

10 Canadian experiences with AI: A look at regional disease control, past, present, and future. J. P. Vaillancourt*, *University of Montreal, St-Hyacinthe, PQ, Canada.*

Over the past 4 years, the poultry industry in Canada has had 3 outbreaks of reportable avian influenza (2 highly pathogenic H7N3, and one low pathogenic H5N2). In addition to this, several provinces have conducted tabletop and field simulations. From these experiences, it is clear that no one organization has the resource capacity to control avian influenza alone. Hence, both government and industry specialists have been working on improving regional disease control strategies. The poultry industry has the opportunity to act quickly within the first few days of an epidemic to minimize spread of the disease and to establish an effective support structure to assist federal authorities once the disease has been confirmed. To do this, provincial poultry organizations have created teams responsible for decision making, field operations, and communications as soon as an epidemic is suspected. Current efforts include establishing an early reporting system with intervention teams responsible to assist growers with self quarantines, traceback data gathering, poultry traffic control, and even depopulation, disposal, and decontamination procedures. Ontario currently works with insurance institutions to eventually offer coverage to growers to cover expenses not paid by the federal government in case of eradication, such as production losses. All regions have developed training programs for industry personnel regarding biosecurity and regional disease control, including testing these plans with simulations. The future of AI control will require an active surveillance system offering proper compensation to growers in case H5 or H7 strains are identified. Early detection remains the most critical challenge. There are others: confidentiality issues in the context of communications prior to disease confirmation; traceability of people and equipment; quick industry led interventions prior to the federal government being in charge of the control efforts; minimizing the impact of disease control efforts on poultry businesses; and managing the risks associated with smaller poultry operations that are not part of the mainstream industry.

Key Words: avian influenza, disease control, biosecurity

11 AI monitoring plan in Texas, how it was developed and how the plan has worked in the face of outbreaks, with reference to export market access. J. B. Carey*, *Texas A&M University, College Station.*

The Texas AI monitoring and indemnity plan was developed in 1995 in response to industry concerns. The plan is coordinated among responsible state agencies, the poultry industry and the Texas Poultry Federation. Plan elements include sections on purpose and implementation, participating members, funds assessment, initial loss schedule, monitoring program, outbreak response guidelines, vaccination program, flock valuations, biosecurity plan, guidance for carcass burial, and the Texas Animal Health Commission manual of standard operating procedures for Texas LPAI response. The lowest level of monitoring requires 25% of broiler and turkey flocks as they are processed. All breeder flocks are tested every 60 days. Fifty percent of commercial layer flocks are tested every 30 days and all pullet flocks are tested 2 weeks prior to movement. In the event that the risk is increased due to a known infected flock in the area, the level of monitoring is increased within specified zones surrounding the index case(s). The outbreak response guidelines detail reporting and handling of suspected and confirmed flocks including movement restrictions. Provisions for the use of vaccine are also detailed. The monitoring plan has detected 2 infected flocks. Case 1 was identified May 2002 and case 2 was identified May 2004. In both cases, the infection was contained at the index site.

The plan provides the opportunity to educate and inform international trading partners of the level of monitoring and containment procedures that are present in Texas. Reporting of an infected flock of any type has immediate international repercussions. Trade is immediately curtailed following the identification of any AI infection. Trading partners vary widely in their willingness to reopen export markets following such an incident. For example, following the case 2 (May 2004) one important trading partner did not reopen exports until October of 2007. Reasons for such activity in international trade go far beyond the epidemiological aspects of avian influenza.

Key Words: avian Influenza, monitoring, international trade

Symposium: Current and Future Prospects for Natural and Organic Poultry

12 Current and future prospects for organic poultry: Symposium introduction. F. T. Jones* and S. C. Ricke, *University of Arkansas, Fayetteville.*

Recent retail surveys have suggested that over one-half of all Americans have tried organic foods or beverages and nearly 1 in 10 use organic products on a regular basis. Sales of organic foods have nearly tripled since 1997. The fastest growing segment of organic food products is fresh meat and seafood sales and the largest volume of organic meat sales is for poultry. Chicken is the most widely available and most popular organic meat. It is anticipated that organic poultry processing will follow the "logical market development" taken by conventional poultry: first developing a strong production base, then integrating processing and finally moving strongly into higher margin, value-added products. In anticipation of the market trends it is critical that economical, consumer and food safety issues that may be unique to organic and natural poultry be anticipated with focused research on production and processing.

