVA	p-value, Block	0.1254
	p-value, Diet	0.2699
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.2482
	LSD 5%	0.341
Diet Means	MON 88302	17.434
	Ebony	17.576
	Hyola 401	17.252
	Croplan 601	17.388
	Q2	17.209
	SP Armada	17.272
Mixed Model	Control and References*	17.339
	MON 88302*	17.434
	Mixed Model p-value*	0.5885
	Mixed Model 5% LSD*	0.450

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 19. Percent Drum Weight (Drum Wt/Chilled Wt x 100)

	Summary	Overall
ANOVA	p-value, Block	0.1412
	p-value, Diet	0.9970
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.4866
	LSD 5%	0.198
Diet Means	MON 88302	13.184
	Ebony	13.169
	Hyola 401	13.194
	Croplan 601	13.218
	Q2	13.211
	SP Armada	13.194
Mixed Model	Control and References*	13.197
	MON 88302*	13.184
	Mixed Model p-value*	0.8567
	Mixed Model 5% LSD*	0.148

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 20. Breast Moisture (g/100g)

	Summary	Overall
ANOVA	p-value, Block	0.9531
	p-value, Diet	0.6498
	p-value, Sex	0.0770
	p-value, Diet*Sex	0.6352
	LSD 5%	0.623
Diet Means	MON 88302	75.511
	Ebony	75.398
	Hyola 401	75.233
	Croplan 601	75.769
	Q2	75.444
	SP Armada	75.384
Mixed Model	Control and References*	75.446
	MON 88302*	75.511
	Mixed Model p-value*	0.7817
	Mixed Model 5% LSD*	0.471

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 21. Breast Protein (g/100g)

	Summary	Overall
ANOVA	p-value, Block	0.6654
	p-value, Diet	0.5476
	p-value, Sex	0.0153
	p-value, Diet*Sex	0.6570
	LSD 5%	0.638
Diet Means	MON 88302	22.935
	Ebony	22.983
	Hyola 401	23.390
	Croplan 601	22.783
	Q2	23.054
	SP Armada	23.001
Mixed Model	Control and References*	23.042
	MON 88302*	22.935
	Mixed Model p-value*	0.6794
	Mixed Model 5% LSD*	0.669

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 22. Breast Fat (g/100g)

	Summary	Overall
ANOVA	p-value, Block	0.2123
	p-value, Diet	0.9852
	p-value, Sex	<.0001
	p-value, Diet*Sex	0.2256
	LSD 5%	0.293
Diet Means	MON 88302	1.227
	Ebony	1.251
	Hyola 401	1.147
	Croplan 601	1.204
	Q2	1.239
	SP Armada	1.211
Mixed Model	Control and References*	1.210
	MON 88302*	1.227
	Mixed Model p-value*	0.8830
	Mixed Model 5% LSD*	0.225

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 23. Thigh Moisture (g/100g)

	Summary	Overall
ANOVA	p-value, Block	0.1129
	p-value, Diet	0.9261
	p-value, Sex	0.0007
	p-value, Diet*Sex	0.6248
	LSD 5%	0.564
Diet Means	MON 88302	77.335
	Ebony	77.163
	Hyola 401	77.319
	Croplan 601	77.161
	Q2	77.424
	SP Armada	77.277
Mixed Model	Control and References*	77.269
	MON 88302*	77.335
	Mixed Model p-value*	0.7519
	Mixed Model 5% LSD*	0.418

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 24. Thigh Protein (g/100g)

	Summary	Overall
ANOVA	p-value, Block	0.1334
	p-value, Diet	0.5275
	p-value, Sex	0.0972
	p-value, Diet*Sex	0.9818
	LSD 5%	0.736
Diet Means	MON 88302	20.794
	Ebony	20.996
	Hyola 401	21.009
	Croplan 601	21.378
	Q2	20.710
	SP Armada	20.849
Mixed Model	Control and References*	20.988
	MON 88302*	20.794
	Mixed Model p-value*	0.5164
	Mixed Model 5% LSD*	0.759

The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

Table 25. Thigh Fat (g/100g)

	Summary	Overall	Males	Females
ANOVA	p-value, Block	0.4534	0.0066	0.6548
	p-value, Diet	0.7396	0.0163	0.4036
	p-value, Sex	0.9490	.	.
	p-value, Diet*Sex	0.0586	.	.
	LSD 5%	0.271	0.229	0.493
Diet Means	MON 88302	1.495	1.546	AB 1.444
	Ebony	1.510	1.492	AB 1.528
	Hyola 401	1.416	1.668	A 1.164
	Croplan 601	1.331	1.262	C 1.400
	Q2	1.435	1.418	BC 1.452
	SP Armada	1.510	1.326	BC 1.694
Mixed Model	Control and References*	1.440	1.433	1.448
	MON 88302*	1.495	1.546	1.444
	Mixed Model p-value*	0.7002	0.5497	0.9873
	Mixed Model 5% LSD*	0.315	0.480	0.589

Mean separation procedures were performed when the p-value for Diet effect was significant at 0.05 level for Overall, Males or Females. The letters accompany the means to the left. Individual diet means with the same letter(s), i.e., A, AB, ABC, etc., are not statistically different at the 5% level. The individual means were computed from the ANOVA model (1) accounting for only variation within diets.

* Derived from a mixed linear model for comparing test to the population of control and reference diets

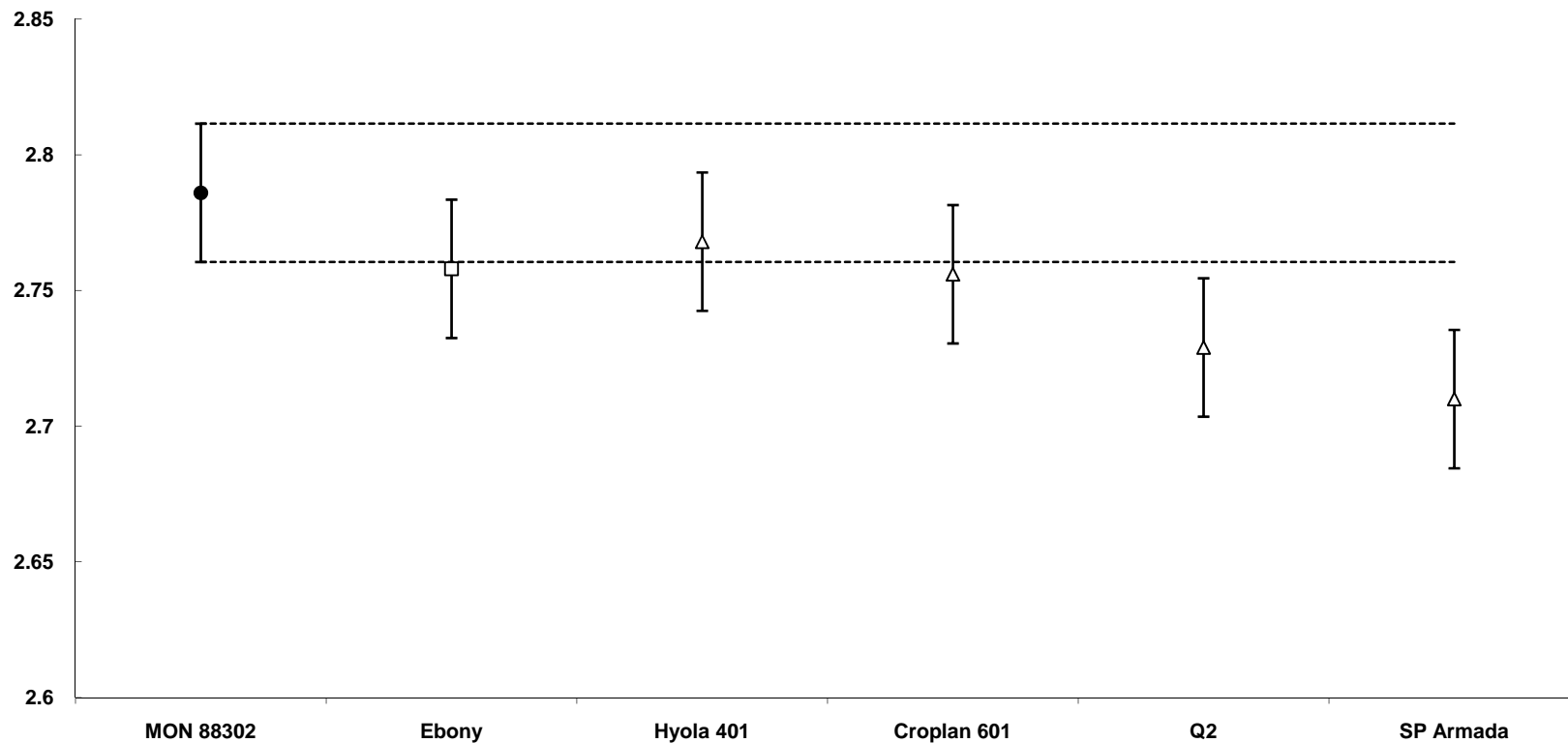


Figure 1. Comparison of Bird Weight Day 42 (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average Bird Weight day 42 (kg/bird), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping treatments are statistically different at the 5% level of significance.

