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Livestock Update

Beef - Horse - Poultry - Sheep - Swine

July 2016

This LIVESTOCK UPDATE contains timely subject matter on beef cattle, horses, poultry, sheep, swine, and related junior work. Use this material as you see fit for local newspapers, radio programs, newsletters, and for the formulation of recommendations.

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Scott P. Greiner, Extension Project Leader Department of Animal & Poultry Sciences

Invent the Future



Virginia Polytechnic Institute and State University

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2016

Dates to Remember

<u>July 18-20, 2016</u> Virginia Tech Livestock Judging Camp- Virginia Tech Campus, Blacksburg VA - 3day, 2-night event- Contact: Bain Wilson- <u>tbwilson@vt.edu</u> or David Roper- <u>droper1@vt.edu</u>.

<u>BEEF</u>

<u>July 23, 2016</u>

Virginia Simmental Association Field Day Virginia Tech, Blacksburg, VA. Please RSVP by July 15th for meal planning purposes: Dan Eversole – 540/641-0295 deversol@vt.edu

Chad Joines – 540/557-7263

deversol@vt.edu cjoines@vt.edu

<u>July 30, 2016</u>

Virginia Charolais Association Field Day Virginia Tech, Blacksburg, VA. Please RSVP by July 15th for meal planning purposes:

Dan Eversole – 540/641-0295 Chad Joines – 540/557-7263 deversol@vt.edu cjoines@vt.edu

<u>August 4, 2016</u>

9th Annual Tri-State Beef Cattle conference. Washington County Fairgrounds; Abingdon, VA.

Contact: Dr. Scott Greiner, Extension Beef Specialist, Virginia Tech.

P: 540-231-9159; Email sgreiner@vt.edu

or on the web at http://www.apsc.vt.edu/extension/beef/index.html

<u>SHEEP</u>

<u>July, 2016</u>

2016 Virginia-North Carolina Wool Pool. See page 13 for dates and times; To confirm dates, and for more information regarding specific times and locations, contact your local Virginia Cooperative Extension Office.

July Herd Management Advisor

Scott P. Greiner Extension Beef Specialists, Virginia Tech

After a dry April, and wet May, we begin summer which typically brings heat and many times dryness through July and August. This seasonal decline in pasture and cattle performance during this period is usually called "summer slump". Infected tall fescue gets most of the blame and is certainly a major contributor, but there are other factors in addition to fescue toxicity that contribute to this seasonal slump.

Consider the following management suggestions to deal with summer slump:

- The age old suggestion for diluting infected tall fescue still works. The dilution can be other grasses, legumes or even supplemental feed, anything that takes the place of infected tall fescue.
- Manage pastures through clipping or grazing management to reduce seed heads and stems which contain higher toxin levels. These management practices will produce a more open forage canopy which will prevent shading of favorable forages such as clovers and warm season grasses.
- Creep supplementation of calves to reduce dependence of forage for calf performance. Creep feeding needs to be evaluated economically, based on cost of feed, feed conversion, and expected calf selling price. Keep in mind that if feed intake gets higher than desired, 2-5% white salt can be to reduce intake.
- Placement of mineral feeders can assist in more uniform pasture utilization. Place feeders well away from water sources and locating them in areas where cattle spend less time grazing.

Spring Calving Herds (January-March)

<u>General</u>

- Focus on breeding season, forage management, and calf health.
- Manage first-calf heifers separately; give them best forage and supplement

Nutrition and Forages

- Switch from high-mag minerals to high Se mineral as grass matures.
- Manage growth of warm season grass pastures by rotational grazing
- Implement rotational grazing management system which will provide a beneficial
 rest period for pastures. July can be a challenging forage management month.
 Depending on moisture, cattlemen are either trying to extend the utilization of
 mature early forage growth or if moisture is abundant, manage the growth of
 warm season forages
- Store your high quality hay in the dry.
- Collect and submit forage samples for nutrient analysis.

Herd Health

- Implement parasite and fly control program for herd.
- Administer mid-summer deworming and implant
- Consult with your veterinarian for a pinkeye control and treatment program
- Plan vaccination and preconditioning protocol for calf crop.
- Castrate commercial calves (if not done at birth), consider castrating bottom end of male calves in seedstock herds.

Reproduction

- Remove bulls from replacement heifers after 45 day breeding season
- Make plans to pregnancy check heifers as soon as possible after bull removal. This will allow options in marketing open heifers.
- Monitor bulls closely during the breeding season to confirm breeding performance and soundness, and monitor cows for repeat estrus. Avoid overworking young bulls (a rule of thumb- yearling bulls should be exposed to number of cows equal to their age in months).
- Remove bulls after 60 days for controlled calving season

Fall Calving Herds (September-November)

General

- Wean calves to allow ample opportunity for cows to replenish BCS prior to calving.
- Finalize marketing plans for calf crop. Time weaning, vaccination program, and weaning management in concert with marketing plans. Calculate break-evens on various marketing options and consider risk management strategies.
- Market open cows. Cull cow prices typically peak mid-spring through midsummer, and prices generally stronger for cows in good body condition vs. thin cows (evaluate forage availability and potential feed and management costs to increase BCS of cull cows if warranted).

