# Developments in Global Pig Production

Leo den Hartog

Nutreco R&D, PO Box 220, 5830 AE Boxmeer, The Netherlands; Department of Animal Sciences, Wageningen University, Wageningen, The Netherlands
***Email:*** Leo.den.Hartog@nutreco.com

The world population has increased during the last decades and will increase further during this century. Due to this, and to the increased meat consumption per person, global consumption of meat will rise. During the last 40 years, global pork production increased with a factor 3.5 from 24.7 million ton in 1961 to 86.6 million ton in 2002. **Figure 1** shows the world market demand for meat including pork.

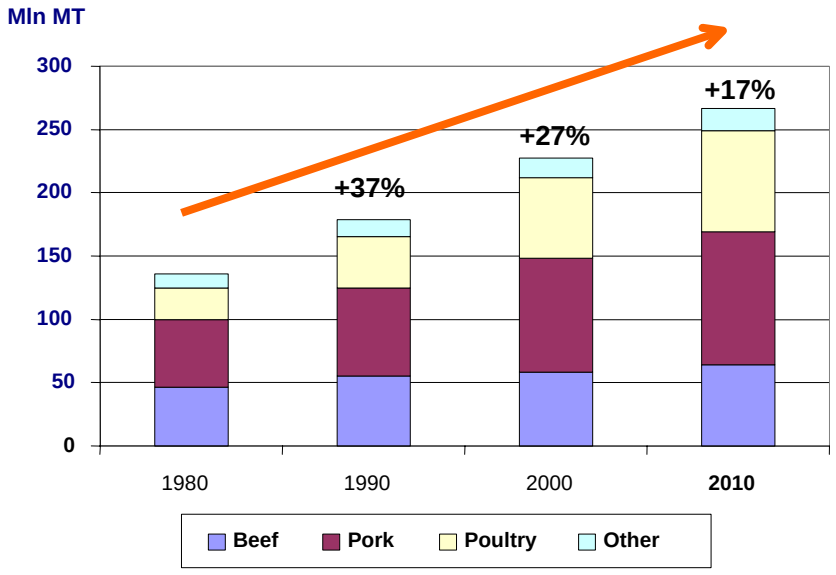


**Figure 1. The world market demand for meat (Source: Rabo N.D. Mulder, Projection Fapri 2001, FAO)**

## ■ Production Area

The main production areas for pork are East Asia, North America and Europe. In eastern Asia there is a shortage of land and feedstuffs for animal production. Japan is a main importer of pork. China however contains nearly 50 % of the world pig population. If the increase in pork production in China continues, more than 50 % of the pork production in the future will occur in this country. In the USA and Canada, pork production has increased during the last decade. (**Figure 2**).

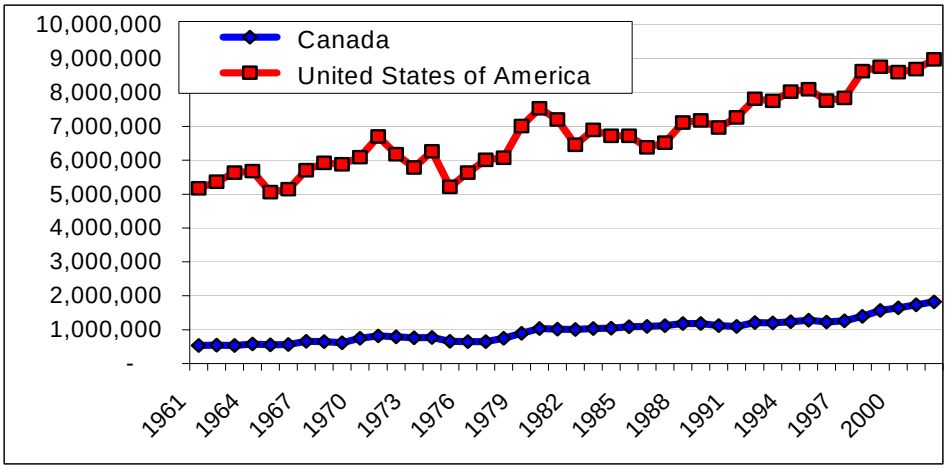


**Figure 2. Development of pig meat production in the USA and Canada across 40 years (tons/year, Source FAO)**

The USA changed from an importing country to a pork exporting country. Export of pork is 4 times more profitable than the export of grains. In South America, especially Brazil, the production circumstances are good: feedstuffs are available, labour is cheap and there is enough land available for manure. Animal production is developing rapidly in this part of the world. Also in Europe several changes are occurring. The EU, for example, will expand. This means an increase in EU member state population of about 110 million people. The surface of the EU will increase about 33% but the area of fertile agricultural land will be enlarged 55%. The Eastern European countries have relatively cheap labour and land prices are also relatively low.

**Table 1 and 2** show the amount of imported and exported pork in 1990, 2000 and 2002. It can be concluded from these tables that the biggest increase in pork export happened in North America and Brazil.

