Important Information

**Beef Quality Assurance**, Tuesday, March 10, 5:30 p.m., Southeastern Livestock Market – North Carolina Cooperative Extension (Robeson, Columbus, and Bladen County Centers) and the N.C. Cattlemen’s Association will host a chuteside demonstration of topics in the BQA Program. The demonstration is at the Livestock Market located off Hwy 410, 5 miles south of Chadbourn. A meal will be provided, so please RSVP by calling the Extension Center at 671-3276.

**Smithfield Processing Plant Tour**, Thursday, March 12, 9 a.m., Tarheel – Our group has been invited to tour the processing plant. I encourage anyone who hasn’t been to go. A state van has been reserved, and the group will leave the Extension Center at 7:30 a.m. Please RSVP by March 10, so we can let the plant know how many to expect.

**Litter Spreader Calibration Field Day**, Friday, March 13, 9:30 a.m., Morris’ Farm, 10402 Hwy 41 East, Bladenboro (2 miles past the Robeson/Bladen County line.) - Three Hours of Animal Waste

If you are interested in learning more about any information in this newsletter, contact me at the Extension Center at 671-3276 or E-mail me at Michelle_Shooter@ncsu.edu. For accommodations for persons with disabilities, contact me no later than five business days before the event.

Sincerely,

Michelle M. Shooter
Extension Agent
Agriculture – Livestock

MS/dh

Continuing Education Credit will be given. A sponsored meal will be provided, so please RSVP by calling the Extension Center at 671-3276 by March 10.

**Pasture Walk**, Thursday, March 19, 2 p.m., BB&K Farms Sprigging Service, hosted by Bruce and Deb Locklear - There will be a no-till demonstration behind soybeans. Soil and Water Conservation Service representatives and Rick Morris, regional soil agronomist with NCDA, will be on hand to answer pasture-related questions.

**Clinton Feeder Calf Sale**, Tuesday, March 24, 7 p.m., Sampson Livestock Facility – Cattle should be taken to the facility for grading, penning, et cetera, between 7 a.m. and 4 p.m. For more information, call Paul Gonzalez, Extension livestock agent, at 910-592-7161 at the Extension Center in Sampson County.
State General Permits

The State General Permits expire on September 30, 2009. The Division of Water Quality (DWQ) is in the process of developing the new permit. There were public meetings held in December to present the permits and allow for public comment. The final permit should be issued by March 2009. You should be getting your application in the mail by early March. Applications are due back to DWQ by April 1. Your new permit is valid starting October 1.

A fact sheet and links to the draft permits are at DWQ’s website at:

http://h2o.enr.state.nc.us/aps/afou/downloads.htm

Some of the key differences are as follows:
- Phosphorous assessment may be required for facilities in watersheds sensitive to nutrient enrichment.
- Sludge applied to bare soils must be incorporated within 2 days or prior to the next rainfall event - whichever is first.
- Routine inspections after a 1-inch rainfall shall include visual inspection of drain outlets, ditches, and drainage ways for any discharge of waste.
- No application of waste if Hurricane or Tropical Storm Warning or Flood Watch associated with a tropical system is issued for the county in which the facility is located. This is a requirement to stop applications 24 hours in advance of a tropical system.
- Sludge levels must be in compliance within 2 years.

If you have questions on any of these topics, please call your Extension Agent.

Rules Concerning Large CAFOs

There are two Environmental Protection Agency (EPA) rules that affect concentrated animal feeding operations (CAFOs). Large CAFOs are defined as having 2,500 or more swine, each weighing 55 pounds (sow or finishing) or 10,000 or more swine, weighing less than 55 pounds (nursery). If your farm is below the threshold numbers, this does not apply to you.

These rules are confusing, because there are 2 new rules that may apply to large farms at the same time. The 2 rules are:

1. EPA Rule for Air Emissions Reporting under EPCRA - - The first part was a requirement to call your local and state emergency management by January 20. If you have not made these calls, it is recommended that you go ahead and make the calls. Within 30 days of making the phone calls, producers are required to submit a written report to both local and state emergency management. If you PARTICIPATED in the EPA Air Consent Agreement and paid the required fees in 2005, you do not have to do anything.

2. EPA NPDES Rules - - More information will be coming out about this topic from DWQ. There are 4 options available to producers and each has pros and cons.
   a. Operate with CAFO rule NPDES permit
   b. Operate under a no discharge “certification”
   c. Operate under a no discharge “validation”
   d. Operate without a CAFO NPDES permit

If you have questions on any of these topics, please call your Extension Agent.

Forage Management Tips

From Production of Pastures and Forages in North Carolina

March
- Fertilize cool-season grasses to increase production.
- Dig weed-free bermudagrass sprigs and plant them before growth begins. Consider using a herbicide.
- Control winter annual weeds in dormant bermudagrass with herbicides, burning, or grazing pressure.
- Watch for grass tetany as rapid grass growth and cool, wet weather prevails-supplement with high mag mineral.
- Scatter manure from areas where animals congregate.

