OKLAHOMA COOPERATIVE EXTENSION SERVICE

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Division of Agricultural Sciences & Natural Resources
Oklahoma State University

*Beaver County Extension Office * Courthouse * Box 339 * Beaver OK 73932 * (580)625-3464*

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STUDY SHOWS YOU CAN HAVE YOUR (BEEF) FAT AND EAT IT TOO

A recent Texas Agricultural Experiment Station study indicates cattle fed longer on certain diets will produce beef with more of the "good" kind of fat.

Dr. Stephen Smith, Experiment Station professor of animal science in College Station, said the study showed the longer cattle were fed corn, the more monounsaturated – and less saturated – fat they produced. Monounsaturated fats are currently viewed as being healthier than other dietary fats, Smith said.

In the U.S., 8-month-old cattle are given a predominately corn diet until they are slaughtered at about 1,200 pounds. With adequate rainfall and good pasture, producers sometimes "background" their cattle on pasture until they are 1 year old, Smith said. After that, they are fed a corn-based diet until they weigh about 1,200 pounds.

"We've always had more corn in this country than we can consume, so we feed it to our livestock," he said.

U.S. consumers "like cattle young and marbled well," because of flavor, he said. Studies have found, however, the marbling and trimmable fat from cattle that are too young is high in saturated fats and trans fats, he said.

Japan, on the other hand, feeds cattle more grass and forage in the beginning. Calves are weaned at 8 or 9 months of age; producers then gradually increase the amount of grain in the diet until they are 28 to 30 months of age.

"They do it in steps," he said. "At the end, they feed corn concentrate."

For the study, 16 American Wagyu and 16 Angus steers were purchased as weaned calves. Eight from each breed were fed a high-energy corn-based diet. Eight were fed a diet of coastal Bermudagrass hay supplemented with a corn-based diet. The cattle were fed to 16 to 20 months of age (U.S. endpoint) or 24 to 28 months of age (Japanese endpoint).

The study tested three factors: breed type, diet and slaughter-age endpoint. Of the three, endpoint had the greatest effect on the adipose tissue lipid composition, Smith said. Lipids are organic compounds and include fats.

In an earlier study, researchers found the breed type did not affect marbling scores or the U.S. Department of Agriculture quality grades for Angus and Wagyu steers. The corn-fed steers had higher marbling scores than hay-fed steers of both breeds, Smith said. Steers raised to the Japanese endpoint had higher marbling scores and USDA quality grades than those raised to the American endpoint.

In the latest study, the corn-fed Angus steers raised to the Japanese endpoint "accumulated adipose tissues lipids that were remarkably unsaturated," according to the report.

Also, the adipose tissue from the Wagyu steers "contained higher concentrations of oleic acid and other monounsaturated fatty acids, regardless of diet or endpoint," it said.

"We're not sure that the trans fat in beef, trans-vaccenic acid, is completely bad for you," Smith said. "We need a human study (to determine that). It may be completely benign."

Smith and the other researchers theorized when Angus and American Wagyu steers were fed to the normal U.S. standards, the amount of monounsaturated fatty acids and cholesterol of the adipose tissue – the connective tissue that stores cellular fat – would be similar. The amounts would differ when fed to Japanese standards, they also theorized.

But they were proved wrong. Both breeds of steers produced more marbling and less trans and saturated fat the longer they were fed.

Wagyu cattle contribute only a small percentage to U.S. beef production. However, these results indicate that typical domestic cattle such as Angus can be raised to produce fat with a healthier composition, Smith said.

But what about completely grass-fed cattle? They have leaner carcasses, he said.

"The problem with (grass-fed cattle) is the U.S. consumer isn't accustomed to the flavor," Smith said. "It's very strong, and it's something we're just not accustomed to. And the other is that the fat that's produced from grass-fed cattle is higher in saturated fats and trans fatty acids."

Cattle fed longer on corn will have a better flavor, more marbling and monounsaturated fats. But there is a trade-off.

"There are more calories there," he said. "There's no question about that, and if you're watching your calories, grass-fed beef is lower in fat. And I can't argue with that."

The study was published in the international journal Meat Science this summer.

TOMATO CRACKING

Tomatoes often have problems with cracking caused by pressure inside the fruit that is more than the skin can handle. Cracks are usually on the upper part of the fruit and can be concentric (in concentric circles around the stem) or radial (radiating from the stem). We don't know everything about cracking but following is what we do know. Tomatoes have a root system that is very dense and fibrous and is quite efficient in picking up water. Unfortunately, the root system can become unbalanced with the top of the plant. Early in the season it may be small in relation to the top growth resulting in blossom-end rot when we get into hot dry weather. Later it may be so efficient that it provides too much water when we get rain or irrigate heavily after a dry spell. This quick influx of water can cause the tomato fruit to crack.

