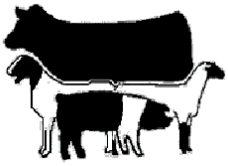

Livestock News

Cumberland County Center — January 2013

Inside This Issue

Contact Us

NC Cooperative Extension
Cumberland County Center
301 East Mountain Drive
Fayetteville, NC 28306

(910) 321-6862 Phone
cumberland.ces.ncsu.edu

Mandy Harris,
Extension Agent, Livestock
mandy_harris@ncsu.edu

For any meeting in this newsletter, persons with disabilities and persons with limited English proficiency may request accommodations to participate by contacting the Extension Office where the meeting will be held by phone, email, or in person at least 7 days prior to the event.

Important Information

Farmers Manage Deer - each year deer consume $30 million dollars worth of crops in NC. Farmers Manage Deer (FMD), an initiative of the North Carolina Wildlife Federation (NCWF), seeks to address these concerns by coordinating delivery of several existing resources directly to farmers. FMD will lease 24,000 acres for 15 days from farmers during the 2013 hunting season and recruit sportsmen to harvest deer according to a deer management plan. Funding is provided by the NC Tobacco Trust Fund Commission. To learn more, there will be a meeting and meal on January 22nd at 6:30 pm at the Bladen Extension Office. Call 910-862-4591 to register.

NC Forage and Grasslands Council will host a meeting in Johnston County on January 29th. See attachment.

Southern Farm Show
January 30—February 1, 2013
NC State Fair Grounds—Raleigh

N.C. Pork Council Conference
January 31st & February 1st. See page 2.

N.C. Cattlemen's Conference
will be in Hickory on February 15 & 16.

Planning for the Future of Your Farm
Is your family prepared for expected changes in estate and income taxes? Do you want to make sure your family is well cared for and able to make good decisions about land and other assets? Three events will help you chart the future of your farm and land assets. These are joint meetings by Mount Olive College, Agribusiness Center; NC Cooperative Extension; and USDA. Registration is $10 per person and $5 per additional family member. Contact the location you plan to attend to register or check out www.mocagbiz.com/farmtransition.

- January 16 - Lee County Cooperative Extension at 919-775-5624.
- February 20- Robeson County Cooperative Extension at 910-671-3276.
- March 7 - Mount Olive College Agri business Center at 919-658-7510.

2013 Cape Fear Regional Cattle Conference

The 4th annual conference will be held on January 17th at the Southeastern N.C. Agricultural Events Center (former Farmers Market) at 1027 US Hwy 74E, Lumberton, NC 28358. The program includes a meal and time to visit with vendors. There will be a $5 charge - pay at the door. To register or for more information, call the Extension office at 910-321-6862 by Friday, January 11. Below is the schedule.

4:00 p.m. Registration and visit with vendors
4:30 p.m. North Carolina Cattlemen's Association Update
4:45 p.m. Fencing Demonstration – Dr. Matt Poore, NCSU Extension Beef Specialist
6:00 p.m. Dinner and visit with vendors
7:00 p.m. Common Cattle Diseases – Dr. Mark Alley, NCSU Extension Veterinarian

NC State University A&T State University COOPERATIVE EXTENSION
Empowering People · Providing Solutions

Animal Waste Management

By: Becky Spearman, Livestock Extension Agent with N.C. Cooperative Extension in Bladen County

CONTINUING EDUCATION CLASSES

Date	Location	Time	Contact
January 10	Duplin County	9 am (6hrs)	910-296-2143
January 23 & 24	Bladen	10 am - 4pm must attend both days to get 6 hr credit	910-862-4591

Initial Animal Waste Certification Training

There will be an initial training class for type A or type B license on **January 23 and 24 at the Bladen County Extension Office**. The cost for the class and manual is $35 or $5 for just the class. Call (910) 862-4591 to register. The 2013 exams are March 14, June 13, September 12, and November 12.

Reminder - Animal Waste Operators must send in their $10 renewal fee for their license to DWQ by December 31st.

NC Pork Conference

The NC Pork Conference will be held in conjunction with the Southern Farm Show again this year. Educational seminars will be held on Thursday, January 31st at the Martin Building on the State Fairgrounds. The members only Bacon Bash will be held at the Crabtree Valley Marriott on Thursday evening, January 31st. The Annual Awards Breakfast will be held Friday morning, February 1st at the Crabtree Valley Marriott. More details on the program will be coming out soon.

