

# Specialized Pigs for Specialized Markets

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## ■ Introduction

In an effort to stimulate discussion on niche markets and their relevance in the swine industry, this paper will present a broad overview of the types of niche markets encountered in the industry and the potential impact of breeding organisations on those markets.

Market segments in the meat industry are multifaceted (Table 1). At the fresh meat level, carcass size, primal cuts, retail cuts and inherent meat quality characteristics provide a wide range of combinations that can be categorized in different segments. With further processing a multitude of classifications can be introduced to cater to different consumer groups, including ethnic groups, age groups, lifestyles, income groups, all based on preferences of these groups of individuals. The variety of products available in food stores testifies to the fact that the retail industry has responded to this demand.

**Table 1. Selected criteria at different levels of the pork chain that help classify products into niche markets.**

<b>Farm Production</b>	<b>Packer Carcass/Meat Specifications</b>	<b>Processor/Retailer Sold product</b>
Nutrition	Size of carcass, cut, retail	Ham production
Health status	Colour	Export fresh
Drug use	Water holding capacity	Belly usage
Management	Fat/Marbling	Processing, yields

## ■ Markets in Canada

The export market is very important in Canada. It is mainly comprised of the US market but the Asian market, particularly Japan, is a significant component creating a big niche market. This market differentiates itself from the North American product in that the characteristics of the fresh pork are very well defined. Meat quality is at the top of the list of required specifications.

From a purely Canadian perspective the economic evaluation of carcasses has relied for many years on grading grids. These grids provided a common mechanism of payment to determine an accurate economic value for a biologically variable product. At the same time it has provided an economic incentive to producers to deliver what the packer wanted. In recent years this has evolved but we still rely heavily on a scale and a ruler (backfat measure, probe) to determine economic value. We sometimes include loin depth, and in some instances, pH as a measure of quality. Using these procedures the packing industry has defined niche markets to respond to their customers. Different grids to some extent define different niche markets for the pig producers and different grading grids from different packers offer some flexibility for producers to market their pigs. Still a very limited set of criteria is available to the packer to convey what he wants from the producer. Meat quality is also a big issue but is dealt in a less quantitative way.

## ■ The Process of Differentiation

Marketing trends today have to respond to the need to increase margins at the retail level and this seems to be accommodated by the segmentation of the markets. In principle retailers produce a product that responds to the needs of a specific group of people who are willing to pay more for what they want. This is something that works quite well in the industrialised countries. Alternatively, a well-targeted marketing program can manipulate the needs of the consumer.

So there are many ways by which differentiation can occur. As mentioned previously, a good marketing program can lead to positioning a similar product differently. This is concept based and would be categorized as marketing led differentiation. Factors around a product can be changed in order to create a different category. This could be called extrinsic differentiation and would result in organic and/or natural pork, traceable pork or pork products based on food safety practices. Lastly, intrinsic differentiation would incur modifying the characteristics of the product to respond to the demand of the customer. Raw material characteristics for fresh product differentiation can be governed by genetics and feeding strategies. Processing can play a role in modifying the properties of the fresh product (e.g. moisture-enhanced fresh products). Cutting

specifications will also create a level of differentiation, a prime example being Japanese cutting specifications versus North American specifications.

## ■ The Product

From the livestock industry point of view and, more specifically, in the pig industry, we are in a position to deliver different levels of differentiation. Some programs in the US and Canada have adopted certain breeds of pigs as being the tools to deliver intrinsic differentiation and they have been quite successful. The primary product has to deliver some basic characteristics for size, as mentioned previously, which includes carcass weight, primal size, and, ultimately, retail cut and then intrinsic meat quality traits. Meat quality not only impacts the fresh meat consumption segment but also has an impact on the manufacturing yield. Hence meat quality has an impact at all levels of the pork chain. Basically, quality is produced when muscle is transformed to meat. Many factors come in to play at this stage of the game. Genetics, nutrition, slaughter and pre-slaughter conditions will impact post-mortem pH decline rates, which in turn will have an impact on colour and water holding capacity.