Nutrition and Forages

- Switch to high selenium trace mineral salt
- Body condition score bred females. Plan nutrition and grazing program based on BCS. This is the most efficient period to put weight and condition on thin cows
- Reserve high quality hay and a pasture area for calves post-weaning.
- Manage growth of warm season grass pastures by rotational grazing
- Implement rotational grazing management system which will provide a beneficial
 rest period for pastures. July can be a challenging forage management month.
 Depending on moisture, cattlemen are either trying to extend the utilization of
 mature early forage growth or if moisture is abundant, manage the growth of
 warm season forages
- Store your high quality hay in the dry.
- Collect and submit forage samples for nutrient analysis.

Herd Health

- Administer mid-summer deworming on replacement heifers and pregnant heifers
- Implement parasite and fly control program for herd.
- Consult with your veterinarian for a pinkeye control and treatment program
- Implement vaccination protocol for calf crop. Design vaccination and weaning program around marketing goals and objectives. Vaccinate, wean, and certify calves to be marketed in late summer
- Reimplant commercial calves.

Genetics

- Identify replacement heifers. Utilize available tools including genetics, dam performance, individual performance, and phenotype. Restrict replacement heifer pool to those born in defined calving season.
- Finalize plans for post-weaning development and marketing of bulls in seedstock herds.

Virginia Tech Livestock Judging Camp

July 18-20, 2016 VT Campus Blacksburg, VA



Join us for the 1st annual VT Livestock Judging Camp. A 3-day, 2-night event with detailed instruction in all species and reasons.

Campers will be housed on VT campus and the \$250 camp registration fee includes housing, meals, materials, tshirt, and activity fees.

Camp is open to youth entering the 6th grade to High School Seniors.

To register fill out the attached form and return along with registration fee. Camp is limited to the fist 60 youth registrations.

Two male & female chaperones are required. Please indicate your willingness to serve this role. Additional adults are welcome and will be charged \$175 registration fee (meals/lodging).

> For more information contact: Bain Wilson: tbwilson@vt.edu David Roper: droper1@vt.edu



Virginia Tech • Virginia State University www.ext.vt.edu

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VT Livestock Judging Camp Registration Form

Name		
Parent ChaperoneYesNo		
Youth Age Adult Gender		
Address		
City, ST, Zip		
Email address		
Phone #		
Roommate preference		
T-shirt size		
If attending with team list members:		
Deadline: June 15, 2016		

Return form and Payment to: VT Livestock Judging Camp C/O Bain Wilson 378 Litton Reaves (0306) Blacksburg VA 24061

If you are a person with a disability and desire assistance or accommodation, please notify Bain Wilson, 378 Litton Reaves at 540-231-5253/TDD*) during business hours of 8a.m. and 5 p.m. *TDD number is (800) 828-1120.



Virginia Simmental Field Day July 23, 2016 Virginia Tech



The Department of Animal and Poultry Sciences at Virginia Tech will be hosting the Virginia

Simmental Field Day on Saturday, July 23, 2016 at the Multi-Purpose Teaching Arena across from the VT Beef Cattle Center on Plantation Road. A cattle judging contest with prizes, an educational program and complimentary lunch have been planned for your enjoyment. Please make plans now to attend the Virginia Simmental Association Field Day.

Field Day Agenda

10:00am- 12:00pm	Registration and Cattle Judging Contest
12:00-1:00pm	Complimentary lunch
1:00- 3:30pm	Educational program/Junior fitting program to run concurrently

Afternoon sessions will include:

- Update from the American Simmental Association (ASA) and understanding genomic-enhanced EPDs and indexes – Dr. Bert Moore, ASA Representative and State Association Liaison
- The ASA Carcass Merit Program: a report from a Virginia cattle producer -Lynda Stuart, Stuart Land & Cattle Company

Embryo Transfer: understanding the differences between conventional ET and IVF - Dr. Allen Strecker, Blue Ridge Animal Clinic

> Please RSVP by July 15th for meal planning purposes: Dan Eversole – 540-641-0295 deversol@vt.edu Chad Joines – 540-557-7263 cjoines@vt.edu





Virginia Charolais Association Field Day

Saturday, July 30, 2016 Virginia Tech, Blacksburg, VA

The Department of Animal and Poultry Sciences at Virginia Tech will be hosting the Virginia Charolais Field Day on Saturday, July 30, 2016 at the Multi-Purpose Teaching Arena across from the VT Beef Cattle Center on Plantation Road. A cattle judging contest with prizes, an educational program and complimentary lunch have been planned for your enjoyment. Please make plans now to attend the Virginia Charolais Association Field Day.

