

Food safety and quality control for poultry products

At the recent International China Summit that was held in Beijing as part of VIV China, Roel Mulder, secretary general of the World Poultry Science Association presented an informative paper entitled Food Safety and Quality Control for Poultry Products.

Roel focused on general issues in poultry production, food safety, the quality of poultry meat, legislation and international quality systems and he rounded off with various conclusions.

He stressed that continuous demographical changes occur worldwide. As a result of economic factors there are increases in absolute wealth in South-East Asia and South America and nowadays, on a global scale, more people are being taken out of poverty than ever before. As a consequence, more meat is being consumed as an important component of their diet. World poultry meat consumption has increased by 250% between 1985 and 2005.

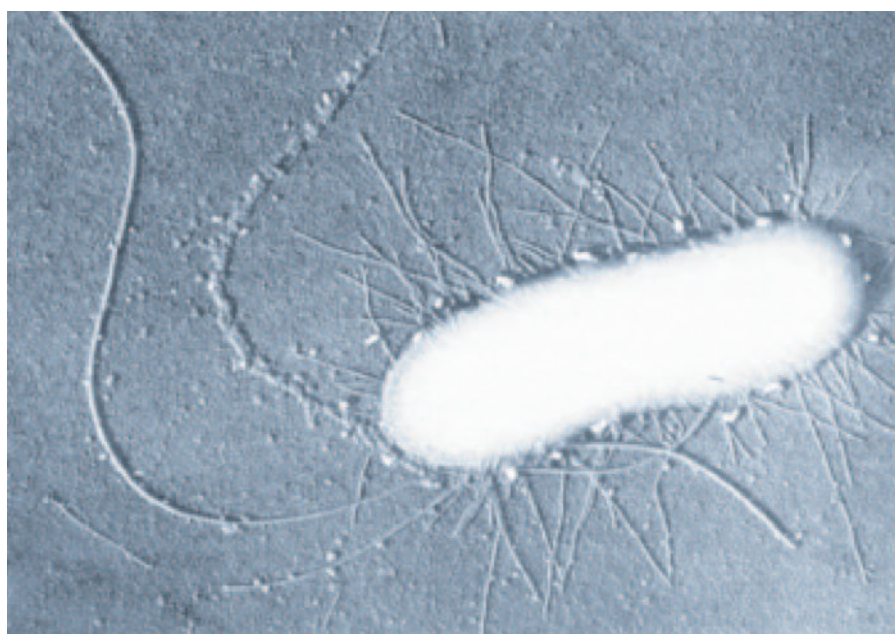
Risk of antibiotic resistance

In poultry production, pathogen control, welfare and general management may not be optimal and the consequence is that antibiotic resistance in bacteria may become a risk in the production of poultry meat.

Expansion of the poultry industry also brings unique problems and issues and in

Table 1. Causes of concern arising from modern poultry meat production.

- Diseases and food safety.
- Welfare of the birds.
- Environmental impact.
- Utilisation of natural resources.
- Loss of biodiversity.
- Impact on small producers.
- Impact of intellectual property rights and patents.
- Concentration of ownership into few hands.



Salmonella – one of the main foodborne bacterial pathogens.

countries where the ambient temperature is high for much of the year, there can be limitations in hygiene and zoonotic pathogen control.

For economic reasons open-sided housing, with its obvious biosecurity shortfalls is frequently used instead of enclosed housing. However, in many areas where open sided housing was the norm one or two decades ago many larger producers are moving over to controlled environment housing. The way of processing poultry is also changing with countries that were heavily dependent on traditional wet markets changing to highly mechanised and automated processing procedures.

In addition, more countries are now wanting to export poultry meat, where previously there was little or no trade in these products, and this can favour a rapid exchange of zoonotic and epizootic pathogens between countries.

Despite the spectacular success of the poultry industry in efficient production of poultry meat and eggs and the fact that these products are among the cheapest and most available forms of high quality protein, concerns are emerging in some quarters regarding production (see Table 1).

Turning to product quality Roel highlighted the interlinking of key attributes. He highlighted how the foundation for commercial success was good intestinal function as this was crucial for the well being of the bird and was required for optimum growth (meat yield), quality, health and product safety.

Safe, quality products

We need to consider what consumers and, hence, producers demand. This is encapsulated in safe and high quality products that are routinely available.

