WATT Global Media Focus Series: Volume 1

Antibiotic-Free Poultry Production:

Understanding Producer and Consumer Perspectives

THE CHALLENGE OF RAISING ABF POULTRY

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Antibiotic-Free Poultry Production: Understanding Producer and Consumer Perspectives

ECONOMIC EFFECTS OF ANTIBIOTIC USE IN POULTRY, PIG PRODUCTION

By: Alyssa Conway
Published: December 18, 2015

A policy restricting the use of production-purpose antibiotics in livestock in the U.S. may not have as drastic of an impact on producers as typically thought, depending on how the market and consumers respond.

The U.S. Food and Drug Administration (FDA) issued a final guidance on voluntarily phasing out the use of medically important antibiotics for the purpose of livestock production in 2013. However, a large number of poultry and pig producers were already not using antibiotics, and those producers will be better off in the long-run should regulations on antibiotic use in food animal production in the U.S. get tighter. This was the conclusion of a new report released by the U.S. Department of Agriculture (USDA) Economic Research Service (ERS) and discussed by Stacy Sneeringer, PhD, USDA ERS, during a webinar on "The Economics of Antibiotic Use in U.S. Livestock Agriculture."

Farmers use antibiotics in livestock: to treat disease, control disease, prevent disease or increase productivity

Farmers use antibiotics in livestock, Sneeringer said, for four main purposes: to treat disease, control disease, prevent disease or increase productivity. However, these uses have also raised a number of public health concerns. These concerns–mainly that antibiotic use in livestock and humans can contribute to the emergence of organisms that are resistant to most or all antibiotics and that antibiotic use leads to difficult-to-treat illness or death in humans and animals – have led to recent calls for policy changes, including restricting or eliminating antibiotics for production use.

Sneeringer's research, based on the most recent data from the Agricultural Resource Management Survey (ARMS) conducted every five to six years, looked at three main questions associated with the potential economic effects of a policy restricting antibiotics for production purposes in broilers and hogs:

1. Current extent of antibiotic use for production purposes and disease prevention
2. Effects of restricting production purpose uses on animals and farms
3. Effects of production purpose restrictions on prices and quantities produced of pork and chicken

For the broiler industry, the ARMS survey, most recently conducted in 2011, found that 48 percent of farmers surveyed used antibiotics only for disease treatment; 32 percent did not know if antibiotics were used only for disease treatment (such as in the possible case of contract growers who may not know what was in the feed previously); and 20 percent used antibiotics for purposes other than disease treatment. Additionally, between 2006 and 2011, the share of broilers raised without antibiotics except for disease treatment rose from 44 to 48 percent.

7 KEYS TO ANTIBIOTIC-FREE POULTRY PRODUCTION

Make sure that every hen is vaccinated so that the chicks have the immunity they need. Missed or skipped vaccinations cost in the future. | Yuriy Bukhanovsky, Bigstock.com

By: Gary Thornton
Published: October 23, 2015

Pay attention to seven key areas of live production for successful antibiotic-free (ABF) poultry production.

Seven key areas of live production for successful antibiotic-free poultry production were discussed by John Carey, Texas A&M University, in the webinar, “Antibiotic-free poultry production requires teamwork.”

In the webinar, presented by WATT Global Media and sponsored by Jones-Hamilton Company, Dr. Carey focused on live-production basics of high importance to antibiotic-free (ABF) poultry production.

1. SUCCESSFUL ANTIBIOTIC-FREE (ABF) POULTRY PRODUCTION BEGINS BEFORE THE BIRDS ARE ON THE FARM

The period between poultry flocks is the time for the grower to perform activities needed to get the next flock off to a good start. The following are especially important in ABF poultry production:

» Assess the need for poultry litter treatment and windrowing.
» Consider closing up the housing to induce heating and purging of poultry litter.
» Downtime of less than 14 days makes it difficult to accomplish everything that needs to be done to prepare for the first seven days of the chicks’ life, including preparation of satellite drinker and feed trays, placement of paper under drinkers and establishment of drinker water temperature.
» Heat poultry houses far enough in advance of the arrival of flocks for the litter to warm enough for the birds’ comfort.

2. ABF POULTRY PRODUCTION PROGRAMS CONTINUE DURING POULTRY GROW-OUT

Attention to basic husbandry is a key to successful ABF poultry production. Growers need to spend "quality time" with the birds.

» Pay close attention to the birds in the flocks. Look, listen, smell and touch to evaluate a flock's condition.
» Avoid overreliance on automated house management systems. Human husbandry is necessary to determine how the systems are performing for the flocks.
» Reducing stocking density can be beneficial in ABF poultry production.
» Basic husbandry is crucial. Provide for the feed, water and environmental needs of the needs of flocks without interruption.
» Litter quality plays an important role in coccidiosis control. Drinker management and ventilation are crucial to litter quality.

3. REDUCE CONTAMINATION AND STRESS AT THE HATCHERY AND DURING CHICK TRANSPORT

Avoid the dehydration, chilling and exposure to pathogens that can occur at the hatchery and during chick transport.

» Pull the hatch at the proper time.
» Minimize the time involved with chick holding and transport.
» Minimize stress during chick placement; everything should ready and in place for the chicks prior to their arrival on the farm.
» Proper sanitation of everything that the eggs and chicks come into contact with is critical.

4. VACCINATION OF BREEDER FLOCKS AND SANITATION OF FERTILE EGGS ARE ESSENTIAL

The husbandry provisions recommended for the grow-out operation apply to pullets, including implementation of a coccidiosis control program.

» Make sure that every hen is vaccinated so that the chicks have the immunity they need. Missed or skipped vaccinations cost in the future.
» Send only clean, uncontaminated eggs to the hatchery.
» Avoid exposing the fertile eggs to microbial challenges.
» Egg room hygiene is important, including workers' hands and surfaces that the eggs contact.
» Maintain proper egg room temperature.

5. FEED MILLING AND NUTRITION

Avoid feed milling- and nutrition-related stresses to antibiotic-free poultry flocks. It is imperative that feed inventory and feed delivery be managed closely. Never run out of feed on the farm.

» Larger particle sizes of feed benefit gut health and flock performance.
» Assure good pellet quality.
» Feeding all-vegetarian diets is the norm in ABF poultry production but the real key is in maintaining ingredient quality.
» There is a place in ABF poultry production for feed additives, but the key is to determine what is needed from the feed additive and under what conditions the additive can deliver the needed performance.
» Water supply and quality are an essential part of the nutrition experience.

6. MANAGEMENT AND ADMINISTRATION MUST ADEQUATELY SUPPORT ABF POULTRY PRODUCTION PROGRAMS

Poultry company management must ensure that the paradigm for antibiotic-free poultry production is followed throughout the live-production operation. There needs to be commitment of resources to support the changes necessary for a successful ABF program for poultry.

» There must be a “plan B” for birds that require antibiotic treatment; flocks needing antibiotic treatment must receive it.
» Communication and coordination within the live-production operation and externally are vital.

7. VETERINARY CARE MUST ENSURE THE ABF POULTRY FLOCK’S GUT HEALTH

A main focus of veterinary care of ABF poultry flocks is on managing gut health.

» Vaccination of all breeder hens is essential for overall health of the flock.
» Coccidiosis control and gut health are of paramount importance.
» Flocks needing antibiotic treatment must receive it.

Dr. John Carey is a faculty member of the Department of Poultry Science at Texas A&M University, where he is engaged in undergraduate teaching and research in laying hen and broiler production.

TEAMWORK REQUIRED IN ANTIBIOTIC-FREE POULTRY PRODUCTION

By: Gary Thornton
Published: October 23, 2015

Successful antibiotic-free poultry production requires a paradigm change in live-production operations involving growers, nutritionists and veterinarians.

Who is involved in a successful antibiotic-free (ABF) poultry production program? Everyone involved with live production in the poultry complex, according to Dr. John Carey, Texas A&M University.

Speaking in the webinar, "Antibiotic-free poultry production requires teamwork," Carey said successful ABF poultry production starts in the hatchery and on the farm before chicks or poults reach the brooding chamber, includes every phase of live production from the feed mill to the breeder operation, and involves growers, nutritionists and veterinarians.

Carey discussed seven keys to successful antibiotic-free poultry production in the webinar, which was presented by WATT Global Media and sponsored by Jones-Hamilton Company. (see p. 30)

MAKING ANTIBIOTIC-FREE POULTRY PRODUCTION WORK

"Everyone must be involved in making antibiotic-free poultry production work," Carey said. "Every element of a live-bird division is impacted and involved in an ABF program."

Not only is everyone's involvement required, but significant change is also necessary to make ABF poultry production work.

"Everyone's job is more complex in ABF poultry production," he continued, "especially those at the front lines with direct bird contact. It is no longer business as usual – this is a big change."

CHALLENGES OF ABF POULTRY PRODUCTION

Carey named several challenges involved with ABF poultry production – the chief one being to keep the focus of the entire live-production operation on the birds and their needs.

> ***"Poultry producers must stay abreast of developments and new technologies."***

What's more, there is no single program that will result in successful ABF production in all poultry operations, he added. Every poultry producer must tailor the ABF program to the individual needs of each poultry operation.

"There is much to be learned and unlearned for successful ABF poultry production, and there is a steep learning curve involved," he said. "Poultry producers must stay abreast of developments and new technologies."

Carey warned that the difficulty of growing ABF poultry means that the bottom-performing growers will face tough challenges.

UNDERSTANDING THE ABF POULTRY PARADIGM

"There needs to be an understanding of how all of us play a role"

"One key element of an ABF program is that everyone understands that it is the paradigm for how broilers or turkeys are produced. This requires more than simply saying it will happen. There needs to be an understanding of how all of us play a role. There needs to be a commitment of resources [physical, financial and time] to support the changes necessary to make ABF poultry production successful," he said.

ANTIBIOTIC-FREE BROILER PRODUCTION IS SUSTAINABLE

Dr. David Wicker, live operations vice president, Fieldale Farms, challenged broiler company managers to change their way of thinking and develop a can do attitude regarding antibiotic-free production.

By: Terrence O'Keefe
Published: May 19, 2015

Fieldale Farms executive says antibiotic-free chicken production can be done efficiently, humanely and sustainably.