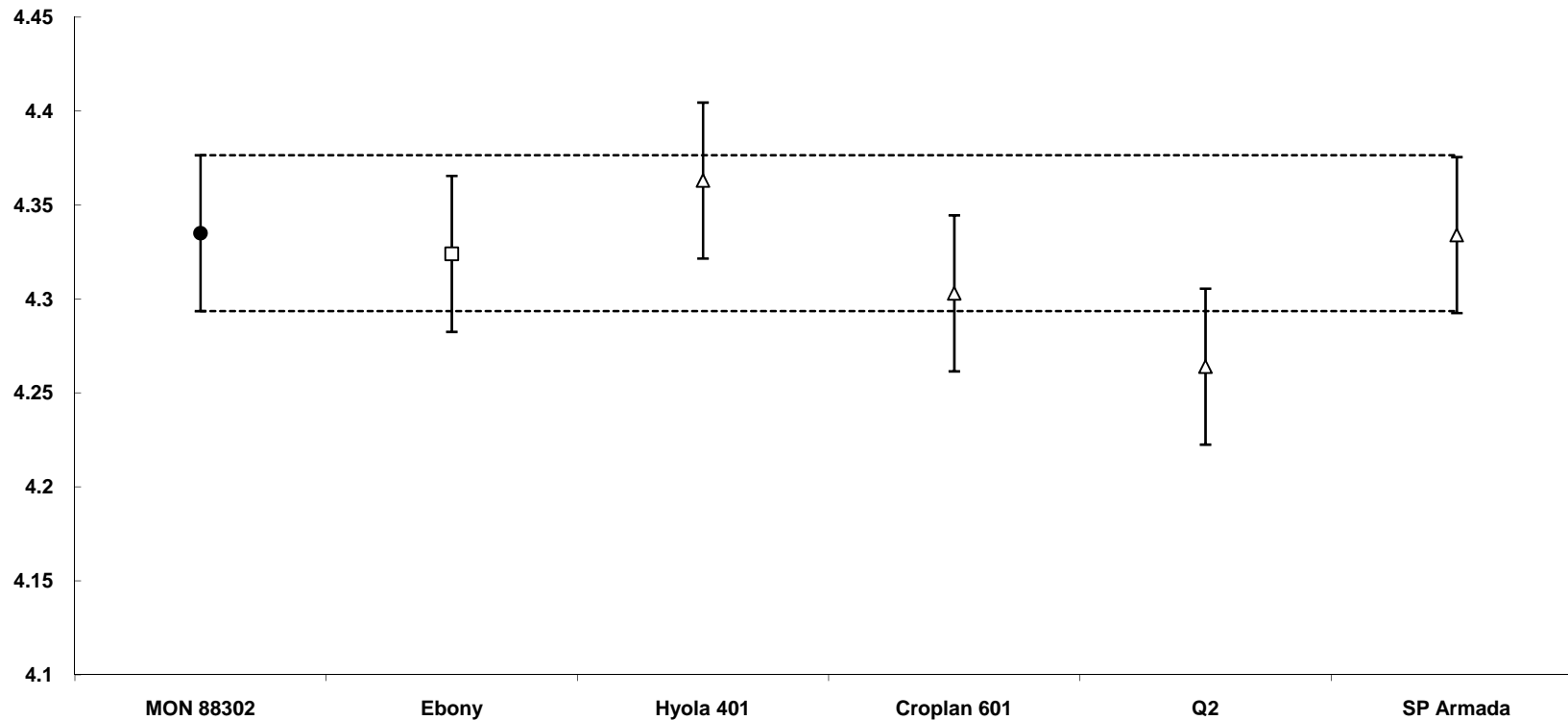


Figure 2. Comparison of Average Feed Intake (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average Feed Intake (kg/bird), day 0-42, for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping treatments are statistically different at the 5% level of significance.

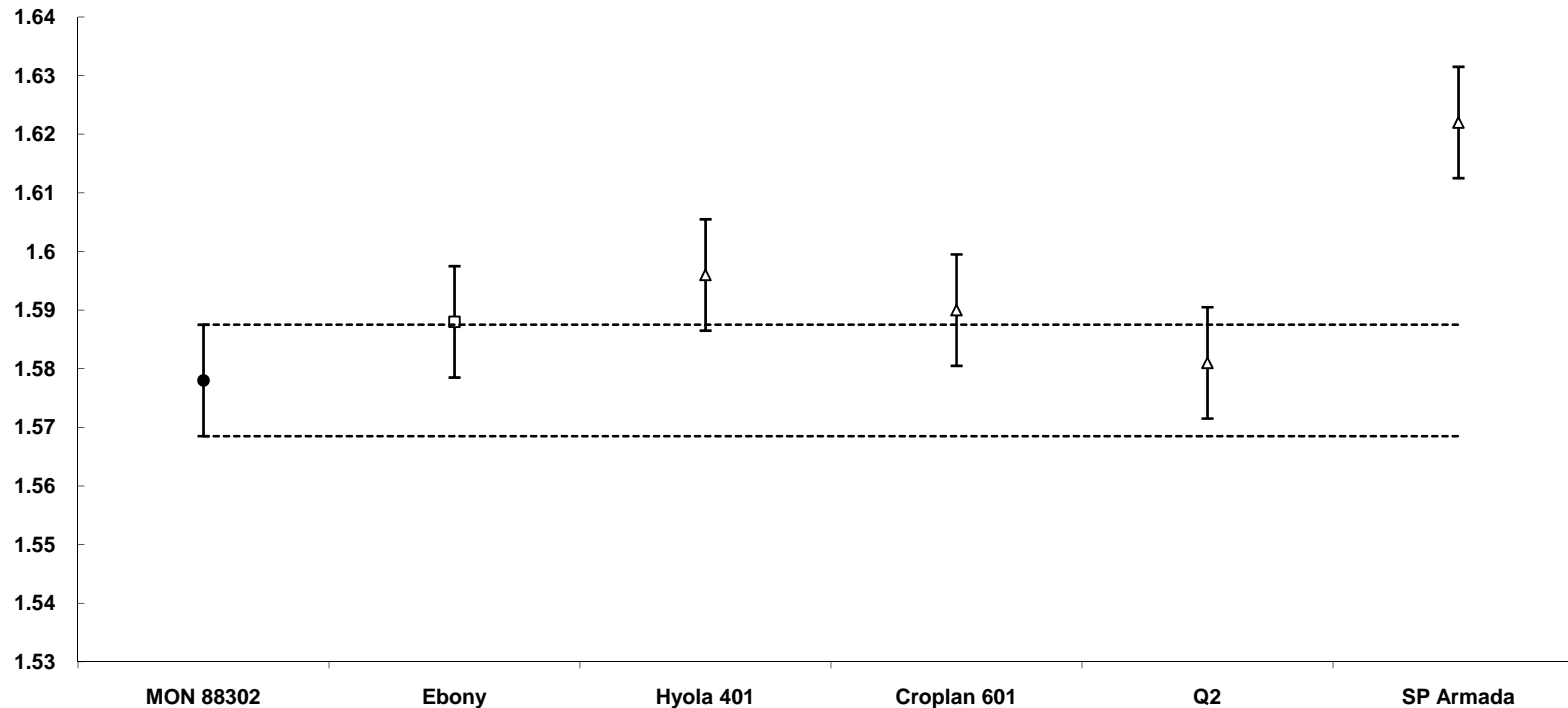


Figure 3. Comparison of Adjusted Feed Conversion (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Adjusted feed conversion (kg/kg adjusted for R/M birds), day 0-42, for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping treatments are statistically different at the 5% level of significance.

