

Osage County Agriculture Newsletter



**OKLAHOMA COOPERATIVE
EXTENSION SERVICE**

August 2021

Cow/Calf Corner

July 26, 2021

In this issue:

USDA reports show reduced cattle numbers now and later

Derrell S. Peel Oklahoma State University Extension Livestock Marketing Specialist
Anaplasmosis: People, Ticks, and Certain Flies

Justin Talley, Oklahoma State University Extension Livestock Entomologist

USDA reports show reduced cattle numbers now and later

The July USDA Cattle on Feed report shows July feedlot inventories of 11.29 million head, down 1.3 percent from last year and down 1.7 percent compared to 2019. June placements were 1.67 million head, down 7.1 percent from 2020 and down 5.2 percent from June 2019. Feedlot marketings in June were 2.02 million head, up 2.7 percent year over year and 4.1 percent above the 2019 level. The report was well anticipated with placements down slightly more than the average pre-report estimate.

This latest cattle on feed report confirms that the feedlot situation continues to improve relative to the slaughter capacity constraints that plagued fed cattle markets in early 2021. The July 1 feedlot inventory is down 816,000 head from the February peak, a decrease of 6.7 percent. It appears that the feedlot industry has finally moved past the cyclical bulge of cattle numbers and should be operating with declining numbers going forward for the foreseeable future.

USDA also released the July Cattle report last week. The report shows, as expected, that cattle numbers continue to decline in the U.S., possibly aggravated by additional liquidation resulting from the widespread drought in the western half of the country. The estimated July 1 inventory of all cattle and calves is 100.9 million head, down 1.3 percent year over year and down 1.9 percent from the cyclical peak July inventory of 102.8 million head in 2018.

The July beef cow inventory is 31.4 million head, down 2.0 percent from 2020. The current beef cow inventory is down 3.1 percent from the 2018 cyclical peak of 32.4 million head. The estimated July 1 inventory of beef replacement heifers is 4.3 million head, down 2.3 percent year over year. The estimated 2021 calf crop is 35.1 million head, down fractionally from last year. The 2021 calf crop is down 3.3 percent from the 2018 peak of 36.3 million head.

The estimated feeder supply outside of feedlots, calculated from the July 1 inventories of steers, other heifers and calves, is 36.1 million head, down 1.6 percent year over year. The July 1 estimate of inventories in all feedlots is 13.4 million head, down 1.5 percent from last year.

The overall message of these two reports is that declining cattle numbers are improving cattle market conditions both for the remainder of the year and into 2022 and beyond. While it is not clear that drought has contributed significantly to cattle liquidation thus far, the potential is high for additional herd liquidation in the remainder of the year. Tighter cattle supplies, combined with continued strong beef demand leads to expectations for modestly higher prices for the remainder of 2021 and beyond. Fourth quarter prices for calves, feeder and fed cattle are currently projected to average 8-12 percent higher year over year. However, profitability will be tempered by higher input costs, including sharply higher prices for feed grains and supplements.

Anaplasmosis: People, Ticks, and Certain Flies

Justin Talley, Oklahoma State University Extension Livestock Entomologist

Anaplasmosis is a common disease in cattle and Oklahoma is considered an endemic state. This means that anaplasmosis will occur every year within Oklahoma with some variation on the intensity of this disease usually based on the strain of *Anaplasma marginale*. *A. marginale*

Osage County Extension Office

1039 Old Hwy 99

Pawhuska, Ok 74056

(918) 287-4170; Office

Osage County Agriculture

Educators

Rick Clovis

Osage/Pawnee County

rick.clovis@okstate.edu

Cheyenne Patrick

Osage County/Osage Nation

cheyenne.patrick@okstate.edu

Go like us on Facebook at Osage County Extension for News and Updates :



In This Issue:

Cow/Calf Corner July 26, 2021

USDA reports show reduced cattle numbers now and later

Derrell S. Peel Oklahoma State University Extension Livestock Marketing Specialist
Anaplasmosis: People, Ticks, and Certain Flies

