

# Effect of Selection for Reduced Residual Feed Intake on Pork Carcass Composition and Fresh Pork Quality

## A.S. Leaflet R2394

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### Summary and Implications

Selection for reduced residual feed intake (RFI) resulted in leaner carcasses and less intramuscular lipid in the pork loin. However, the selection approach did not result in differences in water holding capacity and color of fresh pork loin chops. Selection for reduced RFI has the potential to improve carcass composition with few detrimental effects on meat quality.

### Introduction

With ever rising feed prices, it has become more important to produce livestock more efficiently. Residual feed intake (RFI) is a novel measure of feed efficiency because it denotes the true differences in the physiological ability of pigs to use valuable feed energy for maintenance and growth. Pigs selected for reduced RFI have been shown to grow more efficiently. However, the selection for improved growth efficiency has the potential to alter meat composition and fresh meat quality. The objective of this study was to determine the extent to which selection for reduced RFI affects pork composition and meat quality.

### Materials and Methods

The two lines evaluated in this study consisted of a line selected for reduced RFI over five generations (select) and a

randomly selected control line (control). Selection for reduced RFI resulted in 0.052 kg lower RFI per day.

Yorkshire gilts weighing, on average, 250 pounds (select = 80, control = 89) were harvested and the boneless loins were collected at 24 hours postmortem. Back fat and loin eye depth were collected off the midline of the posterior part of the loin using the Fat-O-Meater. Quality attributes were measured at 2 and 3 days postmortem. Drip loss was measured in duplicate. Objective measures of color, Hunter L (lightness), a (redness), and b (yellowness) values were measured in triplicate on two chops using a C10 illuminant, 10° observer, and 1.27cm aperture. Intramuscular lipid and moisture content were determined by AOAC guidelines. Results were analyzed using PROC MIXED in SAS. The model included the fixed effects of line, slaughter date, barn group, and line by slaughter date, and genotype by line interactions, off-test weight as a covariate, and sire, pen, and litter as random effects. The melanocortin-4 receptor gene (MC4R) has been implicated in the regulation of feeding behavior and body weight in pigs and thus the MC4R genotype was also included as a fixed effect in the model.

### Results and Discussion

Carcass composition and meat quality data are reported in table 1. There were no differences between lines for hot carcass weight (HCW), pH, drip loss, or Hunter L and a values. Compared to the control line, carcasses from the select line tended to have less backfat greater loin depth and greater calculated percentage of fat free lean. Loin chops from the select line had less intramuscular lipid content than control chops. Chops from select line carcasses had a greater percentage of moisture than the control chops. Selection for reduced RFI has the potential to improve carcass composition with few detrimental effects on selected measures of meat quality.

**Table 1. Effects of selection for reduced RFI on carcass composition and meat quality attributes.**

	HCW (lb)	Backfat (mm)	Loin Depth (mm)	%FFL	pH	% Drip Loss	L	a	b	% Lipid	% Moisture
Select	191.85	15.02	57.50	56.58	5.55	1.41	45.83	2.37	7.41	1.13	74.37
Control	189.29	17.37	54.56	54.75	5.54	1.39	45.97	2.67	7.67	1.66	73.79
P-value	0.15	0.09	0.05	<0.05	0.71	0.91	0.74	0.13	0.08	<0.01	<0.01