Dr. David Wicker, live operations vice president, Fieldale Farms, said, "I hear a lot that the growers are the major problem with ABF (antibiotic-free) production. No, they are not."

He told the attendees at a panel discussion on antibiotic-free poultry and livestock production at the Alltech Symposium in Lexington, Kentucky, that the real problem starts with executives and managers at integrated companies who are stubborn and can't see another way to do things.

> ***"It is best to start at a small level, because the first three years there is a steep learning curve"***

"It starts out here right in this room. We have to change a lot of thinking and develop a can-do attitude," he said.

Fieldale started antibiotic-free broiler production in the 1996-97 timeframe, according to Wicker. He said Fieldale now raises all of its broilers in the antibiotic-free program.

"It is best to start at a small level, because the first three years there is a steep learning curve," Wicker said. "You can easily lose five to 10 points of feed conversion and most companies will have trouble maintaining flock mortality rates at 10 percent or less."

ANTIBIOTIC-FREE PRODUCTION IS HUMANE, EFFICIENT AND SUSTAINABLE

"Is antibiotic-free production doable? The answer is yes, we have been doing it for 18 years," he said. "We have very few treated flocks, and we are American Humane Association approved.

For your first few years, you will have to treat lots of flocks. Later on, you will treat fewer of them."

Wicker said McDonald's announcement of the company's intention to only purchase chicken that has not been treated with antibiotics used in human medicine has really changed the landscape for broiler production in the U.S. He said that if a company wants to get into antibiotic-free production then it better have "extremely good feed quality and consistency."

"Are we sustainable? The answer is yes," Wicker said. "We recently moved to Category A in the Global Reporting Initiative." The Global Reporting Initiative is an internationally recognized sustainability initiative.

"Can antibiotic-free production be done efficiently, can it be done humanely? The answer to both is yes. I will remind everyone that all animals were raised antibiotic-free prior to the 1950s, because they were not around," he said.

PORK PRODUCER ADDRESSING CUSTOMER REQUESTS

Commenting on antibiotic-free and other specialty pork production alternatives, Doug Clemens, CEO, Clemens Family Corporation, said, "The requests keep coming in from our customer group every day. We take the approach of learning, testing and verifying." Clemens Family Corporation owns Hatfield Quality Meats, a pork processor, and Country View Family Farms, a swine production company.

> ***"The requests keep coming in from our customer group every day. We take the approach of learning, testing and verifying"***

Clemens was asked by a member of the audience what would happen to producers if they "caved in" to every consumer/customer request? Clemens replied, "We aren't caving in to what the consumer/customer says they want. We start out by asking, 'Can we do it in a way that is different from the way we have done it in the past, while keeping animal welfare at the top of the pyramid?' If we don't think we can do something, we have to ask why."

"We have been asked to do a lot of things by customers that we haven't done," Clemens said. "We will not do it until we can prove that it is sustainable."

Hatfield processes 5,000 head of swine per week in the Never Ever 3 program. Never Ever 3 is a marketing claim for livestock and meat products that is part of USDA's Process Verified program. For meat to be sold with Never Ever 3 on the product label it has to come from animals that have never received antibiotics, growth promoters or animal byproducts.

PRODUCING CHICKEN WITHOUT ANTIBIOTICS REQUIRES A PLAN

Dr. Bruce Stewart-Brown explains the steps Perdue took to produce antibiotic-free chicken.

By: Bruce Plantz
Published: February 23, 2015

With major food chains and increasing numbers of consumers looking for chicken raised without antibiotics, the demand for antibiotic free poultry is growing. Multiple factors, including maintaining good gut health, go into a successful antibiotic-free…

A few years ago, antibiotic-free poultry was considered a niche market for the type of consumer that shops at Whole Foods Market. Today, major fast food chains, mainstream retailers and even schools are offering chicken raised without antibiotics. This has brought the production of antibiotic-free poultry into the mainstream. The nutritional, health and husbandry requirements to produce chicken without antibiotics was the topic of a panel discussion sponsored by DuPont during IPPE 2015 in January.

Perdue has been one of the leading mainstream poultry producers embracing antibiotic-free production. Dr. Bruce Stewart-Brown, senior vice president of food safety and quality, talked about Perdue's 12-year journey to antibiotic-free production and some of the lessons learned. He stressed it is a process.

> ***"We've learned a lot of things…you must have clean eggs in hatchery."***

"We've learned a lot of things," said Stewart-Brown. "For example, you must have clean eggs in hatchery. We had to clean hatcheries better, had to step up sanitation and use a stricter approach as it related to personnel and procedures. I think the hatchery piece was the most significant to work through, but in the end all that cleaning and sanitation had positive side benefits in regards to chick quality."

Brown said the easiest part of the transition to producing chicken without antibiotics was to remove the growth promoters. "We took the antibiotics out of the feed and put in probiotics and prebiotics. Seven years ago, I was very skeptical, but today I believe probiotics and prebiotics have a place."

Purdue also relies more on vaccination to maintain flock health than some of its competitors. Stewart-Brown says vaccination of the parent stock is very effective in producing healthy flocks.

Other speakers on the panel included Dr. Gregory Siragusa, senior principal scientist – microbiology, Danisco/DuPont; Dr. Steven Collett, clinical associate professor, University of Georgia; and Richard Kottmeyer, founder and managing director of Strategic. The discussion was moderated by Terrence O'Keefe, WATT's content director-agribusiness.

POULTRY GUT HEALTH IMPORTANT

Dr. Siragusa echoed Stewart-Brown's statements on performance without antibiotics. He said that studies have shown that overall performance does not have to suffer, but can even be better than flocks using growth promoters.

"There are a lot of variables involved and new systems have to be put into place," said Siragusa. "You have to customize the program, plus the practices of the organization. If it is done right you can get better performance from antibiotic free flocks."

Siragusa said the key to optimizing bird performance without growth promoters is to optimize the flora in the gut. "If you look back five years ago, we knew so little about what was making up that flora," he said. Over the last two or three years, we've been able to figure that out."

Dr. Collett agreed that managing poultry gut health is one of the key variables in raising broilers without antibiotics. "Seeding the gut with the correct flora is the most important part," he said. "That can be done in the breeder stock in the hatchery."

> ***"Seeding the gut with the correct flora is the most important part,"***

Collet said that, in the past, the industry has used antibiotics to control unfavorable bacteria in the gut, but the prebiotic has a very strong role in suppressing the unfavorable elements versus the favorable flora and can be as effective, with proper management.

Collet said vaccination for disease control is also a vital part of a successful antibiotic-free production system. "Coccidiosis control becomes very important in antibiotic free production," he said. "You have to use coccidiosis vaccines."

CONSUMERS WANT CHICKEN WITHOUT ANTIBIOTICS

Kottmeyer spoke on the consumer sentiment toward antibiotic free poultry. He said that the consumer is convinced antibiotics use in poultry is detrimental to human health because the Centers for Disease Control and Prevention and the American Medical Association turned antibiotic use in animals into a human health issue.

"We now have a lot of people who know someone who has problems with antibiotic resistance," said Kottmeyer. "It is a mainstream health issue. I think in a few years, one-third of chicken and turkey will be antibiotic free. The problem then is the other 66 percent of consumers will be resenting the fact their chicken isn't antibiotic free."

SECRETS TO ANTIBIOTIC-FREE POULTRY PRODUCTION

By: Gary Thornton

A panel of experts dissected the secrets to successful antibiotic-free poultry production.
Hint: There is no single secret – success is mainly from superior execution of poultry production basics.

If there is a secret to antibiotic-free (ABF) poultry production, it is that producers are using powerful tools to make their ABF programs successful – in most cases, these tools are old ones just better applied than in the past. Combine those tools with the customized use of prebiotics, probiotics and organic acids, and you have the formula for maintaining competitive performance in ABF poultry production.

In the final analysis, there are no real secrets to successful ABF poultry production. Success boils down to trial and error leading to customized application of non-antibiotic feed additives and the superior execution of the fundamentals of poultry production.

A lot can be learned, however, from the experiences of veterinarians at U.S. poultry companies that have invested in ABF-friendly hatcheries, conducted trials with feed additives and refined live-production management techniques to make antibiotic-free poultry production successful.

FOUR EXPERTS SHARE KNOWLEDGE OF ABF POULTRY

WATT Global Media presented, "Judicious use of antibiotics in the poultry industry," which featured the following experts:

- **Bruce Stewart-Brown** Vice President of food safety and quality | Perdue Foods
- **Brian Wooming** Senior Staff Veterinarian | Cargill Turkey Products
- **Jeff Courtney** Director of Veterinary Services | Pilgrim's
- **Alastair Thomas** DFM Business Manager | DuPont

The panel presentation, sponsored by DuPont – Danisco Animal Nutrition, took place during the 2016 International Production and Processing Exposition (IPPE).

> ***"Integrators are changing production practices to meet the demands of the marketplace in the U.S."***

"Integrators are changing production practices to meet the demands of the marketplace in the U.S.," said moderator Terrence O'Keefe of WATT Global Media. "Poultry growers, nutritionists and veterinarians are being challenged to raise birds using fewer antibiotics. Meanwhile, they must maintain good performance and welfare without raising food safety concerns."

MIGRATION TO ANTIBIOTIC-FREE POULTRY PRODUCTION BY SOME PRODUCERS

The top veterinarian at Pilgrim's said the company produces ABF broilers at two poultry complexes – one of which is fully dedicated to ABF production and the other with half conventional and half ABF production.

Courtney said, "We are learning, as we transition broiler complexes to ABF production, that adjustments in management must occur for the program to be successful. Some people may expect to be able to continue business as usual when antibiotics are removed from flocks, but it requires a whole change in mindset of paying attention to every little detail of production management."

Jeff Courtney, director of veterinary services, Pilgrim's

Perdue Foods is raising approximately 70 percent of its poultry in "no antibiotics ever" (NAE) production and continues its migration to NAE production. Stewart-Brown said some of the company's hatcheries are achieving lower seven-day mortality in ABF flocks than when antibiotics were being used.

"We're working hard in the process of migrating to NAE production," he said, "but it takes a lot of work and preparation. I don't think that every bird in the United States should be raised under NAE production."

MANAGING ANTIBIOTIC-FREE POULTRY PRODUCTION

Antibiotic-free (ABF) poultry production programs succeed or fail based on superior execution of the basics of poultry management, the panelists agreed. There are no silver bullets to make an ABF program successful. Having the right people with the right focus, however, is essential.