Justin Talley, Oklahoma State University Extension Livestock Entomologist

Fall Gardening

Published Feb. 2017 | ID:HLA-6009

By David A Hillock, Brenda Simons

Heat Stress in Small Ruminants Kelly Froehlich

Assistant Professor/Extension Specialist - Small Ruminant Production

Updated June 18, 2021

UPCOMING EVENTS

is a bacteria that infects red blood cells and once an animal becomes infected they are infected for life. This bacteria does not harm the red blood cells directly but the cow's immune response recognizes it when it reaches certain levels which then causes anemia due to the immune system killing the red blood cells that are infected. This will limit the amount of oxygen that is transported throughout the animal's blood, which can then lead to aggressive behaviors exhibited by normally docile cows or bulls. Other clinical signs that animals are infected with the bacteria are extreme lethargy, yellowing of the mucous membranes, abortions, weight loss, and difficulty breathing. Most producers will not know they have an anaplasmosis problem until they see dead cows or bulls that are older than 2-years of age. This is why this disease can be so devastating because it targets some of the older stock in the herd, which have significant investment towards these animals.

Treatment options

First and most important is to consult with your local veterinarian so that they can develop a comprehensive plan to limit the impact of anaplasmosis. This relationship is important because the most commonly utilized control plan is to administer tetracycline antibiotics through mineral supplements or feed and the only access to this preventative treatment is to obtain a Veterinary Feed Directive (VFD) through your veterinarian. More severe infections can be treated with injectable antibiotics via an intramuscular injection of oxytetracycline administered multiple days and should be given under a veterinarian's directions. A vaccine is available in some states and Oklahoma is approved for this vaccine. This vaccine does not prevent infection but anecdotal evidence demonstrates a reduction in clinical signs.

Transmission

Now for the "People" component for anaplasmosis prevention, one of the most prevalent ways the bacteria is spread is through contaminated needles used to administer pharmaceutical drugs to cattle. In fact, a study conducted by Kansas State University demonstrated that six out of 10 uninfected animals became infected with anaplasmosis after treating one infected animal due to not changing needles between animals. Also, any instrument that penetrates the skin or comes into contact with blood will serve as a fomite and transfer the bacteria from infected to uninfected animals. These can include dehorning tools, tattoo tools, castration equipment and ear tagging tools.

Ticks are probably the next most common source of maintaining the bacteria in the environment. The reason for this is that ticks are considered a biological vector of anaplasmosis, which means that the bacteria can multiply within the tick, and when the tick feeds on a different animal, they are exposing that animal to higher levels of the bacteria. In addition, the main ticks involved are Dermacentor ticks that go unnoticed due to their preferred feeding locations in between the legs. Producers will have to put their animals through a chute to accurately determine if they have a Dermacentor tick problem by conducting tick scratches which is time consuming and stressful to the animals especially when the heat index is above 90°F. The male Dermacentor ticks are more involved in the transmission of anaplasmosis due to the more interrupted feeding patterns exhibited by male ticks to receive a complete blood meal. The male ticks will feed on more animals to receive their blood meal, which increases the risk of transmission.

Tick control can be difficult due to the life cycle of the Dermacentor ticks that require more than one host to reach the adult stage. This means some of the ticks are on alternative hosts such as wildlife and control programs will have to be developed based on history of tick problems in certain pastures. Burning pastures in the spring will reduce tick populations for a period but the burning frequency would need to be yearly or at least utilized in a patch burning system where different parts of the pasture are burned each year to affect tick populations. The most successful means of tick control is the combination of pasture rotation usually in August away from pastures with historical tick issues and the use of a systemic products such as an ivomec or moxidectin type products.

Certain biting flies are also involved in anaplasmosis transmission but not all flies are involved in moving this disease from animal to animal. The two main biting flies that are implicated in anaplasmosis are horse / deer flies and stable flies. Horse and deer flies visit multiple animals to receive a complete blood meal because their bite is very painful and will cause animals to react quickly when bitten. This causes the feeding by these flies to be interrupted so they visit multiple animals that increases the transmission risk. Similarly, stable flies cause significant pain when feeding on the legs of the animals that will cause the animals to react that then interrupts feeding by this

fly. The difference between ticks and flies related to anaplasmosis is that biting flies are mechanical vectors of anaplasmosis. This means that the bacteria does not replicate within the fly and the survival on the exterior of the mouthparts of the fly is very short. When these flies are involved in the transmission of anaplasmosis this usually means that there are infected animals present either within your herd or located very close. Flies are not efficient carriers of the bacteria but can certainly transmit it from an infected animal to a nearby uninfected animal.