Hay Directories are below for people selling hay or looking for hay to buy. It is free to list your hay for sale.

1. North Carolina Department of Agriculture's Hay Alert is at http://www.agr.state.nc.us/hayalert/. Producers can call the Hay Alert at 1-866-506-6222. You can sign up to list your hay on-line.
2. The Southeastern NC Hay Directory is available at http://onslow.ces.ncsu.edu/files/library/67/HayDirectory.pdf. Call your Extension Agent to learn how to include your farm on the list.

Forage Management Tips

From Production and Utilization of Pastures and Forages in North Carolina

JANUARY

* If winter pasture is limited, feed hay in the pasture or allow cows to graze every other day. The priority for limited pasture is (1) calves by creep grazing, (2) stockers, (3) nursing cows, and (4) dry cows.
* Winter annual pastures that were planted on a prepared seedbed may be severely damaged if animals trample on them during wet periods. Allow calves first priority to these high-quality annual pastures.
* Sample hay and send to NCDA lab for analysis.
* Determine animal feed requirements for the year and out line a 12 month forage plan to meet animal's needs.

FEBRUARY

* Apply nitrogen to cool-season grasses to stimulate early spring growth.
* Lime fields that will be prepared for spring plants.
* Locate sources of hybrid bermudagrass sprigs for planting next month.
* Burn warm-season grass residues in late February or early March.
* Get herbicide sprayers ready to control weeds in dormant bermudagrass fields.

The Hormone Myth. Chickens are Not Fed Hormones! Here are 7 Reasons Why.

By: James Parsons, Area Poultry Extension Agent with N.C. Cooperative Extension

The following is an excerpt of the article, "The Hormone Myth" and used with the permission of Adam Davis with the University of Georgia. I think you will find it very interesting.

It seems to occur with increasing frequency. If you happen to mention you are involved in poultry nutrition, sooner or later the question is bound to arise: 'Why do you add hormones to chicken feed?' As all nutritionists know, it is simply not true. Hormones are not added to poultry feeds.

At the recent International Poultry Exposition in Atlanta, over a thousand companies exhibited their products to the poultry industry. As not a single firm that was there markets hormones for poultry, it may be questioned where the general public gets the idea that these substances are an integral part of poultry production. During the past several years, some poultry producers have in their advertising campaigns emphasized that they do not use hormones. Whether this position puts the matter to rest in the mind of the public is not certain. Perhaps, such advertisements might be interpreted to imply that other producers use hormones, or that this was a common practice at some time in the past. It would take a public relations expert to interpret the mental impressions. Another possible reason for suspecting hormone use is that today's broilers grow so incredibly fast that those not familiar with poultry production might well assume that "magic bullets" are needed. Whatever the case, the misconception that hormones are added to poultry feed is, of course, totally inaccurate and detracts from the image that the poultry industry likes to project to health-conscious consumers. In the interest of refuting this belief, it is the authors' purpose to not simply deny the use of hormones, but rather to go one step further and provide solid reasons why hormones are not and, in fact, cannot be used in poultry production.

Seven Reasons

1. Hormone use is illegal. In the United States and many other countries, extremely strict controls are placed on the use of hormones and hormone-like substances in animal feeds. In no case is the supplementation of hormones approved for poultry. While it might be alleged that illegal use of hormones might occasionally be practiced, as will be made clear below there is no logical reason to use these compounds in poultry production.

2. Hormones are not effective. The administration of growth hormone does not lead to increased growth in chickens. In a similar vein, injecting growth hormone into humans will not lead to development of a winning basketball team. Growth is an extremely complex combination of metabolic functions, depending on a wide array of endocrinological signals.

3. Administration is extremely difficult. Like insulin, which is used in the treatment of diabetes, growth hormone is a protein. If either of these hormones were consumed orally, they would be quickly digested in the same way as protein from corn or soy. As is well known, diabetics must receive injections of insulin. Thus even if a positive effect were likely, growth hormone would need to be injected into chickens on a very frequent basis. The logistics of injecting hundreds of thousands of chickens with hormone illustrates the impossibility of this scenario. Research indicates that the release of natural growth hormone in chickens is pulsatile, peaking every 90 minutes. This could imply that if growth hormone were to be administered effectively, the only feasible way to do this would be through frequent intravenous administration.