Stewart Brown said, "We have been working on a definition of an ABF farm and an ABF farmer to identify what makes them successful. Successful NAE (no antibiotics ever) poultry complexes are characterized by tight relationships between their flock advisors and growers. They might talk every day to identify problems early and do things other than using antibiotics. It is a powerful tool that has been there all along but the removal of antibiotics forces them to have tighter everyday relationships.

"For example, don't tell me how many poultry have died," he continued, "but do tell me what the water consumption is [and other environmental clues about the health of flocks]. Those things are very helpful in knowing what early action to take."

Bruce Stewart-Brown, vice president of food safety and quality, Perdue Foods

Wooming agreed that monitoring of in-house environmental cues – such as carbon dioxide and humidity levels – is important to maintaining performance in ABF poultry flocks.

"There is not one thing that solves all the challenges of maintaining good performance in ABF flocks," he said, "but a combination of factors influences success in growing birds with no or reduced use of antibiotics."

> ***"There is not one thing that solves all the challenges of maintaining good performance in ABF flocks"***

INTERACTIVE ABF POULTRY PRODUCTION TEAMS

Wooming said ABF poultry production is creating a heightened need for near-instantaneous communication and interaction between field service personnel and veterinarians. Cargill is equipping field service staff with smartphones and other Internet-based technology to allow them to communicate quickly and easily with company veterinarians.

This communication can include Internet texting of mortality data and the transmission of images of flock conditions including post-mortems.

"Field service people, by using this technology, can communicate quickly with me or other veterinarians about the care and treatment of flocks," he said, and this results in quicker health care decision-making and action.

WHAT MAKES A SUCCESSFUL ABF POULTRY PRODUCER?

Stewart-Brown said poultry producers are still trying to understand what makes a successful ABF poultry farm and farmer. Some growers, he said, need more help in transitioning from traditional to NAE poultry production.

"It became obvious during our migration to NAE production that some of the poultry growers who tended to finish in the top tier in flock performance in traditional production did not readily make the transition to NAE production and fell to the middle of the pack in performance. Other growers who tended to rank in the middle in flock performance in traditional production were more successful in NAE production.

"We came to realize that NAE production is not for everybody. Some farms and farmers shouldn't do it. In some cases, it is more work than they signed up for and that is OK. The people who are successful in NAE production have a different kind of make-up," Stewart-Brown continued.

SUCCESSFUL ABF POULTRY PRODUCTION

Stewart-Brown said Perdue may have made a mistake in the transition from conventional to ABF poultry production by making the change-over invisible to the farmer.

“In the beginning, we made it invisible to the farmer that we were transitioning to ABF production. That, in retrospect, probably was a mistake to some degree. We needed to have the farmers involved at the start of the process.”

One of the key changes was the addition of probiotics to the feed package. “We were working on making the growers successful without them having to change their practices very much,” he explained.

Today, however, Perdue’s growers are heavily involved in the adjustments needed to make ABF production successful.

MEASUREMENT OF ANTIBIOTIC USE HAS BENEFITS

The panelists agreed that measuring antibiotic usage benefits the production performance of flocks and the organizational culture of the poultry company. Measuring the number of antibiotic treatments on a farm, for example, helps identify poultry farms or individual houses that would benefit from extra attention and care.

Wooming named three benefits to measuring antibiotic usage:

1. More care is taken by production team members in deciding if and when to use antibiotics.
2. Farms are identified where there needs to be resolution of chronic or multifactorial problems impacting flock health.
3. Team members are more willing to adopt alternatives to antibiotics and use them sooner.

Brian Wooming, senior staff veterinarian, Cargill Turkey Products

ANTIBIOTIC-FREE POULTRY PRODUCTION AND OPERATIONAL CULTURE

> ***"The cultural impact in the company of monitoring these management practices is just as important as what is done operationally"***

"The cultural impact in the company of monitoring these management practices is just as important as what is done operationally," Stewart-Brown said.

The intense focus on the details of poultry production management can come close to being "neurotic" in the ABF poultry complex, he joked, as the production team works to minimize seven-day mortality.

Hatchery managers in the ABF operations must be intensely focused on management details, he said. The hatchery manager, for example, needs to demand that eggs received be clean. That leads to close attention at breeder farms on litter quality and other factors that impact contamination of hatching eggs, including the need to reduce the number of floor eggs and maintain the cleanliness of breeder nests.

DOWNTIME BETWEEN FLOCKS IS POWERFUL TOOL

Adequate downtime between flocks is crucial to good performance in in ABF poultry production.

"In the past, the processing plants tended to dictate the layout time between flocks," Courtney said. "Now we try to set and adhere to a minimum number of days of layout – whether 16 or 18 or whatever the number of days. Layout needs to be as long as feasible while allowing growers enough flocks in a year for their economic success."

Wooming said the number of days that a poultry house is idled under dry and clean conditions is more important than the overall numbers of days idle. This is especially true of turkey brooder houses that are cleaned out after every flock.

"The number of days the barn is dry and clean between flocks is probably more important in turkeys. How long is long enough? It depends on the geographic location (some areas tend to exhibit more intense health challenges), and whether the complex or the farm is a multi-age facility or an all-in/all-out facility, which requires fewer days of downtime," said Wooming.

> ***"The number of days the barn is dry and clean between flocks is probably more important in turkeys…"***

Stewart-Brown said, "Layout is like magic. It is the most powerful tool we have to manage the microbiology in the poultry house. It is wrong to not respect it, especially with NAE production. A lot of discipline is required in managing downtime, and the whole company has to be disciplined when it comes to allowing adequate downtime."

CAPITAL INVESTMENT IN ABF HATCHERIES

Reducing or eliminating antibiotics in poultry production calls for more capital investment over time. Stewart-Brown said Perdue's migration to ABF production has involved 12 hatcheries for which every renovation or expansion of facilities is an opportunity to invest to be able to reduce antibiotic usage. For example, the company has invested in the construction of separate rooms equipped with laminar flow hoods for the mixing of vaccines.

"Every time a hatchery [is renovated or expanded] build it back with the reduction in the usage of antibiotics in mind, and your hatchery will change over time," he said.

FEED ADDITIVES: NOTHING WORKS LIKE ANTIBIOTICS

Thomas said that many poultry producers are looking for a single solution or feed additive to replace antibiotics: "I don't think that is a possibility because flexibility is needed. A particular prebiotic, probiotic or organic acid needs to fit the individual challenges of different production programs and poultry complexes."

Alastair Thomas, DFM business manager, DuPont

Cargill Turkey Products uses both prebiotics and probiotics in feed rations for both conventional and ABF flocks. The company continuously tests new feed additives, Wooming said.

Stewart-Brown said nothing works like an antibiotic. “Other additives are useful,” he said, “but require a lot of infrastructure, thought and trials to figure out how they best work in your production system.”

COMMUNICATING WITH CUSTOMERS, CONSUMERS ABOUT ANTIBIOTICS

The panelists expressed differing opinions about what information poultry producers should share publicly about their antibiotic usage.

- Pilgrim’s Courtney said he believes it is better to educate activists about why antibiotics are used rather than sharing usage data with them.
- Thomas said there should be an emphasis on the benefits of judicious use of antibiotics, such as the number of birds saved by judicious use.
- Stewart-Brown advocated sharing antibiotic usage data based on percentages of farms or flocks treated but not on pounds because administration rates differ by type of antibiotic.
- Wooming said that antibiotic usage might be stated on a per-pound basis of live poultry.

Stewart-Brown said there are three measures of antibiotic usage that Perdue is prepared to share publicly:

1. Percentage of poultry raised in antibiotic-free production programs
2. Percentage of farms or flocks receiving human-used antibiotics
3. Percentage of farms or flocks receiving animal-only antibiotics

“These three things are useful to know, and we are ready to share them with anybody who asks [about Perdue Foods’ antibiotic usage],” he said.

VIEW VIDEOS FROM THE PANEL DISCUSSION:

Where do ionophores fit in antibiotic-free production?
How can growers be more successful in ABF programs?
Controlling mortality in antibiotic-free production
Do consumers care about medically important antibiotics?
Which non-antibiotic alternatives have shown promise?
What works for ABF production at the farm level?

INFOGRAPHIC: 6 MYTHS ABOUT POULTRY PRODUCTION

By: Alyssa Conway
Published: September 29, 2015

This infographic sheds light on myths busting misconceptions about antibiotics in poultry production, litter as a waste product, chicken growth and more.

Consumers' perceptions about poultry production may end up being a deciding factor as to whether or not they ultimately purchase these products when shopping for food. So, in an age where consumers often trust their friends or misinformation on the Internet instead of seeking out further research from truly qualified sources, it is in the poultry industry's best interest to be transparent and forthcoming with the facts about how birds are raised in the U.S.

In an effort to do just that, media members attending the 2015 Chicken Media Summit heard four poultry experts bust these six common poultry production myths.

Media in attendance of this second summit, "Chicken: Farm to Forklift," sponsored by the National Chicken Council and U.S. Poultry & Egg Association (USPOULTRY), spanned print, broadcast and digital, including reporters from Bloomberg Business Media and the *Wall Street Journal* to popular food bloggers. Attendees had the opportunity to tour a poultry farm, hatchery, processing plant, and research and development facility, and question poultry industry leaders. Industry leaders speaking at the event included: John Glisson, vice president of research for USPOULTRY; Jennifer Rhodes, extension educator for Agricultural and Natural Resources, University of Maryland Extension, Queen Anne's County; Kate Barger, director, World Animal Welfare, Cobb-Vantress; and Christine Daugherty, vice president of sustainable food production, Tyson Foods.

LIFE WITHOUT ANTIBIOTICS IN POULTRY PRODUCTION

A big challenge in antibiotic-free poultry production is the control of coccidiosis, which can lead to necrotic enteritis.

By: Gary Thornton
Published: June 9, 2014

How are broiler producers coping with the flock health challenges in antibiotic-free production?

U.S.poultry producers are using fewer and less antibiotics in broiler flocks as public concern over the use of antibiotics in food-producing animals intensifies. Broiler flocks are being grown without the use of antibiotics in antibiotic-free (ABF) production programs. Broiler producers are still learning how to manage ABF flocks, which present greater disease control challenges.

