

Public Abstract

First Name:Joshua

Middle Name:Lee

Last Name:Humphreys

Adviser's First Name:Carol

Adviser's Last Name:Lorenzen

Co-Adviser's First Name:Marcia

Co-Adviser's Last Name:Shannon

Graduation Term:WS 2007

Department:Food Science

Degree:MS

Title:Effect of Swine Diets Supplemented with Magnesium Sulfate and Electrolytes on Pork Quality

One hundred sixty pigs were allotted into four dietary treatments to evaluate the effectiveness of magnesium sulfate and electrolytes on improving pork quality. The experiment was completed in each of the four seasons of the year to evaluate seasonality (temperature) as an environmental stressor. The temperature variations in the finishing barn for the four trials were: Trial 1, mean 9.4°C (max 17.6, min 3.1°C); Trial 2, mean 11.9°C (max 27.9, min 3.9°C); Trial 3, mean 21.0°C (max 31.5, min 11.7°C); and Trial 4, mean 23.8°C (max 34.2, min 14.6°C). Two breeds of pigs were used (Duroc and Berkshire x Duroc) and were grouped by weight, sex and breed into one of four dietary treatments. The dietary treatments were: 1) control (corn/SBM based; 13.5% CP and 0.8% total lysine), 2) control + 3.2g/pig/d of magnesium sulfate (MgSO₄) for a minimum of 14 d prior to slaughter, 3) control + 1.5% electrolytes (sodium bicarbonate; NaHCO₄) fed for 48 h prior to slaughter, and 4) control + 3.2 g/pig/d MgSO₄ + 1.5% NaHCO₄. Hogs were transported to the University of Missouri for slaughter. Pigs were given ½ hour to 5 hours of lairage and slaughtered in random order. The data found no differences in pork quality between the four dietary treatments. It was determined that temperature variation played a significant role in ultimate pork quality. Pigs that were finished in the hottest weather had darker color loins while pigs raised under fluctuating temperatures had lower pork quality. Overall, dietary treatment had no effect on pork quality. However, seasonal temperature had an impact on pork quality.