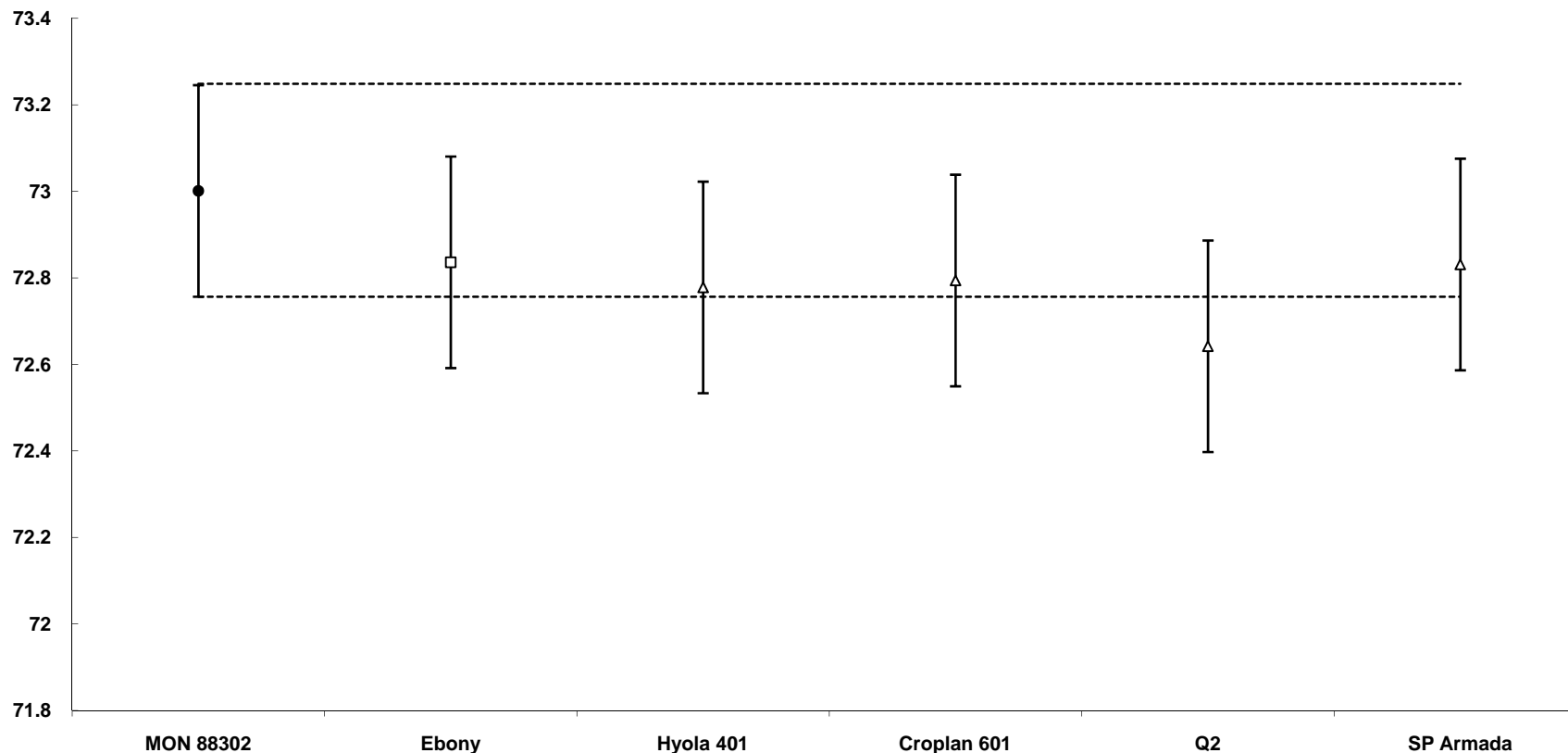


Figure 4. Comparison of Percent Chilled Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Percent Chilled Weight (Chilled Wt/Live Wt x 100), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping treatments are statistically different at the 5% level of significance.

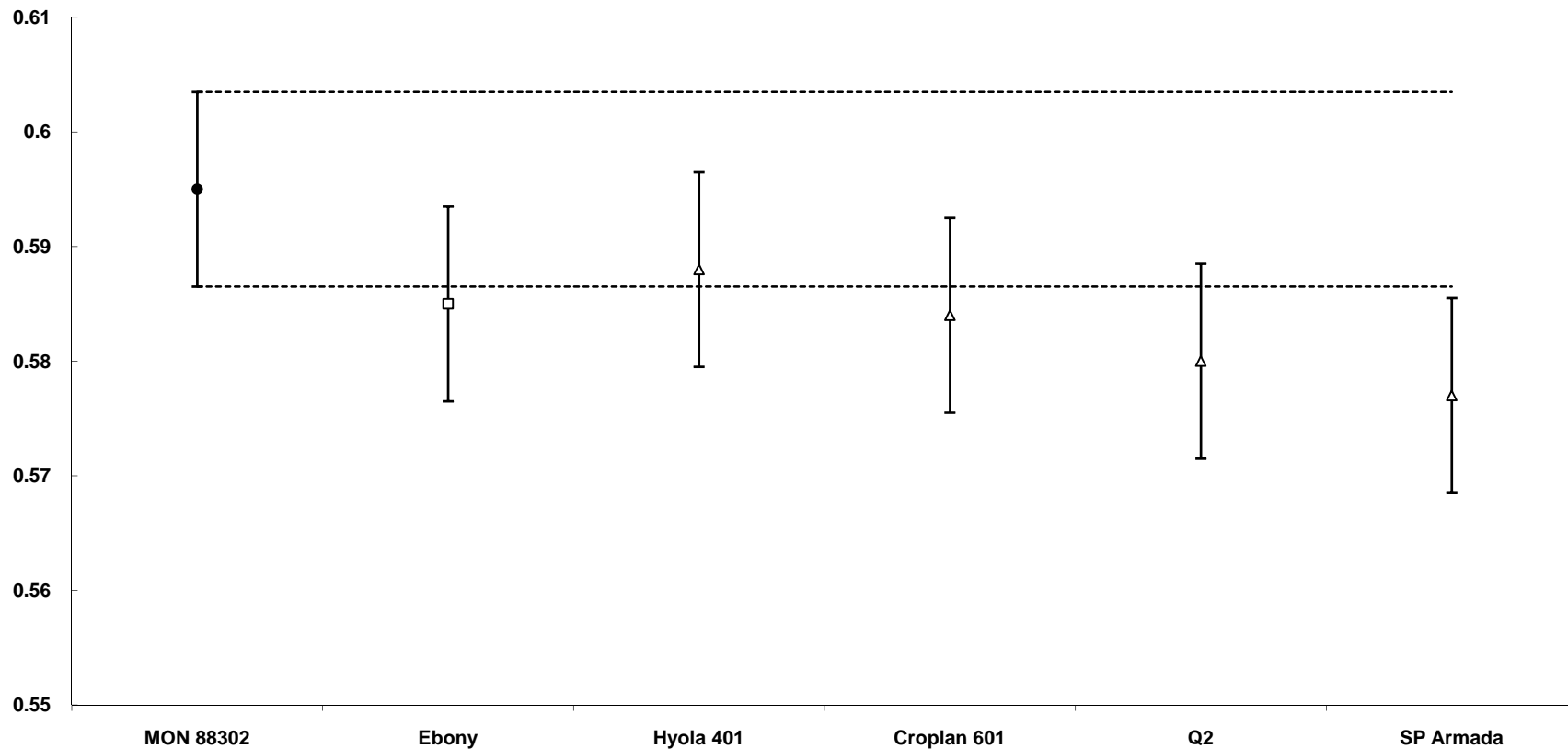


Figure 5. Comparison of Average Breast Weight for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average Breast Weight (kg/bird), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one half the 5% Least Significant Difference (LSD). Therefore, if the overall F-test is significant at $P < 0.05$, any two non-overlapping treatments are statistically different at the 5% level of significance.

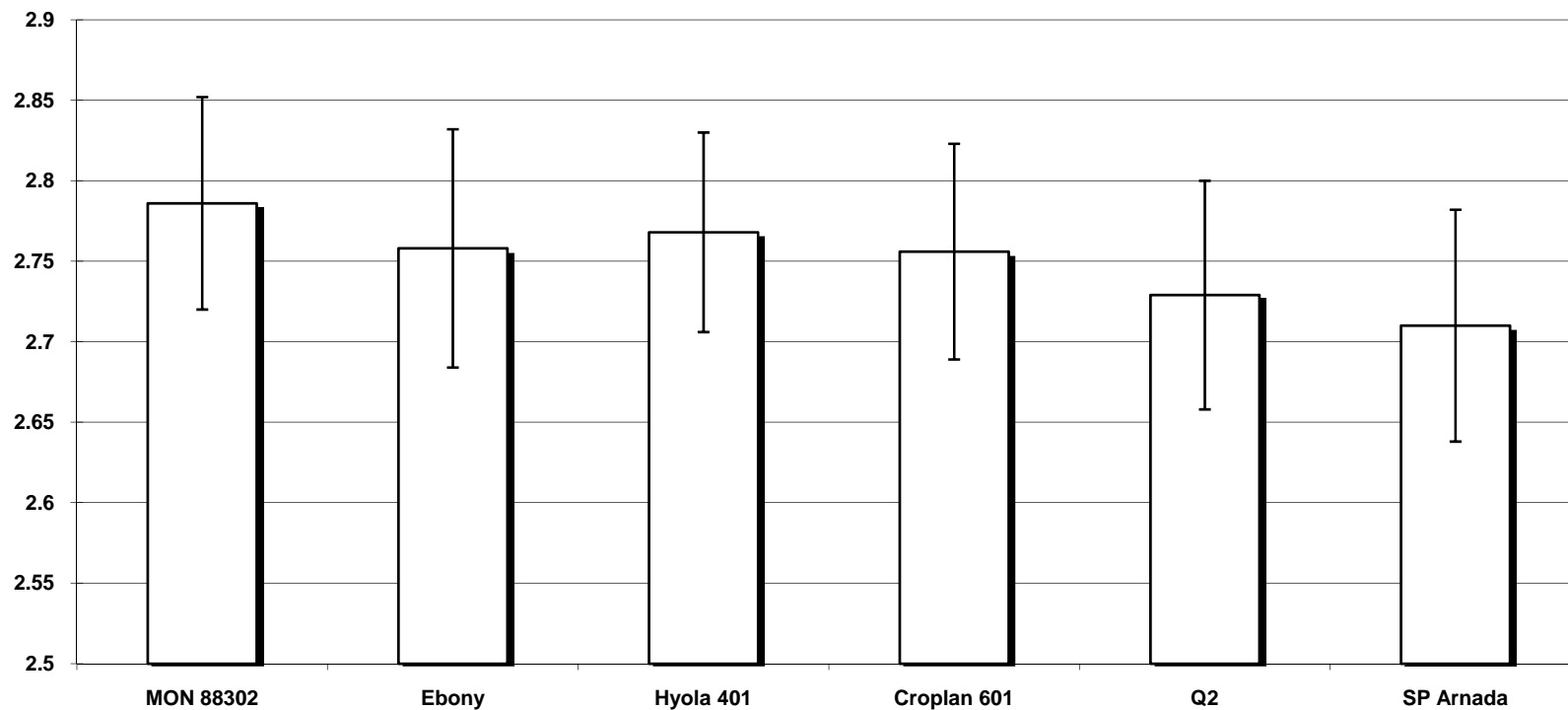


Figure 6. Summary of Bird Weight Day 42 (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average Bird Weight day 42 (kg/bird), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one standard error of the mean (SEM).