They perceive safe as meaning safe from a microbiological point of view, without pathogens such as salmonella, campylobacter, listeria and other emerging microorganisms, as well as without residues from antibiotic growth promoters (AGPs)/ enhancers or veterinary drugs.

They consider quality to be aspects of sensory quality, including taste, tenderness, colour and nutritive value. Bird welfare is seen as a quality aspect that also impinges on the image of the product.

Thus, consumers and producers want leg-
Continued on page 11

Continued from page 9

isolation and food safety control and a safe food supply system.

The reasons for these concerns regarding food safety lie in the series of scandals regarding food poisoning organisms and chemical contaminants, together with numerous cases of animal diseases, such as highly pathogenic avian influenza, reports on antibiotic resistance in bacteria and the fact that poultry meat can come from all parts of the world where methods of production are sometimes of concern.

Roel then focused on four areas of concern with regards to food safety, namely, bacterial contaminations, viral contaminations, chemical contamination and AGPs.

The main foodborne bacterial pathogens are salmonella and campylobacter.

Key facts about salmonella include:

- Rates of broiler-flock infection vary widely around the world.
- An EU survey of 24 countries showed 0-68.2% salmonella flock prevalence rates.
- In this survey only Sweden showed no salmonella positive flocks.
- EU legislation has introduced compulsory testing of flocks and set salmonella targets for breeders, layers, broilers and turkeys.
- From 2010 the EU criterion for fresh poultry meat has been an absence of salmonella in 25g.

	Prevalence (%)
At slaughter	1.8-83.0
During processing	26.0-53.0
At retail	2.2-62.2

Table 2. Campylobacter prevalences.

Table 2 shows some interesting data on campylobacter prevalences, but, we need to put food poisoning deaths into context (see Table 3).

The key zoonoses legislation in the EU is Directive 2003/99/EC of the European

Parliament and of the Council of 17th November 2003 on the monitoring of zoonoses and zoonotic agents amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC.

Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17th November 2003 on the control of Salmonella and other specified foodborne zoonotic agents. The objectives of Zoonoses Directive (2003/99/EC) are:

- Monitoring of zoonoses and zoonotic agents.
- Co-ordinated monitoring programmes to assess risks or to establish baseline values.
- Monitoring of antimicrobial resistance.
- Epidemiological investigation of foodborne disease outbreaks.
- Exchange of information and the assessment of trends and sources.

Fig. 1 shows interesting differences between salmonella and campylobacter in relation to the relationship between human cases of food and the situation in poultry.

When it comes to viral contamination and poultry viruses causing problems in man, this is of no consequence in terms of poultry meat as the vector.

General Food Law (EC/178/2002)

focuses on:

- Principles of food safety.
 - Farm to table principle.
 - Producers are primarily responsible
 - Traceability of feed, food and ingredients.
 - Traceability of materials in contact with food.
 - Risk analysis (assessment; management; communication).
 - Application of precautionary principles.
- Coupled to the statutory requirements placed on poultry meat production are the requirements of international quality systems such as:
- Hazard Analyses Critical Control Points (HACCP).
 - ISO 9000:22000.
 - Global-GAP.*

Area	Cause	Annual mortality
World	Hunger	13,000,000
	AIDS	3,000,000
	Malaria	1,000,000
EU	Cancer	750,000
	Heart disease	425,000
	Diabetes	50,000
	Motor accidents	45,000
	Infections	30,000
	Food poisoning	<1,000
	BSE	<10
	GMOs	0

Table 3. Causes of death in man (c2000). Putting food poisoning into context.

- Global Food Safety Initiative.
 - British Retail Consortium (BRC).*
 - Safe Quality Food (Australia).*
 - Quality and Safety (QS, Germany).*
- HACCP is a combination of factors used in:
- GHP (Good Hygienic Practice) and
 - GMP (Good Manufacturing Practice) programs

Those marked (*) have bird welfare components.

ISO systems are generic for all types of organisations producing all kinds of products or services in any sector of activity (profit, non-profit or public).

