

The Latest Decade of Continuous, Balanced Improvement: \$250 Million Dollar Savings for Heavy Toms and Counting

By Jihad Douglas, President of Aviagen Turkeys, Inc.

We just finished a decade that challenged the turkey industry, in terms of profitability and competitiveness, like never before. Some of the challenges were self-inflicted but a good portion of the challenges were driven by the breakdown of the world economy and the imposition of government policies that pushed feed ingredient prices and other commodities to record highs.

This decade taught us that continuous improvement in production efficiencies and management practices is essential in order to compete and survive within our own industry and to contend with other protein producers. So what financial contribution did Aviagen Turkeys make in the past decade to improve the performance and profitability of our industry?

At Aviagen Turkeys, the aim is to steadily improve our breeding stock so that we don't "shock your system" with dramatic changes from one year to the next. The way we deliver this continuous, balanced performance improvement is by focusing on, and investing in, the following basics:

Consistency: We stay the course that gives us steady, balanced improvement. More than once, when other breeding companies have gambled with new, untested crosses to catch up in one or two genetic traits, it has backfired. The cost to you, our customer, and to our industry in general was significant.

Accuracy: At Aviagen Turkeys we have invested in sophisticated, yet simple to use, equipment to collect accurate and extensive data on many traits. This investment has eliminated human errors and has paid off in terms of more accurate selections and faster performance improvements at all levels of production.

Selection intensity: It is about consistency, accuracy, and also about numbers! The more intensely we select our pedigree populations, the faster we make progress. For example, in one of our pure lines which contributes to our commercial cross we place 20,000 day old poults. Of the 20,000 placed, only 195 mature turkeys are retained to regenerate the next pedigree generation.

Infrastructure: Aviagen Turkeys' pedigree set-up is unique. We have two full pedigree programs: one based in the UK, and one in the US. This set-up allows us to measure and select traits on both continents to avoid any surprises that could be caused by environmental or nutritional interactions with a specific genotype.



In addition, our continuous pedigree program is designed with biosecurity as our top priority. Our breeding program is spread over several farms over two continents, rather than risking our lines with one huge pedigree complex with multiple age birds. Spreading our breeding stock over multiple farms reduces the biosecurity risks and ultimately improves future product performance. One could argue that this set-up is costly and inefficient but we consider this as a cornerstone for supply security, and crucial for the industry in general.

Technology: Aviagen Turkeys has invested millions of dollars to incorporate technology from other industries into our breeding program. Technology that is used in human medicine, the military, aerospace industries, and in other animal protein species has been adapted for use in our turkey breeding program.

We will continue to look for new technologies that will improve our product performance and allow us to better compete with other protein sources. Following are several economically important traits where technology has given us the genetic advantage:

Meat Yield Several indirect techniques are used to improve yield:

- The dimple meter was used to develop the best yielding line in the history of the turkey industry, the Nicholas 85.
- Conformation scoring and physical measurements performed by highly skilled selectors have continued the improvement in breast meat yield.
- Sib testing is also used as a correlated response for selection.

All these indirect yield techniques have helped Aviagen Turkeys remain the leader in yield products for over a decade.

There's more on the horizon when it comes to yield improvements. We are investing and exploring ultrasound technology in order to measure yield directly on the actual breeder candidates rather than their sibs. We believe this technology, although in its early stages, will provide us with faster progress in the next decade.

Feed Efficiency Proprietary feed conversion stations allow us to measure feed conversion under commercial conditions. Moreover, it allows us to measure feed conversion for a longer period of time without the behavioral abnormalities caused by a pen setup. The outcome is faster feed conversion progress due to more accurate data, more records, and higher heritability.

Leg Strength The use of the LixiScope, a portable x-ray tool, allows us to implement real-time selection to reduce the incidence of Tibial Dyschondroplasia (TD) and thus improve leg strength and livability.