Fall Gardening

Published Feb. 2017 | ID:HLA-6009
By David A Hillock, Brenda Simons

Vegetables for the Fall Garden

To some extent, the selection of crops will be influenced by what is presently in the garden and producing, family preference, space, water available for irrigation, and crops adapted for fall production. Some crops that were planted in the spring garden that may continue in production are tomato, okra, pepper, sweet potato, cowpea, and New Zealand spinach.

These plants may produce excellent yields in the later fall season if given proper care. If tomato, okra, or New Zealand spinach plants are too large for the space, prune them to reduce their size and also stimulate growth. If they are cultivated, it should be done very shallowly and used primarily to remove grass and broad-leaved weeds. They should also be fertilized, watered, and mulched.

Fall Gardening Suggestions

- Seeds left over from planting the spring garden may be used in planting the fall garden if the seed is stored in a cool, dry location or in a refrigerator or freezer.
- Seeds that are stored in the freezer properly should remain viable for many years. Immediately following planting, return surplus seed to the freezer.
- In order to get early established growth, supplemental irrigation is desirable. Most vegetable crops will benefit from supplemental irrigation. Information on drip irrigation may be available from garden centers and county Extension centers. This technique allows an efficient method of irrigation.
- In order to conserve on water usage, water only the furrows or rows and wait for rainfall for general watering.
- Soak seeds overnight for planting (except beans and peas). This will hasten germination and seedling emergence when soil drying is most critical to plant growth.

- Cover seeded rows to reduce soil temperature and drying (Figure 1d and 1e).

Conditions that favor the germination of planted vegetable seed and luxuriant growth also favor the growth of grass and broadleaf weed plants. Mulch the soil or cultivate when the grass and broadleaf weed plants are very small and more easily destroyed (Figure 1f and 1g). This is a more critical problem than in spring gardens.

Insect pests may come into the fall garden and seriously damage plants within a week. Frequent checks and immediate protective measures must be used. In order for control to be effective, determine what kind or kinds of pests are causing damage. Use the proper kind of control material as recommended in fact sheet EPP-7313.

Growing Fall Irish

Potatoes

If seed potatoes are available and space permits, potatoes are a desirable supplement to the fall and winter food supply. Yields are usually lower than from spring-planted potatoes, but proper storage is much easier to provide and potato quality is excellent.

The practice of using potatoes from the fresh produce counter for planting purposes is not recommended. This kind of material frequently does not produce adequate growth and is considerably lower in yield.

One of the problems is getting a stand of plants early enough to produce a crop before fall frosts. This emphasizes the need to use matured, medium-to-large potatoes that require cutting into 1 or 1 1/2 ounce size seed pieces.

Cut potatoes should be allowed to cure three to five days before planting, and they should be stored under cool (45° to 65°F) conditions during curing.

In order to have a more favorable (cooler) soil at planting time, deep furrows may be opened in the late afternoon, seed pieces planted, covered with two inches of soil, watered, and mulched with straw or other available organic material. This should provide more favorable conditions for growth.

Harvesting and Storing Vegetables

Vegetables such as carrots, beets, rutabagas, turnips, and Irish potatoes, when harvested, may be stored in a cool, moist location and remain in usable condition until late winter. Place the vegetables in ventilated plastic bags in a cool basement cellar, or “store” them in place in the garden. Once produce reaches maturity, it will “keep” in place through early January. For protection during the cold of December, January, and February, the soil layer over the mound should be six to 10 inches thick. Limited quantities of vegetables may be kept in the refrigerator in order to reduce the problem of frequent removal from the soil mound.

Other crops that produce and store easily include winter squash and pumpkin. These require cool, dry storage conditions.

Table 1. Tender Vegetables – (harvest before frost). * Many varieties will do well. Select varieties that are early maturing and disease resistant.