4. High cost. As chicken growth hormone is not produced commercially, its cost would be extremely high. If 1 mg were to be administered to a broiler, the cost would be far in excess of the value of the chicken itself. Obviously, this makes no commercial sense.

5. Negative impact of chicken performance. The modern broiler has been genetically selected to grow so rapidly that it occasionally encounters physiological limits. All are familiar with the cases of young men who, as they enter puberty, experience a sharply increased rate of growth. The "growth spurt" is usually accompanied by joint inflammation and other problems. In the same way, the modern broiler lives literally on the edge of its metabolic maximum. In fact, feed restriction is occasionally recommended (either by physical restriction or reduced nutrient density) in order to reduce growth rate and limit the incidence of lameness, heart attack and ascites. In tropical regions, a sharply increased growth rate would almost certainly double, triple or possibly quadruple the rate of mortality from heat stress. Thus, it would be highly counterproductive to suddenly force a higher rate of growth on broiler chickens.

6. What about anabolic steroids? The occasional abuse of anabolic steroids by athletes is periodically documented in the press. There is certainly no question that their use

Getting Your Bulls Ready for the Breeding Season

By: Randy Wood, County Extension Director and Livestock Agent with N.C. Cooperative Extension in Scotland County

By now, many cattle farms have already or soon will be turning their bulls out for the breeding season. Usually Mother Nature takes over after that and 283 days later you will start to see calves hitting the ground. Occasionally though, something goes wrong. The results will often be a bunch of open cows and a farmer left with the difficult decision to rebreed out of his/her preferred season or spend a year feeding open cows with nothing in return. Lets discuss some of the more common things that can go wrong with a bull and how to avoid them.

Bulls are infertile going into the breeding season. This is probably the most common issue facing cow-calf & purebred cattle producers. It is also easily solved through a Breeding Soundness Exam (BSE). A BSE looks at the normal male reproductive functions (physiology, reproductive diseases, and semen quality) and determines if a bull is able to successfully breed a cow. There are really only three factors keeping farmers from performing this worthwhile examination each year. Proper facilities for working a bull, not having a working relationship with a large animal vet, and of course the cost itself of having this examination preformed. In a nutshell, you should have a working facility/chute that you can put a bull in if you're going to have cattle and be responsible for their well being. Large animal vets are accustomed to working a long ways from their home. So just because you may not have a large animal vet in your home town should not deter you from using one of your liking. Finally, even if your paying a pretty hefty mileage stipend to get a vet on your farm, all it takes is for a vet to catch 1 sterile bull every 20 years or so to more than pay for what it costs to have a pasture full of open cows several months after the breeding season is over.

A bull gets injured/goes sterile during the breeding season. This one is also pretty commonly seen. An injury to his back, hip or leg, even if not a severe injury, will almost always reduce his ability to settle cows in a timely fashion. If you've ever watched a bull court a cow that is coming in heat, he will walk a lot following this cow during this process until she is in standing heat. If a bull cannot walk normally or put a majority of his weight on his back legs, then he will not be able to settle your cows.

Also along these lines is sickness that may occur during the breeding season. If you are not closely observing the bull daily, it is easy to overlook a bull that may be a little "off" for a few days. The biggest danger by far during an even mild sickness is the bull running a fever. A fever will have a major detrimental impact on his semen quality for several weeks after this time. This is often what catches a cattle farmer off guard even though the bull may be feeling better and back working. He very well may be sterile way after the fact. If you suspect a bull has gotten sick and run a fever consult a vet right away to determine what course of action you need to take.

Finally, a bull may be exposed to too many cows during the breeding season. This scenario also occurs pretty regularly and while normally will not result in large quantities of open cattle, even a few more open cattle than your normal conception rate will cost you money in the long run . Even if a bull only misses 4 or 5 cycling cows in a season will result in a pretty big loss of income the following year. The general rule of thumb is a yearling bull may start out covering 12 cows. You can then add another cow per month of age to a max of 35 or so depending on good health and proper nutrition.

While unexpected problems and just bad luck may still cause problems with your bulls, planning ahead and being vigilant during the breeding season will go a long way to avoiding an expensive lesson in your cattle operation.