Current Yield Measurements



Conformation Scoring

Physical Measurements
Width, Length and Girth

Cut-up Test on Pedigree Siblings

Ultrasound Measurements

- Provides more accurate yield information on the selection candidate
- Reduces subjective estimates



Feed Stations

- Each pedigree candidate is identified by a transponder on its leg
- Feed consumption and behavior is recorded on individual birds
- Birds are in a commercial environment



LixiScope to Identify TD

- Abnormal leg bone growth resulting in the formation of a "cartilage plug"
- Can lead to bends, fractures or infections
- Only detectable by X-Ray in live birds



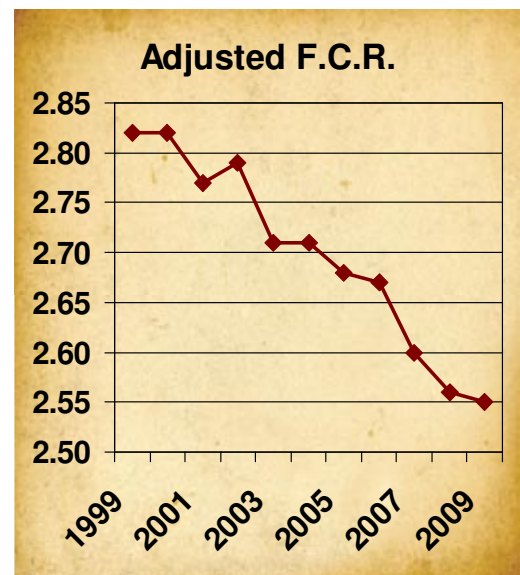
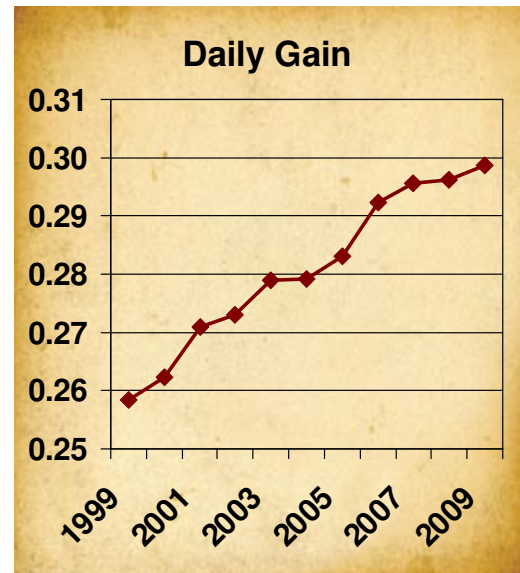
The Latest Decade of Improvement

What did these techniques and this investment in technology deliver to our industry in the last decade?

We have consistently delivered balanced improvement in performance across all traits, including:

- Poults per Hen Housed:** The number of poults produced from each hen has improved by almost one poult per year, even with the tremendous gains in commercial performance.
- Livability:** This trait was a challenge in the middle of the decade but we made a commitment to our industry to improve livability without giving up weight, yield and feed conversion. As promised we improved livability back to previous levels along with an impressive gain in weight. It is now fairly common to see 88%-90% livability in flocks of heavy toms at 20 weeks of age.
- Weight:** The improvement in weight over this decade is impressive to say the least. In a decade our Average Daily Gain (ADG) improved from 0.259 to 0.299 on average. That means it takes 20 fewer days to raise a 40 lb (18 kg) turkey.
- Feed conversion:** The Nicholas 700 commercial turkey's feed conversion improved by about 3 points per year for the last 10 years. A steady, sustainable improvement that will only get better through time.
- Breast meat yield:** Breast meat yield measurement varies across companies in our industry. There are many factors that will influence yield results in the plant, however it is an important trait to monitor because it has such an impact on profitability. Our results show that breast meat yield has increased 2.5 percentage points over the last 10 years on the same size birds which is in line with what we promised the industry.

In the last decade we have faced increased input costs including feed, labor, energy and fuel. It also costs us more to comply with increasing regulation. Our breeding program helped to minimize the impact of these cost increases by improving bird performance.