Field Day Agenda

10am - Noon	Registration and Judging Contest
Noon - 1pm	Complimentary Lunch
1:00-3:30pm	Educational Program:
	Welcome - Dr. Dan Eversole and Mr. Chad Joines, VT Beef Cattle Center and
	Mr. Floyd Wampler, AJCA Southeast Representative
	Data Collection and Processing – Ms. Marilou Wegner, AJCA
	Keys to a Better Pasture – Ms. Diedre Harmon, Ph.D candidate, University of Georgia
	Pinkeye Prevention and Treatment - Dr. Sierra Guynn, VA-MD College of Veterinary Medicine
Contraction of the	Sale Management and Preparation – Mr. Dennis Adams, Outfront Cattle Service
3:30 - 4:00pm	Contest Results

Please RSVP by July 15th for meal planning purposes:

Dan Eversole – 540-641-0295 Chad Joines – 540-557-7263

Virginia

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deversol@vt.edu cjoines@vt.edu

TRI-STATE BEEF CONFERENCE TO BE HELD AUGUST 4th IN ABINGDON, VA

The 9th Annual Tri-State Beef Cattle conference will be held at the Washington County Fairgrounds in Abingdon, Virginia on Thursday, August 4th. This year's conference will address topics of interest to both stocker and cow-calf producers. The conference will be a one-day event and will include educational sessions covering such topics as beef cattle outlook, considerations for A.I. in cow/calf herd, how to use a forage analysis and designing a supplementation program, pasteurella and its impact on stocker health, the new veterinary feed directive and a feedlot buyer's perspective.. There will once again be virtual tours of operations from each of the three states and then a time of questions and answers with the producers themselves.

A trade show will be open during the conference, with many of the organizations involved in the region's beef industry there for participants to meet and learn more about their products and services.

The conference will begin with registration at 8:00 a.m. and the program beginning at 9:20 a.m. The trade show will open at 8:00 a.m.

The meeting is being sponsored by the University of Tennessee Extension, Virginia Cooperative Extension, and North Carolina Cooperative Extension. Registration information and complete details will be available through your county Extension Office. Registration for the conference is \$20 through July 30 and \$25 after July 30. Additional information can be obtained from Dr. Scott Greiner, Extension Beef Specialist, Virginia Tech, phone 540-231-9159, email <u>sgreiner@vt.edu</u>, or on the web at <u>http://www.apsc.vt.edu/extension/beef/index.html</u> or through your local Extension office.

PROGRAM (Registration begins 8:00 AM, Program at 9:20 AM)

Beef Cattle Outlook

Dr. David Anderson, Professor & Extension Economist, Texas A&M University

Forage Analysis: How to use it & designing a supplementation program

Dr. Jason Smith, Assistant Professor & Extension Beef Cattle Specialist, University of Tennessee

Veterinary Feed Directive Panel

Discussion- Industry, Extension and Private Practice Veterinarians

Considerations for A.I. in Cow/Calf Herd

Dr. Justin Rhinehart, Assistant Professor &, Extension Beef Cattle Specialist, University of Tennessee

Pasteurella and It's Impact on Stocker Health

Dr. John Currin, DVM, Associate Professor, Virginia-Maryland College of Veterinary Medicine

Feedlot Perspective

Mr. Steve Fogelsong, Black Gold Ranch and Feedlot *Mr.* John Queen, Southeast Livestock Exchange

Virtual Tours of three beef operations

Virginia Bull Test Sale Price Relationships: 2006-2016 Summary Andrew Weaver, Scott Greiner, and Joi Saville Virginia Tech

In today's variable cattle markets, opportunities for better price prediction can be a great asset to producers. Feeder steer prices in Virginia have ranged from \$88 cwt. in December of 2008 to \$258 cwt. in June of 2015; a fluctuation of over 190% in just seven years. Similar volatility has been realized in other sectors of the industry, including the seedstock sector. Given this, the extent of the relationship between feeder prices and bull prices may provide insight into the future price expectations.

To help answer these questions, we examined the relationship between historical bull prices and corresponding feeder calf prices. Bull prices reflected the average sale prices across breeds from the Virginia BCIA Culpeper Senior Bull Test Sale which takes place annually in mid - December and the Southwest Virginia Bull Test Sale which occurs late March each year. Monthly feeder calf prices (500-600 lb. LM1) were obtained from the VDACS Historical Price Reports and reflect prices from March 2006 to March 2016.

In the first analysis, feeder steer prices were compared with the bull test prices. Over the 10-year time period, fluctuations in feeder steer and bull prices paralleled closely with a correlation of 0.94 (1.0 being a perfect relationship) as shown below.



Relationship Between BCIA Bull Sale Prices and Feeder Calf Price 2006-2016

Using regressions, bull value can be predicted based on steer price. The regression coefficient for feeder steers was 18.3, which is reflective of a \$18.30 increase in bull price for every \$1 cwt. increase in feeder steer price (and vice versa). Using these regression equations, bull price can be predicted over a range of feeder calf prices (see table below).