The Hormone Myth. Chickens are Not Fed Hormones! Here are 7 Reasons why. Continued

6. continued. What makes the steroid question even more unlikely is that the most valuable part of the chicken-the breast-is composed of muscles used to raise and lower the wings. Chickens have not flown for several thousand years. No exercise . . . no benefit from anabolic steroids.

7. Hormones are simply not needed. The extremely rapid growth of broilers is very easy to explain without resorting to hormones. Reviewing the records of genetics firms, it will be noted that for the past several decades birds have reached a specified market weight one day earlier per year. The challenge to poultry producers is to provide high quality feed and a healthy environment in the poultry house to meet the broiler's prodigious genetic potential. For those familiar with the technical aspects of poultry production, the rapid growth of modern broilers is a logical consequence of slow but con-

Winter Horse Care

Adapted By: Mandy Harris, Extension Livestock Agent with N.C. Cooperative Extension in Cumberland County from Responsible Horse Care for Winter and Summer by Steven M. Jones, Extension Horse Specialist

Although North Carolina is not the coldest place in the winter months, the temperature does drop and your horses need to be ready. You should already be using a feeding plan for your horse. In the summer months a feeding plan should have been developed to decide what you were going to feed during the winter. Waiting until after the first frost kills your summer pasture was too late to decide what your winter feeding program was going to be. It is important for you to know the nutrient value of your hay.

Your local Extension office can assist you in getting your hay tested. The test takes several weeks, so you should have this done already. You should also know the nutritional requirements of your horse. These nutritional requirements are based on age, size, reproductive stage (for mares) and amount of work performed and can be obtained from your Extension agent. Once you have your hay sample results, compare the nutrient content of the hay to the nutrient requirements of your horse. It is likely they will need a grain supplement to meet their nutritional requirements.

Winter weather, such as cold and wet weather, can cause problems with hooves, colic, stable vices such as cribbing and increase the horse's nutritional needs. During winter months horses will probably need one to two more pounds of feed to provide adequate energy to maintain body temperature. Adequate roughage should also be provided to prevent cribbing and other stable vices. During the winter grass is 80 to 90 percent water, so grazing horses consume mostly water. The desire to chew isn't satisfied and cribbing usually begins during times of wet weather.

Impaction colic is also more prevalent during cold weather. This is usually because horses do not consume adequate amounts of water for digestion. Horses should have access to clean, unfrozen water sources. Barns should have good ventilation and air flow to maintain good air quality through the winter and prevent respiratory problems.

Wet conditions make hoof care essential. Sometimes, horses feet become wet enough that the outside of the hoof deteriorates and causes cracking and splitting. Then mud and sand can get in to the cracks, causing more spreading. It is critical to keep the hoof wall intact, and every effort should be made to keep the hoof as dry as possible and have hoof dressings applied regularly. Hoof dressing is an oil or grease that keeps water from soaking into the foot.

Horse care during the winter is essential to having a healthy horse the rest of the year.

NC State University College of Veterinary Medicine Equine Health Symposium

The NCSU Equine Health Program and NCSU-Student Chapter of the American Association of Equine Practitioners invite you to join them for select topics in equine health. This year's event will provide attendees with the most up to date information on a variety of topics with a focus on equine neurological and orthopedic disease. The symposium will be February 2-3, 2013. The horse owner, caretaker and rider program will be February 3. This set of seminars will provide horse owners, caretakers and riders the most current information available on topics such as head trauma and neurologic exams, pain management, nutrition, biosecurity, infectious diseases, and preventative care. There will also be tours of the vet school.

The program's overall goal is to bring new health information to horse owners. The discussions are aimed so that novice owners and experienced professional trainers all have an opportunity to take home new information that they can apply to their horses. Exhibitors will also be available so attendees can learn about individual products or organizations during the lunch break.

This event provides a unique learning opportunity that no horse owner or enthusiast can afford to miss! Registration is $60 for owners, caretakers and riders. For more information and to register, visit http://www.cvm.ncsu.edu/conted/equinehealth.html.

Scrapie in Sheep and Goats

By: Becky Spearman, Information from a factsheet by USDA APHIS Veterinary Services and a NCDA memo

Scrapie is a fatal disease that affects sheep and goats. It is one of several diseases classified as transmissible spongiform encephalopathies (TSE). Other diseases in the same category are bovine spongiform encephalopathy (BSE) of cattle and chronic wasting disease (CWD) of deer and elk. There is no evidence that scrapie or CWD can spread to humans through consuming meat or dairy products or through handling infected animals.

