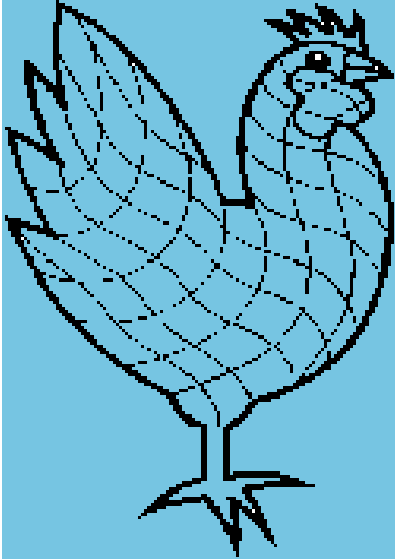# BroilerOpt
a Broiler Optimization Program

A Cost Saving Program

Based on Work Defining

OmniPro II®

BroilerOpt Broiler Model

- Predicts Growth and computed Feed Cost
- Import Least Cost Information from Brill
- Calibrates to Local Conditions
- Predicts impact of changes of Energy, Amino Acids and Feed Amounts on Cost
- Predicts Carcass Changes
- Saves Cost and Adds Confidence

BroilerOpt Broiler Model

- Model Based on Mathematics of OmniPro II, the only Model with Published Results (E. O. Oviedo-Rondón , C. A. Fritts and P. W. Waldroup, International Journal of Poultry Science 2 (3): 178-182, 2003).

- BroilerOpt Optimization Improved over OmniPro®. OmniPro no longer available.

- Accuracy Documented.

- Test Current and Alternative Diets to evaluate cost and carcass impacts. Make more informed decisions.
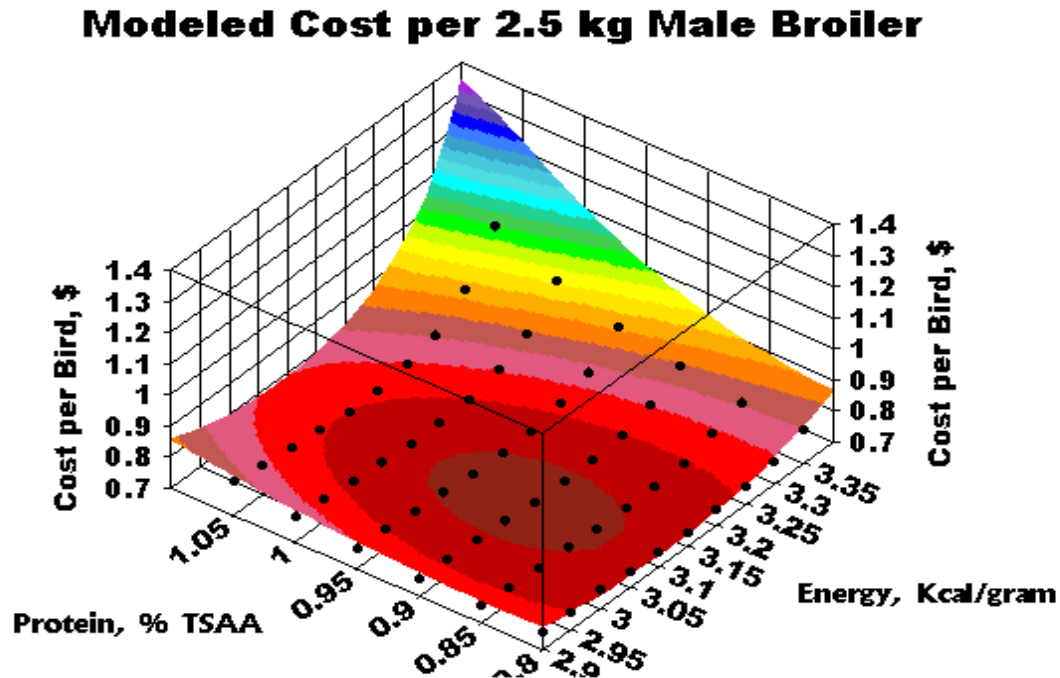
BroilerOpt Broiler Model

- Differs from Least Cost Program in Outputs
  - LP finds the lowest cost recipe for making a feed meeting the set nutrient contents. Usually based on Energy, Protein, amino acids and other nutrients.
  - BroilerOpt finds the least cost recipe (LP constrains and amount of each feed) to grow a flock to meet set growth expectations (flock weight, age or feed intake).

BroilerOpt Broiler Model

- Differs from Least Cost Program in Frequency of Use
  - LP is run when minor ingredient prices occur or ingredient availability is restricted.
  - BroilerOpt is run when ingredient prices vary enough to cause significant effects on feed costs.
  - Least Cost Programs are often run each day while BroilerOpt might be run each week or once a month.

BroilerOpt Broiler Model

- ## Based on Broiler Response to Nutrition

Modeled Cost per 2.5 kg Male Broiler

- Like LP, Changes in cost of Nutrition Molds the Shape of the Bowl, not Changes in the birds.

BroilerOpt Broiler Model

- A Broiler Model Must be Accurate, Easy to Use and Answer Your Questions.

- BroilerOpt has the same basis for its Predictive Engine as OmniPro II®.

- Easy to Use as it imports LP Information, including cost, from Brill or from Excel at a click.

- Answers questions like optimization to carcass composition or fixed feed to gain.

BroilerOpt Broiler Model

- Published Test of OmniPro, the source of BroilerOpt:

  "Accuracy of OmniPro® Predictions for Amino Acid Needs Without Minimum Crude Protein Requirement " by E. O. Oviedo-Rondón, C. A. Fritts and P. W. Waldroup, International Journal of Poultry Science 2 (3): 178-182, 2003 Poultry Science Department, University of Arkansas

- Abstract:

  Diets formulated based on levels of protein and amino acids estimated by OmniPro® II were compared with diets based on NRC (1994) recommendations. Significant differences between sexes were observed for all variables evaluated. Broilers fed diets formulated with 100% of OmniPro® II estimations had BW that was similar to those fed diets based on NRC or 110% OmniPro, and were significantly heavier than those fed the 90% OmniPro diets. The feed conversion of male broilers fed diets based on OmniPro recommendations was significantly better than that of chicks fed diets based on NRC recommendations. Females fed with diets according to OmniPro or NRC had the highest dressing percentage, and differed only from those fed the 90% OmniPro diets. These data suggest that nutrient estimations generated by the OmniPro® II support performance equal to or better than that of broilers fed diets based on NRC nutrient recommendations.

First Testing Results:

- US trial by Novus International :
  - Novus Research Farm USA, May 2000

- Temperature Effect by Novus International in Brasil:
  - Brasil, April 2000

U S Trial Overview:

- Experimental design:

	Breed Crosses		
Feeding Plan	**Ross 308**	**Cobb 500**	**Ross X Hubb**
High Yield Plan	Prediction	Prediction	Prediction
US Industry Standard	Calibration	Calibration	Calibration

Feeding Programs Used at U S Trial:

	Std Starter (0-21)	Yield Starter (0-21)	Std Grower (21-35)	Yield Grower (21-35)	Std Finisher (35-49)	Yield Finisher (35-49)	Std WD (49-56)	Yield WD (49-56)
ME (Kcal/kg)	3020	3090	3090	3130	3130	3175	3190	3230
CP%	21.49	23.50	20.25	22.00	18.50	20.49	17.25	19.00
TSAA %	0.900	0.960	0.830	0.890	0.760	0.820	0.670	0.780
Arg%	1.405	1.531	1.341	1.454	1.230	1.341	1.115	1.206
Lys%	1.130	1.240	1.080	1.180	1.020	1.100	0.900	1.050
Thr%	0.756	0.829	0.713	0.776	0.701	0.775	0.647	0.707

Parameters Analyzed at the U S Trial:

- Measurements @ 21, 35, 49 & 56 days

  – Body weight

  – Feed Conversion

  – Breast yield (@56 days of age)
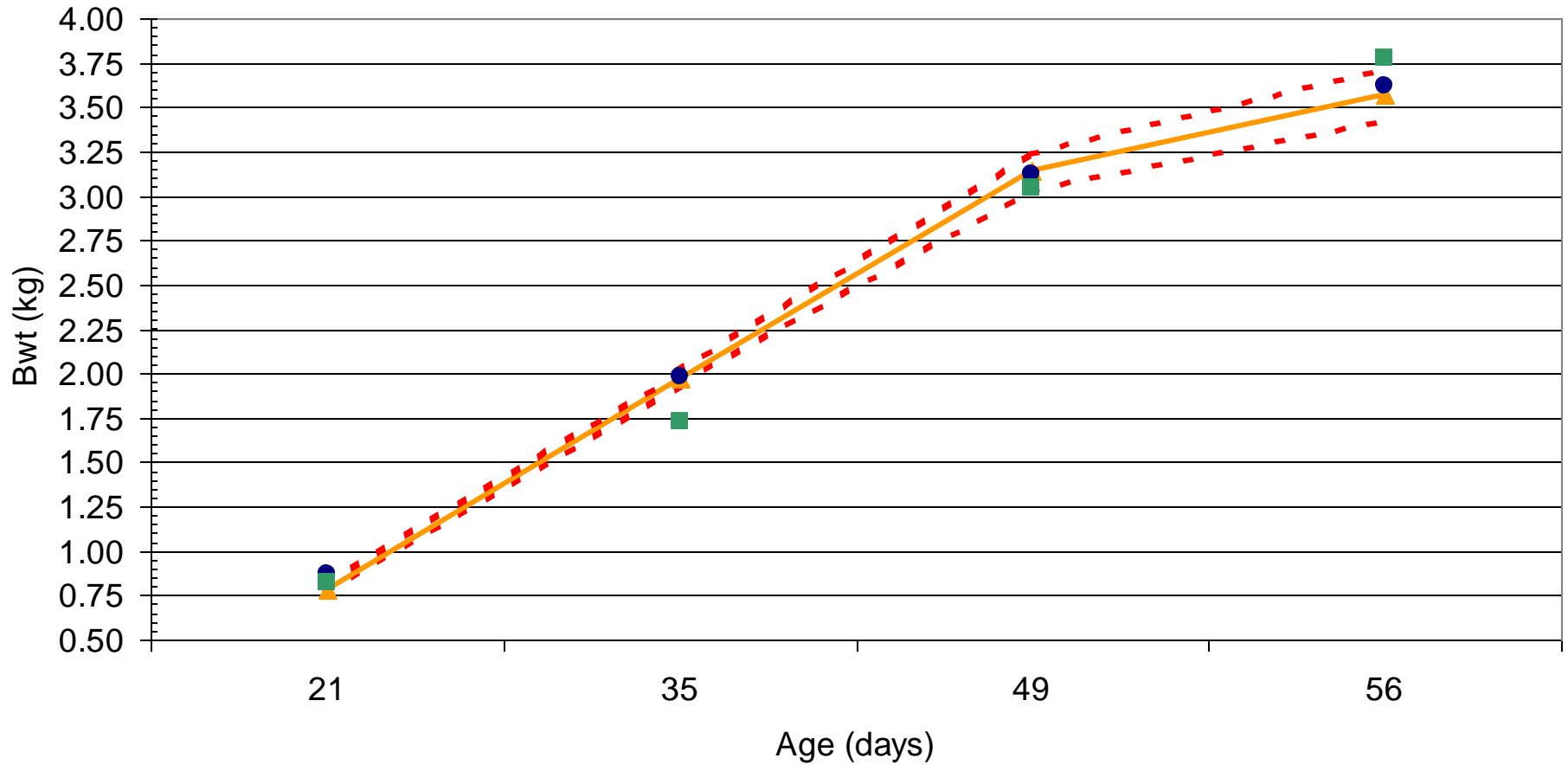
  – Leg yield (@56 days of age)

Very good when prediction is within +/- 1 std
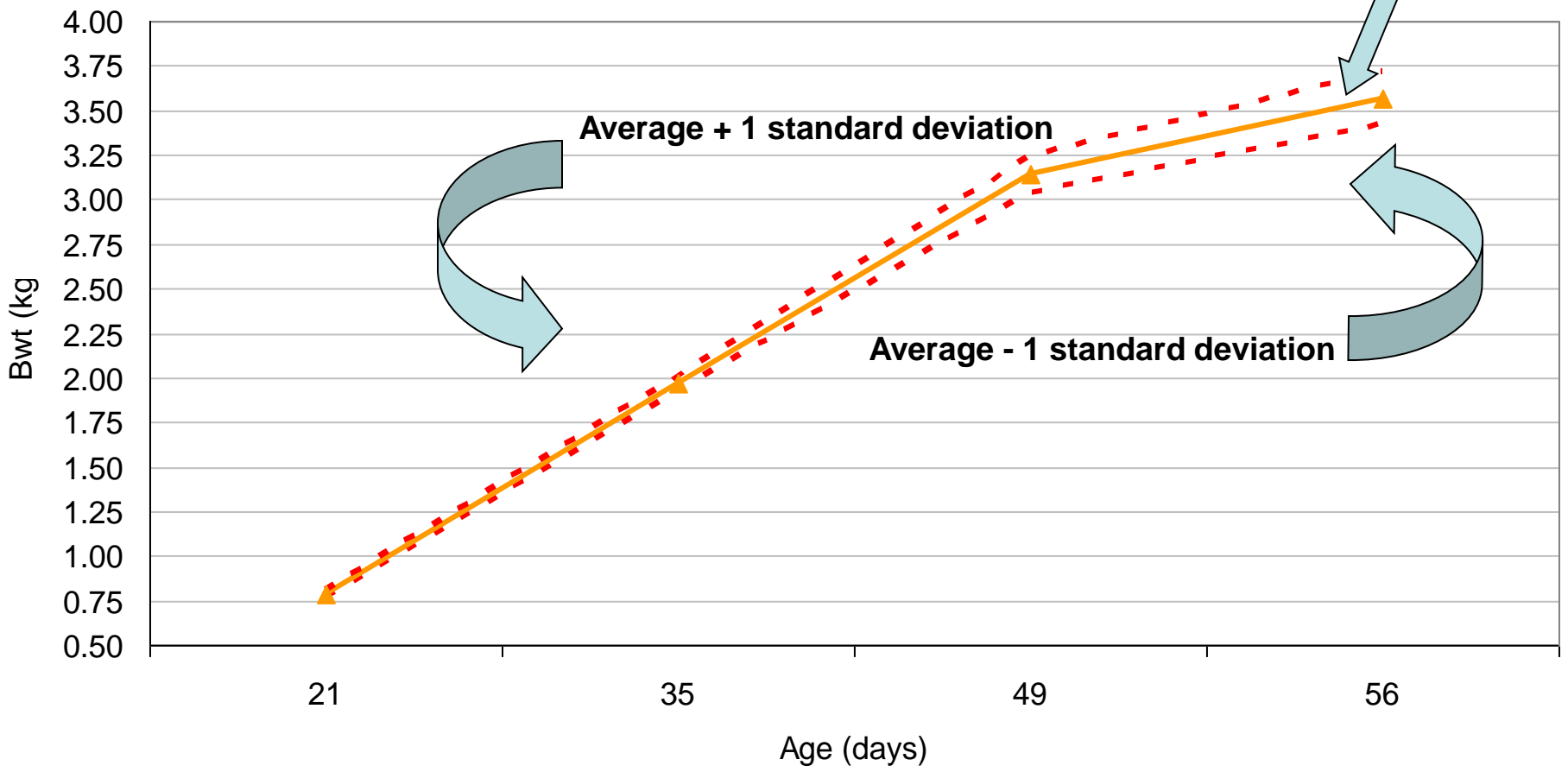
EXAMPLE - Ross 308 - Body Weight Prediction (Males)