Speaking at the 2013 Poultry Health & Production Seminar, Dr. Tim Cummings, senior technical services veterinarian, Zoetis, presented the results of an informal survey of veterinarians, researchers and consultants with experience in antibiotic-free poultry production programs.

EXPERIENCES WITH ABF POULTRY PRODUCTION

Cummings shared the early experiences reported by five broiler companies and two experts involved in ABF broiler production. He drew a number of conclusions from their responses:

- All-vegetable diets seem to work best.
- Husbandry plays a pivotal role in keeping flocks healthy.
- It helps to reduce bird density and maintain adequate downtime between flocks.
- Litter management is critical to success of ABF production programs.
- Coccidiosis vaccination works, when properly administered.

"There is definite variability in the way that companies grow ABF flocks but some similarities as well," he said. "It is important to realize that every poultry complex will be different and may require its own tailored approach."

"There is definite variability in the way that companies grow ABF flocks but some similarities as well"

It is important to keep in mind that ABF poultry production is evolving. The survey results reported here might not be indicative of current practices and experiences on all points.

SOUTHEASTERN COMPANY ROTATES VACCINES, CHEMICAL COCCIDIOSTATS

One of the five broiler companies that Cummings surveyed started with a small percentage of flocks in an ABF program but now has nearly 100 percent committed to ABF production.

Necrotic enteritis/enteritis remains a significant, seasonal problem, which is worse in the winter.

ABF program basics included the following:

» Feeds an all-vegetable diet
» Bird density reduced
» Coccivaccine administered, in rotation with chemical coccidiostats
» Built-up litter is maintained; litter is acidified
» Tries to maintain a minimum of 14 days downtime between flocks

This company gives growers a "conventional program break" when a farm's flock performance deteriorates or necrotic enteritis becomes severe.

One breed of broiler seems to perform the best in ABF conditions, the company reported to Cummings.

SOUTHEASTERN COMPLEX ADMINISTERS PROBIOTIC AT HATCHERY

Another broiler company that Cummings surveyed has a complex in the Southeast with production that is half ABF and half conventional. The company's ABF flocks experience some enteritis but practically no necrotic enteritis.

While broilers are grown to 6.5 pounds with good livability, the company reported feed conversion is 2 points less in ABF flocks.

ABF program basics included the following:

» No animal by-products in the diet, only corn and soy
» No antibiotics are administered at the hatchery
» At least 18 days downtime maintained between flocks
» Bird density is reduced compared to conventional flocks
» Built-up litter maintained; litter is acidified
» SIS (non-defined probiotic approved for use on litter) sprayed on the chicks at the hatchery

Cummings reported that the company rotates farms between ABF and conventional production when enteritis and/or necrotic enteritis become more severe. It reported a 5-point improvement in feed conversion with the rotation.

UPPER MIDWEST COMPANY: NO COCCI VACCINATION

A broiler company surveyed by Cummings in the Upper Midwest has 50 percent of production antibiotic free.

The company has used chemical coccidiostats in the starter/grower feeds for a couple of years in the ABF birds without cocci vaccination without major problems, he reported.

In the company's conventional flocks, in which ionophores are used, there is gangrenous dermatitis but no necrotic enteritis. In the company's ABF flocks there is some necrotic enteritis but no gangrenous dermatitis. Nonetheless, necrotic enteritis has not been a significant problem in the ABF flocks and performance is good, according to Cummings' survey.

ABF program basics at the Midwest company included the following:

- All-vegetable diets with no meat and bone meal are fed.
- Prime hatching eggs are used for the ABF program.
- No antibiotic is used in the hatchery for ABF birds (0.3 percent higher first-week mortality experienced in ABF flocks).
- A probiotic is used in the feed.
- Bird density is reduced compared to conventional flocks.

The brood chamber is cleaned out after every flock, and the litter is a mixture of rice/oat hulls and/or pine shavings. No litter treatments are used.

Necrotic enteritis outbreaks are treated with copper sulfate/acidifier and in a preventative program on days 3-7 as well as 21-28.

WEST COAST COMPANY STRESSES SUPERIOR HUSBANDRY

All production is ABF at this West Coast broiler company, where the emphasis is on close attention to flock management, according to Cummings.

When the company first adopted ABF production, necrotic enteritis was very severe in the flocks. By closely managing the birds' gut flora and the grow-out environment, flock health and performance has improved.

The production program at the West Coast company included the following:

- There should be no fluctuations in house temperature.
- Brooding temperatures are 2 degrees higher than conventional.
- Any disruption in eating pattern is avoided.
- Water quality is key and adjusted to pH 4-6.
- Flocks are managed to reduce stress, especially days 14-21.
- There is a strict downtime policy of 15-17 days.
- Immunosuppressive pathogens are monitored and controlled
- The proper application of cocci vaccine is considered to be vital.

"The company has learned that gut flora and house litter management is a key to the ABF program's success," Cummings said. "Some probiotics, prebiotics and acidifiers have been used in the feed and/or water successfully but in conjunction with the total overall management program."

It is critical that litter be kept dry and an acidifier be applied to the litter, the company told Cummings. Where litter is cleaned out on a dirt floor, salt is put down.

EAST COAST COMPANY: CLOSE MANAGEMENT REQUIRED

This East Coast broiler company stresses flock management in ABF production, according to Cummings.

Necrotic enteritis is experienced in ABF flocks, more so in the winter, the company reported. ABF program basics at the East Coast company included the following:

- No animal by-products are used in diets.
- The company administers cocci vaccines, but rarely uses chemical coccidiostats and tends not to use ionophores.
- Probiotics in the feed seem to provide some benefit, but prebiotics are not used.
- Antibiotics in the hatchery are generally not used.
- Bird density is reduced in certain grow-out areas.
- Downtime is variable, but must be adequate.
- Litter acidification and windrowing is used.

> ***"Don't just go to ABF production and hope for the best"***

Close attention must be paid to the management of air, water, litter and feed in ABF flocks. A company manager told Cummings: "Don't just go to ABF production and hope for the best."

CONSULTANT: CONSIDER ADJUSTING BIRD DENSITY

A consultant with experience in ABF production shared a number of recommendations with Cummings.

BIRD DENSITY: The consultant recommended bird density of a little over 6 pounds per square foot versus the industry average of 7.5 pounds per square foot. Reducing square footage is best and really doesn't lose as much as the increased gain which often offsets the reduction in placement density.

TIMING OF LITTER ACIDIFICATION: *Clostridium perfringens* levels in the litter need to be reduced to promote flock health. While litter acidifiers are widely used, the timing of application is an often overlooked factor in their effectiveness. The consultant recommended windrowing or treating litter with an acidifier immediately after birds are harvested. Application at this time destroys the most Clostridia before spore formation, he said.

DOWNTIME: While downtime between broiler flocks on farms is often not a discretionary management factor, the longer the downtime the better. The consultant said downtime longer than two weeks is preferred.

Other recommendations from the consultant included the following:

- Most cocci vaccines can work but must be properly administered.
- All-vegetable diets and enzymes are strongly recommended.
- The consultant's program involves feeding a commercially available yeast cell wall mannan oligosaccharide.
- Probiotics should be given as early as possible, preferably sprayed at the hatchery with cocci vaccine.
- Acidify the flock's drinking water for the first three days or a week. This promotes the establishment of microflora in the bird's gut and the effectiveness of probiotics.

RESEARCHER: CONSIDER THE PRODUCTION SITUATION

A researcher, who conducts extensive research involving gut health and necrotic enteritis, offered observations and recommendations for ABF broiler production.

The management of ABF production can be aided by an understanding of the disease challenge.

- Necrotic enteritis is more likely to occur on new litter.
- More light will increase the necrotic enteritis challenge.
- The use of rice or oat hulls will increase litter consumption, which can increase the risk of necrotic enteritis.
- Increased litter moisture will result in more necrotic enteritis.
- Necrotic enteritis can occur in hot spots in the chicken house, so manage the house environment.
- Birds are less susceptible to necrotic enteritis after four weeks of age, so manage the flock so as to delay the development of cocci lesions.
- Breed is a factor in that early, rapid growth predisposes birds to necrotic enteritis.
- Minor turn-out mismanagement may set the birds up for the disease.
- Increased protein levels increase susceptibility to necrotic enteritis.
- Low temperature or chilled chicks predisposes the birds to necrotic enteritis.
- Feed outages during peak susceptible periods will predispose birds to necrotic enteritis once they are back on feed.

CUMMINGS OFFERS ABF PRODUCTION PRINCIPLES

Feed additive antibiotics have been used over the years because they work, according to Cummings. As poultry producers move to the use of fewer and less antibiotics, he offered the following principles:

- Intestinal and litter microflora are involved, so new programs may take some time to fully assess.
- Experience teaches that not all programs work in all poultry production complexes.
- Alternative products definitely have a role but the strengths and weaknesses of each product must be understood.
- Although some products or product combinations have demonstrated efficacy, they need to demonstrate an economic return.
- No product will work consistently without total program support including management.

No endorsement of products or brands is intended or implied by citation or mention in this article. The survey of industry practices conducted by Dr. Cummings in a prior year may not be indicative of current practices and experience in all cases.

Water can be the hidden problem in poor broiler performance: www.WATTAgNet.com/167283.html

ANTIBIOTIC-FREE (ABF) PRODUCTION AT FIVE US POULTRY COMPANIES

Practices and Experience with Necrotic Enteritis

	Southeastern company	Southeastern complex	Upper Midwest company	West Coast company	East Coast company
Scope of ABF production	Nearly 100%	Single complex, 50%	50%	100%	Not specified
Diet	All vegetable	No animal by-products	No meat/ bone meal	Conventional	No animal by-product
Growing density vs. conventional	Reduced	Reduced	Reduced	Conventional	Reduced in some cases
Coccidiosis vaccination	Yes[1]	Yes	Not Reported	Yes	Yes
Chemical	Yes[1]	Not Reported	Yes	Not reported	Used rarely
Probiotic/ Prebiotic	No/No	Yes[2]/No	Yes/No[3]	Yes/Yes	Yes/No
Litter acidification	Yes	None	None	Yes	Yes
Downtime between flocks	14 days or more	18 days	Not reported[4]	15 to 17 days	Variable; considered important
Necrotic enteritis incidence	Significant, seasonally	Practically none	Not significant	Not significant	Some seasonally

Source: Presentation by Dr. Tim Cummings, Zoetis, Poultry Production & Health Seminar, 2013

1 = Cocci Cavcines/chemical coccidiostats in rotation

2 = SIS non-defined spray on chicks

3 = Under evaluation at time of report

4 = Brood chamber cleaned out between every flock

Poultry companies are still learning how to manage ABF poultry production. Early experience indicates:

1. Cocci vaccination works, when properly administered.
2. All-vegetable diets seem to work best.
3. Litter management and downtime between flocks is critical to success.