Quality is really defined in terms of appearance, water holding capacity, tenderness and taste. Simplistically, colour and water holding capacity are a function of pH, while taste is more related to intramuscular fat - the latter being influenced by genetics and nutrition. Trained line people usually evaluate colour visually and we usually rely on these criteria to assume that water-holding capacity is within acceptable ranges. Tenderness in pork is usually not a concern. Intramuscular fat (marbling) although desirable from a taste perspective, may not be desirable from the consumer point of view in the domestic market. However it is a significant requirement for the Asian market. Water holding capacity has an impact on the appearance of the product in the fresh state and this is illustrated by wanting to minimize purge in vacuum packaged meat after 30 days of storage. On the processing side, the capacity of the meat to take up brine or curing solution has an impact on the efficiency and profitability of the process.

## ■ Differentiation through Genetics

Genetics provides some tools to fulfill different requirements. Over the years it has been shown that certain traits are controlled starting at the breed level and that traditional selection practices as well as crossbreeding practices have produced distinct lines with specific traits within or across those breeds. Backfat which, for example, is a highly heritable trait, has been reduced to the point where some packers are asking for fatter carcasses. Modern breeding techniques have given us the tools to differentiate pigs within line by genotype.

Early examples of genotyping include the *Hal* and *RN* gene that have a definite impact on the intrinsic properties of meat. Most certainly traditional genetics has shown that meat quality characteristics are heritable and that information used in combination with statistical techniques can ultimately help improve meat quality.

As noted earlier, market segments can be identified for different end uses and in the livestock industry each link in the chain has an impact on the profitability of the sector. On-farm performance in the swine industry has a dramatic impact on the profitability of the unit. Sire performance traditionally selected for grow-finish performance and carcass merit will usually complement the emphasis given to the dam side on prolificacy and mothering ability. Further downstream, fresh meat segmentation can be broken down into 4 categories: low cost lean, fresh pumped lean, domestic unpumped lean and Japanese lean, each having its own set of criteria with certainly some overlap. Most certainly, in the best of worlds, we would want to maximize quality and lean content of the carcasses.

Available today in the industry are a variety of breeds to meet some of the basic requirements. PIC is one of many companies in offering a wide range of products for the domestic or export markets based on line segmentation. Lines based on traditional breeds and selected for rapid growth and carcass lean, as well as synthetic lines and niche market lines, like the Berkshire, make up the framework of available technologies to supply different segments. Differences in production performance at the farm level and intrinsic meat quality provide a wide range of products to supply the market. This differentiation can be expanded from breeds to genotype and technology today plays a greater role in refining these possibilities. More recently a gene responsible for lean accretion and grow-finish performance has been discovered in specific lines to further provide for differentiation (Table 2).

**Table 2. Pure line results of MC4R effects on grow-finish and carcass performance<sup>1</sup>.**

<b>Genotype</b>	<b>Number of pigs</b>	<b>Backfat (mm)</b>	<b>Days to 110 kg</b>	<b>Daily feed intake (kg/d)</b>
PT1.2-PT1.0 <sup>2</sup>	1720	-0.9	+3.3	-0.17
P-value		0.0001	0.0001	0.01

<sup>1</sup>Kim et al, 2000.

<sup>2</sup>Difference between the 2 homozygotes, PT1 is a PICmarq™ Technology

## ■ Conclusion

In the end, purchasing criteria and eating expectations at the consumer level create a pull through demand that helps define the type of products needed for the market place. Hence the diversity in consumer habits across the world creates these niche markets for pork and although traditionally a commodity product, pork is becoming a value added item in certain markets. In terms of volume, the pork sold today on the domestic retail market is still mainly undifferentiated.

In conclusion, once the basis for sound wholesome raw materials has been laid, differentiation can occur through specific programs (extrinsic and marketing led) that will fill the niche markets. Inherent product characteristics will still have to be delivered through the product itself (intrinsic differentiation).

## ■ References:

- Kim, K.S., N. Larsen, T.H. Short, G.S. Plastow, and M.F. Rothschild.** (2000)  
A missense variant of the porcine melanocortin-4 receptor (MC4R) gene is associated with fatness, growth, and feed intake traits.  
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