Therefore, even, consistent watering can help with cracking. Mulching will also help because it moderates moisture levels in the soil. However, you can do everything right and still have problems with cracking in some years. K-State has evaluated varieties for cracking. It takes several years worth of data to get a good feel for crack resistant varieties but have found some real differences. Some varieties crack under about any condition and others are much more resistant. The difference seems to be pliability of skin rather than thickness. Therefore, the more pliable the skin the more resistance to cracking. The old variety Jet Star has been the most crack resistant of any we have tested including the newer types. Unfortunately, Jet Star is an indeterminate variety that puts out rampant growth. Newer varieties with more controlled growth are often more attractive to gardeners. Mountain Fresh, Floralina and Sun Leaper are smaller-vined types that have shown good resistance to cracking.

HEAT STOPS TOMATOES FROM SETTING FRUIT

Temperatures that remain above 75 degrees F at night and day temperatures above 95 degrees F with dry, hot winds will cause poor fruit set on tomatoes. High temperatures interfere with pollen viability and/or cause excessive style growth leading to a lack of pollination. It usually takes about 3 weeks for tomato flowers to develop into fruit large enough to notice that something is wrong and an additional week before tomatoes are full size and ready to start ripening.

Though there are "heat-set" tomatoes such as Sun Leaper and Sun Master that will set fruit at higher temperatures, that difference is normally only 2 to 3 degrees. Therefore, the brutal temperatures the state saw last week will cause a tomato "drought" in the future. Unfortunately, there isn't much we can do about this but wait. Cooler temperatures will allow flowers to resume fruit set.

IMPROVING YIELD OF DROUGHT-STRESSED ALFALFA

Your ground is dry, no rain is forecast and alfalfa growth is really slow. Under these conditions, it's unlikely that alfalfa will regrow much after harvest, so growers probably need to get as much yield as possible from the current growth. So when should you cut?

University of Nebraska experts suggest first determining if alfalfa is growing at all. If it seems the alfalfa has stopped growing, and there is enough to justify harvest, cut right away because waiting means the crop is going to go downhill. If it's still growing, although slowly, wait until as much yield as possible has accumulated. This might occur sooner than you think. Research studies have shown that maximum yield from any single cutting occurs at or soon after full bloom. But what is full bloom? You might think it's when all flowers are blooming, with the field covered in purple. But that's actually later than full bloom. Full bloom is when virtually every stem has one or more flowers open and blooming, say the experts. Since most stems usually have several potential flowers per stem, full bloom and maximum yield occur while many potential flowers have still not bloomed.

Maximum yield occurs while there still is potential growth on the plant. Bottom leaves begin falling off faster after full bloom so new growth can accumulate at the top. The bottom line is that yield can be lost by waiting too long.

Source: University of Nebraska.

DROUGHT CONDITIONS WORSEN; COW-CALF PRODUCERS SHOULD PLAN NOW FOR NEXT WINTER

By Derrell S. Peel, OSU Ext. Livestock Marketing Spec.

Oklahoma has received no appreciable rain in the last two weeks and we have had 100+ degree temperatures for most of that time. As of July 23, USDA-NASS reported that 67 percent of Oklahoma pastures and range were in poor to very poor condition. It is safe to assume that hay production is similarly limited. Although we could get some late summer rain that would produce some forage growth for fall pasture, it would likely be limited and certainly will not produce much hay. At any rate, there are no obvious prospects for rain anytime soon. The current forecast for central Oklahoma is for temperatures over 100 degrees until the middle of next week at least.

There are several continuing and new indications that the drought is having a number of impacts on cattle markets. Cow culling in the south central part of the country continues to exceed year ago levels. So far this year, beef cow slaughter in Federal slaughter region 6, which includes Arkansas, Louisiana, New Mexico, Oklahoma and Texas, has averaged 43 percent higher than last year. That is equivalent to an additional 4,200 head of beef cows slaughtered in the region each week. The drought is apparently also causing early weaning and marketing of feeder cattle. Auction sales volume in July at the eight federally reported auctions in Oklahoma is up 27 percent compared to the same period a year ago.

Although cow-calf producers may still be hanging on as a result of the limited rains earlier in the growing season, it is essential to plan ahead for fall and winter. The most likely scenario that appears to be developing is one of scraping by this summer only to find oneself at the end of the growing season with no standing forage and no hay and no prospects for forage until next May. Producers should evaluate forage reserves right now and plan how to make them last until next May. In many cases this means weaning calves immediately, culling old and open cows immediately and making realistic production and financial plans that include culling to a bare bones level, stretching available forage supplies and perhaps using supplemental feed to maintain a core set of young cows through the winter.