THE FUTURE OF ANTIBIOTIC USE IN POULTRY PRODUCTION

Published: November 28, 2011

The availability of antibiotics in poultry production depends on greater understanding of their risks and benefits.

The availability of antibiotics in poultry production depends on greater understanding of their risks and benefits. The regulatory status and use of antibiotics in poultry production were addressed in research presented at the annual meetings of the Poultry Science Association, American Association of Avian Pathologists and the American Veterinary Medical Association.

Topics covered in one of the symposia ranged from the effect of antibiotics in poultry on consumer shopping, the need to educate people on the differences in the way that antibiotic use is reported, the current use of antibiotics in poultry, and the discussion of the possible ways that antibiotics will be administered and their use monitored in the future.

THREE CLASSES OF ANTIBIOTIC USAGE

One of the first things to understand is that antibiotics can be classified into three uses which include therapeutics, disease prevention and growth promotants. An antibiotic is a chemical produced naturally by a bacteria or fungus to inhibit the growth of neighboring bacteria, where antimicrobials include both the antibiotics and those compounds that are manmade, like sulfa drugs.

Preventative growth promotants are often added to the feed to improve feed efficiency. These antibiotic feed additives are used at low-dose, therapeutic levels to decrease organisms such as *Clostridium perfringens* that cause necrotic enteritis. In addition to preventing subclinical *C. perfringens*, the growth promotants may have a benefit in food safety, as found in two studies by Dr. Scott Russell at the University of Georgia which demonstrated that birds with airsacculitis that were not given antibiotics were significantly higher in *Campylobacter* and *Salmonella*.

There are situations where animals do contract infections that require therapeutic antibiotic administration. This is not only important to the production aspects of the food animal but also is critical in terms of animal welfare.

ANTIBIOTIC RESISTANCE MISUNDERSTOOD

The threat of organisms developing resistance to antibiotics used in human medical treatments is one of the biggest concerns raised in this debate. Research on antibiotic resistance continues to help us better understand the factors that impact this mechanism. Consumers armed with their power of purchasing choice have also greatly influenced the amount and depth of research on this topic, by insisting on antibiotic-free and reduced antibiotic use in the animals for food choices. Media sources have put a heavy emphasis on antibiotic use in food animals and its potential impact on antibiotic resistance. However, there are other factors that can affect the development of antibiotic resistance, which include, but are not limited to, human medical use and perhaps even practices of sanitation and disinfection.

The use of antibiotics as preventative growth promotants is probably the most misunderstood by the general public. Many people interpret the use of antibiotics to be the same, whether it is a therapeutic treatment of disease or preventative control of subclinical disease such as necrotic enteritis. Several speakers at this symposium shared data from various sources both domestic and international, which indicated that data comparisons were not comparing apples to apples. When reading the summaries that have been published by both domestic and foreign

organizations on antibiotic use in food animals, the reader should be aware of whether the reports include one or a combination of the three antibiotic categories. For example, some reports may only include therapeutic and preventative growth promotants, whereas others will include therapeutics, preventative growth promotants and ionophore coccidiostats.

VETERINARY FEED DIRECTIVE

One regulatory step that is currently being taken by the FDA (Draft Guidance Document No.209) to restrict antimicrobial drugs in food producing animals is to limit their use to situations that do not include the label for growth promotion or performance enhancement. The new FDA guidance will also require greater veterinary oversight. This means that anytime antibiotics are utilized in feed, a veterinarian will have to sign authorization forms called a Veterinary Feed Directive.

For many companies the oversight task alone could dominate a veterinarian's time, reducing their time and effectiveness in monitoring flock health. The FDA is aware of this situation and is working with the American Feed Industry Association and the AVMA to make the VFD process more workable while still protecting animal health. It is believed it will also protect humans by reducing the potential of antibiotic use in food animals, causing increased resistance in human bacteria.

INCREASED POULTRY PRODUCTION COSTS

Antibiotic use in the poultry industry has decreased over the last decade. Companies are striving to utilize fewer antibiotics in feeds, and they are using genetic selection, bird management and house sanitation to reduce the load present of disease-causing organisms. However, even with these steps, there are concerns that the cost of producing chicken will increase because of the decreased use of antibiotics. It might be from a variety of causes such as increased incidence of disease, decreased feed efficiency due to the omission of growth promotants, or increased costs related to disinfection and sanitation procedures to reduce disease-causing organisms.

In the end, there are still situations that will require the use of therapeutic antibiotics in poultry flocks that have infections. Many companies are voluntarily removing preventative growth promotants from diets, but the debate will continue on how these actions will impact antibiotic use and resistance in the future.

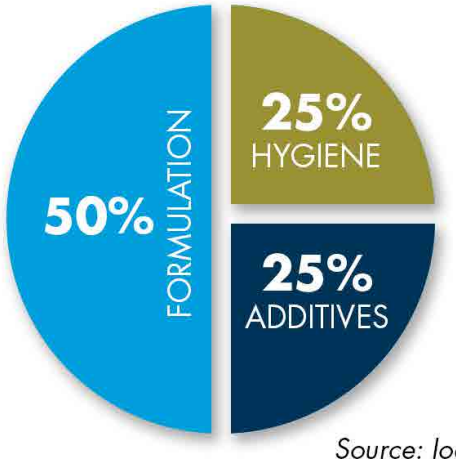
FORMULATING LIVESTOCK DIETS WITHOUT ANTIBIOTICS: THE COST ISSUES

By: Ioannis Mavromichalis
Published: July 16, 2015

Looking beyond alternatives, we must focus on cost, ingredient selection and dietary nutrient adjustments to fully replace in-feed antibiotics.

In most cases, any discussion regarding replacing in-feed antibiotics revolves around the topic of replacements. Yet, experiences from the European Union reveal that no single additive can fully compensate for the removal of antibiotics from pig and poultry feeds. Not only is a combination of additives is required, but also, a refocus on feed formulation with particular emphasis on ingredient selection and dietary nutrient adjustments. In my opinion, even more important is the issue of animal health and that of overall farm health status (see Figure 1), but this is beyond the scope of this article that focuses on nutritional intervention strategies.

FIGURE 1: AREAS OF IMPORTANCE IN THE ABSENCE OF FEED-GRADE ANTIBIOTICS



Source: Ioannis Mavromichalis

While farm hygiene plays an important role in maintaining the performance in an antibiotic-free diet, proper formulation and the introduction of feed additives contribute much to successful animal production.

To begin with, let's imagine any nutritionist faced with the challenge of reformulating a diet without antibiotics. After having selected the combination of additives required, the nutritionist is looking at a computer screen facing the main interface of a feed formulation program. Our nutritionist must have an alert eye on three aspects: cost, ingredients and nutrients.

Quite often, the cost, which is rather important if the feed is to be sold, is neglected with subsequent reformulation attempts to bring it down to more "reasonable" levels. So, we shall address these three areas in the above order in three serial articles starting with cost that largely defines or rather constricts the options for the other two aspects.

PREPARING FOR THE INEVITABLE

Antibiotics (and similar other antimicrobial agents, which are all referred to as antibiotics for simplicity's sake) were, without the slightest doubt, very cheap. So cheap, that they became universal, allowing for a more relaxed attitude towards feed formulation principles.

But, in many parts of the world where antibiotics are already or soon will be gone, alternative options are unlikely to be as inexpensive. In fact, the more efficacious is such an alternative, the more expensive it will be, until similar products become competitively produced and marketed. But, given the fact that such a single product or combination of additives has yet to be proven as effective as most antibiotics were, alternatives will remain rather expensive for the foreseeable future.

Thus, manufacturers and users of antibiotic-free diets should be prepared to sell and buy such diets at higher prices than they were used to before. It might be that in a market where antibiotics are still allowed, antibiotic-free diets may have to be sold at a lower margin in order to establish a viable market.

COST-CONTROL MEASURES

In other cases, such as in most EU countries and nowadays in the U.S., antibiotic-free diets are kept less expensive to what they should have been because of fierce competition, reluctance to buy expensive feeds and a general preference for less "efficient" diets due to widespread economic crisis. But, quality also suffers when such diets are offered at reduced prices, because margins are quite often inelastic.

In my own experience, it is always better to use a more expensive, and proper, antibiotic-free diet for a reduced period of time, rather than a less expensive diet for a longer period of time.

> **it is always better to use a more expensive, and proper, antibiotic-free diet for a reduced period of time…**

For example, if a medicated pre-starter was to be used, say, at 2 kg per piglet, or in for two weeks in the case of broilers, and cost for a non-medicated similar feed is deemed excessive, it is better to reduce allowance of such expensive diet to 1 kg per piglet or one week for broilers, rather than use a diet that is less expensive but used as per usual.

Although a less expensive feed will be suitable for the period towards the end of the period in question, it will cause nevertheless more damage than it will do good in the first stage. So, it is best to err towards less "quantity" rather than "less quality."

WILL ANTIBIOTIC-FREE BROILER PRODUCERS BE COMPETITIVE?

A U.S. researcher says broiler production without antibiotics will not work without ionophores. | Peter Dean

By: Terrence O'Keefe
Published: September 16, 2015

Researcher thinks U.S. chicken industry will lose its ability to compete on price in global markets if 'no antibiotics ever' and 'raised without antibiotics' programs become standard practice

The cascade of foodservice outlet pledges to purchase only chicken from flocks that have been raised without antibiotics that started with Chick-fil-A's is causing a major shift in how broilers are raised in the United States. Dr. Steve Davis, DVM, Colorado Quality Research, said,

"In my opinion, it (raised without antibiotics broiler production in the U.S.) won't work without ionophores." The problem, he explained, is that some antibiotic-free husbandry programs being mandated by customers are calling for "no antibiotics ever" and exclude the use of ionophores, a class of coccidiostats that also have antibacterial properties.

