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Oklahoma State University

Oklahoma Quality Beef Network Sees Strong Premiums in 2017

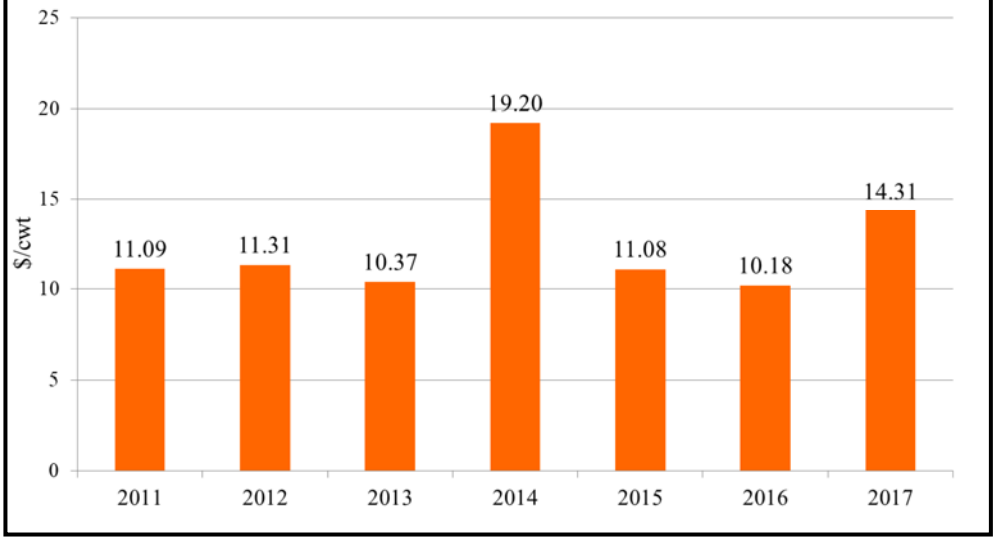
Kellie Raper, Livestock Market Specialist; Derrell Peel, Livestock Market Specialist and Eric DeVuyst, Farm Management Specialist

Oklahoma Quality Beef Network's (OQBN) participating producers during the fall 2017 sale season benefitted from strong premiums for their efforts. Just over 10,000 calves were enrolled in OQBN's Vac45 program, with approximately 6700 of those calves marketed through OQBN's special sales at participating livestock markets. The remaining calves were direct marketed by producers. Data was collected on 12,582 calves (including OQBN calves) at 8 sales across Oklahoma. OQBN premiums were strong, at an average of $14.24/cwt above non preconditioned calves at the same sales. Steer premiums averaged $13.51 across all weights while heifer premiums averaged slightly higher at $15.31/cwt. Premiums reported here are calculated as a weighted average and do not reflect differences attributable to lot size, breed, hide, color, fleshiness, and muscling.

On average, OQBN producers realized a premium of $85.44/head, assuming a 600 pound calf. When the value of added weight gain over the preconditioning period is considered along with preconditioning costs, the net gain in returns to a producer for the average calf is estimated at $114.44/head, bringing the estimated monetary impact of the program to $1.15 million for 2017.

For more information on OQBN, including program information, sale dates, weaning and management protocols, go to the OQBN Website (http://oqbn.okstate.edu/). The website includes additional educational information related to beef calf production in general that you may find useful. You can also like OQBN's Facebook page and visit Oklahoma State University's Beef Extension website (http://www.BeefExtension.com) for more information on management recommendations and more.

Figure 1. OQBN Premium over Calves Marketed with No Preconditioning ($/cwt)*, All Calves 2009-2017



*Premiums calculated as difference in weighted average prices at same sale.

