

# Effect of pig growth rate and health status on meat eating quality

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# Introduction

- There is speculation that slow growth results in tougher pork (calpain activity).
- Slow growth could also increase boar taint levels (older and more mature pigs).
- This project investigated the effect of variations in growth rate on tenderness and boar taint.



# Materials and methods

225 loins were examined from Large White x Landrace pigs

Treatment		Sex		Slaughter Weight
Fast growing		Female		90 kg liveweight
Slow growing	X		X	
		Male		110 kg liveweight
Interrupted				

**Measurements:** boar taint (skatole and androstenone), toughness, P<sub>2</sub> fat thickness, muscle pH, colour, drip loss, sensory analysis (flavour and odour).



# 🌟 Results: overall

Growth rate, P<sub>2</sub> fat thickness, toughness and skatole in growth category groups. Both sexes and carcass weights.

	Growth category			p-value	sig.	sed
Variable	Fast	Slow	Interr			
Wean to finish ADG (kg)	0.68a	0.54b	0.49c	†	*	0.023
P <sub>2</sub> (mm)	10.13a	9.06b	8.43b	<0.001	***	0.351
Toughness (kg)	4.40	5.22	5.41	†	Ns	0.405
Skatole (µg/g)	0.068a	0.052b	0.054ab	0.005	**	0.007

† Significant carcass weight group x growth category interaction. Effects bigger in 110 kg pigs.



# Results: toughness

Effects of growth category on toughness (kg) in carcass weight groups in both sexes.

	Growth category			p-value	sig.	sed
Weight	Fast	Slow	Interr			
90 kg	4.49b	4.81ab	5.35a	0.019	*	0.305
110 kg	4.32b	5.63a	5.47a	<0.001	***	0.272

Bigger effect on toughness at 110kg.



# 🌟 Results: boar taint in males

Effects of growth category.

Variable	Growth category			p-value	sig.	sed
	Fast	Slow	Interr			
Androstenone ( $\mu\text{g/g}$ )	0.500	0.383	0.397	0.045	*	0.062
Skatole ( $\mu\text{g/g}$ )	0.080a	0.056b	0.060ab	0.009	**	0.011

Effects of carcass weight.

Variable	Weight group (kg)		p-value	sig.	sed
	90	110			
Androstenone ( $\mu\text{g/g}$ )	0.414	0.439	0.602	ns	0.047
Skatole ( $\mu\text{g/g}$ )	0.066	0.065	0.925	ns	0.008

Threshold levels are: 1.0  $\mu\text{g/g}$  Androstenone and 0.2  $\mu\text{g/g}$  Skatole.



# 🌿 Results: sensory analysis

Effects of growth category.

Griddled loin steaks (1 to 8 scales). All pigs.

	Growth category			p-value	sig.	sed
	Fast	Slow	Interr			
Pork odour of fat	4.22	4.07	4.07	0.297	ns	0.112
Abnormal odour of fat	2.23	2.39	2.23	0.251	ns	0.112
Tenderness	4.36	4.01	3.97	†	ns	0.206
Juiciness	4.59a	4.34b	4.37b	0.013	*	0.091
Pork Flavour	4.41	4.39	4.31	0.585	ns	0.103
Abnormal Flavour	2.65	2.68	2.64	0.948	ns	0.124
<b>Hedonic</b>						
Flavour liking	4.68	4.56	4.64	0.413	ns	0.095
Overall liking	4.43	4.19	4.27	0.053	ns	0.100

† Significant carcass weight group x growth category interaction. Effects bigger in 110kg pigs.



# 🌿 Results: sensory analysis

Eating quality of griddled loins steaks (1 to 8 scales).  
Comparison of Fast and Slow groups in 110 kg males.

	Growth category		p-value	sig.	sed
	Fast	Slow			
Pork odour of fat	3.73	4.20	0.025	*	0.205
Abnormal odour of fat	2.69	2.50	0.438	ns	0.241
Tenderness	4.22	3.81	0.004	**	0.139
Juiciness	4.88	4.47	0.013	*	0.161
Pork Flavour	3.95	3.91	0.804	ns	0.189
Abnormal Flavour	2.86	3.05	0.390	ns	0.217
<b>Hedonic</b>					
Flavour liking	4.50	4.20	0.107	ns	0.183
Overall liking	4.33	3.91	0.020	*	0.179



## Conclusions

- Pork tenderness was higher in pigs growing rapidly ( $>600\text{g/d}$ ) to 90 or 110kg live weight than in those growing more slowly.
- Boar taint compounds were at higher concentrations in faster growing male pigs which reduced pork odour.
- Therefore boar taint is not higher in older, slower growing pigs.



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