Davis told the audience at USPOULTRY's Live Production & Welfare Seminar, in Nashville, "I fear this will make the U.S. broiler industry noncompetitive in the world market." The research that Davis has conducted on necrotic enteritis, which has already become a major health problem in the U.S. broiler industry, has convinced him that prevention of this disease without access to antibiotics will be an even bigger problem for U.S. broiler producers as they move to reduce or eliminate antibiotic use in the future.

Davis speculated that broiler complexes in dry climates, which excludes most of the U.S. broiler belt, would have an advantage in antibiotic-free production because dry air helps keep litter dry and control coccidiosis in flocks and prevent necrotic enteritis from developing. He said that antibiotic-free production in the U.S. may only be feasible in some complexes with increased house cleanouts, perhaps as often as every flock, and houses might need to have concrete floors. Increased downtime between flocks, reduced bird densities in houses, and low-protein vegetarian diets may also be required, according to Davis.

Antibiotic-free broiler production could be an "industry killer" for the U.S., according to Davis, and he questioned if it was sustainable. As a veterinarian, Davis said he finds that no antibiotics ever and raised without antibiotics growing programs are troubling. They are "not best for the chickens and not best for the chicken companies," he said.

5 TIPS FOR RAISING HEALTHY ANTIBIOTIC-FREE POULTRY

Chicks given the best developmental opportunities in the shell will be easier to manage in antibiotic-free systems.

By: Ole Lund Svendsen
Published: May 19, 2016

The difficulties of antibiotic-free poultry production can be overcome by following carefully considered strategies.

Demand for antibiotic-free (ABF) poultry is growing fast, and what was once considered a passing trend has become a well-established, health-conscious requirement for consumers worldwide.

However, ABF production presents challenges for meat producers, who are taking distinct approaches to its development, with different results.

While some producers still have difficulties in controlling health challenges, others have had success, due to improvements in housing and changes in feeding, management and health programs. The various approaches to ABF production can be grouped as:

Demand for antibiotic-free (ABF) poultry is growing fast, and what was once considered a passing trend has become a well-established, health-conscious requirement for consumers worldwide.

1. MANAGING NUTRIENT INTAKE

A common misconception in ABF production is to focus only on controlling intestinal diseases. These are the main health issues when any ABF program is implemented, but the reality is that they are the consequences, not the causes, of the real problem.

Excess nutrients, especially protein and fat, may not be well digested and absorbed by the bird. Undigested feed increases microbial proliferation in the ceca, leading to potential infections. Appropriate digestibility is key to broilers' overall health and can help control microbes and resultant diseases.

Factors such as a balanced diet and sufficient water consumption are essential to improve digestibility. A pH between 5 and 7 and water temperature between 16C and 25C are ideal conditions to support the activity of most enzymes.

To further strengthen the effect of endogenous enzymes, additives such as phytases and xylanases can be added to feed. Moreover, to guarantee acidic crop, organic acids are a good option.

Feed management plays an essential role too. Grain damage and conditions that could increase mold and insect spoilage must be minimized and, at the same time, fat storage conditions should be frequently revised in order to control rancidity within the feed mill.

2. MODULATE MICROFLORA

The gut flora plays an important role in supporting the immune system. In addition to a balanced diet and good housing conditions, feed additives and minerals can help maintain a healthy microflora in all gut regions.

For example, alternative feed additives, such as probiotics, can introduce desirable live microorganisms in the gut and, with the support of prebiotics, can help maintain a healthy gut balance.

Enzymes are an alternative to eliminate the anti-nutritional effects of water-soluble polysaccharides, while organic acids cause the inhibition of bacterial growth, and essential oils can support gut microflora balance, stimulate digestive enzyme production and the immune system.

Regardless of the above single benefits, it is extremely important to understand that only appropriate testing and use can guarantee success. One solution working in one flock may not work in the next as the environment may have changed, e.g. the feed raw material properties.

3. IMPROVE HOUSE ENVIRONMENT, BIOSECURITY

Proper environmental conditions are the foundations of effective ABF poultry production. Optimum temperature, air velocity, and relative humidity according to the age, phase of production and size of the birds should be considered.

Environmental stress, due to heat, cold, very dry or very humid air could affect feed intake and intestinal motility, causing reduced digestibility.

Lighting programs may also affect feed intake, motility and digestion. Light intensities lower than 10 lux and 4 to 6 hours of total darkness per day improve feed conversion ratios, indicating slower feed intake and better digestibility.

Good house ventilation is key for ABF programs to maintain litter moisture below 30 percent, and to minimize condensation and caking.

Flock management is also important to allow the flock more space during the brooding period. This helps avoid excessive stress.

4. MAINTAIN FLOCK HEALTH

Preventing coccidiosis and necrotic enteritis are normally the main concerns during ABF production.

In cases where no anticoccidial medications are allowed, coccidiosis vaccines and litter management are the principle controls. Cocci vaccination for broilers has been applied in traditional poultry production systems and new ABF programs for years, in many countries.

Furthermore, the appropriate feeding regime and use of feed additives, such as the eubiotics category, may help maintain healthy microflora adding to flock health.

Control of other intestinal parasites, worms and poultry diseases that affect intestines and immunity is also necessary.

Practices including bio-exclusion, limiting visitors, vehicles and equipment that visit other poultry farms, and bio-containment, isolating the houses, controlling insects, rodents and entry of wild birds and other animals to the houses, can help prevent new infections.

5. IMPROVE BREEDER HEALTH

Broiler breeder nutrition is fundamental for adequate development of their progeny.

Embryo development is totally dependent upon egg nutrients deposited by the hen, and specific nutrients, such as vitamin D, trace minerals, carotenoids, and fatty acids, are key in immunity and gut development.

Hens also affect embryo nutrition and development via eggshell properties, including porosity and thickness, which determine conductance. Eggshell conductance dictates the capacity of eggs to exchange gases and water vapor, consequently affecting embryo yolk and general nutrient utilization.

These physical factors, especially the capacity to obtain sufficient oxygen, limit the type of metabolism, rates of tissue development, and embryo growth.

This is more important during the last three or four days prior to hatch, when development of many tissues, including the gastrointestinal tract, bones and muscles, is fastest.

As breeders can transfer intestinal microbes and immunity to their progeny, companies practicing ABF production should make sure that intestinal health is adequate in breeders and that vaccination programs are effective.

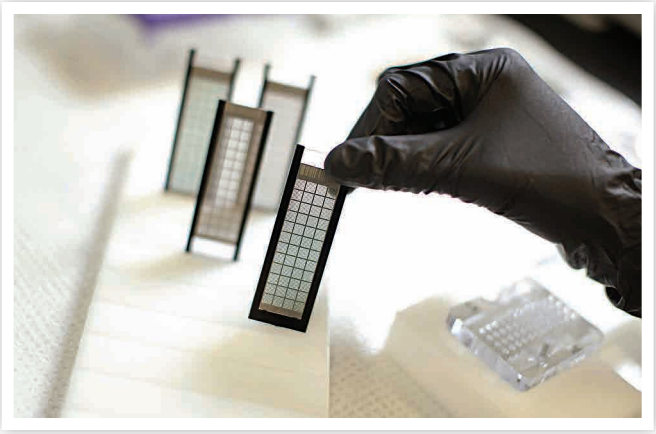
HOLISTIC APPROACH

There are numerous concepts around the ways ABF systems in poultry meat production can be implemented to improve productivity.

As ABF programs for poultry production become more common, and to make these programs successful, a holistic approach along the whole production system is needed. Not only are feed, feed additives or enteric pathogen control important, but also are housing management, water quality and biosecurity at breeder and grow-out levels.

Ole Lund Svendsen is marketing manager at DSM Nutritional Products.

GENOMIC SELECTION AND ANTIBIOTIC-FREE BROILERS



Using genomic selection in breeding programs will continue to prove its worth as producers embark on antibiotic-free programs and broiler's disease tolerance becomes more important. | Courtesy Cobb-Vantress Inc.

By: Austin Alonzo
Published: May 5, 2016

Genomic selection provides breeders a tool for improving previously hard-to-select-for traits like disease resistance and could pave the way for more efficient broiler production.

One hundred years after its founding, Cobb-Vantress Inc. is still tackling current issues facing the broiler industry.

In an interview, Dr. Mitchell Abrahamsen, senior vice president of research and development at the Arkansas-based broiler primary breeder company, explained how Cobb applies cutting-edge genomic technologies to better understand what specific aspects of an individual bird's genetic make-up contribute to desirable traits.

Abrahamsen said the genomics work represents a continuation of Cobb's past century of progress in broiler genetics. Cobb has brought significant improvements in animal health, mortality, feed conversion, growth rate and overall yield which, he said, has provided the basis for the development of today's global broiler industry. With more information on which specific gene sequences contribute to desirable traits, the company is positioned to keep moving the industry forward in the coming decades.

Scientific advancement is an integral part of Cobb's ability to develop products that perform better in antibiotic-free production environments, and it's helping it breed birds that will be able to thrive under more stressful conditions farmers might face in the coming decades.

> ***"Cobb has brought significant improvements in animal health, mortality, feed conversion, growth rate and overall yield…"***

WHAT IS GENOMIC SELECTION?

Completion of the chicken genome project opened the door for genetics companies and academia to partner to use genomic selection to speed up the delivery of commercially important improvements in genetic stock. Abrahamsen said Cobb's partnership with Dutch genetics company Hendrix Genetics and its academic collaborators was critical to helping Cobb understand the potential value of genomics in its breeding programs and allowed it to take full advantage of the science.

The application of genomic selection to poultry breeding allows geneticists to be able to examine which specific DNA sequences contribute to useful production traits and then select birds who possess those genes for the next generation of breeders within the pedigree program.

> ***"Genomics is a critical component of our program to improve animal health and welfare traits, as well as the key broiler traits that are driving profit for the industry"***

"Genomics is a critical component of our program to improve animal health and welfare traits, as well as the key broiler traits that are driving profit for the industry," Abrahamsen said.

By monitoring which single nucleotide polymorphisms (SNPs) – specific variations in the DNA sequence – exist in genes, breeders are able to understand and recognize parts of chromosomes that are linked to desirable traits as they are inherited from generation to generation. This allows breeders to carefully identify and exploit the genetic components that are driving the changes in the birds. Abrahamsen said that, before genomic selection, geneticists were only able to understand genetic contributions based on parentage/family relationships to breed for desirable traits. Now they can understand what specific genes were passed on and put that knowledge to use.

