

SYMPOSIA AND ORAL SESSIONS

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GARY ALLEE SYMPOSIUM: SCIENCE IN PRACTICE

O001 Factors to consider when doing fat quality research—Perspectives of a meat scientist. S. N. Carr*, P. J. Rincker, *Elanco Animal Health, Greenfield.*

Fat quality is a topic of vast importance to all sectors of the swine industry. When researching, we must consider the primary objective of the study as this should dictate the breadth and depth of measuring fat quality. Some questions to consider may be: Do we expect an effect and if so, what kind? Are we trying to alter the fat or just monitor for changes? Once we have established the extent of the measurement, we must determine what to measure. Some of the important characteristics of fat include composition, color, firmness, fatty acid profile, and iodine value. It should be noted that although these characteristics can be measured separately, they are not necessarily independent. Additional items of interest may include effects on further processing such as brine uptake, slicing yield, smearing, and storage stability. Few research labs operate commercial style equipment, so the results of small scale research may not translate directly to the commercial processing industry. Next, we need to determine anatomically where to measure. It would be cost prohibitive and out of scope for most research studies to measure all fat depots and characteristics. Therefore, we should focus where we expect an effect and that are economically important to the industry. Some options would include areas specific to a carcass such as belly fat, back fat, ham or shoulder seam fat, and loin marbling. Alternatively, the interest may be in fat intended for further processing, which would be a combination of all of these. It is important when collecting samples to understand that fat exists in multiple layers. General characterization of fat from a specific carcass location should include all of the layers while other research may want to focus on specific layers. The storage of the fat samples should also be taken into consideration. Shorter chain fatty acids will oxidize rapidly, so if these are of interest, the samples may require special treatment and/or storage at extreme temperatures. Finally, consider that there is value in all kinds of research ranging from basic to commercial. However, it may not always be feasible to address this entire range with a single study.

Key Words: fat quality, meat scientist, research

O002 What factors need to be considered when doing fat quality research—Perspective of a nutritionist. M. D. Tokach*, R. D. Goodband, J. M. DeRouchey, S. S. Dritz, J. L. Nelssen, *Kansas State University, Manhattan.*

Increased use of byproducts from the ethanol and food processing industries has led to greater concern over pork fat quality. As a nutritionist, targeting fat quality as an outcome raises several issues. Fat quality importance and definition varies by pork processor. Processors that sell bellies for cured bacon or target Japanese markets require firm fat with low iodine value (IV). Processors that sell bellies

for microwaveable bacon or market fresh pork to domestic markets may have less stringent requirements. Once fat quality becomes a target, the method for measuring it becomes an issue. Because IV is used by some processors, it has become the most common measure; however, it is not highly correlated with bacon slicing yields and is influenced by many factors besides diet. If measuring IV, another consideration is which fat depot to evaluate. Although jowl fat typically has a higher IV than belly or back fat, the relationship between depots is not consistent. The method of measuring IV also must be standardized. The cost of analysis (NIR < calculation from fatty acid analysis < direct iodine titration) is inversely related to their accuracy. Calculation of IV from fatty acid analysis is preferred by many, but differences exist in the number of fatty acids used in the equation. From a diet standpoint, although there is a relationship between dietary IV product and IV of fat depots, numerous other factors influence our ability to predict IV outcome of carcass fat. These include diet factors, such as previous diet history, withdrawal programs, ractopamine, and dietary fiber and non-diet factors, such as disease, genetics, environmental temperature, or gender. Anything that alters ADG and de novo fat synthesis can alter IV. Use of immunocastration greatly alters the dynamics of the change in fatty acid composition due to the rapid increase in feed intake and de novo fat synthesis with time post second injection. Recent meta-analysis of existing data has provided us with tools to better predict IV; however, we still need considerable research to fully predict IV. Finally, other methods of measuring fat quality need research attention.

Key Words: fat quality, nutrition, pig

O003 Pork fat quality: Implications for international product specifications and determining its economic value. E. B. Sheiss*, A. W. Duttlinger, *Indiana Packers Corporation, Delphi.*

The quality of carcass fat influences pork processing characteristics, manufacturing efficiencies and product quality, due mainly to impacts on product firmness. A minimum requirement for firmness of fresh bellies, loins and shoulders is a key component in specifications for important international markets. The US pork industry exports approximately 25% of its annual production. Thus, failing to meet product specifications for export markets may have significant negative effects to the pork value chain. Published research measuring nutritional, genetic and management influences on fat quality has largely attempted to measure the impact on bacon processing and the oxidative stability of pork during storage. Fat quality and product firmness and its corresponding influence on meeting specifications for fresh premium export products has not been quantified. This may be due to the lack of objective criteria for product quality standards, inconsistent industry specifications, confounding factors influencing premium export pass rate, or the availability of sufficient observations. Nonetheless, in addition to processing characteristics, fresh product quality attributes should be evaluated in order to determine total carcass value. Differences in carcass value attributed to fat quality will likely vary between companies. The economic value of fat quality will be impacted