Growth Performance and Pork Quality of Two New Zealand Pig Genotypes

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ABSTRACT

In the pig industry, feed is a major cost which contributes 60 - 80% of production costs, thus it is important that feed specifications reflect the needs for modern genotypes to express their genetic growth potential. The major genetic drivers for growth are the minimum whole body lipid to protein ratio (Minlp) and the upper limit to protein deposition (Pdmax). The objective of the present study was to evaluate the growth performance potential and pork quality of two genotypes (G1 and G2) commonly used in New Zealand.

Sixty four pigs were reared indoors for 12 weeks, and fed two diets to slaughter. The first diet was limited in energy (to provide expression of Minlp); and the second was not limited in energy or protein/amino acids (to provide expression of Pdmax). After slaughter, carcass measurements were recorded and pork quality was tested.

During the Minlp and Pdmax diet phases the key overall findings were that G1 had improved average daily gain (940 vs. 890 g/d) and feed conversion ratio (1.75 vs. 1.87), had lower calculated Minlp slope (i.e., 0.0248, 0.0327) and greater Pdmax values (i.e., 226 vs. 204 g/d) compared to G2. No difference was found for daily feed intake.

For carcass traits G1 had the lower backfat thickness. There was no difference found for dressing % or carcass weight. For pork quality, G2 had the lower pH and also had greater thawloss % compared to G1.

In conclusion G1 had overall better growth performance and were leaner than G2. The pork from both G1 and G2 was not found to have pale soft and exudative (PSE) quality and was considered to be very tender.

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α	Slope
a*	Relative redness
ADFI	Average daily feed intake
ADG	Average daily gain
AI	Adequate intake
b*	Relative yellowness
BF	Backfat
BFA	Backfat surface area
BW	Body weight
CP	Crude protein
DEI	Digestible energy intake
DFD	Dark firm dry
DM	Dry matter
EJL	Expressed juice loss
FCR	Feed conversion ratio
FI	Feed intake
G	Genotype
GE	Gross energy
G*S	Genotype*sex interaction
He-Ne	Helium-neon
HI	Heat increment
kcal	Kilocalories

KJ	Kilojoules
L*	Relative lightness
Ld	Lipid deposition
LM	Longissimus muscle
LA	Longissimus dorsi surface area
LSMeans	Least squares means
LW	Live weight
ME	Metabolisable energy
ME_m	Metabolisable energy for maintenance
MFI	Myofibrillar fragmentation index
Minlp	Minimum Ld to Pd ratio
MIRINZ	Meat Industry Research Institute of New Zealand
N	Newton
n	Sample size
NDF	Neutral-detergent fibre
NRC	National Research Council
Pd	Protein deposition
Pdmax	Protein deposition maximum
pHu	Ultimate pH
PSE	Pale soft and exudative
S	Sex
SD	Standard deviation
SEM	Standard error of the mean

SL	Sarcomere length
Target L/P	Target lipid to protein ratio
WBSF	Warner-Bratzler shear force
WHC	Water holding capacity