

Breeding for poultry meat quality traits - present and future

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The advent of further processed and portion controlled broiler meat products has brought to the forefront the importance of white meat yield, fillet shape and meat quality. The response to market demand by the breeding companies has been significant improvements in white meat yields. Research has shown that fillet shape, especially thickness at various points, may affect variation in appropriate chill time, color and tenderness. The turkey industry has dealt with a PSE-like condition that results in significant drip-loss, and loss of cooked yield. With the rapid increase in breast meat yield in the broiler sector, researchers are investigating meat quality issues that result in similar, although not as extreme, conditions. Color and pH have been associated with drip-loss following chilling, and with cook-loss. Research has shown that breast meat color, pH and drip-loss are moderately to highly heritable and that successful selection practices could prevent increases in the amount of breast meat that has poor processing characteristics. High density feeds combined with heavier processing weights are adversely affecting fillet tenderness and are increasing the incidence of green muscle disease. Research of the structural integrity of the muscle fibers indicates that muscle myopathies are present under certain conditions and research is under way to better understand the mechanisms that control this condition. Stress test models, enzyme assays, histopathological analysis, laser sarcomere length determination, and a host of other procedures and models can be useful tools to a researcher interested in further investigation of meat quality traits. Breeding companies would like the most accurate information possible for each Breeder Candidate that they are evaluating. While we have developed ultrasound procedures that allow accurate estimates of breast meat yield and fillet thickness on breeder candidates, our test of meat quality characteristics either do not allow evaluation of other traits of economic importance or require the sacrifice of the individual for research purposes. Molecular markers for genes that control various meat quality traits have been identified. As the major breeding companies integrate these new tools into existing breeding programs, meat quality traits that are difficult or expensive to measure under a range of induction models will be more easily improved by marker assisted selection.

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