Average + 1 standard deviation

Average - 1 standard deviation

Bwt (kg

Age (days)

- - - Lower limit ▲ Actual Ross - - - Higher limit

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OmniPro II—U S Trial

Ross 308 - Body Weight Prediction (Males)

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OmniPro II—U S Trial

Ross 308 - Feed Conversion Prediction (Males)

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OmniPro II—U S Trial
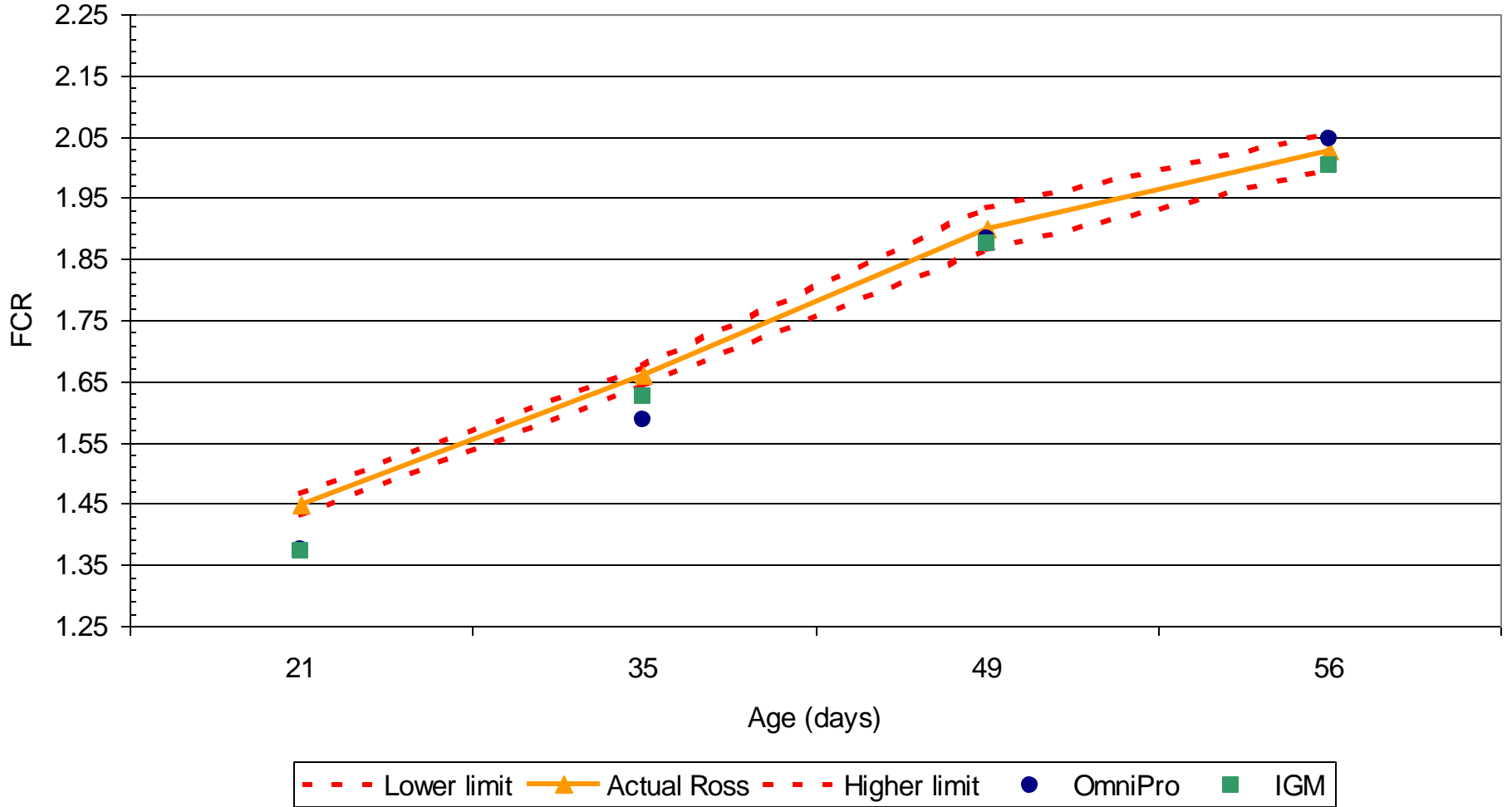
Cobb 500 - Body Weight Prediction (Males)
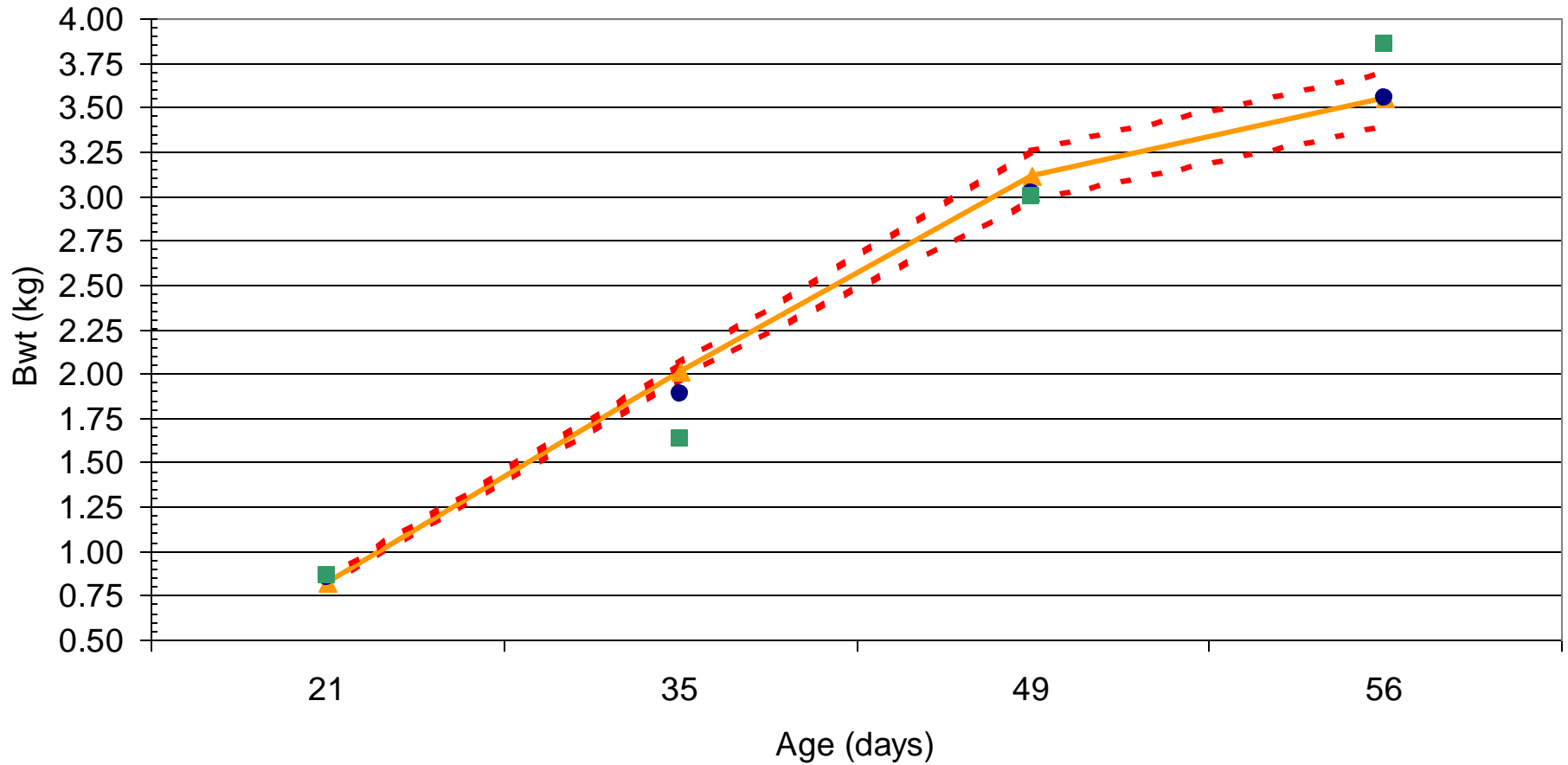
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OmniPro II—U S Trial