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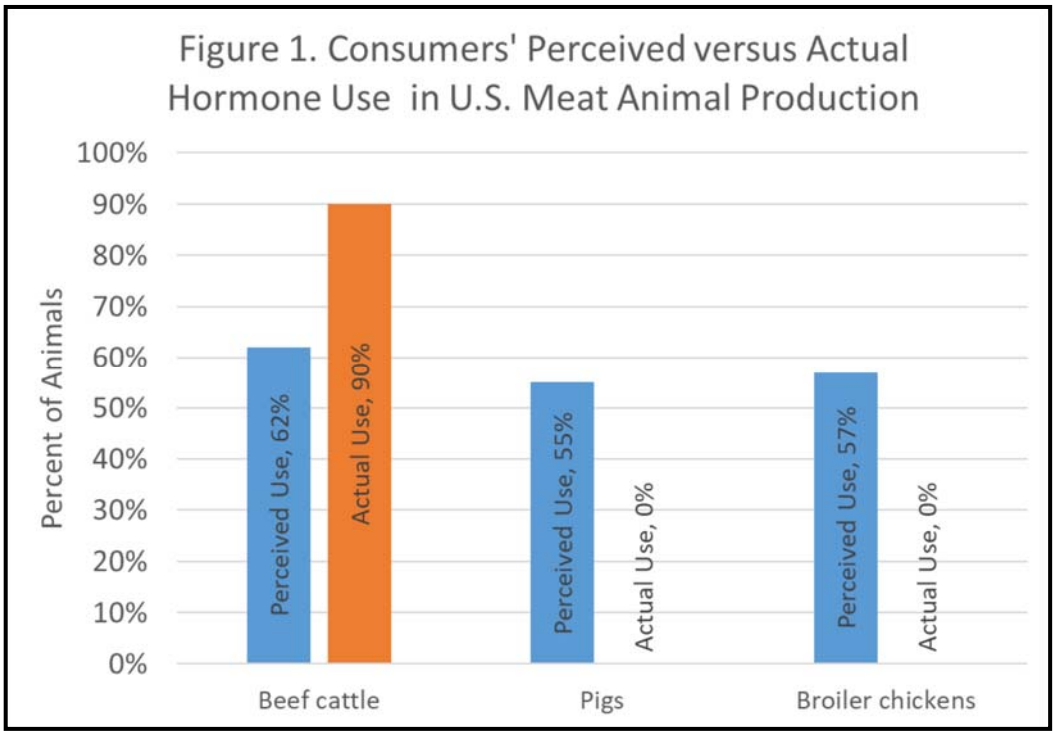
In this issue:

What Do Consumers Know About Hormone Use in Livestock Production?

Ruoye Yang, Ag Economics Graduate Assistant, Kellie Curry Raper, Livestock Economist, Oklahoma State University; and Jayson Lusk, Purdue University

Hormone use in meat production has received much attention from media, consumer groups and other sources. In fact, in a recent study by the University of Illinois, consumers ranked "no growth hormones" as their number one production attribute concern for beef, chicken, milk and eggs (Ellison et al, 2017). Given this degree of concern, it is crucial to understand consumer beliefs about hormone use in livestock production. What do consumers believe about hormone use in livestock production? How does perception compare to reality?

The retail meat case can be a source of confusion for consumers. Shoppers see some retail beef products labeled as produced with no added hormones (NAH), along with similar labels on some pork and chicken products. While growth hormones are frequently administered to beef cattle, added hormones are not used in pork and poultry production and are, in fact, prohibited. NAH labeling on pork and poultry products is truthful, but it may also mislead consumers to believe that hormones are used in typical pork and poultry production scenarios.



Oklahoma State University's May 2016 Food Demand Survey (http://www.agecon.okstate.edu/agecon_research.asp) was appended with questions asking consumers about their perceptions and concerns about hormone use in livestock production (Lusk 2016). Survey participants were asked "What percentage of the following types of farm animals in the United States are given added hormones to promote growth and muscle development?" Responses to this question are represented in Figure 1 where perceptions are contrasted with actual livestock industry use rates.

As seen in the chart, consumer perceptions of hormone use rates are significantly different from actual hormone use rates. Survey participants, on average, correctly ranked beef cattle the highest for hormone use among beef cattle, pigs, and broiler chickens. The perceived hormone use rate for beef cattle was 62 percent on average. In reality, approximately 90 percent of all U.S. feedlot cattle are injected with hormones to improve growth rates and feed efficiency (USDA, 2013). For both broiler chickens and pigs, the average perceived hormone use rate was also over 50 percent, despite the fact that no added growth hormones are used in U.S poultry and pigs. In fact, less than 2 percent of those surveyed correctly answered that 0 percent of pigs and broilers are given added hormones, meaning that 98% of respondents incorrectly think hormones are used at least at some level in pork and chicken production. On average, consumers underestimate hormone use in beef production and overestimate hormone use in pork and poultry production. Though many consumers are concerned about hormone use in meat animals, survey results suggest that most are not well-informed regarding actual use of hormones in production.