THE BENEFITS OF GENOMIC SELECTION

Genomic selection is already increasing the rate of genetic progress for many key economic traits. Abrahamsen said genomic selection has demonstrated the ability to improve the rate of genetic progress for today's pedigree selection program.

"The bigger win is going to be the ability to use genomic selection to select for traits that are difficult to express in a pedigree program. This will be a key technology for linking data/knowledge from off-farm selection programs with the pedigree breeding program." Abrahamsen said.

Data collection has always been a vital component of Cobb's selection programs. With genomic technology, breeders are able to gather even more data to help select birds that will perform in harsher environments around the world and in antibiotic-free operations. It's through this technology that we are able to better understand which genetic variations cause one bird to do better than another under stressful conditions and select for those birds for our breeding program.

ON THE HORIZON

Using genomic selection in breeding programs will continue to prove its worth as producers embark on antibiotic-free programs and broilers' disease tolerance becomes more important. Abrahamsen said this trend is going to allow breeding companies to develop products that will drive the poultry industry to be efficient and profitable in a time when consumers are demanding more focus on bird health without using antibiotics, and more knowledge about where their food comes from.

In the long term, the poultry industry will be challenged as livestock competes with humanity for the grains the earth can produce. In the coming decades, Abrahamsen said Cobb and the genetics industry will be required to develop birds that can succeed on alternative feed stocks and live in environments where temperatures are higher, water is scarcer, and energy to heat and cool chicken houses is less affordable.

"We'll need to develop genetic lines and products that can deal with this ever changing world in the future where the key economic drivers today are probably not going to be the key economic drivers 20 and 50 years from now," Abrahamsen said.

ANTIBIOTIC-FREE CHICKEN: THE INDUSTRY UNDER THE MICROSCOPE

Dr. Ashley Peterson, vice president of science and technology at the National Chicken Council, said that there is confusion among consumers regarding the production of antibiotic-free chicken.

By: Benjamin Ruiz
Published: March 15, 2016

During the Ceva Poultry Vaccinology Summit, different production perspectives of ABF chicken and their impact were analyzed

The use of antibiotics is one of the growing challenges in producing safe animal protein today, and everyone is watching chicken production.

It is estimated that 20 percent of food is lost to animal diseases. That means we need to protect our food sources. But, without antibiotics?

Production without antibiotics was the main topic during the first day of the Ceva Poultry Vaccinology Summit on March 14 in Barcelona, Spain. Dr. Ashley Peterson, vice president of science and technology of the National Chicken Council (NCC), spoke about the U.S. perspective. It is noteworthy to mention that the NCC represents 95 percent of the chickens produced in that country and that 22 percent of U.S. chickens are exported.

Of the total number of chickens produced in the U.S., 10 to 15 percent are already produced antibiotic-free and 40 percent with a restricted use. Antibiotic-free (ABF) production, also known as NAE (no antibiotics ever), may include these compounds if birds become sick, but chickens must be commercialized differently.

> ***"If the label does not have these acronyms, the consumer believes that the chicken does have antibiotics, which is not the case"***

We may be filled with acronyms, but Dr. Peterson said that, "If the label does not have these acronyms, the consumer believes that the chicken does have antibiotics, which is not the case."

However, there is an issue we should take into account that, if chickens get sick, there is an obligation to administer antibiotics, from the ethical and animal welfare point of view.

Dr. Peterson also asked who among the various actors – consumers, legislators/government, retailers, industry – is leading the industry? Because apparently the industry that uses poultry products succumbs to pressure from consumer groups, not based on scientific facts and without consulting the industry to see if it is economically feasible.

Another important point is that most antibiotics used in animal production are not used in human medicine, nor are human antibiotics used to promote growth.

However, despite all this, “Every day there are more companies that want to be supplied antibiotic-free chicken.”

Another important aspect is that because of the different terms used, there is much confusion among consumers, which adds on to the ignorance. For example, according to a study conducted by the NCC, the consumer believes antibiotics are used “because of mishandling or to promote growth,” which is not the case.

Finally, Dr. Peterson spoke about the impact of eliminating antibiotics in production, for which there are four key points:

» Mortality
» Days to market
» Downtime
» Stocking density

Among the various things she talked about, she mentioned that one antibiotic-free chicken house may represent 300 fewer people fed in a year. Seeing this, we can not forget sustainability, and also animal welfare, as there will be more moisture in the bed and can present health problems such as necrotic enteritis.

What are the future trends? She pointed out three specific things: the use of coccidiosis vaccine, the development of alternative antibiotics and finally and to better use vaccines instead of antibiotics, for which “there must be innovation in animal health”.

ANIMAL PROTEIN PRODUCER PANEL DISCUSSES ANTIBIOTIC USE

Dr. Scott Stehlik, general manager of technical operations at The Maschhoffs LLC (left), Dr. Philip Stayer, corporate veterinarian for Sanderson Farms Inc. (middle) and Beef Marketing Group CEO John Butler (right) speak at the Facts vs. Fears: Addressing Antibiotics in Animal Agriculture at the Annual Meat Conference 2016 in Nashville, Tennessee.

By: Austin Alonzo
Published: Mar 10, 2016

Top U.S. animal protein producers said the meat industry questions the need for "No Antibiotics Ever" programs.

Consumer concern about the use of antibiotics in livestock production, and a possible link to antibiotic resistance problems in human medicine, is driving many livestock and poultry producers to reduce the use of antibiotics in their growing programs.

On February 23, at the Annual Meat Conference 2016 in Nashville, Tennessee, Dr. Philip Stayer, corporate veterinarian for Sanderson Farms Inc., Dr. Scott Stehlik, general manager of technical operations at The Maschhoffs LLC, and Beef Marketing Group CEO John Butler, fielded questions about antibiotic use as part of a panel discussion on the future of antimicrobials in the food supply.

ANTIBIOTIC-FREE PRODUCTION, THE WAY OF THE FUTURE?

Growing consumer and regulatory pressure raises the question of whether antibiotic use in livestock production could end in coming years.

In 2017, the U.S. Food and Drug Administration's Veterinary Feed Directive (VFD) will go into effect. The regulation will ban the use of growth promoting antibiotics the FDA deems medically important to humans. The move is coupled with growing consumer concern about the presence of antibiotics in the food supply.

In response, major animal protein companies are rolling out new lines of meat from animals never given antibiotics – marketed as "No Antibiotics Ever" – or pledging to exceed the standards set by the VFD. Some protein purchasers are also pledging not to sell any meat raised with antibiotics.

The panelists said antibiotics are used to protect animal health when other disease-prevention methods fail, and because of mandatory withdrawal periods, the medications are not present in the meat U.S. consumers eat.

Stayer, the lead veterinarian for the third largest company in *WATT PoultryUSA*'s Top Broiler Company rankings, said that he hopes that "No Antibiotics Ever" doesn't become the standard production method. Until a better tool for protecting animal health comes along, livestock producers need the option to use antibiotics. Their use allows growers to produce a healthier product for consumers.

He said removing antibiotics entirely – going no antibiotics ever – will have a domino effect on the industry as a whole. Stayer estimated no antibiotics ever practices would increase the size of an operation by 20 percent.

"So you're talking about a much bigger carbon footprint. Much more corn required, much more manure to be deposited, so if you don't treat your animals with the current technology available now there's a price effect," Stayer said. "The consumer may be asking for something where they don't really know what the unintended consequences are. So sometimes you give someone what they want, and it's not what they thought they wanted."

> ***"So you're talking about a much bigger carbon footprint. Much more corn required, much more manure to be deposited…"***

Stayer added that Sanderson Farms is capable of going no antibiotics ever, but birds will suffer if that change is made.

Stehlik, a leader of the Illinois-based pork producer's breeding program, agreed that a system based on no antibiotics ever practices would lead to either a decline in product produced or an increase in price.

Butler, a leader of the Kansas-based beef producer cooperative, said the best way to respond to the situation is to continue providing consumers choices; whether it be organic, antibiotic-free or conventionally raised. The challenge is to do it in a sustainable way. His own company tried to produce a no antibiotics ever Angus product, but it was unsustainable due to the high cost and the risk of implementing an antibiotic-free program in a decentralized cattle rearing infrastructure.

CONSUMERS DISCONNECTED FROM FARMING

Suspicion of antibiotic use may be caused by growing disconnect between farmers and the average American consumer. Stehlik said the number of farms in the country is steadily declining as its population increases. That disconnect creates a lack of trust and a desire for more transparency in the food supply. He acknowledged the animal protein industry must do a better job of being transparent, but wondered if consumers will ultimately be willing to pay more for a product a vocal minority is demanding.

"I struggle with allowing that subset of the consuming public to drive the price point for the majority and in essence pull the options away from the folks who don't have that consumer ability to spend more," Stehlik said.

PRODUCERS MUST TAKE ACTION TO ADDRESS TRUST ISSUES

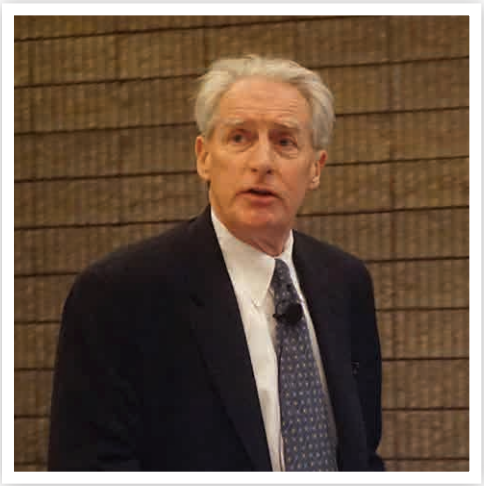
Butler said animal protein producers need to take comprehensive action to address consumer's skepticism about their products.

"If we tackle trust in a holistic way we will make terrific steps with the consumer," Butler said. "We love taking care of animals and we've got to start convincing consumers that that is part of it. These tools that we have in our tool chest – including antibiotics – are part of our ability to do our job. When we get a chance to be consumer facing… the takeaway [for consumers] is 'I'm convinced, check the box, the protein is safe.'"