Key Words: organic, natural

13 Organic poultry, consumer perceptions and regulatory issues. P. G. Crandall*¹, E. C. Friedly¹, M. Patton¹, S. Seideman¹, S. C. Ricke¹, C. A. O'Bryan¹, A. F. Fanatico², and R. Rainey¹, ¹*University of Arkansas, Fayetteville,* ²*National Center for Appropriate Technology, Fayetteville, AR.*

Organic poultry is considered to be a gateway food for consumers who are beginning to purchase organic foods. Organic and all natural poultry production, processing and marketing present unique opportunities for poultry companies. However, there are new food safety challenges that must be met because of the restrictions placed by USDA Certified Organic requirements. This paper presents the background on the growing demand for organic foods, definitions for USDA Certified Organic and the reasons behind the growing consumer market in the United States and Europe. Anecdotal sources consider farmers markets to be the preferred sales outlet for pioneers who are just starting to grow organic poultry. There are persistent reports that many of the current 4,400 farmers markets provide a nurturing environment for these new organic growers. Consumers at farmers markets have tradi-

tionally demanded that the products they purchase be raised by local farmers with a strong respect for the environment and to be free from growth hormones and synthetic chemicals. These consumers typically are middle to upper income, white females who purchase fresh foods from their local farmers market every week. However, in recent years organic and all natural foods have become a staple in a majority of the mainstream retail food outlets. Organic foods currently account for an estimated \$17 billion in sales. The organic foods category is still small, amounting to only about 3% of total food sales, but this category is growing at a rate 7 times faster than the average food category. It is the most rapidly growing food market sector, which has sustained growth at a rate greater than 15%/year.

There may be additional opportunities overseas. Currently 35% of the EU's food supply is organic. Some EU consumers believe that organic foods have fewer health risks, taste better and a significant number of Europeans want to avoid buying Genetically Engineered foods. To date there is almost no scientific evidence to support the claims that organically produced food is safer, tastes better, or has a less harmful impact on the environment.

Key Words: organic, all natural, market research

14 Overview of natural and organic egg production: Looking back to the future. K. E. Anderson*, *North Carolina State University, Raleigh.*

The U.S. egg industry has grown dramatically in the past with a significant component of that growth focusing on alternative production systems of cage-free or range egg production. Constituents of this growth involve uncertainty in relation to the future for intensive egg production and concerns about the impact on the use of the cage environment on laying hen well-being. Both the commercial egg production sector and small producers using heritage strains of chickens in flocks ranging in size from 100 to 3,000 hens are responding by producing eggs in both cage free and range settings. However, one of the current issues is that our knowledge base as to how these alternative production methods influence egg performance and quality characteristics is limited to research studies that were conducted in the late 1940s and early 1950s. This information was collected with specific breeds, and not with modern lines of poultry that have been selected for very high rates of egg production. Therefore, an examination of alternative laying hen husbandry practices would provide beneficial, information taking into account the current knowledge base, in order to see how these husbandry and feeding practices translate to modern strains of laying hens under cage free and/or range production. In addition, a review of the current research that has been done in controlled settings that may be relevant to egg producers wishing to expand cage-free and range egg production.

Key Words: chickens, cage-free production, range production

15 Organic poultry production in the United States: Broilers. A. C. Fanatico*¹, C. M. Owens², and J. L. Emmert², ¹*National Center for Appropriate Technology, Fayetteville, AR*, ²*University of Arkansas, Fayetteville.*

Since the USDA implemented the National Organic Program (NOP), the growth of the organic food market has continued to increase, with

organic poultry as leading products. Organic livestock husbandry practices focus on natural living conditions with outdoor access, preventative health management with a prohibition of antibiotics or other drugs (although vaccines can be used), and 100% organic feed. Organic feed is raised without synthetic fertilizers and pesticides; pastures or yards to which birds have access must also be organic. Hatcheries are not currently required to be organic, and conventional chicks may be used if they are under organic management after the second day. While alternative, slow-growing genotypes are used in organic production in the European Union, conventional genetics are used in the United States. Poultry products including meat and egg must be handled organically. Most synthetic materials are not permitted in organic food production while most natural materials are; however, the National List specifies which materials are allowed. Of particular interest is an impending ban on the use of synthetic methionine in organic poultry diets, which is problematic because animal by-products are also prohibited. Research at the University of Arkansas has examined alternative strategies, including the use of slow-growing broilers that are less heavily muscled than conventional fast-growing meat birds but has not shown these birds to have lower methionine requirements. Research has also examined sensory differences between specialty and conventional meat chickens. Consumer panelists indicated no preference between these products, although trained panelists found some differences in flavor of thigh meat. More meat quality differences were found due to genotype rather than outdoor access. Breast meat from slow-growing birds was more tender than fast-growing. Outdoor access resulted in leaner meat, but only in the case of slow-growing birds. As interest grows in specialty and organic poultry meat products, additional research is added.