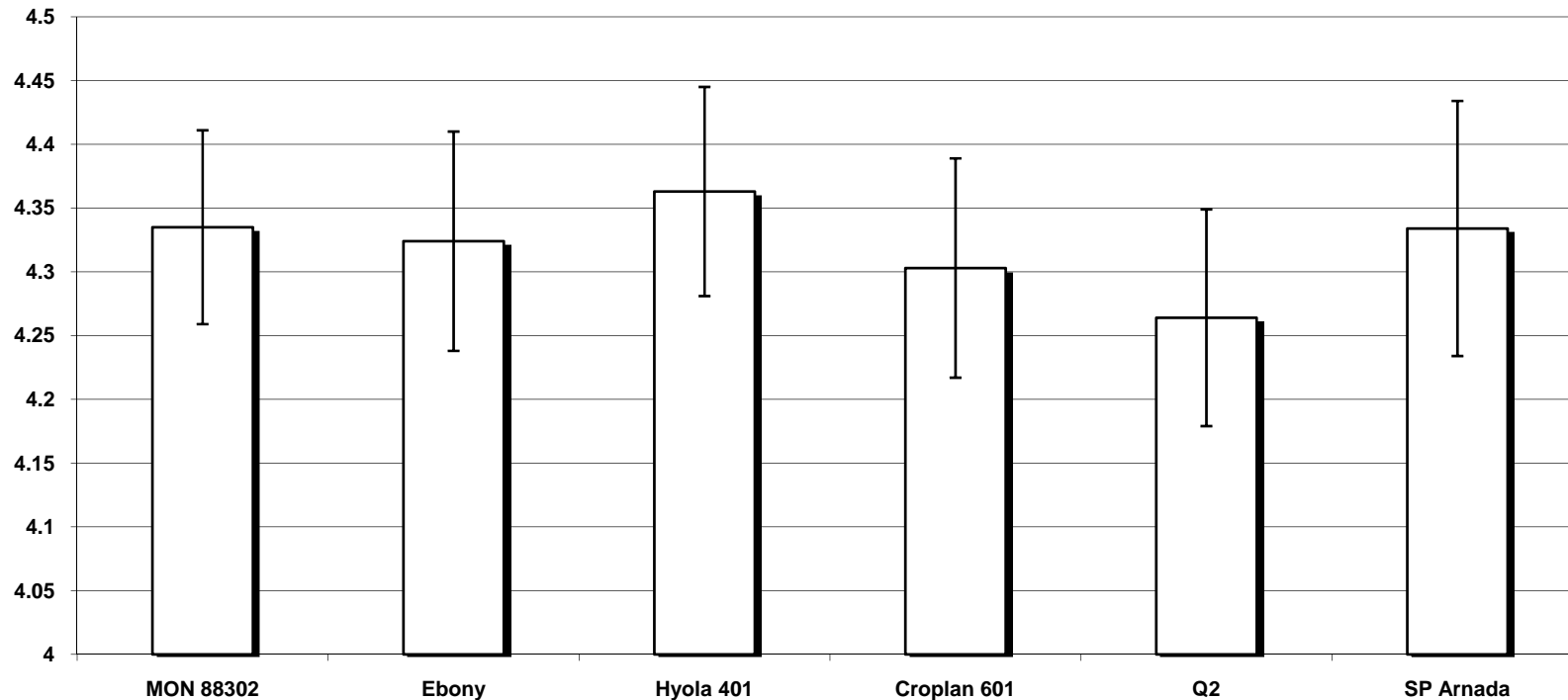


Figure 7. Summary of Average Feed Intake (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average feed intake (kg/bird), day 0-42, for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one standard error of the mean (SEM).

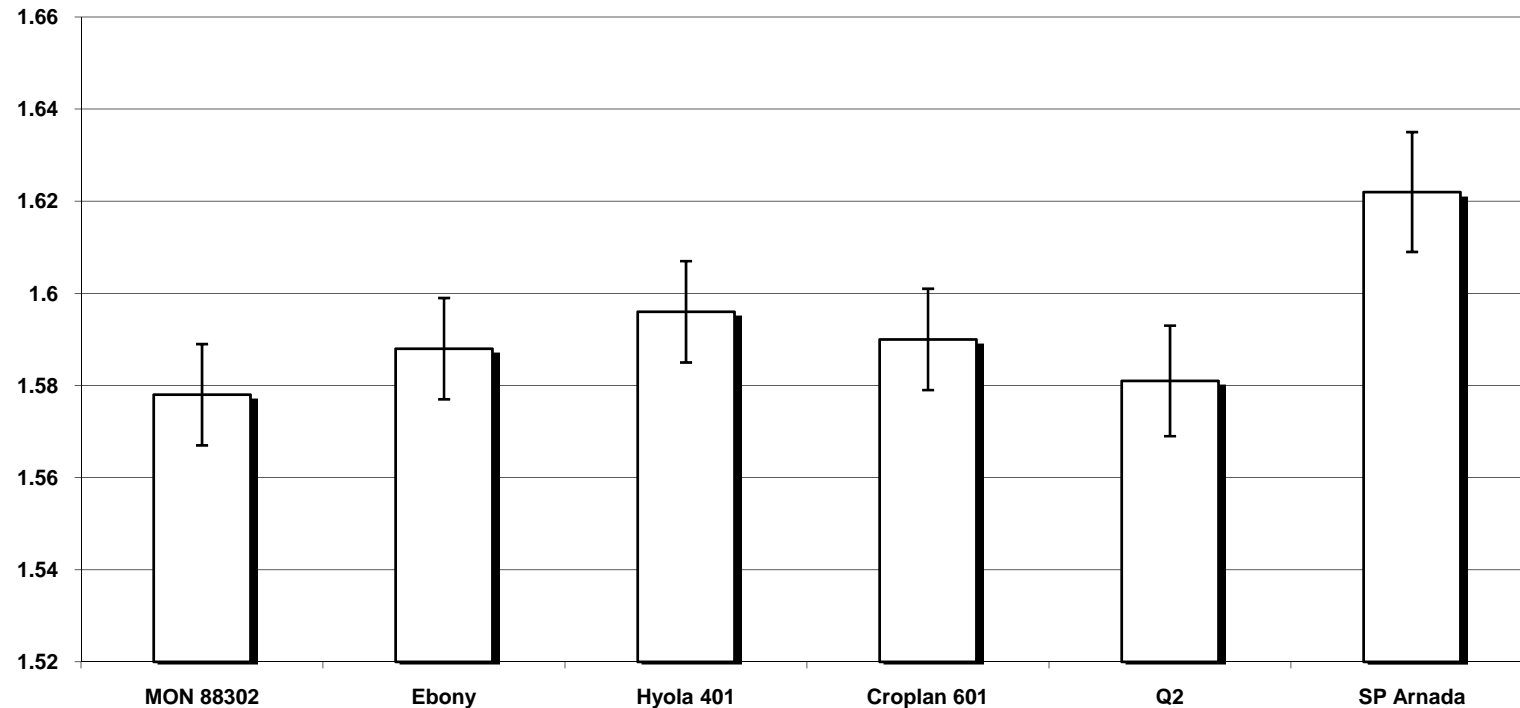


Figure 8. Summary of Adjusted Feed Conversion (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Adjusted feed conversion (kg/kg adjusted for R/M birds), day 0-42, for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one standard error of the mean (SEM).

