



Improvements in Growth Rate and Body Conformation on Poultry Breast Muscle Development

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Ohio's poultry industry has a production value of more than \$510 million and is the fastest-growing sector of animal agriculture in the state. Additionally, Ohio ranks 10th nationally in turkey production, with approximately 4.7 million birds. Consumers and producers have driven the poultry industry trend to select birds with increased growth rate and muscling. Although commercial breeding methods have enhanced production efficiency — including growth rate, feed conversion, and muscling in meat-type chickens and turkeys — the quality of meat has been altered.

Poultry processors are now experiencing a meat-quality problem, similar to a problem in swine, known as pale soft exudative (PSE). Turkey meat with this condition has a soft texture, poor meat binding, and poor juiciness after cooking. The reason is reduced water-holding capacity.

It is estimated that approximately 40% of commercial turkey meat exhibits poor water-holding capacity, representing a significant financial loss to the poultry industry. Methods to improve the quality of poultry meat while retaining the favorable traits of rapid growth and increased muscling are needed to reduce losses to producers while providing a desirable product to consumers.

This research looked at developing a method, for commercial use, to characterize muscle characteristics that will affect meat quality and examined the inheritance of these muscle morphological characteristics.

OBJECTIVES

The objectives of this Research Enhancement Competitive Grants Program (RECGP) project were to:

- Determine if the genetic selection of turkeys for increased growth rate and breast muscling has changed muscle fiber form and structure, resulting in poor quality meat.
- Develop a way to characterize desirable growth and quality traits, thus allowing producers to determine which birds would prove superior for breeding

CHALLENGES

The poultry industry faces significant economic losses as a result of poor quality meat. Producers are faced with the need to improve meat quality for consumers and yet maintain production efficiency. A way of addressing these issues needs to be determined.

ACHIEVEMENTS

This RECGP-supported project worked on the development of a new application for a previously known method to determine the features of muscle that may lead to more desirable meat products. This new application makes it now possible to identify appropriate female parents from which muscle characteristics are inherited. Using only certain females for breeding stock has the potential to provide better growth and muscle development while maintaining a high-quality meat product.

THE FUTURE

A provisional patent application has been issued, based on the results of this research. The provisional application involves the use of a specific method that allows for the determination of muscle features that are likely associated with high-quality meat products. A pilot study is currently being conducted with a major poultry breeding company with commercialization of this method as the ultimate goal.



This research was funded through the OARDC Research Enhancement Competitive Grants Program, which receives funding from dollars appropriated by the state of Ohio.