Scrapie was first recognized as a disease in Great Britain and other counties of Western Europe more than 250 years ago. As of 2008, only two countries are considered by the United States as being scrapie free: Australia and New Zealand. Scrapie was first found in the United States in 1947 in a Michigan sheep flock.

An USDA Animal and Plant Health Inspection Service (APHIS) slaughter surveillance study from 2002-2003, found the prevalence of scrapie in mature cull sheep at 0.2 percent. In the U.S., scrapie has been reported primarily in the Suffolk breed, but occurs in other sheep breeds. APHIS reported that through October 2003, there were approximately 2,350 cases in sheep. From 2002- July, 2008, only 19 diagnosed cases in goats were reported.

The scrapie agent is thought to be spread from ewe or doe to her offspring through contact with the placenta and placental fluids. The signs of the disease appear from 2 –5 years after the animal is infected. After the appearance of clinical signs, most sheep or goats will live 1 to 6 months, but death is inevitable. The genetics of the sheep affects their susceptibility to scrapie.

One or more of the following clinical signs may indicate scrapie:

- Weight loss despite retention of appetite
- Increased sensitivity to noise & movement
- Bunny-hop movement of rear
- High-stepping gait of forelimbs
- Behavioral changes
- Wool pulling
- Itching and rubbing
- Swaying of back end
- Loss of coordination
- Tremor
- Lip smacking
- Biting at legs or sides
- Down, unable to stand
- Death, possibly sudden

Sheep with clinical signs of scrapie

Veterinarians can diagnose scrapie based on the signs and history. Diagnosis can be done in live animals by biopsying the tissues inside the third eyelid. Genetic testing in sheep can be used to identify a scrapie susceptibility gene.

Due to the nature of the scrapie disease having a long transmission time and the concern over lost marketing opportunites, the U.S. has a National Scrapie Eradication Program. More information can be found at www.eradicatescrapie.org

Scrapie Regulations for NC Goat and Sheep Exhibitors/Producers written by NCDA & CS personnel Bruce Shankle, Neil Bowman, and Dr. Tom Ray.

The following is the explanation of what must be done in North Carolina to comply with NCDA&CS Veterinary Division/USDA-APHIS Veterinary Services regulations. This is more inclusive than what is required by USDA in the National Scrapie Eradication Program. All sheep and goats transported, marketed, or moved from premises in NC must be herd or flock of origin identified by:
1. USDA Scrapie Eradication identification tag or,
2. Volunteer Scrapie monitor herd tag or,
3. Registration tattoo with recorded registration certificate from a recognized sheep or goat breed association.

Records must be kept of all sales and/or movements for 5 years.

In the case of shows, breeding stock sales or exhibits:
4. All sheep and goats must have official flock of origin/ birth identification.
5. Show wethers purchased from out of state must be tagged by original owner as animals not born in flock (must have tags from farm of origin).
6. Non tagged animals arriving at shows or exhibits must be accompanied by official registration papers and have matching and readable tattoos.
7. All farms of origin must have an official USDA flock ID number, even if all animals in herd or flock are registered in a recognized breed association.
8. All out-of-state sheep and goats entering NC must have proper interstate health certificates and identification.

To enroll in the USDA Voluntary Scrapie Certification Program or to obtain an official USDA Herd ID number and free official ID ear tags for the Scrapie Eradication Program, call: NCDA&CS, Veterinary Division at 919-733-7601 or USDA, APHIS at 919-855-7700.

4-H Farm Credit Showmanship Circuit Winners

By: Tiffanee Conrad-Acuña, Livestock Extension Agent with N.C. Cooperative Extension in Richmond County

Results for The 4-H Farm Credit Showmanship Circuit were announced at the banquet in Montgomery County. These youth accumulated points for their placings in showmanship at a series of shows in South Central North Carolina this fall. If you know any of these young people, please congratulate them for all their hard work and accomplishments. If you have a child, grandchild, or neighbor who may be interested in competing in our Circuit, please call your local Livestock or 4-H Agent for help.