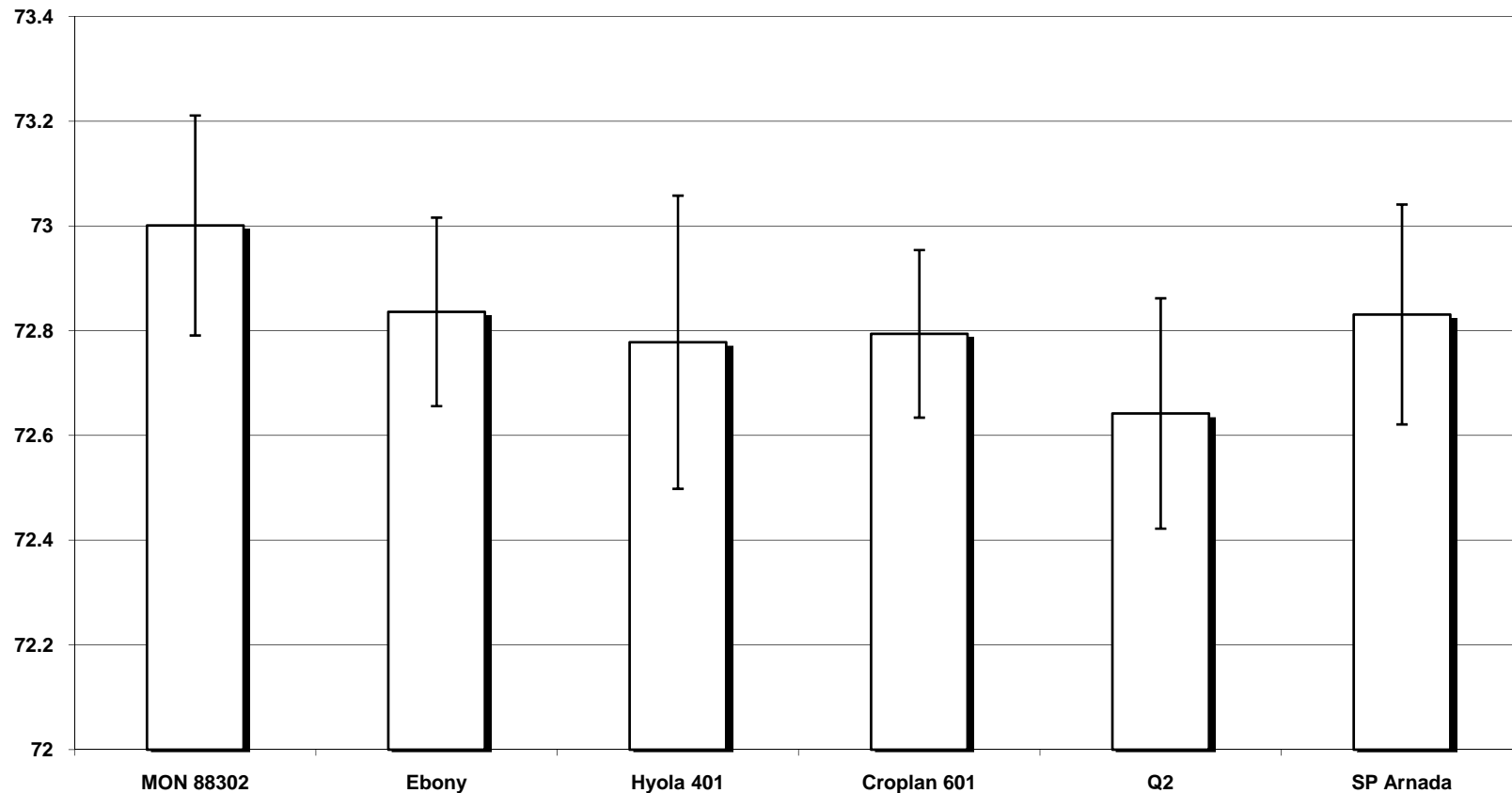


Figure 9. Summary of Percent Chilled Weight (males and females combined) for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Percent Chilled Weight ($\text{Chilled Wt/Live Wt} \times 100$), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one standard error of the mean (SEM).

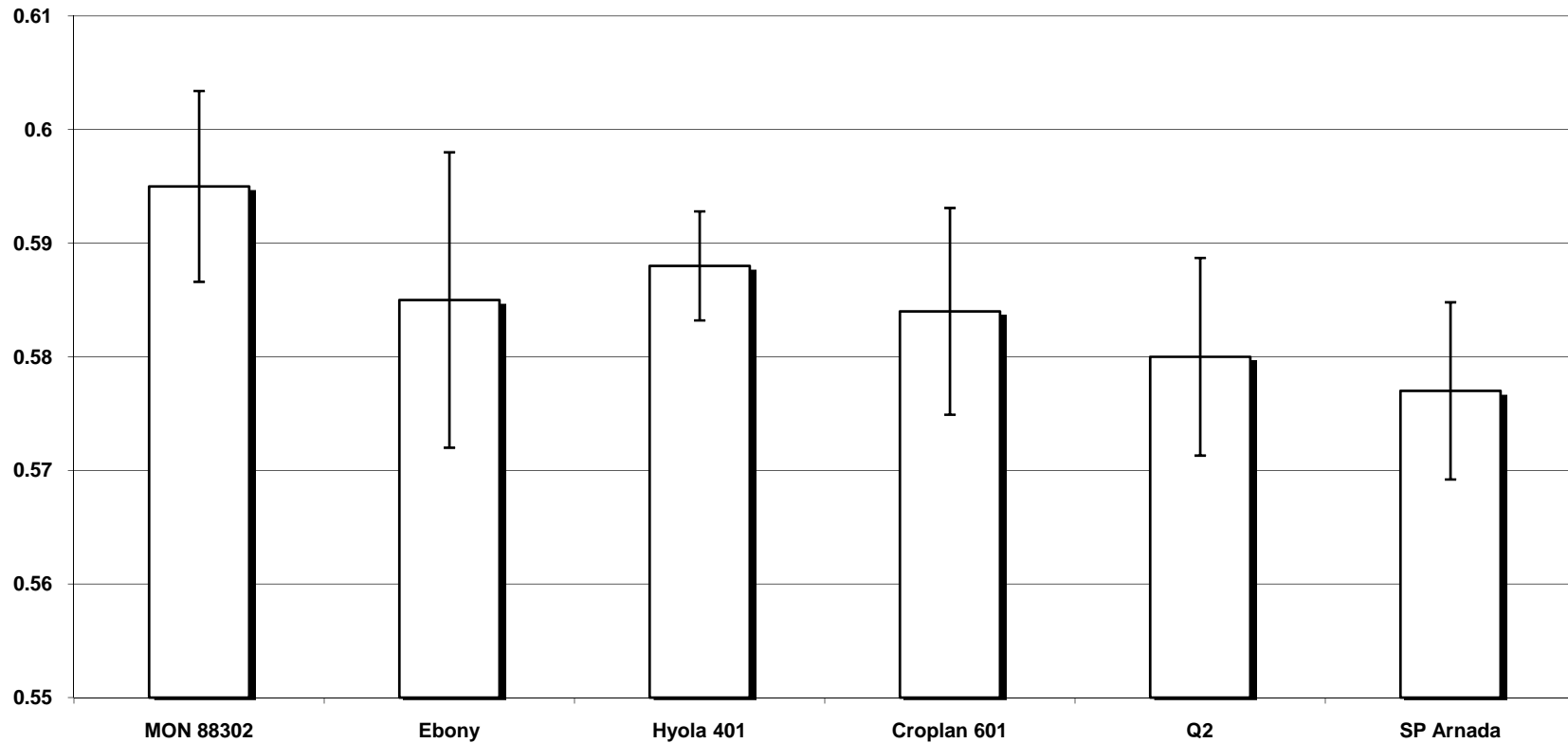


Figure 10. Summary of Average Breast Weight for broilers fed diets containing canola meal produced from MON 88302, Control or Reference canola

Average Breast Weight (kg/bird), for broilers fed diets containing canola meal produced from each variety. Error bars are \pm one standard error of the mean (SEM).

Appendix 1 - Data Listing**Table 1. Broiler Performance Data**

Trt	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Bird Weight Day 42, kg/bird	Aver. Feed Intake, kg/bird	Feed:Gain (Feed Consumed/ Wt Gain)	R/M Weight (Wt of removed & dead birds), kg	Adjusted Feed:Gain (adjust for R/M birds)
1	1	Croplan 601	M	4	40.17	2.92	4.55	1.58	0.20	1.58
			F	9	38.50	2.51	3.98	1.77	1.96	1.64
1	2	Croplan 601	M	17	40.83	3.06	4.64	1.54	0.25	1.53
			F	27	40.00	2.57	4.08	1.61	0.25	1.60
1	3	Croplan 601	M	30	40.50	2.84	4.43	1.58	0.21	1.57
			F	35	38.33	2.55	3.99	1.72	1.76	1.60
1	4	Croplan 601	M	43	40.00	2.91	4.53	1.58	0.22	1.57
			F	49	38.67	2.65	4.15	1.75	1.61	1.64
1	5	Croplan 601	M	79	38.33	3.00	4.60	1.67	1.90	1.56
			F	75	39.00	2.55	4.07	1.77	2.56	1.60
2	1	SP Armada	M	3	41.17	2.96	4.50	1.70	2.24	1.57
			F	6	39.67	2.56	4.17	1.66	0.19	1.65
2	2	SP Armada	M	26	40.17	2.88	4.67	1.64	0.23	1.63
			F	19	40.00	2.52	3.95	1.70	1.07	1.63
2	3	SP Armada	M	31	39.17	2.82	4.45	1.60	0.23	1.59
			F	37	39.00	2.44	4.04	1.83	2.48	1.65

Table 1. Broiler Performance Data (cont.)