Feeder Steer Price	Predicted Bull Price (\$/hd)
(\$ per cwt)	Bull Price = \$18.3 x (Feeder Price, cwt) + \$137
\$100	\$1968
\$125	\$2426
\$150	\$2884
\$175	\$3342
\$200	\$3800
\$225	\$4257
\$250	\$4715

Bull Sale Price Predicted from 500-600 lb. Feeder Calf Price

Another way to evaluate bull value is to express bull price in terms of the number of feeder calves of equivalent value. Remember, the coefficient of 18.3 between feeder steer price (cwt) and bull price. Taking the average feeder calf weight (550 pounds), the relationship of 3.33 on a per head basis can be determined between bull price and feeder price (18.3 / 5.5 = 3.33). Therefore, on a per head basis over this 10 year period, a bull was worth approximately 3.33 times the value of a 500-600 pound feeder steer (add in intercept value of \$137 for more exact estimate). The same principle can be applied to backgrounded steers and feeder heifers. During this ten year period, the ratio of bull price to feeder calf price ranged from 2.86 to 4.09 for feeder steers, 2.09 to 3.32 for backgrounded steers (800-900 lb. LM1), and 3.20 to 4.98 for feeder heifers (500-600 lb. LM1). The graph below illustrates the fluctuation in these price ratios over the years.





To further understand these relationships and provide prediction possibilities for future sales, bull sale prices were further categorized by sale price percentiles (top 1/3, middle 1/3 and bottom 1/3 based on price within location and year). Analysis of these percentiles revealed differences in the rate of change in bull price compared to feeder steer price. For the top 1/3 selling bulls, the regression coefficient was 25 indicating a \$25 change in bull price per \$1 cwt change in feeder price, which compared to a

coefficient for the bottom 1/3 of bulls of 13 (\$13 change in bull price for every \$1 cwt change in feeder price). In short, prices paid for the high-selling bulls were most sensitive to changes in feeder calf price.

Over the past 10 years, there has been a close relationship between Virginia calf prices and average sale prices from the Virginia BCIA Bull Tests. From this data, the potential exists to predict bull prices based on the recent trend in sales and current feeder prices. While there is uncertainty in the current cattle markets and questions as to the value of bulls, historical data can be utilized to provide some insight into prices for bull sales moving forward.

2016 Virginia-North Carolina Wool Pool

Producers in Virginia and North Carolina interested in marketing their wool through local wool pools will have the opportunity to do so through Mid-States Wool Growers Cooperative Association based in Canal Winchester, Ohio. Producers are encouraged to package, handle and store their wool in an appropriate manner in order to maximize the value of their wool clip. Wool should be packaged by type and grade (ewe vs. lamb wool, long staple vs. short wools, fine vs. medium wools) in plastic bags, and be clean, dry, and have foreign material (straw, mud, manure) removed prior to packaging. Following is a list of local pool delivery dates, and locations where wool will be picked up:

Date & Time	Location
July 6- 8:00 to 11:00 AM	Deep Root Home Garden, Orange, VA
July 7- 8:00 to 11:00 AM	Clarke Co. Fairgrounds, Berryville, VA
July 11- 1:00 to 4:00 PM	Fairgrounds, Ablemarle, NC
July 12- 8:00 to 10:00 AM	WNC Regional Livestock Center, Ashville, NC
July 13- 8:00 to 10:00 AM	Allegheny Fairgrounds, Sparta, NC
July 14- 8:00 to 11:00 AM	Farmers Milling, Wytheville, VA
July 15- 8:00 to 11:00 AM	Southern States, Christiansburg, VA
July 20- 1:00 to 4:00 PM	Southern States, Lebanon, VA
July 21- 8:00 to 11:00 AM	Southern States, Tazewell, VA
July 29- 7:00 AM to 1:00	Government Building, Verona, VA
PM	

To confirm the above dates, and for more information regarding specific times and locations, contact your local Virginia Cooperative Extension Office.

Proper Wool Handling

Scott P. Greiner Extension Beef Specialists, Virginia Tech

Proper harvesting, packaging, and storage of the wool is important to realize the full value of the wool clip. Since wool sales represent a very small portion of the gross returns for most sheep enterprise, wholesale changes to the genetics of the flock to improve fiber diameter and fleece weight are likely not justified for most Mid-Atlantic producers. However, there are several important steps that should be considered to maximize the value of the wool clip:

- A. Minimize Contamination:
 - 1. Keep shearing area clean and free of straw/hay and other potential sources of contamination.
 - 2. Avoid use of plastic baler twine in sheep operation that may contaminate fleeces (this contamination occurs throughout the year, not just at shearing time).
- B. Use Proper Packaging Material:
 - 1. Do not use plastic feed sacks to store or package wool.
 - 2. Plastic film bags are available and preferred. Points to consider with plastic film bags:
 - a. Sheep need to be dry when sheared. Plastic bags will not breathe as well as jute bags (more possibility for wool to mold and rot).
 - b. Plastic film bags will tear easier when handled.
 - c. Tie plastic film bags shut in similar manner to jute bags.
 - 3. Store wool in dry place, avoid cement or dirt floors to prevent moisture uptake.
- C. Sort Wool at Shearing Time
 - 1. Shear white-face sheep first, blackface sheep last to avoid contamination of white-faced wool with black fibers.
 - 2. Package lamb and ewe wool separate.
 - 3. Remove tags at shearing and discard.
 - 4. Sort belly wool and bag separately. Also sort wool caps and leg wool out if justified.
 - 5. Off-type fleeces (black, high vegetable matter, etc.) as well as belly wool should be packaged first in a small plastic garbage bag or paper sack. The small bag may then be added to the large polyethylene film bag. The small bag serves to keep these wools separate and prevents them from contaminating other fleeces already packaged, and results in a more uniform lot of wool.
 - 6. Do not tie wool with paper twine.

<u>The U.S. and the Global Meat Trade: Observations from the</u> <u>Annual U.S. Meat Export Federation Meeting</u>

Dr. Bain Wilson Extension Animal Scientist Virginia Tech

The United States meat industry takes pride in being one of the leading exporters of high-quality animal protein to the world. The U.S. Meat Export Federation (USMEF), whose mission is "Putting U.S. Meat on the World's Table," held its annual Board of Directors Meeting and Product Showcase on May 25-27. Dr. Vitor Mercadante, Assistant Professor in Animal and Poultry Sciences, and I represented Virginia Tech during the three-day conference in St. Louis, MO. A wealth of information was provided regarding the flow of U.S. red meat products into the global marketplace, as many of the attendees are the ones who are directly involved in making this happen.

Based in Denver, CO, USMEF is a trade association focused on increasing value and profitability of U.S. beef, pork, and lamb by enhancing their demand in global markets. The USMEF achieves this goal by employing three main strategies:

1) developing export markets by working with foreign governments to eliminate trade barriers

2) gaining market share by displacing products from other countries through education of consumers and foodservice in foreign markets about the benefits of U.S. products, and

3) defending existing U.S. market share in foreign markets.

The USMEF receives 42% of its funding from the USDA Foreign Agricultural Service and the rest from the national beef, pork, soybean, and corn checkoff programs. The grain checkoff programs combine to provide 14% of USMEF's total funding, as U.S. meat exports add significant value to their products – for example, meat exports added \$0.45/bushel to corn prices in 2016.

Variety meats (tongues, livers, kidneys, heart, tripe and small intestine) have little value domestically but are the primary beef exports to many world markets. Egypt and Mexico are easily the largest importers of U.S. variety meats. Higher-priced middle meats (steaks) represent a small portion of U.S. beef exports.

The largest U.S. beef buyers are Mexico, Japan, and South Korea. While Mexico is our largest beef and variety meats customer, exports to Mexico have decreased by 38% since 2008 because of expansion of the Mexican cattle feeding and packing industries. Japan represents 20% of U.S. beef exports. In the quality-focused Japanese market, U.S. CAB, Choice⁺, and Prime⁻ beef is a bargain when compared to their own domestic Wagyu beef. The USMEF is working to increase Korean beef consumption by promoting ready-to-eat beef products. They are also introducing Koreans to Americanstyle barbecue restaurants and supporting the growth of steak and burger restaurants. Both Japanese Wagyu and Korean Hanwoo cattle spend approximately 2 years on feed

relative to the 90 to 200 days U.S. cattle typically spend on feed. This gap in efficiency between Asian and U.S. beef production provides an opportunity to grow and expand our market share in those countries.

A consistent talking point throughout the meeting was displacing Australian beef exports in key Asian markets. Australian beef is priced cheaper in the global marketplace than U.S. beef; however, it lacks the reputable quality and consistency of U.S. beef. Australians have grabbed U.S. market share in the last several years as extreme drought has decreased Australian cow numbers and increased Australian beef supply at reduced prices. The combination of U.S. herd rebuilding efforts, decreased Australian beef supplies, and consumer preference for higher-quality U.S. grain-fed beef should allow the U.S. to regain market share in Asia.

Trade agreements were another key topic of discussion. Congressional passage of the Trans-Pacific Partnership (TPP) free trade agreement among Pacific Rim nations is the primary opportunity to increase U.S. red meat exports. This is especially true as 2/3 of the U.S.'s top customers are member nations of the TPP. The USMEF says failure to pass the TPP gives Australia and the EU greater opportunity to displace the U.S. in Asian markets. Failure by Congress to pass the TPP would result in an estimated \$94 billion loss to the entire U.S. economy.

The Transatlantic Trade and Investment Partnership (TTIP) is a potential free trade agreement between the U.S. and the EU. Discussion concerning the likelihood of reaching an agreement with the EU was surrounded with much pessimism; however, free trade with Europe is also regarded as too good of an opportunity to ignore. Much of this pessimism stems from EU agricultural policies against GMOs, implants, and beta agonists that counter U.S. production practices.