**Table 1. Import of pork per country** (x 1000 ton carcass weight, Source GIRA 2002)

| | 1990 | 2000 | 2002 |
|---|---|---|---|
| Japan | 497 | 847 | 962 |
| US | 483 | 745 | 842 |
| Russia | 489 | 486 | 817 |
| CEEC | 201 | 227 | 303 |
| Mexico | - | 185 | 291 |
| S. Korea | - | 182 | 173 |
| China | - | 149 | 141 |

**Table 2. Export of pork per country** (x 1000 ton carcass weight, Source GIRA 2002)

| | 1990 | 2000 | 2002 |
|---|---|---|---|
| EU | 807 | 1,321 | 1,163 |
| Canada | 380 | 886 | 1,079 |
| US | 109 | 600 | 735 |
| Brazil | - | 155 | 522 |
| CEEC | 323 | 266 | 323 |
| China | 443 | 59 | 188 |

The Western European market is characterized by:

- Change from production oriented to market oriented
- Critical consumers with wishes concerning way of production
- Large market consisting of consumers with a relatively high income
- High production costs compared to other areas.

But even in Western Europe cost of pork production differs per country (**Figure 3**).

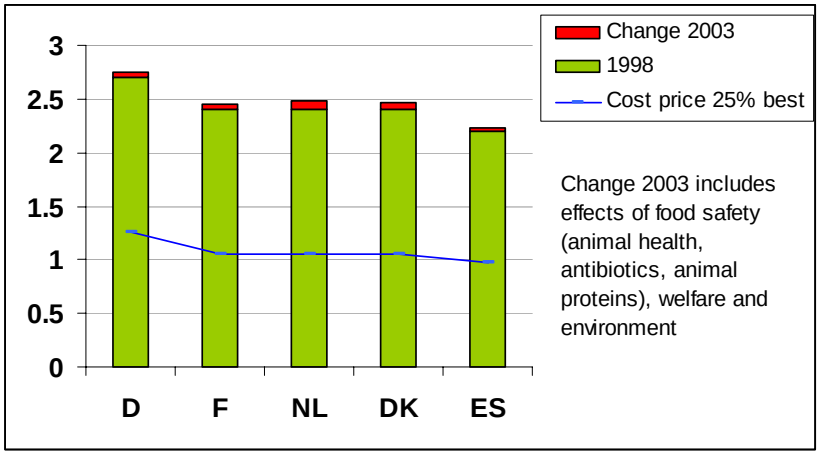


**Figure 3. Long term cost of production for pigs (per kg live weight) in the EU** (includes calculated interest & labour costs, specialised closed farms, source AEI, NL) D = Germany; F = France; NL = The Netherlands; DK = Denmark; ES = Spain

The cost of production per kg live weight is lowest in Spain. However the within country variation in cost price is bigger than the between country variation which means that the 25 % best farmers in Denmark, France and the Netherlands for example have a lower price than the average in Spain. The cost of production in Western Europe, as an average, is higher than in the US, Canada and Brazil.

## ▪ Market

Markets are changing from production to market oriented, which means that we are going more and more towards a consumer oriented production.

This means that we should be aware of the wishes of the consumers concerning products and way of production. Because there is a variety in

consumers and therefore in products, different supply chains should be built. The consumer expects attractive, nutritious and safe food from environmentally responsible and sustainable sources for a fair price. The keys for the successful future of pork production are:

- Food safety
- Quality assurance and transparency
- Sustainability in production
- Variety of products which are easy to prepare

## ■ Supply Chain

In order to fulfil the market wishes, several companies developed supply chains in which breeding, feeding, husbandry and processing are related. Optimization of the supply chain and specialization of the processing plants are used for further improvement of the product quality for bacon, industry, retail and food service.

This means that breeding companies must develop different breeding lines in order to fulfil the requirements of the production chains.

In Europe, pork is mainly consumed in a processed form, especially in the UK, Germany and Italy. The share of fresh meat prepacked is also growing steadily. The percentage of fresh prepacked meat increased in the Netherlands from 42 in 1990 to 76 in 2001. The supermarket share in retail meat purchases keeps growing from 61 % in 1990 in the Netherlands to 78 % in 2001. The importance of prepacking, processing, fresh products and supply chain management will increase in the future. In order to differentiate in the EU from non EU pork producers we have to act close to the consumer and focus on the aforementioned aspects.

