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Two sides of producing antibiotic-free pork

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Introduction

The publicity surrounding the emergence and rapid dissemination of antibiotic-resistant bacterial pathogens has significantly impacted both human and animal health. This has led many consumers and activist groups to believe that protein derived from food animals grown in the absence of antibiotics is safer than product from those conventionally reared. The issue has gradually emerged from “fringe group paranoia” to mainstream, finally impacting consumer choices. Independent producers and integrators have responded by rearing antibiotic free pigs to meet this new demand.

The FDA and its’ Center of Veterinary Medicine (CVM) has gradually engaged the resistance issue over the past decade. There are three assumptions that have dictated the route of this catch-22 in the public domain. First, resistant zoonotic enteric pathogens, primarily *Salmonella sp.*, *Campylobacter sp.*, and *Escherichia coli*, are emerging rapidly. Secondly, food-borne infections are a significant public health problem. Third, many human food related outbreaks associated with resistant bacteria are traced to food animal production.ⁱ In the United States *Salmonella sp.* has been the significant bacterium associated with pork. Much less is known about the role of pork with resistant *Campylobacter sp.* although the FSIS baseline survey concluded pork was the second only to poultry in prevalence.ⁱⁱ

Much of the CVM channel of communication around this issue has been with the Animal Health Industry, the human medical scientific community, special interest and consumer advocacy groups. Many of these groups have Web sites hyping the urgency for quick solutions. The Center for Disease Control (CDC) in Atlanta has acted as a consumer advocate organization often citing food animal anti-microbial use (especially growth promotion inclusions) as a majority factor in the development of resistant microbes. This assumption is based on the premise that genetic selection for resistance is a result of antibiotic growth promoter usage and indirectly the passage of resistant factors between target bacteria and their environmental counterparts. Numerous recent studies have attempted resolution of this issue but severe knowledge gaps remain.ⁱⁱⁱ

The European Union began banning antibiotic growth promoters in 1999 as a precautionary measure. This has increased the activity of special interest/advocacy groups pressuring the CVM to take further action against sub-therapeutic usage. “Keep Antibiotics Working” has taken the issue directly to the fast food industry and food animal producers threatening exposure through the internet and other media venues for those that aren’t in compliance with their goals. Recently senator Kennedy introduced “The Preservation of Antibiotics for Human Treatment Act,” which would restrict the use of medically important antibiotics in animal agriculture. Information concerning the activities of these organizations may be found at the following internet sites: www.healthsci.tufts.edu/apua/Ecololgy/faair.html; www.gracepublicfund.org/ffact.html; www.farmedanimal.net; and www.keepantibioticsworking.com/eatwell.

There is indisputable evidence that human foodborne disease outbreaks often involve multi-drug-resistant enteric bacteria. Many of these outbreaks involve non-animal source foods raising the question as to the exact origin of many of these resistant genotypes. Further, the emergence of flouroquinolon-resistant *Campylobacter* in Britain long before the release of animal products sheds doubt that all resistant zoonotic enterics have a food animal origination. It has been reported that the absence of toilet facilities at pig finishing sites is a major risk factor for presence of *Salmonella enterica* in growing pigs in North Carolina.^{iv} This indirect evidence would appear that a human to food animal to human pathway of dissemination may play a major role in antibiotic-resistant foodborne outbreaks.

Antibiotic-free production

There are numerous North American web sites that advertise antibiotic free pork. Some examples are Du Breton Natural Pork (<http://www.freefarmed.org/dubret.htm>), Greenfields’ Simply Natural Pork (<http://www.kwic.com>), Organic Valley (<http://www.organicvalley.com>), Prairie Gold Farms, and Van Wie Natural Foods (<http://www.vanwienaturalmeats.com/>). Most of these producers also attach themselves to free range, humane animal practices, anti-factory farms, organic farming, and pure

water issues. Organic Valley recently announced an alliance with the "Waterkeeper Alliance."

Premium Standard Farms produces pigs reared without post-weaning antibiotics for several domestic and international customers. They are positioned as value-added products in upscale food distributions systems. These antibiotic free (ABF) pigs are presently derived from conventional sow farms but reared in separate barns. Treatment intervention is applied for humane and economic grounds but any antibiotic administration requires immediate identification and removal from the ABF barn/system. The cost to rear ABF pigs is significantly greater than conventionally reared peers in the PSF system. The actual cost differential varies with input costs and market conditions. The production value differential narrows significantly during low market conditions.

Conclusions

Presently the development of antibiotic-free pork production is an attempt to capture a niche market created by food safety fears and the microbial resistance issue. This product is positioned as value-added and could not survive at conventional pork value. Increasingly, pigs will be raised under lowered or zero sub-therapeutic antibiotic usage. This trend will lead to increasing significance of high health status sow farms and contemporaneous pig flow. PRRS free production is needed to compete with conventionally reared pigs. Industry adoption of ionizing sterilization may eliminate the zoonotic concerns of antibiotic resistance. This will create new issues and will not dissipate the negative connotations many have for large scale or integrated pork production.

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