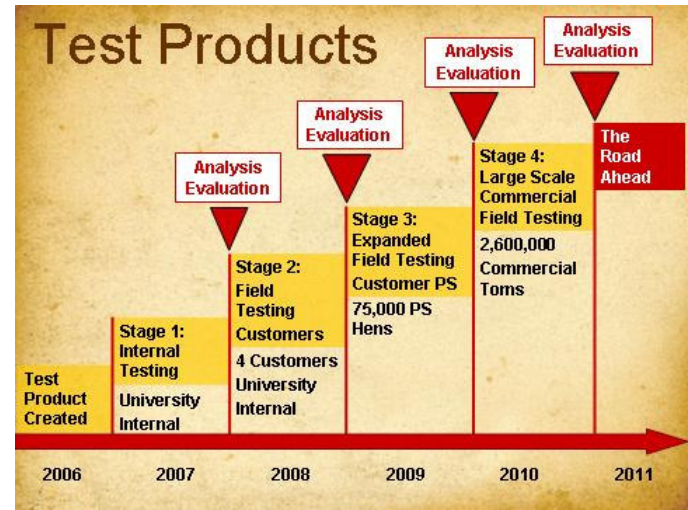


	1999	2009
Weight	36.0	42.0
FCR	2.82	2.55
Breast Yield	30.0%	32.5%

\$250 Million Dollars and Counting

What value did these improvements bring to the industry? Aviagen Turkeys has an Economic Model to evaluate the impact of performance on profitability.

Using the Aviagen Economic Model and assuming the same input costs in 1999 as 2009, the improvements in breast meat yield, feed conversion and average daily gain shows that the benefit to the industry **ONLY for heavy toms** processed is over \$250 million dollars in the last decade. Since we have a continuous balanced program, this is the equivalent of more than \$25 million dollars per year

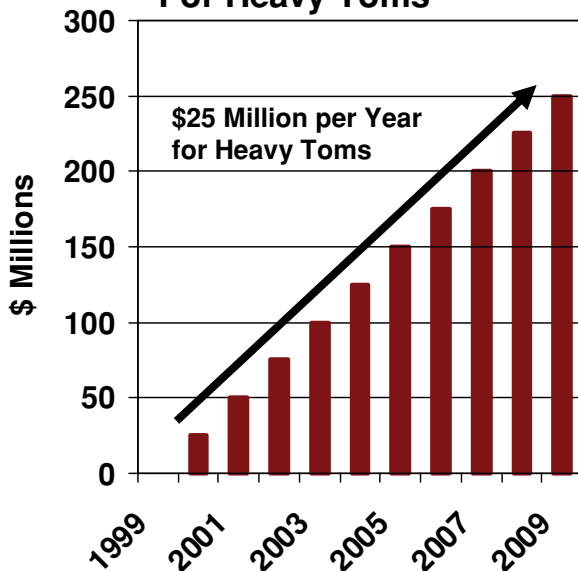


Our methodology of thoroughly testing new products takes about five years from inception to final decision. Test Product 5 (TP5) is in its fifth year of testing. We greatly appreciate the partnership with several of our customers to test the products, as without this partnership we can not do such a large scale commercial evaluation. The results are encouraging for the breeder performance and we will start seeing the commercial performance data in the second part of 2010. It is important to remember that we will present this Test Product as an option to the industry only if the economic performance justifies it.

Summary

We promised a balanced breeding program with continuous improvements and we delivered without gambling on untested products which could have put your bottom line profitability at risk. We are committed to improve the profitability of our industry by providing dependable, predictable and sustainable product improvements. This is a commitment we will continue to honor and deliver.

Value of Improvement For Heavy Toms



This improvement is essential to offset the ever increasing costs. The past few years have been difficult, but they would have been even tougher if the turkeys had not improved in performance. These improvements will continue at an even faster pace due to the investment in proprietary selection techniques.

The future holds more exciting progress for Aviagen Turkeys products. We have a testing program that allows us to thoroughly evaluate products before they are introduced on a large scale to the industry. This testing process is designed to avoid and eliminate any financial risk to our customers and the industry.