The 4-H Farm Credit Showmanship Circuit is for youth showing lambs, heifers, and goats. There are three divisions for all species. First place in each division won a belt buckle and a banner ribbon, second place won a banner ribbon, and third place through fifth place won a tri-fold ribbon. Cape Fear Farm Credit and Carolina Farm Credit proudly sponsor the Circuit, providing the funding to operate it. Each youth participant received a Circuit tee shirt. Final point rankings for the Circuit are below:

Lamb Showmanship Winners

Junior	Intermediate	Senior
1. Fiona Walsh*	1. Ashley Wilson	1. Tanner Riegel
	2. Wyatt Kendall	2. Heather Goodrich
	3. Chase Matthis	3. Emerald Layton
	4. Owen Flock	4. Benjamin Herdon
		5. Brittany Truesdale

Heifer Showmanship Winners

Junior	Intermediate	Senior
1. Mattie Harward	1. Cara Smith*	1. Brooke Harward
2. Marcie Harward	2. Thomas Smith	2. Catherine Harward
3. Luke White	3. Mary Vorder Bruegge	3. Chase Piercy
4. Hunter Batchelor	4. Hannah Horne	4. LeeAnn Harward
5. Madelyn Hall	5. Madison Adams	5. Lee Coley

Meat Goat Showmanship Winners

Junior	Intermediate	Senior
1. Abigail Hamilton	1. Madelyn Chappell	1. Nathan Ezzell
2. DeLani Reep	2. Jordan Carroll	2. Kayla Butler*
3. Taylor Chappell	3 Brianna Hamilton	3. Morgan Rockwell
4. Kane Butler	4. Savannah Chappell	4. Alana McQueen
5. Payton Smith	5 Kristi Reep	5. Jessica Howie

***=Also won the Most Improved Award Ribbon for their species and pictured from left to right are Cara Smith, Kayla Butler, and Fiona Walsh.**

Do I Have Enough Hay for the Winter?

By: Tyrone Fisher, County Extension Director and Livestock Agent with N.C. Cooperative Extension in Harnett County

As a result of this summer's adverse weather, beef producers may again be faced with a shortage of winter feed similar to last winter. Now is the time to evaluate winter feed supplies vs. requirements and develop a plan of action. If the feed supply is inadequate then additional feed must be acquired, or cattle numbers reduced.

The number of days that feed is required must be determined. This will vary from around 90 to 150 days, depending on the climate in your area and the amount of stockpiled forage available. Stockpiled forage is an excellent way to reduce stored feed requirements.

A quick, easy way to estimate feed requirements is on the basis of animal units. This can be done based on a mature cow or a bull equal to one unit, yearling cattle equal to one-half unit and calves equal to one-fourth unit. Utilizing this method each animal unit will require approximately 25 pounds of hay or 50 pounds of corn silage, assuming average to good quality hay or silage.

For a herd of 35 cows, one bull, 8 replacement heifers and 16 yearling steers with a winter feeding period of 120 days, the following is an example calculation of stored feed requirements:

35 cows	x	1 animal unit	=	35 animal units
1 bull	x	1 animal unit	=	1 animal unit
8 replacement heifers	x	1/2 animal unit	=	4 animal units
16 yearling steers	x	1/2 animal unit	=	8 animal units
				48 animal units

The herd total is 48 animal units.

48 animal units	x	120 days	x	25 pounds of hay per day	=	144,000 pounds
			or			
48 animal units	x	120 days	x	50 pounds of silage per day	=	288,000 pounds

You also must have a good estimate of the quantity of feed available to determine if the animals' needs can be met. When estimating quantity of hay it is best to obtain the average weight of several bales and then multiply this times the number of bales.

Remember that large bales stored outside may sustain substantial losses during storage and feeding, which must be taken into consideration. To estimate the quantity of silage in a horizontal silo multiply the average width x the average height x the length to obtain the number of cubic feet. Remember to allow for any spoilage. The average weight of well packed silage is 40 pounds per cubic foot.

Remember that utilizing animal units to estimate feed requirements is just that, only a quick estimate. To be more accurate you need to consider exact nutritional requirements for the size of animal and stage of reproduction or growth desired. Also, feed supply can be more accurately estimated if you have a forage analysis to determine the exact nutrient content.

Once you have calculated your need for hay, develop a contact list for hay resources and start contacting now for hay availability later this winter. Don’t wait until the last minute, we may have a extended winter season or a late spring, you don’t want to be left out in the cold with no feed resources. Thanks to former NCSU Beef Specialist B. C. Allison for the above resources.