The EU poses a major threat to U.S. market share in Asia. Trade sanctions due to the Ukrainian conflict block EU pork exports into Russia, resulting in the EU exploring additional global markets. Consequently, the EU is currently displacing U.S. pork in China. Reports that China is building a high-speed train able to deliver chilled pork from the EU to China in 13 days further threatens U.S.-Chinese meat trade. In contrast, it takes 28 days for the U.S. to ship chilled, vacuum-sealed pork to China, which has a shelf life of only 35 days. This is significant, as chilled meat product has a better flavor profile than frozen product and thus fetches higher prices.

Several significant hurdles remain before opening several global markets to U.S. red meat. Perhaps the most outstanding obstacle is animal traceability. Many countries currently closed to U.S. beef exports demand U.S. cattle be enrolled in a program that tracks points of an animal's birth and slaughter. While momentum for a national animal identification program has died in our country, such programs are standard in many of the world's other large meat exporting nations.

Many countries will only import beef or pork from animals that are certified to never have been fed ractopamine (Optaflexx and Paylean). While science has proven the

efficacy and safety of these products, their use remains an issue for many countries. Australia in particular markets against the U.S. on the premise that their beef is "cleaner" and "safer". Despite the domestic pressure animal agriculture faces over animal welfare concerns, the conditions under which our animals are reared do not appear to be a major concern in the global marketplace.

A final hot topic in the red meat trade is opening beef exports to China. China currently imports limited amounts of U.S. pork, but no U.S. beef due to lack of animal traceability. An additional hurdle is the constant changing of Chinese import specifications. It is believed that the Chinese continuously alter their policies so that they are not reliant on meat imports from any single nation. The opportunity to supply the world's most populous nation with U.S. beef justifies continued patience and efforts to gain market access.

Representatives from the USDA, commodity groups, meat packers and trade directors collaborated at USMEF's annual meeting to share knowledge and decide the coming year's export strategies. Everyone in attendance was directly involved in carrying out USMEF's mission of "Putting U.S. Meat on the World's Table."

Source: https://www.usmef.org.

Lessons from European Swine Industries on Restriction of Antibiotic Growth Promoters

Jeffrey Wiegert¹, KaLynn Harlow², and Mark Estienne³

¹Department of Animal Sciences, North Carolina State University, Raleigh ²Department of Animal and Poultry Sciences, Virginia Tech, Blacksburg, and ³Virginia Tech- Tidewater Agricultural Research and Extension Center, Suffolk

INTRODUCTION

In the late 1940's, researchers discovered that growth rate and feed conversion efficiency of domestic livestock species were improved when low levels of antibiotics were included in the diet. This prompted world-wide adoption of *sub-therapeutic antibiotic administration* in swine production (in other words, providing antibiotics through feed or water to pigs not displaying disease symptoms). In contrast, *therapeutic antibiotic administration* refers to the use of antibiotics to treat pigs displaying symptoms of clinical disease. Today, pigs on many farms in the U.S. are fed antibiotics at sub-therapeutic levels to promote growth and prevent disease. Antibiotics fed at sub-therapeutic levels are also called *antibiotic growth promoters* (**AGP**).

Concern exists, however, that antibiotic usage on swine and other livestock and poultry farms, as well as in human medicine, contributes to the development of antibiotic-resistant bacteria. According to the Centers for Disease Control and Prevention [1], each year more than 2 million people in the U.S. become infected with bacteria that are resistant to antibiotics, resulting in at least 23,000 deaths annually. In an effort to slow the development of antibiotic-resistant bacteria, the U.S. Food and Drug Administration (FDA) proposed legislation that will greatly reduce sub-therapeutic antibiotic usage on livestock farms. Effective January 1, 2017, it will be illegal to provide medically-important antibiotics to pigs to promote growth rates and enhance feed conversion efficiency. In-feed provisions of antibiotics for the prevention, control, and treatment of disease will require veterinary oversight in the form of a Veterinary Feed Directive (VFD). Greater details regarding these upcoming policy changes were previously described [2].

The legislation proposed by the FDA will not result in the U.S. being the first country in the world to restrict feed-grade antibiotic use in swine. Indeed, resistance concerns were first raised in Europe in the 1960's, and in 1986 Sweden became the first country to outlaw routine supplementation of feed with AGP. Other Scandinavian countries passed similar rules in the following years, and in 2006, the European Union outlawed feeding sub-therapeutic antibiotics to livestock in all its member states. A timeline depicting enactment of notable antibiotic legislation is presented in Figure 1.

The antibiotic laws currently enforced in the EU are similar to those being considered in the U.S. Furthermore, the management and production practices of many European nations are comparable to those of small-scale and niche market pig farms in the U.S. By analyzing the short- and long-term effects of sub-therapeutic antibiotic restrictions in Europe, U.S. producers currently using AGP may better anticipate possible production consequences of the FDA legislation to be enacted on January 1, 2017.



Figure 1. Timeline of legislation impacting use of feed grade antibiotics in Europe and the U.S.