Key Words: poultry, organic, methionine

16 Feeding beneficial bacteria: A natural solution for increasing efficiency and decreasing pathogens. M. R. Garner*, *MicroBios, Inc., Ithaca, NY.*

The application of live beneficial bacteria (commonly called probiotics) in animal agriculture is a relatively new and controversial concept. The commercial success of probiotics in poultry to date has been very limited; however, the utilization of probiotics in poultry production will likely dramatically increase in the future. This presentation will overview the history, commercial applications, and research trials of probiotic technology in animal agriculture, including cattle, swine, and poultry. By exploring the commercial success of probiotic technologies in animal industries other than poultry production, some insight to the future of commercially successful probiotics in poultry may be attained. This talk will also review published research trials that demonstrate that the application of some probiotics are successful at a) improving live weight gain, b) decreasing morbidity, c) decreasing the incidence of poultry and human pathogens in poultry, and d) increasing the economic profitability of poultry rearing. Last, this presentation will overview basic microbiological concepts that are essential for functional probiotic technology, and will establish important questions to answer before implementing a probiotic strategy.

Key Words: bacteria, pathogen, probiotic

17 Antimicrobials for foodborne pathogen reduction in organic and natural poultry production. S. C. Ricke*, *Center for Food Safety, IFSE, University of Arkansas, Fayetteville.*

There are a variety of antimicrobial compounds that have potential for effective use in organic and natural poultry production. These can be used as feed additives for broilers during growth or layers during egg production. Some of these agents as well as related compounds can also be used to control microbial contamination in poultry processing. However, in addition to the limits related to the type of compound that can be used for organic and natural poultry production there are also issues associated with devising strategies to optimize their effectiveness. Choice of antimicrobial compound depends not only on efficacy of the particular compound but the chemical form and concentration. A key concern is avoiding stimulation of resistance mechanisms in the targeted foodborne pathogen. Consequently, effective concentration and exposure time are factors that may need to be considered. The influence of the environment on the respective pathogen and the resulting physiological state of the organism during exposure to the antimicrobial are potential factors as well. Generation of resistance mechanisms that allow for cross protection to several antimicrobial compounds can confound attempts to limit foodborne pathogen dissemination in poultry production. Ideally, strategies are needed to devise combinations of multiple antimicrobials that target unrelated metabolic functions of the foodborne pathogen. Combinations of mechanistically distinct antimicrobial compounds have the potential to reduce overall survival/resistance to a variety of environmental stressors that foodborne pathogens encounter during poultry production. Ultimately, this could lead to synergistic inhibition and more effective control of foodborne pathogens in organic and natural poultry production.

Key Words: poultry production, foodborne pathogen, antimicrobial

18 Issues in organic poultry processing: Safety, quality and plant considerations. M. X. Sánchez-Plata*, *Department of Poultry Science, Texas A&M University, College Station.*

Consumers have shown a preference for organic poultry meat on the basis of production practices that minimize the use of growth promoters and drugs which tend to be associated with potentially adverse health effects. The Organic Foods Production Act (OFPA) and the approval of the USDA organic label have supported the growth of the market with estimates that vary between 23 to 38 percent through the end of the decade and estimations to reach annual sales of \$600 million by 2010. Despite representing only 1 percent of conventional poultry sales, the organic poultry market has diversified to include small, medium and large operations with product offerings. Currently, 50% of the organic poultry production is sold in specialty stores and almost 45% is sold in conventional stores. However, limited information is available on quality and safety issues associated with the processing of organically produced broilers. For example, feed withdrawal regimes, transportation, holding periods and the use of stunning methods to render the bird unconscious before neck cutting have not been harmonized. In addition, conflicting information exists about the effects of organic production on quality parameters of chicken meat, with some studies indicating an overall improved texture and meat quality for organic poultry meat, accompanied with a higher susceptibility to lipid oxidation. Sensory studies indicate that consumers can differentiate between conventionally reared poultry products and organically produced counterparts. Researchers also indicate that organic production may in fact increase the potential for contamination with pathogens such as *Salmonella* spp. and *Campylobacter* spp. when compared to conventionally processed broilers. This may be due to the elimination of antimicrobials at the production levels and the minimal use of decontamination strategies during processing. Limited information is available on organically approved interventions that can be used at the plant to reduce bacterial loads. This review will discuss issues associated with organic meat processing technologies and their effects on meat quality and safety.

Key Words: organic poultry, meat quality, meat safety