Otherwise, Butler cautioned, activists will continue to set the agenda for consumers.

"We've sort of let the activists take a role in dismantling our business and dismantling the way we do business, and we sort of sit there and [say], 'Well that's OK,'" Butler said. "Here we are. We cannot do that any longer. We've got to be very much out in front."

ALMOST HALF OF CHICKENS IN U.S. NOT FED GROWTH PROMOTING ANTIBIOTICS



Mike Donohue, vice president at Indiana-based agricultural research company Agri Stats Inc., speaks at the 2016 International Production & Processing Expo on Wednesday, January 27, 2016.

By: Austin Alonzo
Published: February 4, 2016

About 46 percent of chickens in the U.S. were not fed growth promoting antibiotics in the past month, according to data from agricultural research company Agri Stats Inc.

During a presentation at the 2016 IPPE in Atlanta, Mike Donohue, vice president of Agri Stats Inc., said data collected by the agricultural research company indicated 46.1 percent of chickens Agri Stats monitors were not fed antibiotics traditionally used for growth promotion within the past month. Some of the birds he referred to were treated with other classes of drugs. Ionophores, a class of coccidiostats that also have antibacterial activity and are classified by the U.S. Department of Agriculture as antibiotics, do not have growth promoting claims, but may have been used in some of these flocks.

Donohue said the reduction in the use of antibiotics in the U.S. may also be correlated with a reversal in the productivity gains the poultry industry has enjoyed consistently for decades. Consumer concern over the use of antimicrobials in livestock production and the forthcoming US Food and Drug Administration's Veterinary Feed Directive, which will ban the use of growth promoting antibiotics the FDA deems medically important to humans in the U.S., were hot topics at last week's convention.

> ***"It's a slight decrease but I think a big part of that goes back to…antibiotic free and all its permutations"***

There are some antibiotics available for use in U.S. poultry flocks that have growth promotion claims that are not currently classified as medically important.

Over the past two to three years, Donohue has noticed steady improvement in key metrics – livability, field cost, condemnation, rate of gain and feed conversion – has stopped or started to reverse.

"It's a slight decrease but I think a big part of that goes back to…antibiotic free and all its permutations," Donohue said.

Donohue said he noticed the amount of birds not fed antibiotics increasing during the past 15 to 18 months. While it could be part of a normal medication rotation program, he said the trend is worth monitoring over the long term.

As the use of antibiotics continues to be reduced, Donohue said U.S. farmers will be challenged to manage the health of their flocks.

"I do think that eventually we'll get to another plateau."

"As we see fewer tools being used that were traditionally helpful in bird health programs, I think that's a big part of what's gone on in not gaining the growth rate," Donohue said. "I do think that eventually we'll get to another plateau."

YEAST, A GOOD CHOICE TO PRODUCE ANTIBIOTIC-FREE POULTRY

Stephen Collett, University of Georgia.

By: Benjamín Ruiz
Published: January 29, 2016

Intestinal flora management with derivatives of yeast cell wall has advantages for producing antibiotic-free birds.

Changing the paradigm of 60 years of using antibiotics in poultry production is quite difficult. However, "we have lost the confidence of the consumer," said Dr. Stephen Collett, clinical associate professor at the University of Georgia, speaking at an Alltech breakfast event at the 2016 International Production & Processing Expo (IPPE) in Atlanta on January 27.

This statement was made in reference to the discussion regarding antibiotic-free production, known as ABF production.

He spoke of two important aspects to consider in order to produce without antibiotics: management of the intestinal flora and control of protozoa and coccidia.

One of the key issues was the analysis of natural intestinal flora against the flora found in the poultry houses, mainly in countries like the U.S., where bedding material of the previous flock stays up to six consecutive cycles. Raising birds in such houses, "is as if the chicken hatches in a natural nest, but with the risk of facing disease."

The integrity of the upper intestinal tract determines performance and growth of the bird in the long term. When handling intestinal flora, the development of an immature to a mature intestinal tract has to be accelerated.

For antibiotic-free production, microflora management is paramount. Collett discussed the recommended method of seed, feed and weed. It refers to seeding the correct intestinal flora, which is a crucial step. Feeding it in the early growing stages by acidification of the intestine with short-chain fatty acids, and weeding, which means rehabilitating or accelerating its evolution.

For this purpose, essential oils play a broad spectrum antimicrobial effect role, with a similar antibiotic action. Additionally, microorganisms tend to adapt to essential oils. Therefore, Collett recommended types of fimbriae blockers or antagonists, consisting of derivatives of yeast cell wall, which are not absorbed, block negative microflora attachment, prevent colonization and reduce ability to replicate.

ESSENTIAL OILS KEY TO REDUCING ANTIBIOTICS IN POULTRY

Published: January 29, 2016

Cargill is taking a comprehensive approach toward improving gut health to maximize feed efficiency

Cargill researchers are focusing on improving gut health in poultry to promote feed efficiency and keep birds healthy. Cargill has been researching the use of non-medicated feed additives for several years as an alternative to antibiotic growth promoters (AGPs). As an independent supplier, Cargill has performed cross-additive research and determined the most beneficial types of feed additives for individual customer needs. For consistent performance improvement, essential oils turned out to be a key solution because they impact all four key gut function areas (listed below).

Since 2009, a combined total of 77 comprehensive *in vitro* and *in vivo* trials have been conducted at Cargill's Animal Nutrition Innovation Centers in Velddriel, the Netherlands, and Elk River, MN, as well as at regional facilities in Jordan, France, Poland, India and the U.S., on additives including essential oils, probiotics, yeast derivatives and medium chain fatty acids (MCFA).

ESSENTIAL OILS KEY IN GUT HEALTH SUPPORT

Gut health is important in poultry production because the digestive system performs key functions essential to ensuring birds' optimum performance. Cargill seeks to better understand optimal gut function in four key areas:

1. Managing microflora for a well-balanced bacterial population
2. Controlling immune function and inflammatory response
3. Maximizing nutrient digestion and absorption
4. Improving the physical barrier against pathogens

While all additives studied showed some benefit in these areas, Cargill researchers found that selected essential oil compounds, particularly those derived from thyme, cinnamon and oregano, had the most comprehensive effect on overall gut health. Benefits included:

- Antimicrobial activity
- Modulation of immune response
- Antioxidant activity
- Improvement of nutrient digestibility
- Stimulation of mucus production

> ***"Only essential oils have both a broad spectrum of activity against pathogens and a direct impact on digestive function"***

"Only essential oils have both a broad spectrum of activity against pathogens and a direct impact on digestive function," said Stephanie Ladirat, global technology lead for gut health additives in Cargill's animal nutrition business.

ESSENTIAL OILS ROLE IN ANTIBIOTIC REDUCTION

In addition, essential oils were found to be particular efficient in conditions where intestinal infections such as *Salmonellosis* and *Coccidiosis* were present. They were also found to be a viable alternative to antibiotics as more than 85 percent of the results showed a minimal difference between the positive control (antibiotics) and essential oils.

The research also showed that essential oils are just one facet of a feeding program that promotes ideal gut health and allows antibiotic reduction. Research findings support combining essential oils with organic acids to get maximum efficacy. “Cargill’s local nutrition experts are working directly with poultry producers to develop customized, holistic feeding programs encompassing nutrition, additives and farm management based on the study results,” says Twan Van Gerwe, poultry R&D director in Cargill’s animal nutrition business. Combined study results from 12 trials demonstrated that birds given Cargill’s PROMOTE® Biacid™ Nucleus additive, which contains a proprietary mixture of seven carefully selected essential oil compounds, in combination with an antibiotic-free diet, consistently improves body weight gain by 2 percent and feed conversion by 1.5 percent, producing a return on investment (ROI) of 5:1 for producers.

LONG-TERM BENEFITS OF HEALTHY DIGESTION IN POULTRY

For poultry producers the high return on investment is a top benefit of intestinal health support. However, promoting gut health also helps address issues in food safety and animal welfare. Healthy poultry intestines may result in a lower risk of bacterial food contamination and in healthier barn environments.

Finally, feed efficiency has become increasingly important due to the growing world population and limitations in feed resources. Supporting gut heath contributes to efforts to meet increasing demand for global animal protein in an efficient way. “Promoting gut health while reducing AGPs is critical for sustainable animal performance and profitability,” adds Van Gerwe. “Our R&D work in improving poultry gut health is an important part of Cargill’s commitment to nourishing the world’s population.”

GUT HEALTH VITAL TO ANTIBIOTIC-FREE POULTRY PRODUCTION

Chastity Pender, poultry technical manager, Biomin America, discusses the importance of gut health in antibiotic-free poultry production at IPPE 2016.

By: Roy Graber
Published: January 26, 2016

Biomin scientist cites studies linking good poultry gut health to reduced risk of necrotic enteritis

While the demand for poultry raised without antibiotics continues to grow, poultry producers have been more reluctant to adapt to an antibiotic-free program because of the medical benefits that antibiotics provide.

However, the common denominator, is "good, effective, practical management of gut health," said Chastity Pender, PhD, poultry technical manager, Biomin America. Pender spoke during a session held at the International Production and Processing Expo (IPPE), held January 26 in Atlanta.

"Producers are looking for their animals to be healthy and to perform optimally, and until now, they have been achieving this through the use of antibiotic growth promoters (AGPs), antibiotics and ionophores," said Pender.

"Removing antibiotics does come with legitimate concerns. These concerns include decreased performance and productivity of those animals, increased morbidity and mortality rates because of the disease, increased costs of management the health of those flocks and increased disease incidence. If you add all of this up, there is going to be a potential loss of profitability."

> ***"Removing antibiotics does come with legitimate concerns…"***

The biggest health concerns, according to Pender, are coccidiosis and necrotic enteritis.

Natural feed additives have been gaining increased interest in this area, to help manage necrotic enteritis, she said.

Pender also suggested use of probitotics to promote beneficial bacteria, citing a study from partners at University of Ghent, where probiotic supplementation increased incidences of beneficial bacteria within the intestine.

Pender also advised limiting nutrient access to pathogens, which can be achieved with a switch to an all-vegetable diet.

Stay up to date on all the latest news and insights featuring antibiotic-free poultry production on **WATTAgNet.com** and **WATT Poultry Update eNews**.

Watch for future WATT Global Media Focus Series releases highlighting other critical poultry industry topics coming soon!

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