Cobb 500 - Feed Conversion Prediction (Males)

OmniPro II—U S Trial

Cobb 500 - Feed Conversion Prediction (Males)

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OmniPro II—U S Trial
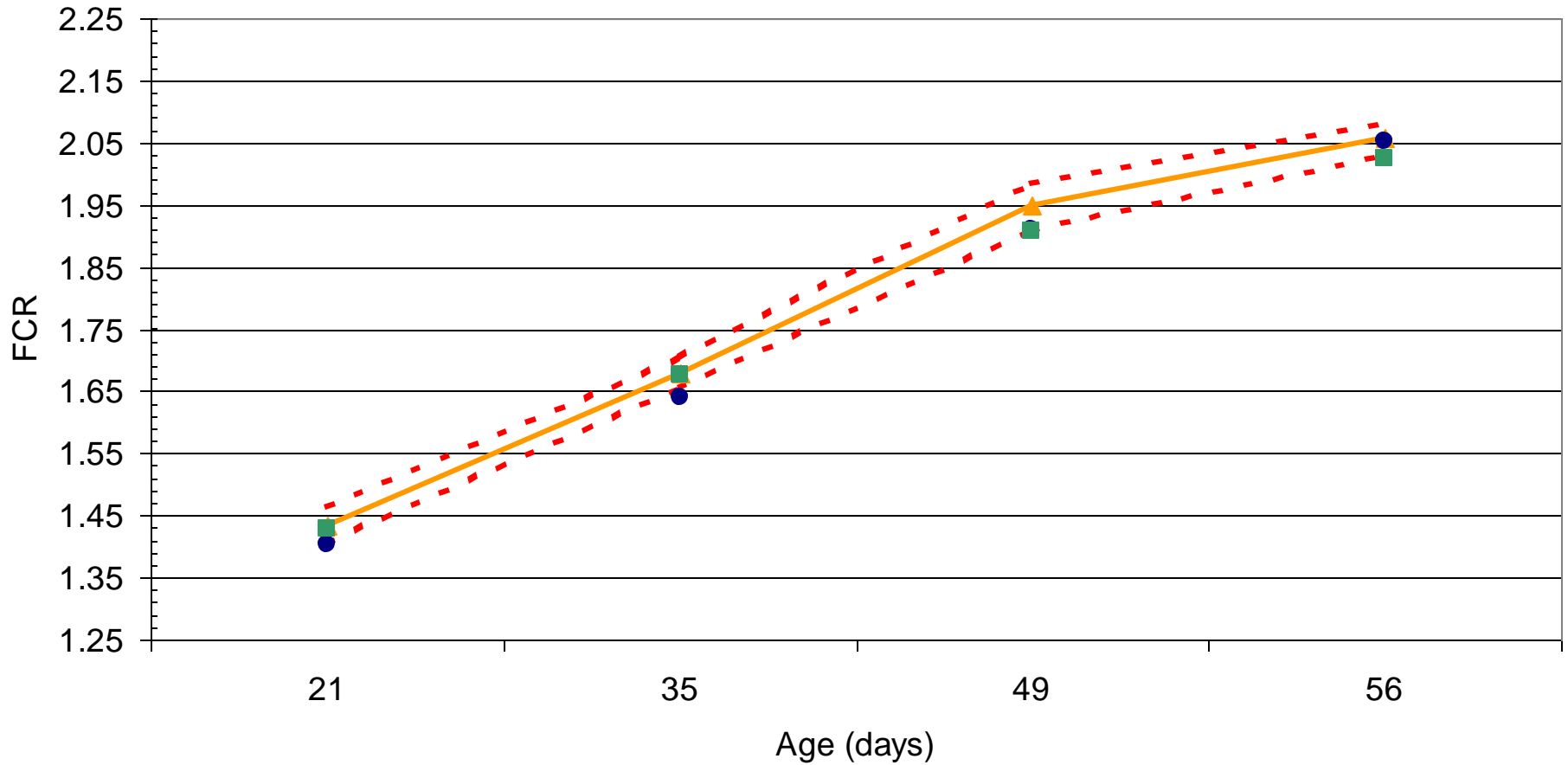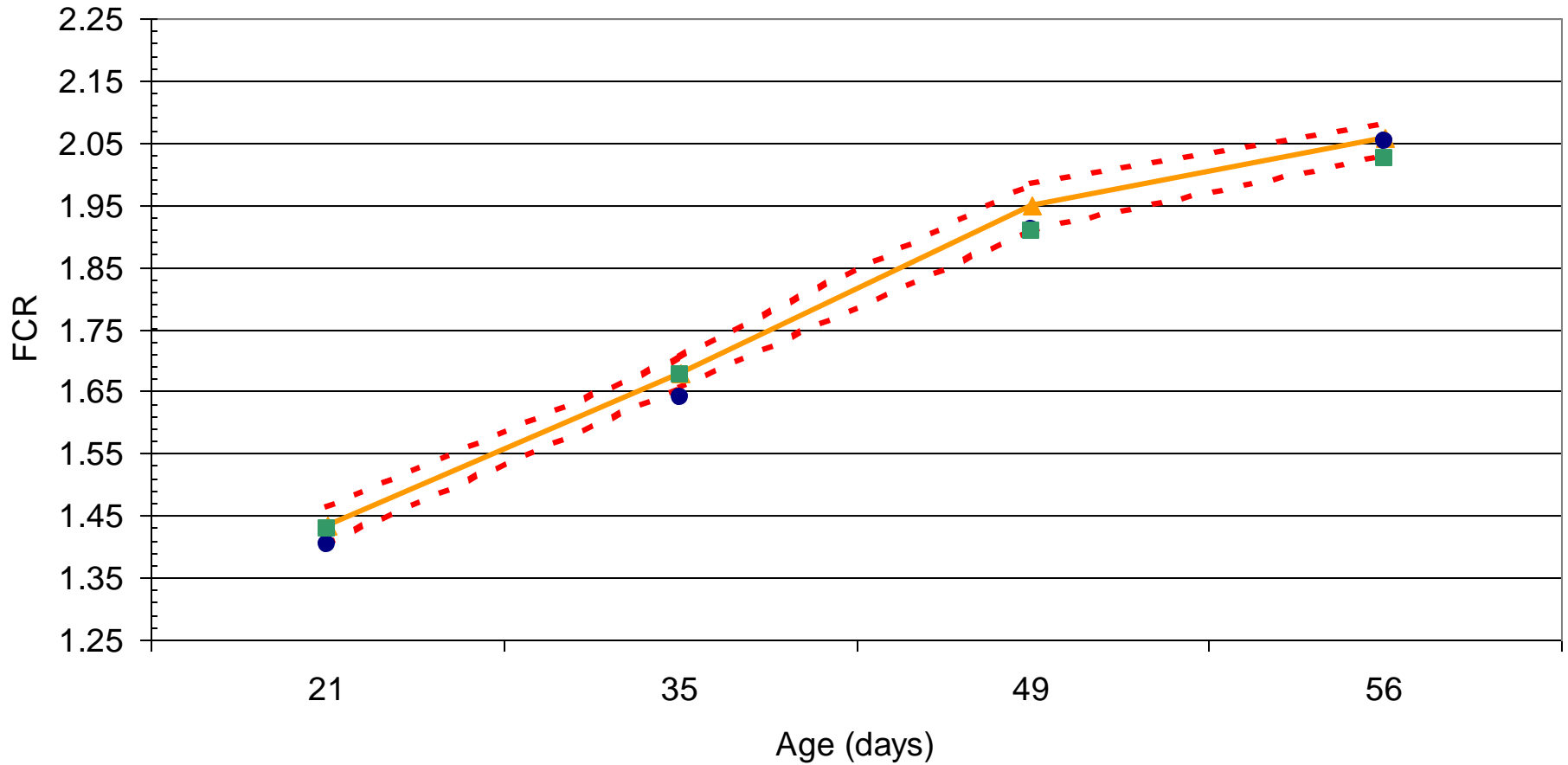
RossXHubb - Feed Conversion Prediction (Males)