I have heard numerous anecdotal reports that there is a very limited supply of very expensive and usually poor quality hay available in the region. It simply will not be possible, let alone feasible to buy hay and get through the winter in a business as usual fashion. There are two relative bright spots in all this bad news. First, cattle markets are still strong and it is possible to sell cows and feeder cattle with good salvage value. Second, it looks like we will have a good corn crop so there should be reasonably good supplies of supplemental feeds to work with. At a minimum, it will require lots of planning, creativity, discipline and hard work to get through the winter. It is critical to start now.

CATTLE TEMPERAMENT IMPACTS IMMUNE RESPONSE

Calm calves appear to have a better response to vaccination at weaning than temperamental calves, says the Texas Ag Experiment Station. This better vaccination response means the calmer calves are less likely to develop sickness or die of disease.

Earlier research has shown cattle that speed out of the handling chute eat and gain less, and yield tougher steaks. The Texas A&M University (TAMU) study is one the first to look at the animal's immune response in relation to temperament.

TAMU animal scientist Ron Randel, working with other Texas and USDA researchers, divided 6- to 7-month-old Brahman bull calves from the Overton research center's 2004 spring calf crop into two groups: the calmest and the most temperamental. The calves were grouped based on their "exit velocity," the speed at which they exit a handling chute, and "pen scores," where visual observations about the animal's response to confinement and humans are recorded.

During the 11-week trial the team analyzed calves' blood samples for the antibody response specific to clostridial vaccinations. On the study's 6th day, both calf groups showed "significant" immune response to the vaccination. But by the 6th week, the calm calves had a 50% greater antibody response than the temperamental calves.

After the booster shot on the 42nd day, the peak immunological response was delayed in the temperamental calves compared to the calm calves. Also, the temperamental calves' immune response decreased from day 49 to the end of the study. The calm calves' immune response didn't significantly decrease after the booster. At the end of the study, the calm calves had more than a 60% advantage in immune response.

"Not only did the calmer calves have a greater response to the vaccine, they did a better job of sustaining antibody levels previously produced," Randel says. "In addition to the benefits of increased vaccination response, the calm bull calves out-gained their more temperamental counterparts by more that 0.3 lbs./day over the length of the study."

For a news article on how animal temperament relates to tenderness of meat, see *agnews.tamu.edu/dailynews/stories/ANSC/Apr0504a.htm*.

DROUGHT

Emergency CRP Haying And Grazing Expanded

USDA has expanded CRP acreage open for emergency practices, such as haying and grazing, to provide drought relief for livestock producers in eligible counties. The expanded area radiates 150 miles out from any county approved for emergency haying and grazing in Alabama, Colorado, Kansas, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming. Producers can find a map of counties approved for emergency haying and grazing with an approximate 150-mile radius by clicking "Conservation" at *www.fsa.usda.gov*.

Additionally, producers' CRP rental payment will be reduced by only 10% instead of the standard 25% on CRP lands grazed in 2006. To be approved for emergency haying or grazing, a county must be listed as a level "D3 Drought -- Extreme" or greater, or have suffered at least a 40% loss of normal moisture and forage for the preceding four-month qualifying period.

Chuck Conner, USDA deputy secretary, says state USDA Farm Service Agency (FSA) committees may authorize emergency haying or grazing of CRP in counties currently listed as level D3 drought, according to the U.S. Drought Monitor. CRP participants should submit applications with their local FSA offices upon approval.

To participate:

- Livestock producers in counties approved for emergency haying or grazing assistance may purchase hay or conduct emergency haying and grazing of eligible CRP acreage from CRP participants (in the expanded area) willing to provide hay or haying and grazing.
- Livestock producers in counties approved for emergency haying or grazing assistance must certify they're eligible in an eligible county approved for emergency haying and grazing and that they are requesting emergency haying and grazing of eligible CRP acreage from another eligible CRP participant in the expanded area who is willing to provide hay or grazing.

The primary nesting and brood-rearing season of the state where the land to be hayed or grazed is located will be respected. For example, a portion of Minnesota is within the 150-mile range of North Dakota counties approved for emergency haying and grazing. Minnesota's nesting season ends Aug. 1. Livestock producers in North Dakota counties approved for emergency haying and grazing and who wish to hay or graze CRP acreage in Minnesota may begin Aug. 2.

Only livestock operations located within approved counties are eligible for emergency haying or grazing of CRP acreage. CRP participants who do not own or lease livestock may rent or lease the grazing privilege to an eligible livestock farmer located in an approved county.