<i>Kind</i>	<i>Time to plant</i>	<i>Method of Planting</i>	<i>Between Rows (inches)</i>	<i>In the Row (inches)</i>	<i>Depth to Cover Seed (inches)</i>	<i>Days From Planting to Harvest</i>
Beans, Bush	Aug 10-20	Seed	18-24	3-6	1.00	50-60
Beans, Cowpea	July 15-Aug 1	Seed	18-48	6-12	1.50	75
Beans, Pole	July 15-30	Seed	24-36	10-18	1.00	60-70
Beans, Lima	Aug 10-20	Seed	18-24	4-8	1.00	70-80
Cilantro	July 15-Aug 1	Seed	9	4	0.50	When plant is 4-6 in. tall
Corn, Sweet (3)	15-Jul	Seed	36	12-18	1.00	80-100
Cucumber	Aug 10-20	Seed or Plants (2)	32-36	12-30	.5 to .75	60-70
Eggplant	15-Jul	Plants	36	18	-	80-90
Pepper	15-Jul	Plants	36	24	-	90-110
Pumpkin	July 15-30	Seed or Plants (2)	36-60	30-48	1	100-120
Summer Squash	July 15-Sept 1	Seed or Plants (2)	36	24-36	1	40-50
Winter Squash	July 15-30	Seed or Plants (2)	36-48	30-48	1	100-120
Tomatillo	15-Jul	Plants	48	24-36	-	90-100
Tomatoes	July 1-15	Plants	48	24-36	-	70-90

1 = There may be advantages to planting earlier, if soil moisture and climatic conditions are favorable.
 2 = Set plants into the garden 1 to 1 1/2 months after planting the seed.
 3 = Be vigilant about scouting for fall armyworms in whorl of seedlings and young plants.
 * Unless using a cold frame or row covers to extend the season.

Table 2. Semi-hardy vegetables – (may continue to grow and be harvested after several frosts). Many varieties will do well – select varieties that are early maturing and disease resistant.

<i>Kind</i>	<i>Time to Plant</i>	<i>Method of Planting</i>	<i>Between Rows (inches)</i>	<i>In the Row (inches)</i>	<i>Depth to Cover Seed (inches)</i>	<i>Days From Planting to Harvest</i>
Beet	Aug 1-15	Seed	12-18	3-4	.5-.75	60-70
Broccoli	July 15-Aug 15	Plants	18-30	16-20	-	70-80
Brussels Sprouts	July 15-Aug 15	Plants	18-30	16-20	-	90-100
Cabbage	Aug 1-25	Plants	18-24	16-20	-	75-90
Chinese Cabbage	Aug 1-25	Seed or Plants (1)	12-16	10-18	0.50	75-90
Carrots	July 15-Aug 15	Seed	12-18	1-2	0.25	70-80
Cauliflower	Aug 1-25	Plants	18-24	16-20	-	70-80
Collards	Aug 1- Sept 1	Seed or Plants (1)	30-36	18-24	0.50	75-85
Garlic	Sept 1- Oct 15	Bulbs (cloves)	12	4	2	Early June the following year
Irish Potato	Aug 1-15	Seed potatoes	30-42	10-16	2	90-110
Kale	1-Sep	Plants	24-36	18	0.25	50-65
Kohlrabi	1-Sep	Plants	18-24	4-6	6	50-70
Leaf Lettuce	Aug 1-15	Seed or Plants (1)	12-18	2-3	0.25	60-70
Leek	1-Sep	Seed or Plants (1)	12-24	2-4	0.5	Late Spring the following year
Mustard	Sept 10 - Oct 10	Seed	12-18	2-3	0.5	40-50
Onions	1-Sep	Seed, Sets, or Plants (1)	12-18	4	0.25	Late Spring the following year
Parsnip	July 15 - Aug 15	Seed or Plants (1)	12-18	4-6	0.25	120
Peas, green	Aug 15 - Sept 1	Seed	36	2	2	60-90
Radish	Aug 15 - Oct 10	Seed	12-Aug	.75-1	0.5	20-40
Rutabaga	Aug 15 - Sept 15	Seed	24-36	3-4	0.5	80-90
Spinach	Sept 5-25	Seed	8-12	1-2	0.5	50-60
Swiss Chard	Aug 1 - Sept 15	Seed	24-30	2-3	0.5	50-60
Turnip	Aug 1 - Sept 15	Seed	12-124	2-3	0.5	50-60

1 = Set plants into the garden 1 to 1 1/2 months after planting the seed.

Note: If planting or sowing into cold frames, plant two weeks later than date indicated. With our abundant winter sunshine, be sure to allow for ventilation. Also, check frequently for pests, especially aphids.

