

# Cutting variation – the challenge for the meat trade

by Nigel Lincoln, Pfizer Animal Health.

No matter where you are in the world, if you buy a Coca Cola, you know what you are going to get. From Sydney to Stockholm, Rome to Rio, the product and its presentation is pretty much the same. Consumers want predictable products: products they can rely on and which meet their expectations time after time. Variability is the enemy of profitability.

The same applies to the meat trade: retailers and consumers want fresh and processed products that are a consistent and thus predictable size, weight and quality.

Processors want carcasses that allow them to produce consistent cuts with a consistent lean/fat content and a consistent high eating quality. The challenge for the meat trade is the fact that animals are inherently individual, different and unpredictable.

Any animal production methods that enhance uniformity of growth patterns and reduce variability in carcass quality are potentially very advantageous to the trade.

## Carcass uniformity

Physical castration of male piglets is one potential source of variation. Any procedure that causes stress and trauma to growing animals, as castration undeniably does, is likely to be a source of setback to a greater

	Castrated	Improvac	Boars
Stiffness (rated 1-8)	4.0 <sup>a</sup>	4.2 <sup>a</sup>	5.0 <sup>b</sup>
Juiciness	3.7 <sup>a</sup>	3.8 <sup>a</sup>	3.4 <sup>a</sup>

*Rated on a scale of 1 (low) to 8 (high). Different superscripts indicate significant differences at p<0.05*

**Table 1. Consumer assessment of pork eating qualities (IRTA, Spain).**

		Castrated	Improvac	Boars
Ham	Weight (kg)	11.98 <sup>a</sup>	11.83 <sup>a</sup>	10.79 <sup>b</sup>
	% carcass weight	25	24.91	22.52
Loin	Weight (kg)	9.12 <sup>a</sup>	8.7 <sup>b</sup>	7.64 <sup>c</sup>
	% carcass weight	19.04	18.3	16.07
Belly	Weight (kg)	4.196 <sup>a</sup>	4.188 <sup>a</sup>	3.599 <sup>b</sup>
	% carcass weight	8.76	8.82	7.62
Fillet	Weight (kg)	0.591 <sup>ab</sup>	0.63 <sup>a</sup>	0.605 <sup>ab</sup>
	% carcass weight	1.23	1.33	1.28

*<sup>ab</sup> different superscripts between groups denote statistically significant differences in results*

**Table 2. Comparison of weight of primal cuts (IRTA, Spain).**

or lesser extent. In addition, by altering normal male growth patterns castration also has the effect of increasing the deposition of fat in the carcass and reducing the proportion of lean muscle tissue.

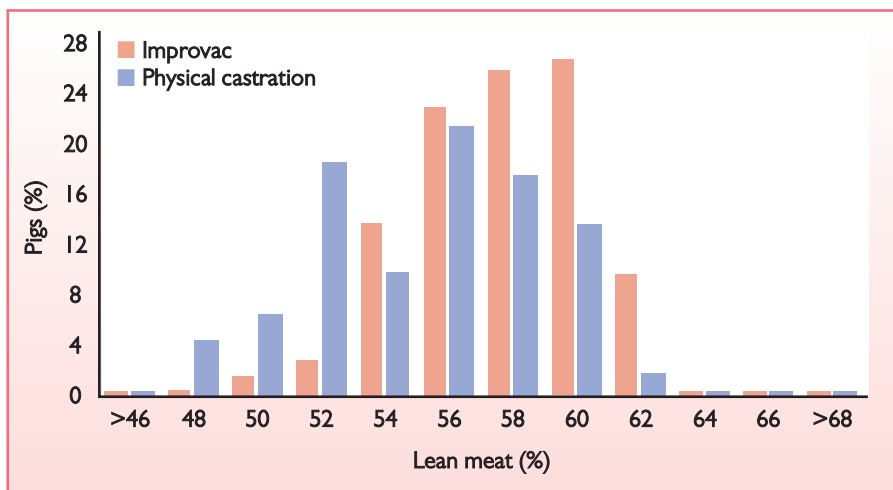
Carcass uniformity is a key parameter for the abattoir/processor when evaluating pigs received from the producer, who may receive lower payments for those carcasses that fail to meet the grade.