The Vitamin A Shortage: What is The Big Deal?

Brian Freking, SE District Area Extension Livestock Specialist, and David Lalman , Animal Science Professor

Currently there are reports of a world-wide shortage of vitamin A. Only a handful of companies around the world manufacture vitamin A or the precursors for vitamin A production. Much of the world's supply is produced in Germany and China and over the span of about a year, production in both countries has declined dramatically for various reasons. This decline has resulted in a gradual tightening of vitamin A availablity on the open market. Consequently, prices for commercial supplemental feeds and mineral products containing vitamin A are expected to increase. While no one knows how long this shortage may last, some market analysts suggest that it could be April before supplies are replenished.

How much vitamin A do cattle need?

Where other nutrient requirements are expressed as a percent of the diet or as parts per million (ppm), vitamin requirements are generally expressed in international units (IU). For example, one milligram of beta-carotene is equivalent to 400 IUs of vitamin A. The primary sources of vitamin A for the biological functions mentioned previously are 1) green, leafy forages, 2) liver stores, and 3) supplemental sources such as commercial concentrate feed supplements and commercial mineral supplements. The liver does store vitamin A, those stores are thought to last only 2 to 4 months if a severe dietary deficiency exists. Table 1 shows vitamin A requirements for different classes of beef cattle.

Table 1. Vitamin A requirements for beef cattle

	Growing Steers and Heifers*	Stressed Steers and Heifers*	Gestating Cows*	Lactating Cows*
Vitamin A, IU/lb of feed DM	1,000	2,250	1,300	1,800
Vitamin A, IU per day	12,500	15,000	34,000	54,000
*Daily requirements are calculated based on 500 lb growing or stressed calves and 1,200 lb cows				

Why is vitamin A important?

Vitamin A is considered by many to be the most important vitamin related to the need for supplementation. Vitamin A is necessary for proper bone formation, growth, energy metabolism (glucose synthesis), skin and hoof tissue maintenance as well as vision. The vision function is associated with visual purple in the eye when animals are trying to adapt from light to dark.

Deficiency Symptoms:

- Night blindness
- Reproductive failures
- Skeletal deformation
- Skin lesions

The best source of this vitamin is beta-carotene, a pigment in green plants that animals convert to vitamin A. If cattle are grazing green grass they will get plenty of vitamin A. The winter months or drought conditions are the critical times for vitamin A deficiencies because dormant plants do not contain the necessary levels of beta-carotene compared to the green forage levels in the growing months.

How much vitamin A is present in typical feeds?

Feeds vary substantially in beta-carotene concentration and therefore, in vitamin A equivalents. Lush, green, immature forages have the greatest concentration of beta-carotene. However, those same plants may contain near-zero beta-carotene during the winter when they are mature, dormant and brown. Bright colored, early harvested hay contains relatively high amounts of beta-carotene. Harvested forage beta-carotene concentration declines over time. While the rate of degradation is extremely variable, a conservative rule of thumb is that the beta-carotene concentration (and therefore vitamin A potential) declines by about 1/3 to 1/2 each year in storage. Feed grains and other concentrate feeds are generally low in beta-carotene. Table 2 shows a summary of rounded vitamin A equivalent values from one experiment where 85 feed and forage samples were analyzed for beta-carotene concentration.

Considerations for supplementing vitamin A

Until recently, vitamin A has been inexpensive to include in mineral mixes and commercial feed products. As a

The Vitamin A Shortage: What is The Big Deal? (cont.)