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OmniPro II—U S Trial
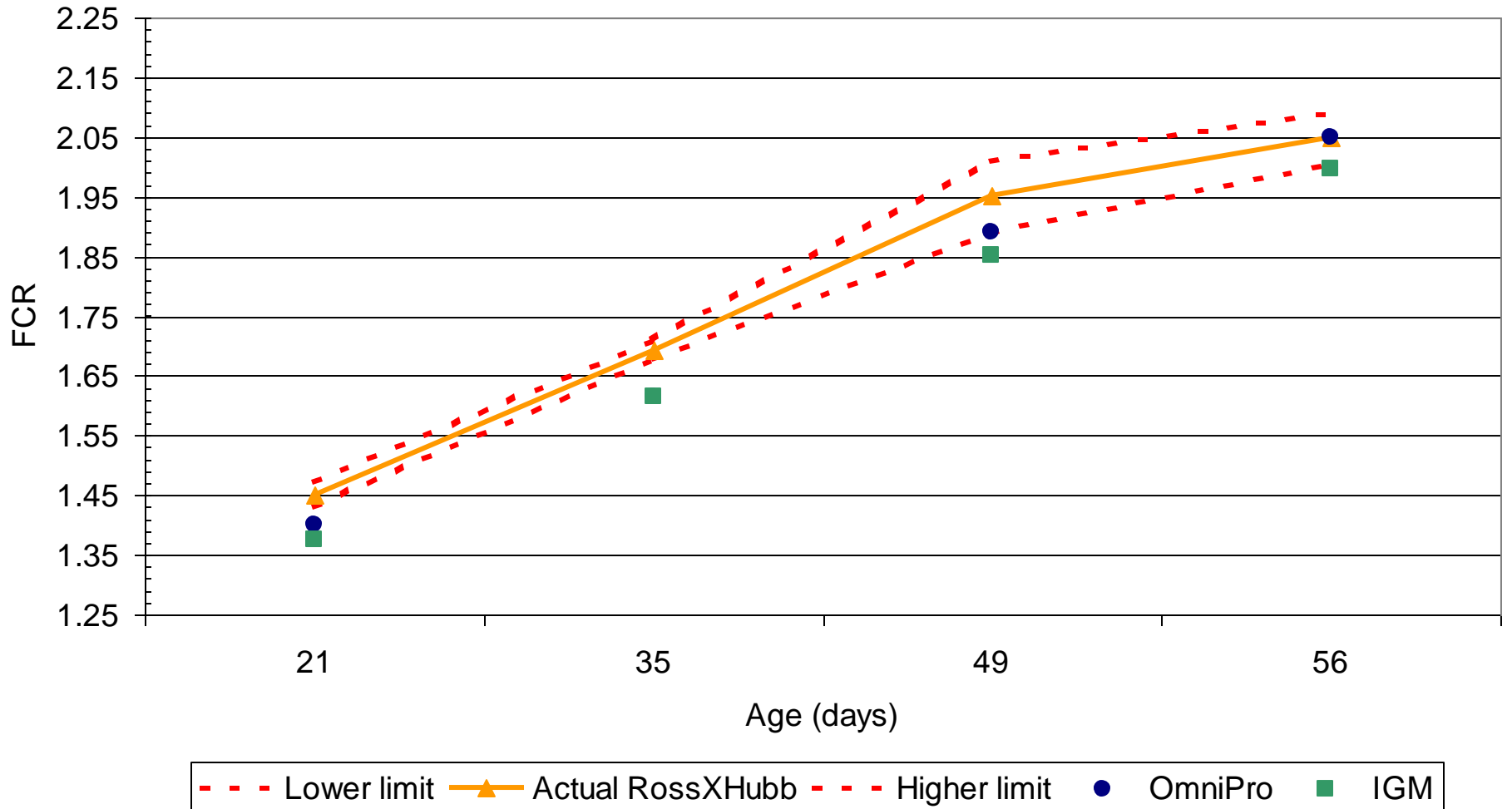
Breast Meat Yield by Breed Cross

Breast yield (kg)

0.670

0.685

0.675

Ross   Cobb   RossXHubb

◆ Lower   ■ Actual   ◆ Higher   ● OmniPro   ■ IGM

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OmniPro II—U S Trial

Leg Yield by Breed Cross

Leg yield (kg)

y-axis values: 0.940, 0.920, 0.900, 0.880, 0.860, 0.840, 0.820, 0.800, 0.780, 0.760, 0.740

Ross: 0.881
Cobb: 0.882
RossXHubb: 0.834

x-axis categories: Ross, Cobb, RossXHubb

Legend: ◆ Lower ■ Actual ◆ Higher ● OmniPro ■ IGM

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OmniPro II—U S Trial
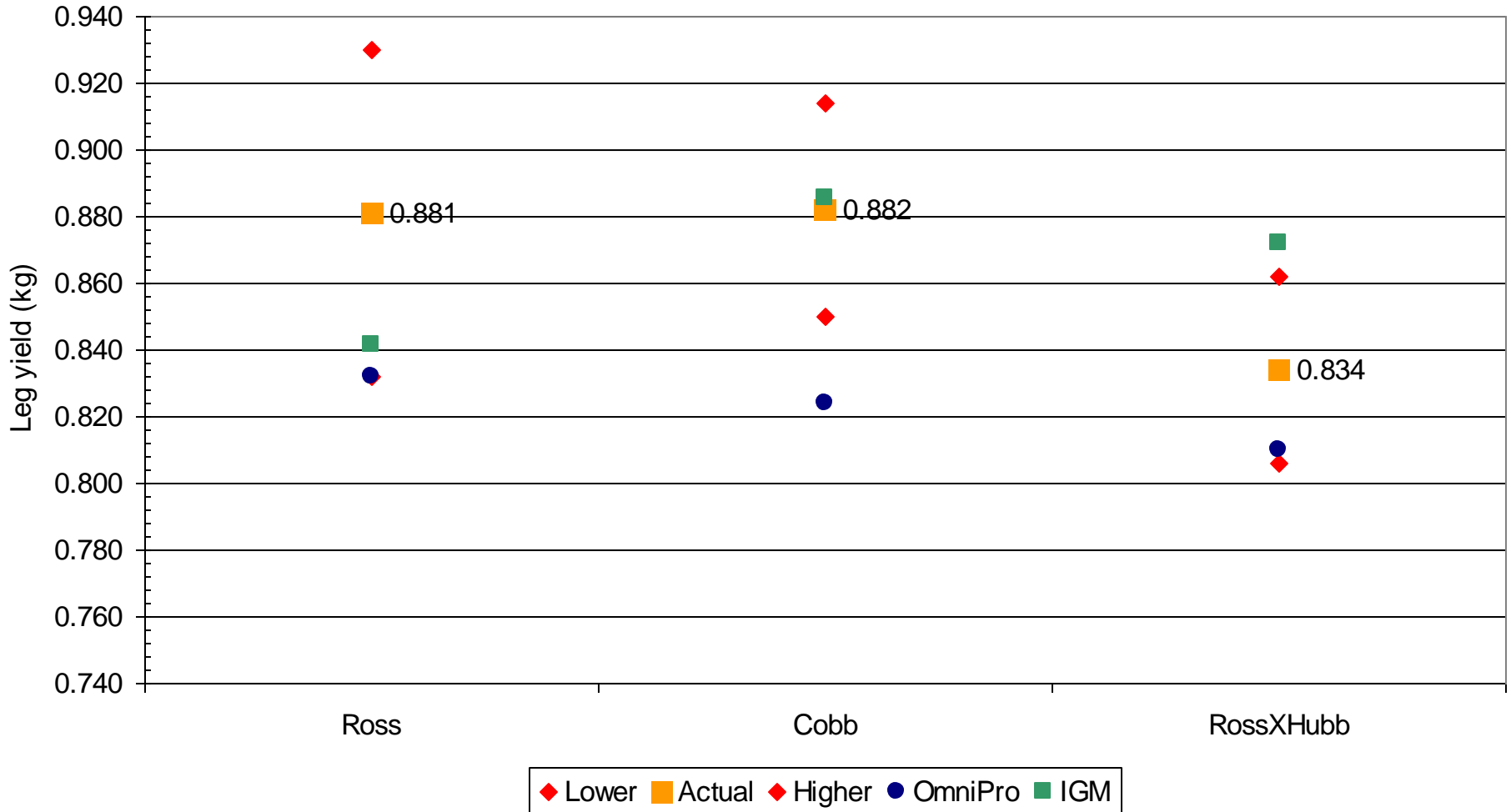
U S --Excellent Results with Model