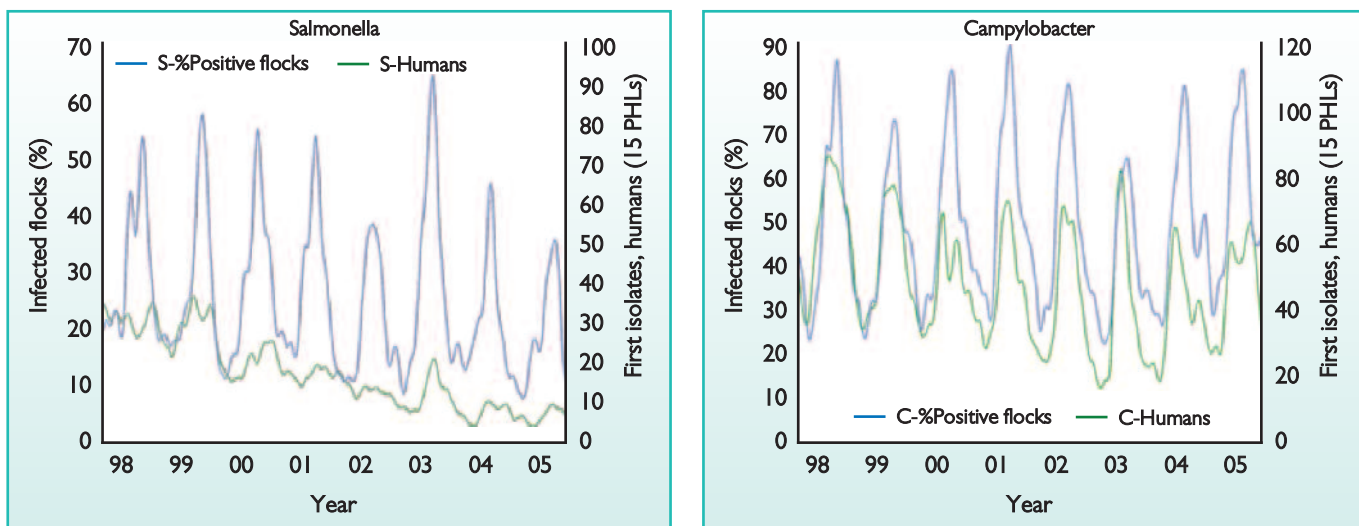
They are management systems with a minimum of operational order so that time, money and other resources are utilised efficiently that give standards that provide the organisation with a model for setting up and operating the management system.

GLOBAL-GAP was originally known as EUREP-GAP which stands for EUro-REtailer Produce working group and is a platform in which the major European food retailers are grouped. It is now known as GLOBAL-GAP (Good Agricultural Practice).

Its objective is to raise standards for the production of fresh products such as fruits,

Continued on page 12

Fig. 1. Differences between salmonella and campylobacter in relation to human cases of food poisoning. Note the much closer correlation between the graphs for campylobacter.



Continued from page 11

vegetables and livestock. The British Retail Consortium (BRC) took the initiative to formulate common standards to inspect suppliers providing retailers with food. It has the aim that BRC-certificated producers satisfy all demands that British supermarkets require at once as this lowers the cost for customers and producers with regard to inspection costs. This concept is valued broadly and since its inception some retailers have added their own additional requirements.

SQF is an Australian initiative that focuses on food safety, product quality and the stimulation of improvement strategies.

Its aim is to raise standards of food safety

The key attributes of product quality are all linked.



and quality across the food chain, to continuously improve and deliver high standards of customer services, to continue to pursue increased recognition of SQF Management Systems by customers and clients in new and existing markets and to maintain and protect the high level of integrity of SQF codes.

In conclusion, Roel stated that aspects of

food safety and quality are extremely important today in the processing of poultry and other meats.

This is due to scandals in the food animal industries and lack of consumer trust.

However, HACCP based quality control systems have become mandatory in legislation and due to their implementation products have become safer. ■

World's Poultry Science Association



The World's Poultry Science Association (WPSA) was established in 1912 and has as its objectives the gathering of knowledge on poultry science, the exchange and dissemination of poultry knowledge and promoting poultry. It is a truly global organisation with 7,500 members in some 80 branches.

Membership includes anyone who is interested in poultry and this includes people from industry, research, extension, education and producers/processors.

WPSA is involved in the organisation of World Poultry Congresses, congresses and symposia of its European and Asian Pacific Federations, branch meetings and workshops.

WPSA also provides the World's Poultry Science Journal, a website (www.wpsa.com), WPSA Programmes, a newsletter, travel grants and educational material.