Table 2. Approximate vitamin A equivalents in various feed sources	
Feed Source	Vitamin A Equivalents, IU/lb feed dry matter
Fresh grass pasture	18,000
Orchardgrass hay	1,400
Alfalfa hay	1,300
Wheat/ryegrass hay	900
Corn silage	3,000
Cracked corn	68
Dried Distiller's Grains	200
Wet Distiller's Grains	350
Soybean hulls	20
Source: Adapted from Pickworth et al., 2012 available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3849816/pdf/nihms527534.pdf	

result, vitamin A has probably been overfed, and in many cases, drastically overfed. The appropriate amount of vitamin A to use in the cattle ration depends upon the level of carotene in the forage, liver stores, and length of feeding period, among other factors. One consideration is that most commercial feed and mineral products have historically included 100% or more of the vitamin A requirement for most classes of cattle. This could change with the vitamin A shortage so talk to your feed or mineral supplier to determine what current level is being included in your supplement product.

Another consideration is not to double up on vitamin A. For example, if you are putting a free-choice mineral supplement out and feeding a commercial concentrate supplement of some sort, you may be providing over twice the amount the animals need. If this is occurring during the spring of the year, it may be as much as five times the amount required.

As shown above, high quality hay may contain 50 % to 100% of the Vitamin A needed. Consequently, a supplement product containing 50% of the animal's requirement would be appropriate. If your hay quality is marginal, 100% supplementation is suggested. Obviously, cattle grazing wheat pasture and spring/early summer abundant immature, growing forage should not require vitamin A supplementation.

Examples and amount of vitamin A provided based on feeding rate and concentration

Table 3 provides examples of the amount of vitamin A supplied per day based on forage intake and forage quality. Tables 4, 5, and 6 provide guidelines regarding the amount of vitamin A supplied given the concentration of vitamin A in the mineral or concentrate product and given the amount of mineral or feed being provided. These tables can be used to estimate the vitamin A balance of your current program. They can also be used to determine the approximate concentration of vitamin A that might be appropriate in the feed or mineral product that you are considering purchasing. For example, assume gestating beef cows are being wintered with 1/2 high quality hay and 1/2 low quality hay similar to the forages described in Table 3. The requirement from Table 1 is approximately 34,000 IU per day. Subtracting the amount provided from forage in Table 3 (18,200) from the daily requirement, a supplemental need of 15,800 IU is identified. This value can be compared to the amount supplied by different products in Tables 4, 5 and 6. From there, one can determine the approximate vitamin A concentration and daily supplement consumption that would be a good fit in this situation without drastically overfeeding vitamin A.

Besides standard mineral packages, vitamin A can be supplied by injectable products and liquid drench forms. Injections need to be repeated approximately every 28 days to maintain safe liver stores. The critical time for injection

The Vitamin A Shortage: What is The Big Deal? (cont.)

Table 3. Approximate vitamin A equivalents supplied by class of cattle and forage quality

Forage source	Approximate Vit A equivalents supplied by forage, IU per day*		
	Growing	Cows, Gest	Cows, Lact
Green, early harvested new crop hay*	17,500	36,400	42,000
Low quality, late harvested, 2-yr-old hay	0	0	0
50% high quality, 50% low quality hay	8,750	18,200	21,000

*Forage consumption is estimated to be 12.5, 26 and 30 lb DM per day for calves, gestating and lactating cows, respectively. High quality hay estimated to contain 1,400 IU/lb DM

Table 4. Approximate vitamin A delivered by **mineral supplements**

	Mineral Intake, ***ounces***/day			
IU/lb Mineral Mix	2	3	4	5
400,000	**50,000**	**75,000**	**100,000**	**125,000**
200,000	**25,000**	**37,500**	**50,000**	**62,500**
100,000	**12,500**	**18,750**	**25,000**	**31,250**
50,000	**6,250**	**9,375**	**12,500**	**15,625**
30,000	**3,750**	**5,625**	**7,500**	**9,375**

Table 5. Approximate vitamin A delivered by **concentrate supplements**

	Feeding Rate, ***pounds***/day			
IU/lb Feed	2	4	6	8
30,000	60,000	120,000	180,000	240,000
10,000	20,000	40,000	60,000	80,000
5,000	10,000	20,000	30,000	40,000
4,000	8,000	16,000	24,000	32,000
3,000			18,000	24,000
2,000			12,000	16,000
1,000			6,000	8,000

Table 6. Approximate vitamin A delivered by **complete feeds**

	Feeding Rate, ***pounds***/day		
IU/lb Feed	15	20	25
5,000	75,000	100,000	125,000
4,000	60,000	80,000	100,000
3,000	45,000	60,000	75,000
2,000	30,000	40,000	50,000
1,000	15,000	20,000	25,000

in pregnant cows is 2 months prior to calving.