IMPACT OF ANTIBIOTIC RESTRICTION ON EUROPEAN SWINE PRODUCTION

Sweden

Before legislation restricting the use of sub-therapeutic antibiotics was passed in 1986, the majority of the approximately 4 million pigs produced annually in Sweden were fed AGP from weaning (approximately five weeks of age) through slaughter (approximately seven months of age). In general, the performance of sows and finishing hogs was not affected by the AGP restriction. The performance of weanling pigs, however, was significantly impacted. One study noted that pigs raised in 1986 required an additional 5 to 6 days on feed to reach 55 lb body weight, compared to pigs reared in 1985. Pig mortality after weaning also increased 1.5% from 1985 to 1986 [3].

Although total antibiotic usage by the Swedish swine industry decreased, therapeutic antibiotic use (in other words, antibiotics used to treat clinical disease) increased by 6% between 1986 and 1989, suggesting that poorer herd health was responsible for the poorer pig performance [3]. In addition, the therapeutic drugs used to treat sick pigs were of greater strength and contained more active ingredient of antibiotics than did the sub-therapeutic drugs previously used for disease prevention and growth promotion. Therefore, on an active ingredient basis, the intensity of Swedish antibiotic usage has been estimated to have actually increased 50% in the years immediately following antibiotic restriction [4]. The poorer health of the Swedish swine industry continued to persist for many years; piglet mortality and therapeutic antibiotic administration remained elevated above pre-ban levels until 1997 [3].

Denmark

In 1995, Denmark banned the in-feed provision of the antibiotic avoparcin, which in 1994 accounted for over 20% of the total antibiotics consumed by livestock in that country [5]. In 1998, the Danish swine industry agreed to a voluntary ban on all sub-therapeutic antibiotics in finishing pigs weighing greater than 77 lb and in 1999, the ban was extended to include nursery pigs weighing less than 77 lb as well.

Total antibiotic usage in the Danish swine industry has declined greatly as result of the ban on sub-therapeutic administration. However, similar to what occurred in Sweden, therapeutic usage of antibiotics more than doubled between 1995 and the early-2000's (Figure 2) [5, 6]. In 2002, the emergence of post-weaning multisystemic wasting syndrome in the Danish swine industry further increased therapeutic antibiotic usage [7].

Elimination of AGP yielded very few consequences in Danish finishing hogs. Weanling pigs, however, showed a 0.05 lb decrease in average daily gain between 1999 and 2000 (0.94 vs. 0.89 lb/day, respectively). Post-weaning piglet mortality also increased 0.7% during this period [8]. Data presented by the National Pork Board indicate that for the period from 1995 to 2005, total pig mortality due to illness increased 25% [9].





Successes in other Countries

The effects of antibiotic restriction on pig health and growth were negligible in Norway, Finland, and Switzerland [4, 7]. For example, only 14% of surveyed farms in Finland reported increased total antibiotic usage following antibiotic restriction [10]. Maintaining good pig health and performance in these countries was achieved largely due to: 1) fewer pigs being raised in those countries; 2) less disease prevalence; 3) enforcement of national programs to eradicate mycoplasma hyopneumonia and other respiratory diseases; 4) producer efforts to decrease reliance on AGP prior to implementation of the ban; and 5) veterinarian and producer-directed campaigns focused on the importance of on-farm preventative disease measures and the prudent use of antimicrobial drugs.

Other countries with larger swine industries, such as France, the UK, and Germany, had not yet established national animal health and antibiotic use monitoring agencies at the time of antibiotic restriction. Therefore, pig performance in these countries before and after antibiotic restriction cannot be evaluated.

RECOMMENDATIONS FOR THE U.S. PRODUCER

The data presented above represent average farm performance before and after restriction of sub-therapeutic antibiotics. On the whole, weanling pigs with immature immune systems were the most affected. However, not all farms experienced the same loss in weanling pig performance. Antibiotic supplementation is known to mask many farm management problems such as improperly balanced diets, high parasite loads, and poor hygiene and biosecurity, and these may have been exposed by sudden removal of antibiotics from the diet of weanling pigs. Small-scale pig farmers in the U.S. currently utilizing AGP are therefore encouraged to transition away from antibiotic supplementation before the January 1, 2017 deadline. This will allow time to identify and correct any potential problem areas on their farms.

In Europe, farms that adopted management strategies emphasizing hygiene and biosecurity saw the lowest incidences of post-weaning pig mortality, used less therapeutic antibiotics, and achieved production levels that met or exceeded production performance prior to the ban [3, 10]. Some strategies that were used to improve herd health and to reduce reliance on antibiotics include:

<u>All-In/ All-Out Management</u>

Under all-in/ all-out management, pigs of similar size and age are housed and managed as a closed group. No other pigs are permitted into the barn, pasture, or pen once the group has been established. This is opposed to continuous flow management, wherein pigs are regularly added to and removed from a larger pool of continuously maintained pigs. All-in/ all-out management creates a break in pathogen persistence, and prevents diseases from recycling among pigs. Pigs produced under all-in/ all-out management show less incidence of infection, and achieve greater average daily gain and average daily feed intake and reach target market weights sooner than pigs grown in a continuous flow system [11].