- OmniPro II was able to accurately predict growth and yield for Ross 308, Cobb 500 and Ross / Hubbard

- OmniPro II understands the role of energy, amino acids and breed cross on growth and carcass yield

BroilOpt and OmniPro Results:

- Based on Same Broiler Nutrition for Calibration.

AGE	Diet	Ross 508			Cobb			Ross HiY		
		Actual Wt.	BroilOpt	OmniPro	Actual Wt.	BroilOpt	OmniPro	Actual Wt.	BroilOpt	OmniPro
day 34	Hi Density	1.949	1.978	1.919	1.993	1.895	1.858	1.914	1.92	1.928
	Standard	1.857	1.897	1.761	1.893	1.815	1.758	1.819	1.835	1.788
day 41	Hi Density	2.501	2.474	2.551	2.592	2.473	2.481	2.522	2.504	2.582
	Standard	2.473	2.388	2.34	2.482	2.378	2.33	2.459	2.405	2.384
day 55	Hi Density	3.534	3.543	3.751	3.488	3.546	3.735	3.558	3.597	3.845
(calibrated to this value)	Standard	3.468	3.468	3.468	3.468	3.467	3.469	3.515	3.514	3.517

- Broilopt Predicted Slightly more Accurately than OmniPro.

# Now Let's Test Temperature and Protein:

⬜ Experimental design:

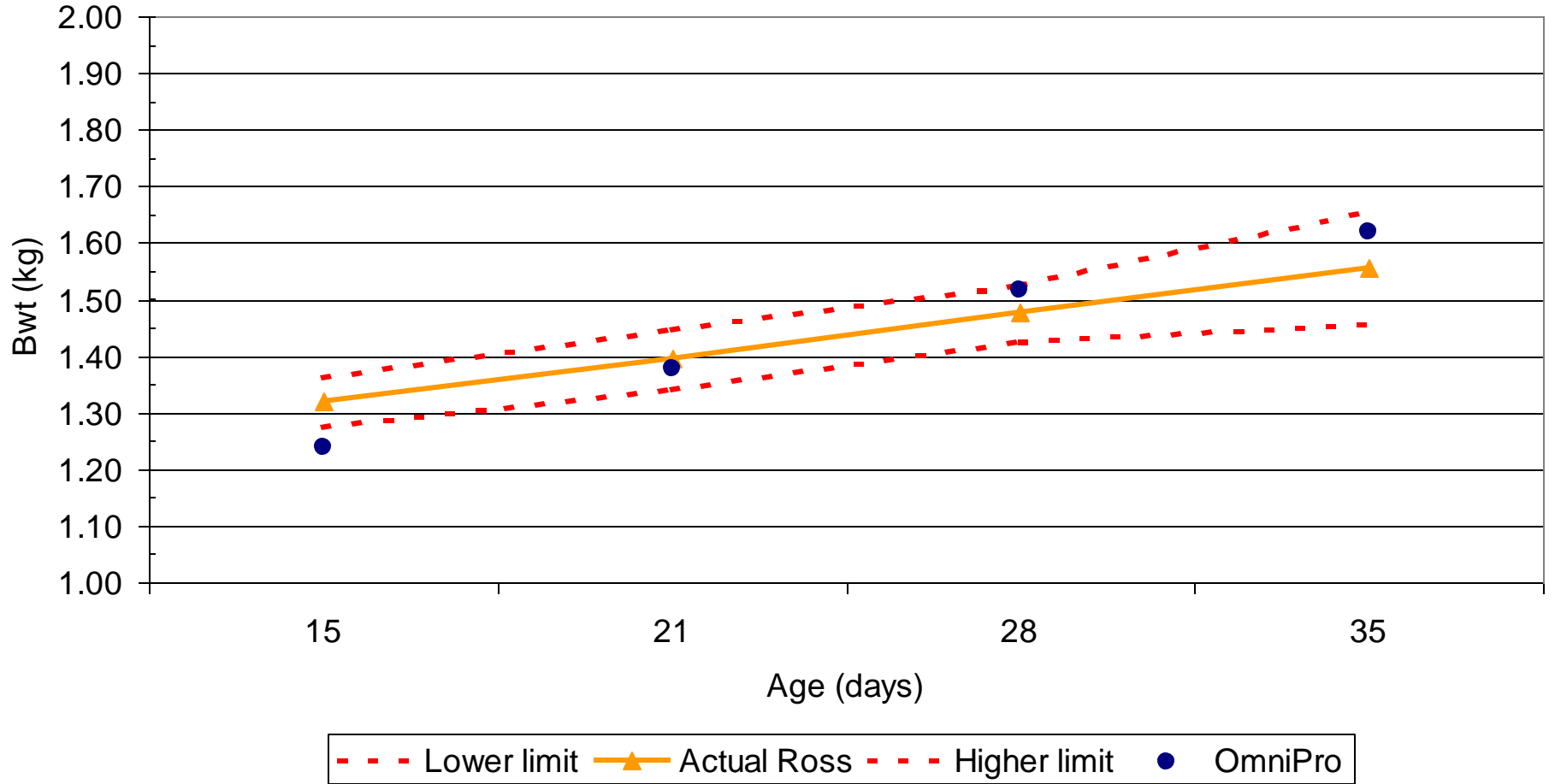|	Crude Protein Levels		
Temperature Plan	**19%**	**21%**	**22.5%**
High Temperature	Prediction	Not used	Prediction
Normal Temperature	Calibration	Not used	Prediction

Parameters Analyzed:

- Measurements @ 15, 21, 28 and 35 days

  – Body weight

  – Feed conversion

  – NO yield data available from this experiment

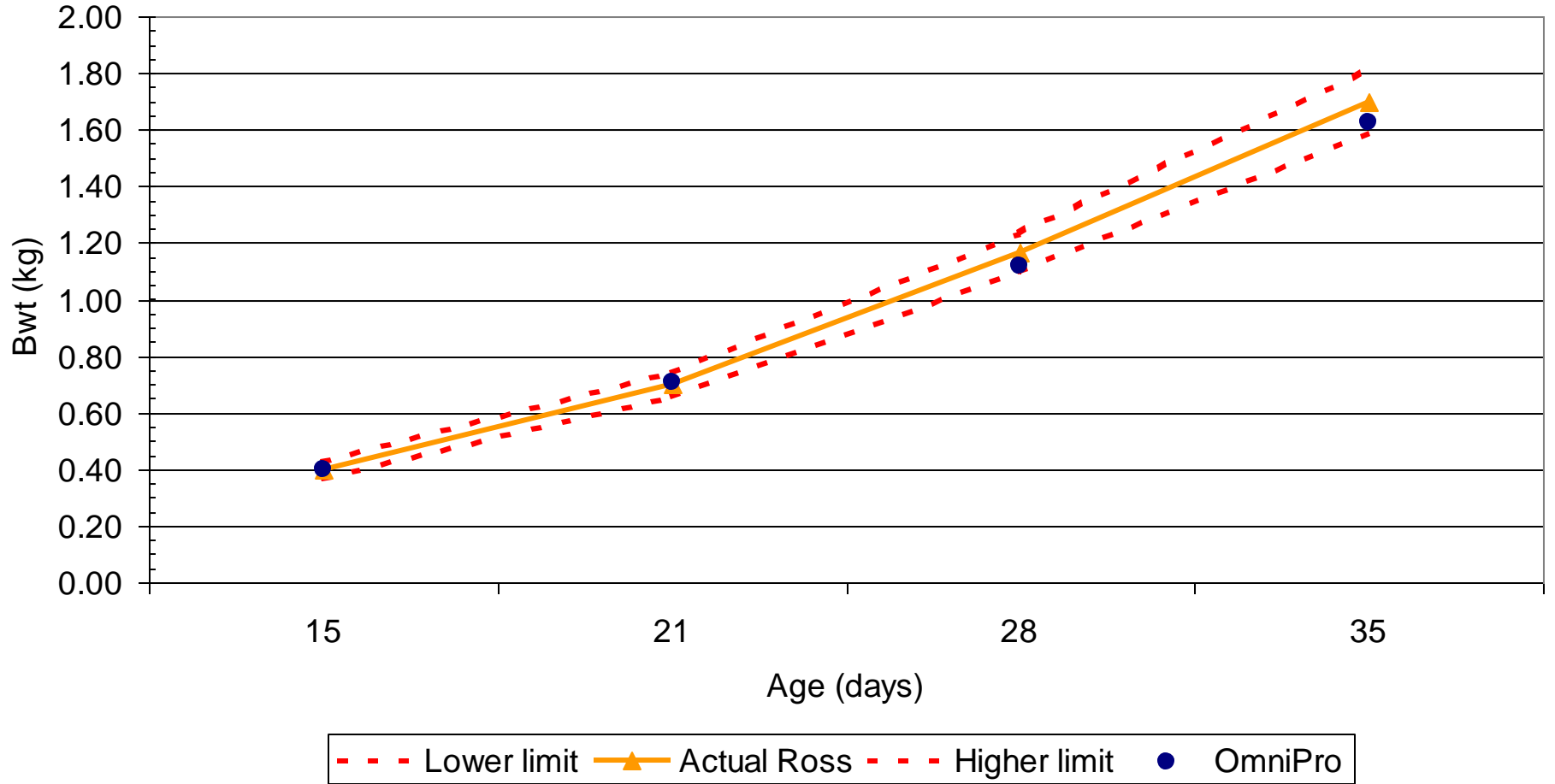# Ross 308 - Body Weight Prediction - High Temperature & 19% Crude Protein

Bwt (kg) vs Age (days)
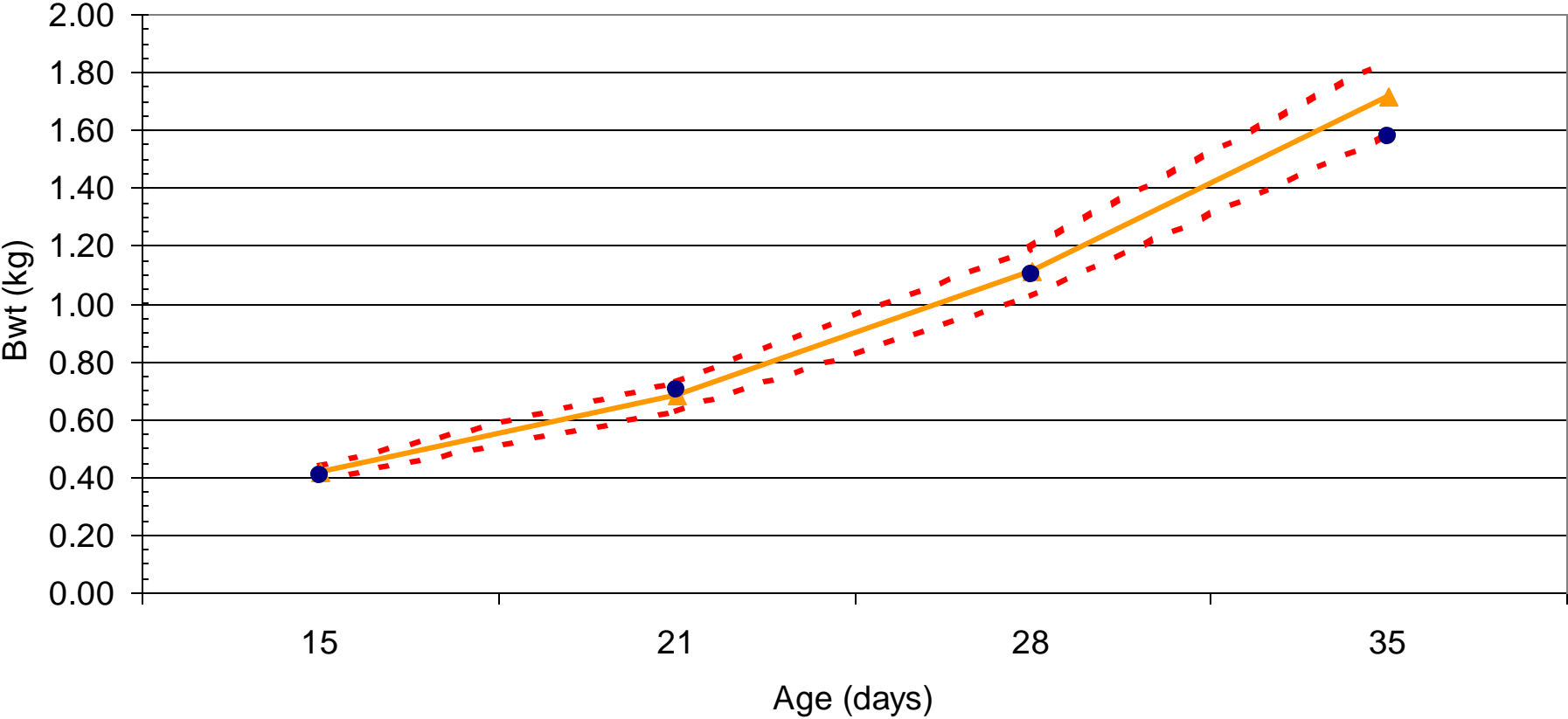
Legend: - - - Lower limit ▲ Actual Ross - - - Higher limit ● OmniPro

