

# EStudy

## A Feeding Study Analysis Program

from Feed2Gain, LLC.

- Features – Uses the power of growth modeling to accurately compare growth from two diets to interpret a feeding study.
- Advantage – Interprets those difficult outcomes that defy valuation, better feed conversion, lower growth weight.
- Benefit – gives higher confidence in assigning value to an ingredient or treatment that benefits growth.

# EStudy

## A Feeding Study Analysis of a Feeding Trial

- The program gives you the best way to determine the benefits of changes made in a diet.
  - Use your matrix to identify the ingredients.
  - Input the control diet ingredients and the nutrient contents are calculated from your ingredients.
  - Enter the growth and the program determines the growth parameters that fit the growth of the control birds.
  - Input the test feed program and the model tells you the change in diet that best fits the change in growth seen.
  - Identify in the program which ingredient to re-evaluate and it even tells you the best nutrient profile of energy, protein and amino acids that fit the growth observed.

# EStudy

## A Feeding Study Analysis of a Feeding Trial

- Open your matrix with files, then select the ingredients used and the amounts.
- One can use total or available amino acids, just be consistent in the matrix.
- The program computes the nutrient content of the diet.
- Fill out the boxes and click “Fit Growth”.

The screenshot shows the 'Feed2Gain Systems' software interface. The window title is 'Feed2Gain Systems' and it has a menu bar with 'Files', 'Set Energy and Weight', 'Load Ingredient Matrix', and 'About'. The main interface is divided into three sections: 'CONTROL Diet', 'TEST Diet', and 'Results'.

**CONTROL Diet:** This section contains a table of ingredients and their amounts across three diets. The ingredients listed are:

Ing. No	Ing. Name	Diet 1	Diet 2	Diet 3
3	Wheat, Soft	60.23	66.74	70.15
7	Soybean 48	30.25	24.43	19.60
10	Meat Meal 49.3	4	4	6.90
13	Animal Fat	3.146	2.88	2.468
18	Dical PO4	.803	.614	0
20	Limestone	.5533	.4717	0
14	Salt	.523	.497	.499
16	DL MET	.22	.156	.162
21	Vitamin Premix	.16	.16	.12
22	Trace Minerals	.1	.1	.1
15	LYS HCL	.011		
		100.0	100.0	100.0

**TEST Diet:** This section contains input fields for 'Flock Sex' (Mixed), 'Flock Weight' (2.14 Kg), 'Flock Feed Conversion' (1.900), 'Average Flock Age, Days' (43), and 'No. of Diets' (3). There are also buttons for 'Fit Growth' and 'Clear Diets'.

**Results:** This section displays a table of nutrient content for Diet 2, Diet 3, and Diet 4. The nutrients listed are:

	Diet 2	Diet 3	Diet 4
Feed Weigh	2.3		
ENERGY	2919.	2951.	
PROTEIN	23.86	23.15	
ARGININE	1.452	1.381	
HISTIDINE	0.544	0.530	
LYSINE	1.352	1.356	
TRYPTOPH	0.308	0.296	
PHE_TYRO	2.025	1.958	
PHENYLAL	1.113	1.076	
MET_CYS	1.385	0.843	
METHIONIN	0.904	0.389	
THREONIN	0.904	0.889	
LEUCINE	1.696	1.652	
ISOLEUCIN	1.044	1.027	
VALINE	1.157	1.138	
FIBER %	3.014	2.954	

At the bottom right, there is a table for 'Week' and 'Temp' with rows 1 through 15. A note below it states: 'A value of Zero is Replaced by the Standard Temperature'. Another note at the bottom center states: 'A value of Zero for Amino Acids to be considered non-limiting.'.





# EStudy

## A Feeding Study Analysis of a Feeding Trial

- In our example, we used ingredient 3 as our test material.
- Choose, on the top right of the folder, how to evaluate the test ingredient, energy or protein only, or both, as selected here.

The screenshot displays the EStudy software interface with the following sections:

- CONTROL Diet** and **TEST Diet** tabs are active.
- Actual Results** section:
  - Flock Sex: **Mixed** (dropdown)
  - Flock Final Weight: **2.24** Kg
  - Flock Feed Conversion: **1.86**
  - Average Flock Age, Days: **43**
  - No. of Diets: **3** (dropdown)
- Results** section:
  - Test Ing No.: **3**
  - Effect on:  Energy,  Protein
- Ingredient Matrix** table:
 

Ing. No	Ing. Name	Diet 1	Diet 2	Diet 3
3	Wheat, Soft	60.23	66.74	70.15
7	Soybean 48	30.25	24.43	19.60
10	Meat Meal 49.3	4	4	6.90
13	Animal Fat	3.146	2.88	2.468
18	Dical PO4	.803	.614	0
20	Limestone	.5533	.4717	0
14	Salt	.523	.497	.499
16	DL MET	.22	.156	.162
21	Vitamin Premix	.16	.16	.12
22	Trace Minerals	.1	.1	.1
15	LYS HCL	.011		
- Nutrient Analysis** table:
 