• <u>Multi-Site Production</u>

On a large, commercial scale, multi-site production systems entails transporting weanling pigs to a site located away from the breeding herd. The basis for this is to prevent the younger pigs with naïve immune systems from contracting endemic pathogens present at low levels in the older pigs. On a small-scale farm, a multi-site production system may be simulated by weaning pigs into areas located far from where the breeding herd and finishing hogs are housed. Even weaning piglets into adjacent lots with at least a three-foot gap between fence lines may provide some break to pathogen transport. Research has shown that health of nursery pigs is improved and the benefits gained from supplementing diets with AGP reduced when piglets are weaned to sites segregated away from the breeding herd [12].

• Farm-Specific Vaccination Protocols

Knowledgeable veterinarians can design vaccination protocols specific for the production style and disease risks in a particular area. While additional vaccination administration does mean greater initial costs, farm profitability is ultimately increased by improving pig performance and avoiding costly therapeutic medications.

• Eradicate Parasites

Parasite infestation will decrease growth rates and feed efficiency, and can compromise the pig immune system and increase disease susceptibility. Because parasite eggs can survive in manure and soil for years, pasture rotation is generally not sufficient to reduce the farm's parasite load. Pig manure and soil should be tested for parasite content, and if parasite counts are high, producers should pursue aggressive eradication procedures outlined by a Veterinarian such as deworming sows with an injectable or in-feed anthelmintic prior to farrowing, and treating pigs after weaning, and again during the growing/finishing phase.

• <u>Reduce Nursery Diet Protein Content to Under 18%</u>

Feeding diets high in protein to young pigs may decrease the acidity of the gastrointestinal tract, and this may in turn degrade intestinal health and accelerate the production of toxic compounds. Research has shown that the incidence and severity of post-weaning diarrhea may be reduced 25% by lowering the protein content of the nursery diet from 21% to 18%. The diminished growth rate of pigs on lower protein diets can be restored by supplementing the feed with crystalline amino acids such as lysine, methionine, and threonine. Additionally, utilizing animal protein or spray-dried plasma protein as opposed to soy protein has been shown to offer the young pig greater protection against enteric diseases and diarrhea [13].

Increase Weaning Age

Increasing the age at weaning gives the piglet gastrointestinal and immune systems more time to develop before starting on solid feed in a new location. Therefore, pigs weaned at 28 to 42 days of age would be more mature and able to tolerate weaning stress than pigs weaned at the industry standard 21 days of age. However, studies reviewed by Kil and Stein [13] indicate no differences in post-weaning growth, health, or mortality of pigs weaned at 26, 28, or 33 days of age. Indeed, increasing weaning age in these reports decreased farm profitability by reducing the number of litters per sow per year. The minimum age at weaning to promote piglet health indicated by these studies would then be 26 to 28 days of age. Greater research into the best age to wean pigs is required.

<u>Creep Feed</u>

Few studies to date have found that providing creep feed for the piglets during lactation improved pre-weaning body weight gain, weaning weights, or post-weaning performance. However, offering creep feed immediately prior to weaning has been shown to increase post-weaning feed intake and decrease the time taken before piglet's consume feed after weaning [14]. Providing creep feed, or even access to the sow's lactation feed, two or three days prior to weaning may then lessen weaning stress and improve gut health in the nursery, and may be considered on farms that observe many incidences of post-weaning scours.

• <u>Post-Weaning Environment</u>

Minimizing weaning stress reduces the strain on the pig immune system and prepares the pig for a good transition onto solid feed. Producers can ensure a comfortable post-weaning environment by grouping littermates together to minimize fighting, providing adequate floor space and stocking density (3 ft² minimum for a 50 lb pig), utilizing good ventilation if housing pigs indoors to keep the air free of contaminants, maintaining the ambient temperature at suitable levels (approximately 80 to 82°F at weaning), and providing uninterrupted access to clean drinking water. Providing straw or some other bedding material can also increase pig comfort, but it must be removed prior to introducing the next group of pigs to break the spread of pathogens between groups.

CONCLUSION

As of January 1, 2017, most sub-therapeutic antibiotics will no longer be available to pork producers for growth promoting purposes, and all other in-feed provisions of antibiotics for the prevention or treatment of disease will require a veterinarian prescription in the form of a VFD. Similar antibiotic-restricting legislation has already been enacted in the European Union. There were few effects of the ban observed in the breeding herd or in finishing hogs. However, the health and performance of weanling pigs was markedly reduced in countries with large swine herds. This indicates that farms making a sudden

transition away from antibiotic-supported production must also make concomitant improvements in farm hygiene, biosecurity, and management to maintain good herd health and production. These adjustments come with greater costs and labor expenses, but will also allow for sustainable pig production and decreased reliance on antibiotics.

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