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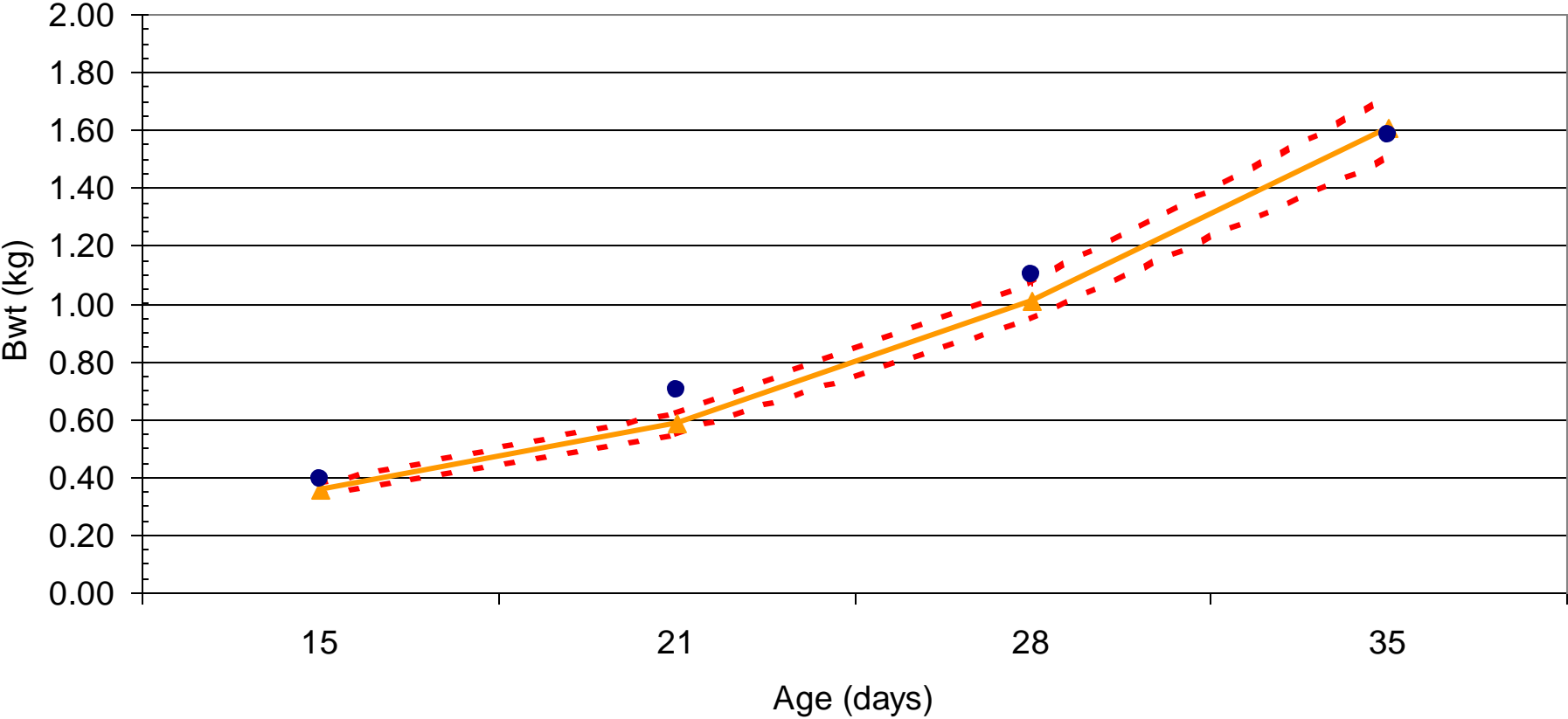# Ross 308 - Feed Conversion Prediction - High Temperature & 19% Crude Protein

Ross 308 - Body Weight Prediction - Normal Temperature & 22.5% Crude Protein

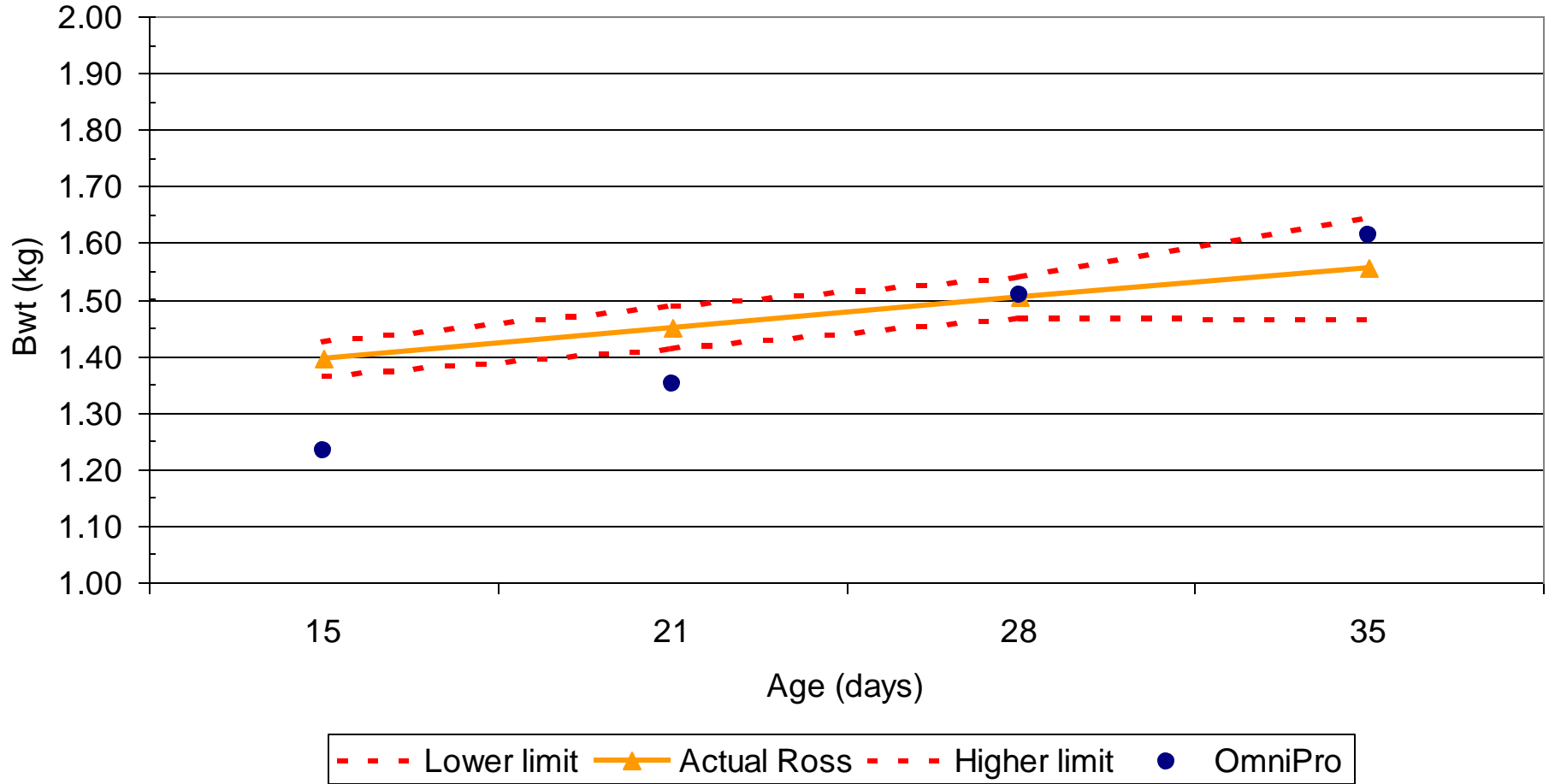# Ross 308 - Feed Conversion Prediction - Normal Temperature & 22.5% Crude Protein

Ross 308 - Body Weight Prediction - High Temperature & 22.5% Crude Protein

Ross 308 - Feed Conversion Prediction - High Temperature & 22.5% Crude Protein

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Testing Summary:

- Results indicate good accuracy level when predicting growth and yield:
  - Breed crosses
  - Energy
  - Crude protein and amino acids
  - Temperature