

**Title:** Developing equations for rapid and accurate prediction of carcass fat quality - NPB# 13-101

**Investigator:** Mark Knauer

**Institution:** North Carolina State University

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### Scientific abstract:

The aim of this study was to develop standardized equations to predict carcass fatty acid composition and iodine value. Crossbred pigs (n=480) were blocked by sex and initial BW ( $48.7 \pm 6.8$  kg) into one of three marketing pulls. Pens (n=96) were then allocated to dietary treatments in a 2x2 factorial consisting of two fat sources: corn oil (CO) or beef tallow (TA) fed at an inclusion level of 6% and two levels of Ractopamine HCL (RAC) fed at an inclusion level of 0 or 9g/ton. The trial was replicated in the summer and winter seasons. The first, second, and third marketing pulls removed 80 pigs (16 pens) on d 56, 64, and 72, respectively. Adipose tissue samples were collected from loin backfat and belly fat depots and fatty acid composition were determined. Data were analyzed utilizing PROC MIXED and PROC REG functions of SAS. Dietary CO supplementation increased total PUFA ( $P<0.01$ ) and UFA:SFA ( $P<0.01$ ) in both fat sampling locations. Dietary CO increased ( $P<0.01$ ) IV when compared to TA for both backfat (88.6 vs. 69.8) and belly fat (83.5 vs. 68.5). Gilts had greater IV than barrows in both backfat (80.6 vs. 77.8) and belly (76.7 vs. 75.3). Summer tended ( $P=0.07$ ) to have greater backfat IV than winter (79.6 vs. 78.8) and had increased ( $P<0.01$ ) belly IV (77.4 vs. 74.6). The last market pull had higher ( $P<0.05$ ) backfat IV (80.9 vs. 77.8 and 78.8) and belly IV (77.1 vs. 75.8 and 75.1) than market pulls one and two, respectively. In the development of equations to predict iodine value of backfat and belly sample sites, dietary IVP was the first variable selected (backfat:  $R^2 = 0.74$ ; belly:  $R^2 = 0.66$ ). The inclusion of ractopamine, sex, season and market pull increased backfat and belly  $R^2$  values to 0.78 and 0.69, respectively. In other words, 66% of the variation in belly IV was explained by dietary IVP and approximately 3% of the variation in belly IV was explained by ractopamine, sex, season and market pull. Equations produced by this project will enable swine production companies to better manage fat quality and optimize feed costs.

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For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • [pork.org](http://pork.org)

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