Trt	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Bird Weight Day 42, kg/bird	Aver. Feed Intake, kg/bird	Feed:Gain (Feed Consumed/Wt Gain)	R/M Weight (Wt of removed & dead birds), kg	Adjusted Feed:Gain (adjust for R/M birds)
2	4	SP Armada	M	50	39.00	2.95	4.67	1.60	0.21	1.60
			F	53	38.50	2.44	3.86	1.61	0.23	1.60
2	5	SP Armada	M	74	40.00	2.98	4.73	1.61	0.21	1.60
			F	72	39.83	2.54	4.29	1.71	0.23	1.70
3	1	Q2	M	12	41.17	2.91	4.49	1.56	0.24	1.56
			F	11	39.33	2.58	4.12	1.62	0.25	1.61
3	2	Q2	M	22	40.50	3.00	4.56	1.54	0.23	1.53
			F	18	38.83	2.53	4.00	1.61	0.20	1.60
3	3	Q2	M	39	40.83	2.91	4.38	1.53	0.24	1.52
			F	36	38.33	2.44	3.92	1.65	0.35	1.63
3	4	Q2	M	42	41.00	2.96	4.62	1.58	0.21	1.57
			F	47	39.17	2.49	3.93	1.61	0.24	1.59
3	5	Q2	M	76	40.33	2.89	4.45	1.56	0.15	1.56
			F	73	41.00	2.58	4.16	1.64	0.26	1.63
4	1	Hyola 401	M	2	39.17	2.98	4.61	1.57	0.22	1.56
			F	7	39.50	2.56	3.98	1.72	1.77	1.61

Table 1. Broiler Performance Data (cont.)

Trt	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Bird Weight Day 42, kg/bird	Aver. Feed Intake, kg/bird	Feed:Gain (Feed Consumed/Wt Gain)	R/M Weight (Wt of removed & dead birds), kg	Adjusted Feed:Gain (adjust for R/M birds)
4	2	Hyola 401	M	15	41.00	2.93	4.54	1.57	0.22	1.56
			F	14	40.50	2.57	4.11	1.63	0.18	1.62
4	3	Hyola 401	M	33	39.50	2.91	4.47	1.56	0.22	1.55
			F	28	40.33	2.62	4.22	1.64	0.23	1.63
4	4	Hyola 401	M	44	39.33	2.96	4.64	1.59	0.22	1.58
			F	45	40.67	2.58	4.07	1.60	0.23	1.60
4	5	Hyola 401	M	70	40.00	2.99	4.69	1.59	0.23	1.58
			F	77	38.67	2.60	4.30	1.68	0.22	1.67
5	1	Ebony	M	8	40.67	3.04	4.64	1.59	0.70	1.56
			F	13	38.83	2.55	4.09	1.63	0.44	1.61
5	2	Ebony	M	24	39.67	3.00	4.51	1.68	2.48	1.54
			F	23	38.67	2.59	4.02	1.58	0.20	1.57
5	3	Ebony	M	34	40.17	2.86	4.38	1.70	2.30	1.57
			F	29	38.00	2.51	4.07	1.80	2.48	1.63
5	4	Ebony	M	48	39.83	2.86	4.48	1.59	0.21	1.58
			F	52	39.00	2.53	4.10	1.64	0.22	1.64

Table 1. Broiler Performance Data (cont.)

Trt	Block	Treatment	Gender	Pen #	Bird Weight Day 0, g/bird	Bird Weight Day 42, kg/bird	Aver. Feed Intake, kg/bird	Feed:Gain (Feed Consumed/ Wt Gain)	R/M Weight (Wt of removed & dead birds), kg	Adjusted Feed:Gain (adjust for R/M birds)
5	5	Ebony	M	68	40.67	3.09	4.79	1.57	0.22	1.56
			F	71	38.50	2.55	4.15	1.65	0.24	1.64
6	1	MON 88302	M	5	39.50	3.00	4.65	1.57	0.22	1.57
			F	10	38.83	2.52	4.04	1.63	0.25	1.62
6	2	MON 88302	M	25	39.17	2.96	4.50	1.54	0.25	1.53
			F	16	38.33	2.63	4.20	1.77	2.74	1.59
6	3	MON 88302	M	38	39.67	3.04	4.47	1.65	2.16	1.54
			F	32	38.33	2.56	4.05	1.60	0.22	1.60
6	4	MON 88302	M	46	39.17	2.86	4.40	1.56	0.23	1.55
			F	51	39.33	2.67	4.13	1.75	2.43	1.59
6	5	MON 88302	M	69	40.00	3.02	4.69	1.58	0.22	1.57
			F	78	37.83	2.60	4.21	1.64	0.21	1.63

Appendix 1 - Data Listing**Table 2A. Broiler Process Data (weights, by pen)**

Trt #	Block	Treatment	Gender	Pen #	Avg Processing Live Body Wt, kg/bird	Mean Fat Pad Weight, kg	Mean Chilled Weight, kg	Mean Wings Wt, kg	Mean Drum Wt, kg	Mean Thigh Wt, kg	Mean Breast Wt, kg
1	1	Croplan 601	M	4	2.86	0.035	2.06	0.22	0.27	0.36	0.58
			F	9	2.51	0.039	1.84	0.19	0.23	0.32	0.56
1	2	Croplan 601	M	17	2.99	0.034	2.19	0.22	0.30	0.39	0.64
			F	27	2.56	0.040	1.88	0.19	0.24	0.32	0.57
1	3	Croplan 601	M	30	2.78	0.029	2.03	0.22	0.28	0.36	0.58
			F	35	2.52	0.040	1.83	0.19	0.24	0.31	0.55
1	4	Croplan 601	M	43	2.85	0.036	2.07	0.21	0.28	0.37	0.60
			F	49	2.65	0.044	1.94	0.20	0.24	0.33	0.59
1	5	Croplan 601	M	79	2.93	0.036	2.12	0.22	0.29	0.38	0.62
			F	75	2.54	0.040	1.84	0.19	0.24	0.31	0.56
2	1	SP Armada	M	3	2.88	0.030	2.10	0.22	0.28	0.37	0.61
			F	6	2.53	0.036	1.86	0.20	0.24	0.30	0.57
2	2	SP Armada	M	26	2.81	0.034	2.02	0.22	0.28	0.36	0.58
			F	19	2.55	0.036	1.87	0.19	0.24	0.33	0.57

Table 2A. Broiler Process Data (weights, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Avg Processing Live Body Wt, kg/bird	Mean Fat Pad Weight, kg	Mean Chilled Weight, kg	Mean Wings Wt, kg	Mean Drum Wt, kg	Mean Thigh Wt, kg	Mean Breast Wt, kg
2 3		SP Armada	M	31	2.73	0.031	1.98	0.21	0.27	0.35	0.57
			F	37	2.44	0.036	1.79	0.19	0.23	0.32	0.54
2 4		SP Armada	M	50	2.87	0.034	2.09	0.23	0.28	0.35	0.62
			F	53	2.45	0.035	1.79	0.19	0.23	0.30	0.54
2 5		SP Armada	M	74	2.90	0.029	2.08	0.22	0.28	0.37	0.59
			F	72	2.55	0.044	1.86	0.19	0.24	0.32	0.58
3 1		Q2	M	12	2.86	0.032	2.05	0.22	0.27	0.35	0.60
			F	11	2.62	0.039	1.92	0.20	0.25	0.33	0.60
3 2		Q2	M	22	2.91	0.035	2.14	0.22	0.30	0.38	0.60
			F	18	2.52	0.038	1.83	0.19	0.23	0.31	0.56
3 3		Q2	M	39	2.83	0.031	2.05	0.22	0.28	0.35	0.58
			F	36	2.44	0.034	1.79	0.19	0.24	0.31	0.52
3 4		Q2	M	42	2.88	0.036	2.06	0.22	0.28	0.35	0.60
			F	47	2.51	0.043	1.84	0.19	0.24	0.31	0.55
3 5		Q2	M	76	2.82	0.034	2.05	0.22	0.28	0.35	0.62
			F	73	2.61	0.040	1.90	0.20	0.24	0.33	0.57

Table 2A. Broiler Process Data (weights, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Avg Processing Live Body Wt, kg/bird	Mean Fat Pad Weight, kg	Mean Chilled Weight, kg	Mean Wings Wt, kg	Mean Drum Wt, kg	Mean Thigh Wt, kg	Mean Breast Wt, kg
4	1	Hyola 401	M	2	2.90	0.033	2.10	0.23	0.28	0.36	0.61
			F	7	2.55	0.033	1.90	0.20	0.25	0.31	0.57
4	2	Hyola 401	M	15	2.85	0.030	2.05	0.22	0.27	0.36	0.60
			F	14	2.57	0.040	1.84	0.19	0.24	0.31	0.56
4	3	Hyola 401	M	33	2.82	0.038	2.05	0.22	0.28	0.36	0.58
			F	28	2.61	0.046	1.93	0.20	0.25	0.33	0.59
4	4	Hyola 401	M	44	2.88	0.030	2.10	0.23	0.29	0.37	0.60
			F	45	2.56	0.035	1.88	0.20	0.24	0.32	0.57
4	5	Hyola 401	M	70	2.91	0.033	2.10	0.22	0.29	0.38	0.59
			F	77	2.63	0.038	1.93	0.20	0.24	0.33	0.59
5	1	Ebony	M	8	2.97	0.040	2.15	0.23	0.29	0.37	0.63
			F	13	2.54	0.039	1.87	0.19	0.25	0.32	0.56
5	2	Ebony	M	24	2.91	0.037	2.10	0.22	0.28	0.38	0.61
			F	23	2.56	0.039	1.89	0.20	0.24	0.32	0.57
5	3	Ebony	M	34	2.79	0.038	2.04	0.21	0.28	0.36	0.60
			F	29	2.51	0.046	1.83	0.19	0.23	0.32	0.55