If you do not feel comfortable with nutrition topics always consult with resources like your local county extension educator, livestock nutritionist or veterinarian for help.

Happy Microbes, Happy Cows!

Dana Zook, NW Area Livestock Specialist

Have you ever considered the beef cow and how much she differs from other animals? To start, the cow is a mammal called a ruminant. Other ruminant animals include deer, sheep, goats, giraffe, and camels. These animals consume forages and feed byproducts that are not suitable for human consumption. Ruminants then take these products and convert them into nutritious foods such as meat and milk which make up a very important part of a humans diet.

How do cows and other ruminants utilize these feed products? In cows specifically, the digestive system is made up of four unique compartments (reticulum, rumen, omasum, and abomasum) filled with microorganisms that actually conduct the digestion process. This marvelous relationship between the cow and microbes allows the consumption of dietary material (forages and feed byproducts) that would be indigestible to the cow alone.

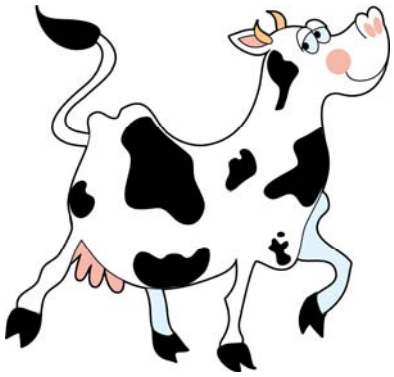
Looking deeper into how these feed ingredients are broken down. Three main types of microbes reside in the ruminant digestive system: bacteria, protozoa, and fungi. These tiny creatures break down the feed and convert them to volatile fatty acids (VFA) which are an energy source cows use for maintenance, growth, and lactation.

Similar to other animals, the digestive system of a ruminant is somewhat acidic (pH) and the level of acidity is greatly affected by the diet they consume. However, not all feeds are created equal! Structural carbohydrates (forages) are fermented by the microbes slowly while non-structural carbohydrates (grains) are quickly digested. The digestion process of the microbes affects the pH of the rumen and in turn this pH will ultimately affect the microbial population. Slower digestion has less of an effect on the overall pH, but highly digestible feed ingredients such as grains can cause rumen pH to decrease significantly. Generally, rumen pH will be lower when a grain based diet is fed and cattle grazing only grass will have a higher pH. Rumen pH will also vary throughout the day, naturally dropping after each meal and rising again slowly until the next meal. After a ruminant eats its fill, they will often lay down and ruminate. This is the process where the animal will regurgitate some of its food and “chew its cud”. This chewing action produces saliva, which buffers the rumen and allows the pH to rise. Some microbes are more adapted to lower pH while others will die if the acidity drops too quickly. This is a complicated process!

Just like our digestive systems, things can go awry and cattle can experience digestive upsets. Stress, introduction of new feeds or any abrupt changes in diet can cause digestive issues in cattle. Bloat and acidosis are commonly known disorders that fall into this category. These digestive issues can often be prevented by properly adapting cattle to a new diet or feed. Some situations where adaption is very important include 1) offering a new diet to freshly weaned calves, 2) pulling calves off wheat pasture and feeding a dry lot ration, 3) supplementing mature cows with a feed byproduct such as whole cotton seed, or 4) offering cows a silage or grain based ration when pastures are short in drought.

As you can see, these tiny microbes have a very important job for the ruminant animal. Without a healthy rumen environment, cows cannot operate efficiently. Producers may not notice anything outward about a cow with a slightly upset digestive system, but this inefficiency will silently erode profitability over time. This situation may materialize as poor milk production in cows, reduced weaning weight in calves, or decreased feed efficiency in stockers.

As producers consider changing nutrition within beef herds, keep in mind the importance of providing consistent nutrition and conducting proper adaptation to new feeds. These steps will keep the microbes within cows operating efficiently. Happy microbes means happy cows! Producers with questions regarding cow nutrition or adaptation to new feeds should contact the local county OSU Extension Educator for assistance.