	Diet 1	Diet 2	Diet 3
Feed Weigh	0.6	2.3	1.2664
ENERGY	3002	3038	307
PROTEIN	22.63	20.48	19.9
ARGININE	1.451	1.271	1.2
HISTIDINE	0.553	0.490	0.4f
LYSINE	1.205	1.038	0.9f
TRYPTOPH	0.313	0.277	0.2f
PHE_TYRO	1.904	1.704	1.5;
PHENYLAL	1.066	0.956	0.9f
MET_CYS	0.927	0.806	0.8f
METHIONIN	0.535	0.442	0.4;
THREONIN	0.843	0.752	0.7;
LEUCINE	1.636	1.452	1.3;
ISOLEUCIN	0.970	0.872	0.8;
VALINE	1.048	0.944	0.9;
- Week** and **Temp** table:
 

Week	Temp
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
- Buttons**: Open Diets, Use Control Diets, Save Diets, Show Matrix, Clear Diets, Find New Value (circled).

# EStudy

## A Feeding Study Analysis of a Feeding Trial

- The program tells us the expected results, which were lower than the observed growth.
- The program finds the energy, protein and amino acids that adjust the nutrition to allow the observed growth and puts that on the RESULTS tab.

**Feed2Gain Systems**

Files Set Energy and Weight Load Ingredient Matrix About

**CONTROL Diet** **TEST Diet** **Results**

**Actual Results** Flock Sex: Mixed, Flock Final Weight: 2.24 Kg, Flock Feed Conversion: 1.860, Average Flock Age, Days: 43, No. of Diets: 3

**Expected Results** (Circled): Flock Final Weight: 2.173 Kg, Flock Feed Conversion: 1.918, Average Flock Age, Days: 44.75

Ing. No.	Ing. Name	Diet 1	Diet 2	Diet 3
3	Wheat, Soft	60.23	66.74	70.15
7	Soybean 48	30.25	24.43	19.60
10	Meat Meal 49.3	4	4	6.90
13	Animal Fat	3.146	2.88	2.468
18	Dical PO4	.803	.614	0
20	Limestone	.5533	.4717	0
14	Salt	.523	.497	.499
16	DL MET	.22	.156	.162
21	Vitamin Premix	.16	.16	.12
22	Trace Minerals	.1	.1	.1
15	LYS HCL	.011		

Feed Weigh	Diet 1	Diet 2	Diet 3
ENERGY	3002	3038	307
PROTEIN	22.63	20.48	19.9
ARGININE	1.451	1.271	1.2
HISTIDINE	0.553	0.490	0.46
LYSINE	1.205	1.038	0.99
TRYPTOPH	0.313	0.277	0.26
PHE_TYRO	1.904	1.704	1.5
PHENYLAL	1.066	0.956	0.90
MET_CYS	0.927	0.806	0.80
METHIONIN	0.535	0.442	0.4
THREONIN	0.843	0.752	0.7
LEUCINE	1.636	1.452	1.3
ISOLEUCIN	0.970	0.872	0.8
VALINE	1.048	0.944	0.9

Week	Temp
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Buttons: Open Diets, Use Control Diets, Save Diets, Show Matrix, Find New Value

# EStudy

## A Feeding Study Analysis of a Feeding Trial

- The program tells us that the wheat with enzyme, since we are evaluating the test diet, gave 6.5 percent more energy and 3 percent more protein availability.
- Since all calculations were done based on your nutrient values, a new ingredient of wheat plus enzyme would best be represented by the values in the third column.

Enter your Description for the study, will be on your reports

Data from International Journal of Poultry Science 2 (2): 168-173, 2003 Effect of Exogenous Enzyme in Diet on Broiler Performance

Diets	Live Weight		Feed2Gain	
	Given	Predicted	Given	Predicted
Control	2.140	2.139	1.900	1900.
Test	2.24	2.240	1.860	1.860
	Energy		Protein	
	Given	Predicted	Given	Predicted
Test Diet 1	3002.	3124.	22.63	22.82
Test Diet 2	3038.	3174.	20.48	20.69
Test Diet 3	3077.	3219.	19.97	20.18
Test Diet 4				
Test Diet 5				
Wheat Soft				
ENERGY /kg	3120.	3323.		Predicted %
PROTEIN %	10.20	10.51		Energy
ARGININE %	0.400	0.412		6.496
HISTIDINE %	0.200	0.206		Protein
LYSINE %	0.310	0.319		3.046
TRYPTOPHANE	0.120	0.124		
...	...	...		



# EStudy

## A Feeding Study Analysis of a Feeding Trial

- This example could have been run as an enzyme only ingredient, but the response of this enzyme is likely related to the amount of wheat in the diet. It would make more sense to have a new ingredient that was priced to be wheat plus enzyme.
- One could test new ingredients, such as distiller's grains, for example, to get a set of nutrients for that ingredient that is compatible with the rest.
- One could re-evaluate new sources of existing ingredients based on growth in the field after making a change.
- The ingredient may be in only one diet, or all diets.
- One warning. Garbage in – Garbage out. If the trials are not well done, or other variables were present, all changes are focused on the ingredient selected to receive the benefit or condemnation of the resultant growth. Sometimes, feeding trials with multiple levels of an ingredient give very different results, due to study variation, but the average across levels should create a reliable estimate of nutrients.