Heat Stress in Small Ruminants

Kelly Froehlich

Assistant Professor/Extension Specialist -
Small Ruminant Production

Updated June 18, 2021

The Upper Midwest provides periods of extreme heat during summer and shorter periods of heat stress potential during spring and fall. Are your sheep and goats cool enough in their environment? Heat stress affects sheep and goat performance by decreasing dry matter intake, while increasing the need for water. This, in return, has a direct impact on weight gain and milk production. Although sheep and goats are more heat-tolerant than other ruminants (e.g. cows), it is important to understand and identify when they may be experiencing stress.

Understanding Heat Stress

Several factors contribute to whether a sheep or goat will experience heat stress, including breed, relative humidity, temperature, wind speed and solar radiation. The comfort zone of a fully fleeced sheep is about 10–90 degrees Fahrenheit; this is where heat produced is the same as heat lost. Temperature comfort zone is less defined in goats, but it is generally accepted that they are better adapted to hot conditions. However, temperature is only part of the equation, with humidity having a huge impact on whether an animal will feel cool or heat stressed. Therefore, temperature humidity index (THI) is the best measure of livestock environmental stress (Table 1). Specifically for sheep and goats, heat stress is experienced when THI is at moderate (82 to <84 degrees Fahrenheit), severe (84 to < 86 degrees Fahrenheit) and extreme (≥ 86 degrees Fahrenheit) levels. This means for South Dakota's moderately humid summers that heat stress may be experienced when the temperature starts rising above 80 degrees Fahrenheit. Specific for South Dakota, South Dakota State University (SDSU) Extension has a [Livestock Stress Tool](#) that can also indicate environmental stresses.

A heat-stressed sheep or goat will sweat, open-mouth pant and will experience increases in respiration rate (breaths/minute) and rectal temperature. This creates a cascading effect on biological functions, including depressed feed intake, feed efficiency and even affecting water, protein, energy and mineral balances, which leads to overall reduced performance. Small ruminants can withstand short periods of heat stress if followed by cooler temperatures, such as nighttime temperatures below a THI of 81. However, alleviating periods of heat stress can help improve performance.

Alleviating Heat Stress

Although THI is used as the primary heat stress measure, other environmental factors, such as solar radiation and air movement, can affect how a sheep or goat handle heat stress.

- When possible, provide shade during the day to alleviate heat stress, especially in animals with darker coats.
- Minimize or avoid unnecessary animal work during peak heat times (10 a.m. to 4:00p.m.).
- Ensure adequate ventilation and air movement to animals housed indoors.

One of the best practices for alleviating heat stress is providing plenty of clean, cool water.

- Provide one to three pounds of water per-pound dry matter.
- Check water quality.

Although it is always recommended to provide water, it is especially important to encourage its intake during heat stress. When encouraging water intake, ask yourself, "Would you drink this water?" If the answer is no, why is that? Maybe a little extra time is needed to clean the stock tank, or there may be off flavors. In South Dakota, high amounts of dissolved solids, alkalinity, nitrates and blue-green algae can affect quality, which can make water unappetizing or have further biological complications. More on water quality can be read in the article, [How Important Is Water Quality to Livestock?](#).

Especially in drought years, it is essential to routinely check your water quality. SDSU Extension provides on-site quick water tests at regional and some extension county offices. This summer, do not let poor water quality affect your small ruminant's ability to effectively handle heat stress.

Heat stress can adversely affect the performance of sheep and goats. Recognizing and alleviating heat stress by providing shade plenty of air movement, avoiding unnecessary animal work and encouraging consumption of fresh clean water will help minimize production losses.

References

- Marai, I. F. M., A. A. El-Darawany, A. Fadiel, and M. A. M. Abdel-Hafez. 2007. Physiological traits as affected by heat stress in sheep—A review. *Small Ruminant Research* 71(1):1-12.
- Sarangi, S. 2018. Adaptability of goats to heat stress : A review. *Pharma Innovation* 7(4):1114-1126.
- Silanikove, N. 2000. Effects of heat stress on the welfare of extensively managed domestic ruminants. *Livestock Production Science* 67(1):1-18.
- Srikandakumar, A., E. H. Johnson, and O. Mahgoub. 2003. Effect of heat stress on respiratory rate, rectal temperature and blood chemistry in Omani and Australian Merino sheep. *Small Ruminant Research* 49(2):193-198.