Table 2A. Broiler Process Data (weights, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Avg Processing Live Body Wt, kg/bird	Mean Fat Pad Weight, kg	Mean Chilled Weight, kg	Mean Wings Wt, kg	Mean Drum Wt, kg	Mean Thigh Wt, kg	Mean Breast Wt, kg
5	4	Ebony	M	48	2.80	0.035	2.02	0.22	0.27	0.36	0.60
			F	52	2.54	0.040	1.86	0.19	0.24	0.32	0.57
5	5	Ebony	M	68	3.02	0.036	2.19	0.23	0.29	0.38	0.66
			F	71	2.49	0.043	1.82	0.19	0.24	0.35	0.51
6	1	MON 88302	M	5	2.95	0.041	2.16	0.23	0.29	0.38	0.63
			F	10	2.53	0.044	1.87	0.19	0.24	0.32	0.57
6	2	MON 88302	M	25	2.89	0.037	2.10	0.22	0.29	0.38	0.59
			F	16	2.65	0.040	1.96	0.20	0.25	0.34	0.60
6	3	MON 88302	M	38	2.97	0.037	2.15	0.23	0.29	0.38	0.62
			F	32	2.56	0.038	1.87	0.20	0.25	0.31	0.54
6	4	MON 88302	M	46	2.80	0.030	2.04	0.21	0.28	0.37	0.59
			F	51	2.68	0.047	1.95	0.20	0.24	0.34	0.59
6	5	MON 88302	M	69	2.97	0.035	2.13	0.22	0.29	0.37	0.63
			F	78	2.62	0.043	1.93	0.20	0.24	0.33	0.59

Appendix 1 - Data Listing**Table 2B. Broiler Process Data (percentages, by pen)**

Trt #	Block	Treatment	Gender	Pen #	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chilled Wt x 100)	Percent Wing Weight (Wing Wt/ Chilled Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chilled Wt x 100)	Percent Drum Weight (Drum Wt/ Chilled Wt x 100)
1	1	Croplan 601	M	4	71.83	1.20	28.10	10.67	17.52	13.35
			F	9	73.22	1.57	30.50	10.59	17.42	12.71
1	2	Croplan 601	M	17	73.08	1.13	29.15	10.17	17.81	13.59
			F	27	73.47	1.56	30.16	10.21	16.95	12.88
1	3	Croplan 601	M	30	72.87	1.03	28.57	10.91	17.67	13.70
			F	35	72.77	1.57	29.88	10.59	16.76	13.12
1	4	Croplan 601	M	43	72.68	1.26	28.96	10.38	17.88	13.59
			F	49	73.26	1.64	30.39	10.36	16.90	12.46
1	5	Croplan 601	M	79	72.45	1.24	29.22	10.29	17.84	13.69
			F	75	72.31	1.56	30.35	10.36	17.15	13.09
2	1	SP Armada	M	3	73.03	1.05	28.91	10.42	17.61	13.22
			F	6	73.56	1.43	30.50	10.92	16.09	12.68
2	2	SP Armada	M	26	71.98	1.21	28.52	10.64	17.78	13.99
			F	19	73.49	1.42	30.58	10.33	17.39	12.74

Table 2B. Broiler Process Data (percentages, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chilled Wt x 100)	Percent Wing Weight (Wing Wt/ Chilled Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chilled Wt x 100)	Percent Drum Weight (Drum Wt/ Chilled Wt x 100)
2	3	SP Armada	M	31	72.42	1.14	28.64	10.76	17.62	13.71
			F	37	73.58	1.48	30.16	10.37	17.70	12.81
2	4	SP Armada	M	50	72.67	1.19	29.62	10.88	16.87	13.67
			F	53	73.01	1.45	30.39	10.51	16.95	12.76
2	5	SP Armada	M	74	71.61	1.01	28.46	10.78	17.61	13.70
			F	72	72.96	1.71	31.11	10.10	17.10	12.64
3	1	Q2	M	12	71.65	1.10	29.13	10.70	16.99	13.13
			F	11	73.27	1.51	31.12	10.23	17.13	12.90
3	2	Q2	M	22	73.28	1.20	28.03	10.45	18.01	13.90
			F	18	72.58	1.51	30.59	10.58	17.00	12.41
3	3	Q2	M	39	72.47	1.11	28.40	10.78	17.29	13.69
			F	36	73.29	1.40	29.28	10.82	17.30	13.23
3	4	Q2	M	42	71.37	1.23	28.93	10.90	16.96	13.55
			F	47	73.32	1.71	30.11	10.35	16.95	12.92

Table 2B. Broiler Process Data (percentages, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chilled Wt x 100)	Percent Wing Weight (Wing Wt/ Chilled Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chilled Wt x 100)	Percent Drum Weight (Drum Wt/ Chilled Wt x 100)
3	5	Q2	M	76	72.50	1.21	30.09	10.65	17.24	13.53
			F	73	72.68	1.53	30.32	10.53	17.22	12.86
4	1	Hyola 401	M	2	72.47	1.12	29.05	10.71	17.24	13.39
			F	7	74.46	1.31	30.09	10.41	16.54	12.96
4	2	Hyola 401	M	15	71.78	1.06	29.27	10.65	17.40	13.42
			F	14	71.60	1.54	30.55	10.47	16.92	12.99
4	3	Hyola 401	M	33	72.59	1.35	28.40	10.51	17.78	13.66
			F	28	73.63	1.75	30.71	10.35	16.96	12.81
4	4	Hyola 401	M	44	72.73	1.04	28.81	10.83	17.69	13.76
			F	45	73.19	1.37	30.43	10.63	17.05	12.90
4	5	Hyola 401	M	70	72.08	1.14	28.22	10.46	17.89	13.58
			F	77	73.25	1.42	30.81	10.37	17.06	12.47
5	1	Ebony	M	8	72.33	1.33	29.20	10.66	17.21	13.31
			F	13	73.54	1.53	29.95	10.40	17.14	13.14

Table 2B. Broiler Process Data (percentages, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chilled Wt x 100)	Percent Wing Weight (Wing Wt/ Chilled Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chilled Wt x 100)	Percent Drum Weight (Drum Wt/ Chilled Wt x 100)
5	2	Ebony	M	24	72.12	1.28	28.96	10.48	17.91	13.42
			F	23	73.61	1.50	30.32	10.78	17.00	12.73
5	3	Ebony	M	34	73.01	1.34	29.49	10.41	17.86	13.56
			F	29	72.84	1.84	30.06	10.42	17.24	12.69
5	4	Ebony	M	48	72.31	1.26	29.41	10.66	17.77	13.55
			F	52	73.41	1.56	30.30	10.36	17.18	12.88
5	5	Ebony	M	68	72.26	1.19	30.03	10.72	17.43	13.29
			F	71	72.94	1.74	28.22	10.31	19.02	13.11
6	1	MON 88302	M	5	73.31	1.41	29.17	10.46	17.66	13.48
			F	10	73.80	1.73	30.70	10.30	16.88	12.87
6	2	MON 88302	M	25	72.78	1.28	28.14	10.51	17.87	13.70
			F	16	73.97	1.52	30.63	10.16	17.28	12.96
6	3	MON 88302	M	38	72.47	1.22	28.86	10.53	17.87	13.52
			F	32	72.94	1.47	29.02	10.69	16.78	13.35

Table 2B. Broiler Process Data (percentages, by pen) (cont.)

Trt #	Block	Treatment	Gender	Pen #	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	Percent Fat Pad Weight (Fat Pad Wt / Live Wt x 100)	Percent Breast Weight (Breast Wt/ Chilled Wt x 100)	Percent Wing Weight (Wing Wt/ Chilled Wt x 100)	Percent Thigh Weight (Thigh Wt/ Chilled Wt x 100)	Percent Drum Weight (Drum Wt/ Chilled Wt x 100)
6	4	MON 88302	M	46	72.78	1.07	28.80	10.52	18.21	13.53
			F	51	72.80	1.76	30.27	10.31	17.28	12.52
6	5	MON 88302	M	69	71.66	1.17	29.34	10.53	17.44	13.47
			F	78	73.50	1.66	30.42	10.41	17.07	12.44

Appendix 1 - Data Listing

Table 3. Moisture, protein & fat analysis of breast and thigh meat

Trt #	Block	Treatment	Gender	Pen #	Breast Moisture (g/100g)	Breast Protein (g/100g)	Breast Fat (g/100g)	Thigh Moisture (g/100g)	Thigh Protein (g/100g)	Thigh Fat (g/100g)
1	1	Croplan 601	M	4	74.22	23.84	1.15	75.38	23.62	1.30
			F	9	75.72	23.00	0.88	76.27	22.14	1.45
1	2	Croplan 601	M	17	75.47	22.59	1.29	77.60	21.32	1.19
			F	27	75.57	23.13	0.89	76.96	21.07	1.16
1	3	Croplan 601	M	30	76.66	22.05	1.90	79.34	19.09	1.27
			F	35	75.37	22.87	1.02	76.92	21.98	1.23
1	4	Croplan 601	M	43	76.29	22.64	1.00	78.64	20.05	1.54
			F	49	75.60	23.03	1.10	76.70	20.88	1.97
1	5	Croplan 601	M	79	77.91	21.17	1.64	77.49	21.45	1.01
			F	75	74.88	23.51	1.17	76.31	22.18	1.19
2	1	SP Armada	M	3	76.84	21.26	1.66	77.69	20.79	1.25
			F	6	74.97	23.69	0.66	76.95	21.70	1.15
2	2	SP Armada	M	26	75.52	23.11	1.56	77.54	21.20	1.19
			F	19	75.26	23.29	1.01	77.67	19.91	1.66
2	3	SP Armada	M	31	75.30	24.00	1.17	77.31	20.80	1.24
			F	37	75.47	23.15	0.92	77.46	21.37	1.16

Table 3. Moisture, protein & fat analysis of breast and thigh meat (cont.)