The five basic items which may affect the supply chain are:

- Food safety
- Quality
- Production circumstances
- Cost price
- Information

## Food Safety

Food safety is priority in all parts of the production chain nowadays. The first essential step in a food safety program is a good risk analysis (actual and perceived risk), including risk assessment, risk management and risk communication. In order to guarantee the consumer that the products are safe four key characteristics in the Nutreco quality program NuTrace® (**Figure 4**) are defined:

- development of food quality assurance programs (certified quality)
- development of tracking and tracing systems
- effective risk management and preparedness
- monitoring the whole food value chain

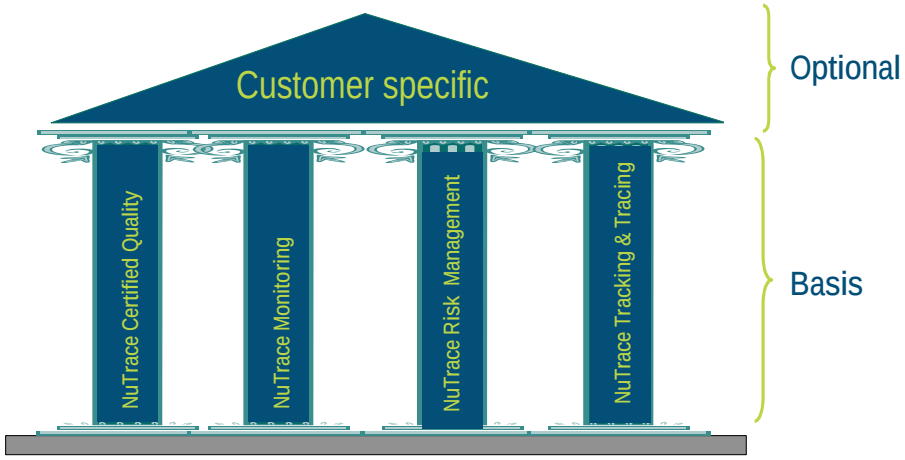


**Figure 4. Nutrace®, based on four pillars**

## Quality Systems

The food quality assurance program fits with the specifications of the Global Food Safety Initiative. This initiative was launched by a group of international retailers and is a market-oriented approach to assure food safety. However in several countries national requirements are involved as well.

For this purpose not only a good contact with the customers is needed but also an intensive contact with NGO's, governmental organizations and politicians is necessary.

## ▪ Tracking and Tracing

Tracking and tracing through the whole chain and also to the suppliers is necessary in order to state the guarantees. Therefore NuTrace® tracking and tracing was developed; it contains information concerning the product and the production process during breeding, farming, feeding, delivering, processing and packing (**Figure 5**). This means that the NuTrace® tracking and tracing system contains all the integrated information from feed raw materials through to processed products all in one database. This makes it possible to trace back within a few minutes from meat to, for example, the feed ingredients used in order to produce that meat. NuTrace® starts with traceability, evolves into transparency and leads to trust.

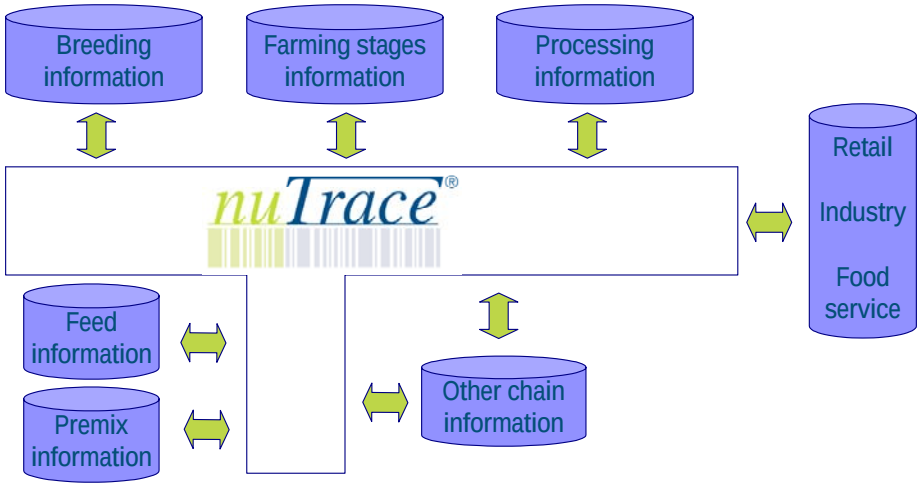


**Figure 5. Nutrace®, Tracking & Tracing**

An example of a new technology that has been installed to track and trace meat products during processing is the DOT code system. The DOT code is put on the hams, backs, bellies and shoulders of the carcass by an advanced robot. Also the boxes with the smaller meat cuts can contain this code. In this way the customer has not only access to information on the product but also to the production process like breeding, feeding, health inspection and classification. This is the way to a complete transparent production.

## Risk Management

In order to build confidence with customers and to react in an adequate and accurate way, effective risk management policies and procedures are necessary.

## Internal and External Monitoring

Monitoring at all parts of the chain is essential. Suppliers are audited and raw materials checked rigorously at company laboratories. The traffic light procedure for suppliers is used. Only suppliers with a green light are allowed to deliver their products to Nutreco companies. Suppliers with a red light are not allowed to deliver and those with an orange light have to be double-checked. All the results of the monitoring procedure are communicated with the supplier. Detection methods for rapid and accurate indication of the presence of contaminants or undesired micro-organisms were developed. An example is the Calux analysis for rapid dioxin analysis.

## Conclusion

Total Quality Management through the whole production chain is the only way to fulfil the demands of the consumers and to offer them safe, nutritious and attractive meat products for a fair price.

Food safety and a customer oriented supply chain production are the key items now and for the future.