Tell us about the impact of VFD rules on your herd

Michigan State University Extension, in partnership with other Land-Grant Universities including Oklahoma State University, is conducting a nationwide survey of food-animal producers to learn more about how the VFD rules that have been in effect just over a year have impacted animal agriculture.

Managing the health of your herd is a primary responsibility of all farmers. The Veterinary Feed Directive (VFD) rules that went into effect January 1, 2017 may have impacted how you manage herd health. The rules limited the use of medically important antibiotics to disease prevention, control or treatment, and only when a veterinarian writes a VFD for their use.

We would like to learn how those rules have affected your management as well as the health of your animals. Michigan State University Extension, in partnership with Land-Grant Universities nationwide, is conducting a survey of farmers who raise and manage dairy or beef cattle, pigs, sheep or goats. We want to learn about changes that have occurred, in response to the VFD, in terms of your use of antibiotics, the health of your herd, and, in your relationship with your veterinarian.

The survey is open from now until April. All responses are confidential and your participation is voluntary. Use the QR code above or take the survey:

Qualtrics survey: https://msu.co1.qualtrics.com/jfe/form/SV_eY83E3DiinngljD

We anticipate that it will take 10-15 minutes to complete the survey. Your thoughtful answers, with examples, will provide good information to be used by Land-Grant Extension professionals to design educational programs that help food-animal producers.

This survey is only for farmers over the age of 18 who raise food-animals impacted by the VFD rules. Farmers in every state are invited to respond to the survey. The findings will be analyzed by specie type (that is, for beef producers, swine producers, etc.), and by region of the country, and will be shared with Extension professionals in your state.

FDA implemented the VFD policy changes with the goals of: 1) promoting the judicious use of antibiotics, 2) protecting public health and 3) helping to limit the development of antimicrobial resistance. This policy change was in response to widespread concerns about the rate of development of resistance to common antimicrobials by disease pathogens for both humans and food animals.

Key questions to be answered are what the impacts of those changes have been on health management of herds and herd performance. The responses of food animal producers will help to answer those key questions.

Cow Trivia!

- A cow has 32 teeth, and will chew about 40-50 times a minute.
- A cow will chew for up to eight hours a day
- Cows move their jaws about 40,000 times a day.
- Cows spend about 10 hours a day lying down.
- Cows will stand up and lay down about fourteen times a day.
- Cows can sleep while they're standing.
- The first cow arrived in the U.S. in 1611 in Jamestown.
- A cow will consume about 40 pounds of food in a day.
- The hamburger debuted at the 1904 World's Fair in St. Louis.
- Almost 2,000 quarter pound hamburgers can be made from the ground beef in one cow.
- Cows have an acute sense of smell and can detect odors up to six miles away.

Save the Date! Oklahoma's Statewide Women in Agriculture & Small Business Conference, August 9-10, 2018

Mark your calendars for the upcoming annual statewide conference for women in agriculture and small business on August 9-10. The 2-day conference offers a variety of sessions to assist participants in successfully managing risk for their families, farms and/or businesses.

The 2018 conference will feature three keynote speakers: Dr. Janeal Wyn Yancey, professor and author of the popular Mom at the Meat Counter blog; Rebecca Long Chaney, author and rancher, who will share her keynote "Dare to Risk Life Change" which highlights the trials and tribulations during a life-changing adventure on a million-acre cattle ranch in the Australian Outback; and Marcy Luter, management development training coordinator at Meridian Technology Century, who will share her expertise on how to make better decisions in life and work.

Concurrent sessions are offered from four tracks—agriculture, beginning farmer, alternative enterprises and business and finance—with participants able to choose whatever session is of most value to them.

Registration will be $50 per person by August 3 or $60 at the door (includes 2 lunches, breaks, and breakfast Friday). For more information visit **http://okwomeninagandsmallbusiness.com/** or contact Sara Siems at 405-744-9826.

Agricultural Economics Dept.
515 AGH
Stillwater, OK 74078

David Lalman
201 Animal Science
david.lalman@okstate.edu