Trt #	Block	Treatment	Gender	Pen #	Breast Moisture (g/100g)	Breast Protein (g/100g)	Breast Fat (g/100g)	Thigh Moisture (g/100g)	Thigh Protein (g/100g)	Thigh Fat (g/100g)
2	4	SP Armada	M	50	74.20	22.54	1.57	76.76	21.70	1.85
			F	53	75.71	22.64	1.36	77.19	20.18	1.86
2	5	SP Armada	M	74	75.83	22.83	1.24	77.70	19.34	1.10
			F	72	74.74	23.50	0.96	76.50	21.50	2.64
3	1	Q2	M	12	75.49	21.99	1.90	76.87	21.11	1.50
			F	11	75.31	23.19	0.86	77.61	20.75	1.60
3	2	Q2	M	22	76.50	22.33	0.96	77.94	20.42	1.58
			F	18	75.05	22.78	1.88	76.96	20.61	1.79
3	3	Q2	M	39	75.51	22.82	1.84	77.74	19.84	1.59
			F	36	75.13	23.27	1.42	77.38	20.35	1.10
3	4	Q2	M	42	75.43	23.81	0.96	77.82	20.90	1.37
			F	47	75.69	22.74	1.15	77.37	20.78	1.43
3	5	Q2	M	76	75.36	23.52	0.86	77.58	21.12	1.05
			F	73	74.97	24.09	0.56	76.97	21.22	1.34
4	1	Hyola 401	M	2	74.54	23.97	1.33	77.28	20.43	1.74
			F	7	75.25	23.77	0.59	77.14	21.50	1.16

Table 3. Moisture, protein & fat analysis of breast and thigh meat (cont.)

Trt #	Block	Treatment	Gender	Pen #	Breast Moisture (g/100g)	Breast Protein (g/100g)	Breast Fat (g/100g)	Thigh Moisture (g/100g)	Thigh Protein (g/100g)	Thigh Fat (g/100g)
4	2	Hyola 401	M	15	74.38	24.30	1.22	76.43	22.10	1.44
			F	14	75.24	23.69	0.72	77.22	20.62	1.14
4	3	Hyola 401	M	33	75.84	23.00	1.92	77.51	20.96	1.75
			F	28	75.49	23.15	0.62	77.57	21.30	0.98
4	4	Hyola 401	M	44	75.60	22.56	1.47	77.84	20.56	1.86
			F	45	75.31	23.25	0.81	76.52	21.66	1.26
4	5	Hyola 401	M	70	75.06	23.17	2.03	78.42	19.84	1.55
			F	77	75.62	23.04	0.76	77.26	21.12	1.28
5	1	Ebony	M	8	76.41	22.04	1.14	77.39	21.19	1.82
			F	13	75.75	22.78	0.93	77.07	20.98	1.09
5	2	Ebony	M	24	74.90	23.24	1.44	76.73	21.23	1.08
			F	23	75.28	23.31	0.78	76.76	21.90	1.34
5	3	Ebony	M	34	76.18	22.52	1.69	78.92	19.22	1.47
			F	29	74.73	23.14	1.65	76.89	20.52	1.96
5	4	Ebony	M	48	74.72	23.91	1.25	77.01	21.71	1.66
			F	52	75.57	22.91	1.05	76.68	20.95	1.80

Table 3. Moisture, protein & fat analysis of breast and thigh meat (cont.)

Trt #	Block	Treatment	Gender	Pen #	Breast Moisture (g/100g)	Breast Protein (g/100g)	Breast Fat (g/100g)	Thigh Moisture (g/100g)	Thigh Protein (g/100g)	Thigh Fat (g/100g)
5	5	Ebony	M	68	75.20	22.53	1.80	77.40	20.52	1.43
			F	71	75.24	23.45	0.78	76.78	21.74	1.45
6	1	MON 88302	M	5	76.69	21.48	1.89	77.68	20.72	1.50
			F	10	74.99	23.85	0.84	76.43	21.68	1.52
6	2	MON 88302	M	25	76.03	22.38	1.41	78.13	20.71	1.54
			F	16	75.13	23.46	1.19	76.48	21.45	1.81
6	3	MON 88302	M	38	75.25	21.30	1.39	77.28	20.73	1.71
			F	32	75.17	23.14	1.46	77.55	20.07	1.44
6	4	MON 88302	M	46	75.95	23.01	1.51	78.43	19.03	1.60
			F	51	76.23	22.66	0.69	77.66	21.13	0.99
6	5	MON 88302	M	69	75.26	23.91	1.18	77.36	21.62	1.38
			F	78	74.41	24.16	0.71	76.35	20.80	1.46

Appendix 2. Standard error of means from model (1) and (2).

Model1_se*: pooled standard error of means for model (1)

Model2_test_se*: test standard error of means for model (2)

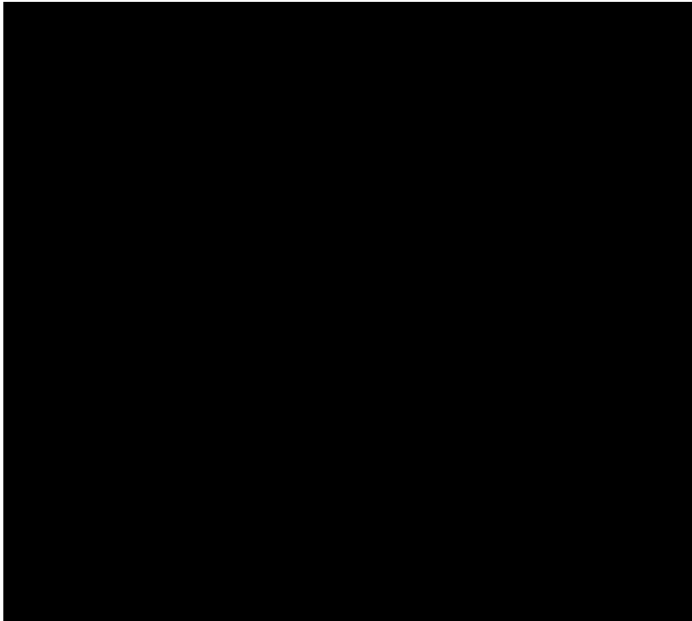
Model2_reference_se*: reference/control standard error of means for model (2)

*N=10 pen for each diet treatment. Model2_reference_se is estimated from the population of the control and six reference diets.

Standard error of means from model (1) and (2)

table	Variable	Model1_se	Model2_test_se	Model2_reference_se
1	Bird Weight Day 0, g/bird	0.2198	0.3200	0.1431
2	Bird Weight Day 42, kg/bird	0.0178	0.0238	0.0107
3	Average Feed Intake, kg/bird	0.0290	0.0367	0.0164
4	Average Bird Gain Day 42, kg/bird	0.0178	0.0239	0.0107
5	Feed Conversion (Feed Consumed/Wt Gain)	0.0174	0.0313	0.0140
6	Adjusted Feed Conversion (adjusted for R/M birds)	0.0068	0.0160	0.0072
7	Average Pre-Processing Live Body Weight, kg/bird	0.0178	0.0233	0.0104
8	Chilled Weight, kg/bird	0.0140	0.0173	0.0077
9	Fat Pad Weight, kg/bird	0.0010	0.0017	0.0008
10	Average Breast Weight, kg/bird	0.0060	0.0070	0.0031
11	Average Wing Weight, kg/bird	0.0016	0.0016	0.0007
12	Average Thigh Weight, kg/bird	0.0030	0.0048	0.0022
13	Average Drum Weight, kg/bird	0.0021	0.0022	0.0010
14	Percent Fat Pad Weight (Fat Pad Wt/Live Wt x 100)	0.0364	0.0607	0.0271
15	Percent Chilled Weight (Chilled Wt/Live Wt x 100)	0.1716	0.1622	0.0725
16	Percent Breast Weight (Breast Wt/Chilled Wt x 100)	0.1705	0.2070	0.0926
17	Percent Wing Weight (Wing Wt/Chilled Wt x 100)	0.0603	0.0585	0.0262
18	Percent Thigh Weight (Thigh Wt/Chilled Wt x 100)	0.1196	0.1478	0.0661
19	Percent Drum Weight (Drum Wt/Chilled Wt x 100)	0.0695	0.0673	0.0301
20	Breast Moisture (g/100g)	0.2185	0.2143	0.0958
21	Breast Protein (g/100g)	0.2237	0.2199	0.0984
22	Breast Fat (g/100g)	0.1026	0.1025	0.0458
23	Thigh Moisture (g/100g)	0.1977	0.1902	0.0851
24	Thigh Protein (g/100g)	0.2583	0.2496	0.1116
25	Thigh Fat (g/100g)	0.0952	0.1249	0.0558

Report Submitted by:



7/8/2011

Date

7-8-2011

Date