TABLE 1. SHEEP AND GOAT TEMPERATURE HUMIDITY INDEX (THI)

Tem p. F	Relative Humidity (%)															
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
50°F	54	53	53	53	53	52	52	52	52	52	51	51	51	51	50	50
55°F	56	56	56	56	56	56	56	56	56	56	55	55	55	55	55	55
60°F	59	59	59	59	59	59	59	60	60	60	60	60	60	60	60	60
65°F	62	62	62	62	63	63	63	63	63	64	64	64	64	64	65	65
70°F	65	65	65	66	66	66	67	67	67	68	68	68	69	69	69	70
75°F	68	68	68	69	69	70	70	71	71	72	72	73	73	74	74	75
80°F	70	71	72	72	73	73	74	75	75	76	76	77	78	78	79	79
85°F	73	74	75	75	76	77	78	78	79	80	81	82	83 ^a	83 ^a	84 ^b	84 ^b
90°F	66	67	68	69	69	70	71	72 ^a	73 ^a	74 ^b	75 ^b	76 ^c	76 ^c	77 ^c	78 ^c	79 ^c
95°F	79	80	81	82	83	84 ^b	85 ^b	86 ^b	87 ^c	88 ^c	89 ^c	90 ^c	91 ^c	92 ^c	93 ^c	94 ^c
100°F	82 ^a	83 ^a	84 ^b	85 ^b	86 ^b	87 ^c	88 ^c	89 ^c	90 ^c	91 ^c	92 ^c	93 ^c	94 ^c	95 ^c	97 ^c	98 ^c

THI Levels: ^aModerate (yellow) 82 to < 84F; ^bSevere (orange) 84 to < 86F; ^cExtreme (red) >86F



ANNIE'S PROJECT

EMPOWERING WOMEN IN AGRICULTURE



Annie's Project

August 24th

- Introduction & Overview
- Human Resources-Real Colors

August 31st

- Estate Planning
- Enterprise Analysis
- Livestock Marketing

September 7th

- WebSoilSurvey
- Insurance for Farm Families
- Farm Leasing

September 14th

- Farm Service Agency
- Natural Resource Conservation Service
- Grain Marketing

September 21st

- Basic Financial Documents
- Women and Money
- Family Dynamics

September 28th

- Two topics to be selected by participants
- What have we learned
- Evaluations & Graduation photograph

Our mission: To empower women in agriculture to be successful through education, networks, and resources.



Why Annie's Project?

This six-week course is a discussion-based workshop bringing women together to learn from experts in production, financial management, human resources, marketing, and the legal field.

There's plenty of time for questions, sharing, reacting, and connecting with your presenters and fellow participants.

It's a relaxed, fun and dynamic way to learn, grow and meet other farm/ranch women.



Tuesday Evenings from 5:30 – 8:30 PM

Osage Co OSU Extension Office

Sponsors:



For more information call **Cheyenne Patrick** at **918-287-4170** or e-mail Cheyenne.patrick@okstate.edu

Only \$75 for all six sessions!

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the American with Disabilities Act of 1990, and other federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitlatch, OSU, Stillwater, OK 74078-1035, Phone 405-744-3371, email: eeo@okstate.edu, has been designated to handle inquiries regarding non-discrimination policies. Any person who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9134 in furtherance of Cooperative Extensionwork, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of XXXX cents per copy.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, disability, or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services. References within this publication to any specific commercial product, process, or service by trade name, trademark, service mark, manufacturer, or otherwise does not constitute or imply endorsement by Oklahoma Cooperative Extension Service.

UPCOMING EVENTS

- Starting August 24th Osage county OSU Extension office will be hosting an Annie’s project continuing every Tuesday until September 28th. This is a great program that Empowers Women in Agriculture. Dinner will be provided each night. Make sure and RSVP by August 17th to ensure your spot. They will fill up fast. For any questions or more information call the Ex-tension office at 918-287-4170 or email me at cheyenne.patrick@okstate.edu.
- Just a reminder the Osage County Free fair will be September 15th-18th. You do not want to miss out, they have a lot of great things planned!
- Keep your eye out for more information on a Master Cattlemen's Program this Fall.



**OSAGE COUNTY
EXTENSION**

Osage County Extension Office

(918) 287-4170 Office

1039 Old Hwy 99

Pawhuska, Ok 74056