Swine producers, however, may have a new and unexpected ally. The advent of a vaccine (Improvac from Pfizer Animal Health) which can replace castration has provided a more welfare friendly option and, equally importantly, a means to provide a more consistent, high quality carcass.

Scientific studies have demonstrated that Improvac delivers more consistent carcasses

*Continued on page 24*





**Fig. 1. Comparison of Improvac vaccinated pigs and physically castrated pigs.**

Continued from page 23  
 than physical castration. An assessment conducted in Germany found that, for pigs slaughtered at the same age, 85.4% of carcasses from Improvac vaccinated pigs were in the desirable lean meat percentage range (according to German standards); whilst only 56.1% of carcasses from castrated pigs met the same standards.

This is confirmed by work carried out in Spain by IRTA, the government backed agricultural research institute, which graded carcasses according to back fat thickness. Those from Improvac vaccinated pigs varied less than those from castrates ( $\pm 2.42\text{mm}$  from the mean compared to  $\pm 3.5\text{mm}$ ).

## Lean and healthy

Field studies conducted in several EU countries have consistently shown that Improvac produces levels of back fat and intramuscular fat that are between those of castrates and entire boars, and similar to those of females.

A study in Spain which included 24 castrated pigs, 36 boars and 36 Improvac vaccinated pigs found that back fat was significantly lower (7.83mm) in vaccinated pigs compared to castrates (10.54mm) at

176 days of age, but higher (7.62mm) than boars.

Measurement of intramuscular fat, which plays an important role in the tenderness and juiciness of pork, shows that Improvac also produces values that fall between those of castrates and entire boars. These figures are supported by the results of consumer testing showing that meat from Improvac has better eating qualities than meat from non-castrated boars (too much lean).

Trials in Germany and Switzerland have shown similar trends in back fat with significantly higher percentage of lean meat in carcasses from vaccinated pigs compared to carcasses from castrated pigs.

If we look at the composition of this fat, a fatty acids analysis shows that castrated and Improvac vaccinated pigs have more saturated fat than entire males. This makes the fat firmer and less oily and thus easy to cut and process.

The percentage of oleic acid – a heart health friendly fatty acid – content was higher in Improvac treated males than in boars. And percentage of linoleic acid – a fatty acid that can directly impact fat oxidation – was more favourable in the Improvac treated males than in boars.

The exact results are likely to vary from unit to unit and country to country depend-

ing on variables such as genetics, nutrition, slaughter age and production system.

However, the important point is that when comparing animals under the same conditions, studies have consistently shown that Improvac produces high quality meat with the desired balance between lean meat and fat.

## Maximised primal cuts

So how do vaccinated carcasses perform in terms of butchery compared to those from castrated pigs?

In general, Improvac vaccinated pigs are no different from castrated males or females with regard to the majority of variables (primal cuts weight), with the exception of fillet weights which are higher than those of castrates.

## Changes to pH and drip loss

Data from studies conducted in 10 countries around the world, including Spain, Germany, USA, Brazil, Australia, and Japan, consistently show no difference in pH between pork from Improvac vaccinated pigs, castrated pigs and boars (pH = 5.5 in Spain and Germany).

Assessment of drip loss, again from studies in different parts of the world, found no significant difference between pork from castrates, boars and Improvac vaccinated pigs.

## Summary

Vaccination may be a unique and technologically advanced solution to reduce boar taint, but it has been tried and tested over many years in every major pork producing country in the world. The effects on the carcass are consistent and well established.

This method of animal management which is now being adopted by more and more producers around the world promises to bring us one step closer to the uniform, consistent meat products that today's retailers and consumers demand. ■