For all land enrolled in CRP that's been approved for emergency haying and grazing, the 10% payment reduction will be assessed based on the number of acres actually hayed or grazed times the CRP annual rental rate. CRP participants who prepaid the 25% payment reduction will have the difference refunded.

In addition to making forage available on CRP land, USDA is operating a range of programs to assist producers affected by drought or other natural disasters. More info on emergency haying and grazing is available at local FSA offices and online at: *www.fsa.usda.gov*, click on "Conservation."

JULY PLACEMENTS SURGE; COW HERD EXPANSION SLOWS

The July Cattle on Feed report and the mid-year Cattle Inventory released last Friday tell the story of continuing drought, writes Darrell Mark, University of Nebraska economist, at *www.lmic.info/*.

After a drop in May placements, feeders placed 10.7% more cattle in June, mostly lighter weight feeders. Placements of cattle less than 600 lbs. were up 37%, and calves 600-700 lbs. were up 24%. Meanwhile, placements more than 700 lbs. fell 5-6% from 2005.

Mark says the higher placements of lighter cattle suggest drought is driving light stockers off grass early, and early weaning may be taking place. Thus, supplies of feeder cattle may be tighter than expected this fall. He says the trend also points to increased slaughter numbers in 2007's first quarter, which may pressure fed prices.

Mark calls the growing front-end supply of cattle on feed "concerning." Cattle on feed for more than 120 days (3.9 million head), is up 18.2% from last year, the fourth consecutive month of double-digit increases. And, it's translating to increasingly larger dressed weights.

Meanwhile, the Cattle Inventory report estimated the July 1 all-cattle and calf inventory at 105.7 million head, up 1.1% from July 1, 2005. Both the beef-cow and dairy-cow inventory grew only 100,000 head from last year.

Mark believes limited feed supplies and drought are dampening herd expansion, while the number of heifers held for beef cow replacements in 2006 (5 million head) was unchanged from 2005.

That slow growth in beef-cow numbers portends just a 0.3% increase in the 2006 calf crop. At 37.9 million calves, that's less than 400,000 head more than the 2004 calf crop, which was the smallest in history. Thus, he says, fall calf supplies are expected to remain tight, which points to another year of relatively high feeder cattle prices.

BIOAVAILABILITY OF TRACE MINERALS IN RUMINANT RATIONS

The effectiveness of trace mineral supplementation isn't only dependent on concentration in the diet but also the bioavailability of the trace mineral once it reaches the animal's digestive tract. North Carolina State University's Jerry Spears, in a review of the bioavailability of certain trace minerals in feeds, says selenium (Se) in feeds for ruminants is more bioavailable than inorganic Se from selenite. A portion of the zinc (Zn), copper (Cu) and manganese (Mn) in plants is present as various complexes or "chelates."

"A sizable portion (20% or more) of the Zn, Cu, and Mn in forage is associated with the plant cell wall," Spears says. "A prerequisite for trace-mineral absorption is release of the mineral from feeds in a soluble form in the digestive tract."

Several studies show more than 50% and 70% of the Zn and Cu, respectively, in dried forages is rendered soluble in the rumen. Research with grass silage indicates more than 90% of the total Zn and Cu present is released in the rumen.

Another study found similar absorption of Zn in calves from radioactive ^{65}Zn in calves from radioactive labeled ^{65}Zn in ZnCl or from corn forage where labeled Zn was incorporated during plant growth. However, retention of labeled Zn at 7 days post-dosing was higher in calves fed Zn labeled corn forage compared with ZnCl.

Corn futures drifted lower on Friday, July 28 and they have for the most part erased much of the gains made in the second half of June and early July. **Weather in the next two weeks could still have an impact on the current corn crop but it appears increasingly likely that corn producers will get yields that are slightly above trend.** The outlook for the corn market will continue to be a significant driver for hog contracts but the ethanol demand picture for corn in the new marketing year is for the most part known.

What is unknown is the impact that the resurgence in ethanol demand will have on corn prices and, consequently meat prices, in the next two to five years. As a growing percentage of the corn crop goes to produce energy rather than meat, hog and to a lesser extent cattle producers will have to bid up prices in order secure enough feed. As some point, the surge in feed costs will eat enough at profits that it will cause producers to revise their production growth plans. For now, however, the slow growth plan that hog producers are under continues to pay dividends.

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Rick Nelson
Extension Educator, Agriculture/4-H Youth Development

OKLAHOMA COOPERATIVE EXTENSION SERVICE

Beaver County Cooperative Extension Service
Oklahoma State University
111 W 2nd ST
PO Box 339
Beaver OK 73932