April
- Fertilize cool-season grasses if not already done so.
- Watch for symptoms of grass tetany.
- Fertilize warm-season grasses as soon as dormancy breaks.
- Establish hybrid bermudagrass unless irrigation is available.
- Plant bahia grass, crabgrass, switchgrass. Plant seeded varieties of bermudagrass at the end of the month.
- Graze cool-season grasses down to 2-4 inches. Harvest for hay if growth is too rapid to maintain grazing pressure.
- Completely graze or harvest all winter annual pastures before grazing on other pastures or pastures which may be harvested as hay.
This long-practiced management technique depends on several factors: Can the field be legally and safely burned? Is the dormant grass left from the previous fall over 2 - 3 inches tall? Was there a significant weed problem the previous year? Is your goal to produce a high-quality first cutting of hay this spring? Depending on how you answered these questions will determine if you need to burn off your fields in late winter/early spring this year. Let’s discuss these factors in detail:

Safety
The first question you should ask yourself is “can I safely burn this field?” Disking in fire lanes on the edges of the field, having water tanks ready, and having enough help to keep watch and put out any jumps in the fire breaks are just the first steps. After this, it is often a waiting game to get the right weather conditions to burn. More often than not, our springs are too dry rather than too wet to manage a burn. Two out of the last three years the state has had burning bans in March. Even without burning bans, we have had times when extremely low humidity has made control burns very difficult to control. Regardless of these other factors, changes in daily wind patterns will make or break you when it comes time to burn. Keep in mind that any burning done before 4 p.m. requires a burning permit. After 4 p.m., a permit is not required. Usually, the conditions are much more favorable after 4 p.m. anyway. Winds are calmer, the humidity will be higher, and in a worst-case scenario, volunteer firemen are much quicker to respond after they get off work.

Removal of Thatch
If you cut your fields right before the first frost during the fall and have very little build-up of thatch on the ground, then not only do you not need to burn it, you probably cannot get a successful burn in the first place. However, in a lot of cases, there will be some dead grass standing from the previous season and some thatch buildup that does need removing. Any standing grass over 2 - 3 inches will significantly slow down green-up in the spring. Removing it will open up the canopy and get this year’s grass out of the ground much faster. Also, removal of a thick thatch layer will help in several ways. Water and nutrients will get into the root zone easier, and the soil temperature will heat up much quicker without the thatch layer to insulate the ground.

Weed Control
Another benefit to burning is that it offers some free weed control. Keep in mind that burning will never be as good as a Glysophate burn-down in February or a replacement to a good combination herbicide in April/May, but it certainly will help. Also, any weeds like pigweed or sandspurs that will still be in the field and just as sharp months after they have died will be destroyed in the fire. If weed control is your primary goal, the hotter and slower the burn, the more it will help. An upwind fire normally does a better job of destroying weed residue than a fast-moving downwind fire. Don’t fool yourself into thinking that a significant weed problem will suddenly be gone simply by burning a field, because it will not. Burning will just be the first step in controlling weeds this summer.

Produce High-Quality First Cutting of Hay
If your goal is to produce a clean hay cutting or get a pasture to green-up as early as possible in the spring, then yes, burning will be a big management tool with this. However, keep in mind that burning too early, especially with a more winter-sensitive variety like Tifton 85, can hurt as much as it helps. Removing the residual grass and thatch layer removes all the field’s natural insulation. If you burn too early in the winter and we have several weeks of extreme cold afterwards, then it is possible that you will get some significant winter kill as a result.
Controlled breeding seasons are a great way to increase the profitability of your farm without having to make any major investments. With a controlled breeding season, management can be fine-tuned by allowing bulls to be with the cows for 60-90 days. If a bull is accustomed to spending all his time with the cows, it may take some effort and a strong fence to keep them apart, but in the long run, it can really impact the quality and profitability of a herd.

Controlled breeding seasons increase the productivity of a farm by:
1. Improving marketing opportunities
2. Reducing time and labor needs
3. Improving herd health
4. Improving nutrition

**Improving Marketing Opportunities**
Having a controlled breeding season means having a uniform calf crop, which is important when participating in feeder calf pools. Buyers want uniformity and are willing to pay more for it. Producers can also determine their calving season and plan their ideal time to wean and sell calves.

Historically, data shows that the best time of the year to sell calves is in the early summer. Prices usually drop in the fall months, because many calves are weaned across the country when forage supplies decrease. Producers with a controlled breeding season in the fall would be able to wean and sell calves when prices are higher.

If a producer also farms row crops, fall calving may not be conducive to his/her schedule. For that producer, it may be more feasible to calve in the early spring when there isn’t as much to do in the field. Controlled breeding seasons allow calves to be marketed at a time best for the producer, and it also allows the producer the option of holding on to uniform calves until they reach the size the market demands. For example, if a producer has 50 calves that weigh around 500 pounds, he can hold onto them until they reach 700 pounds.

**Reducing Time and Labor Needs**
Controlled breeding seasons allow the reduction of time and labor on the farm. If a producer knows all his cattle will calve in a two-month window, time and energy can be concentrated on the herd during those months. If a producer usually hires extra help when cows are calving, the amount of time paying for additional help can be reduced. Most importantly, knowing when cows and calves are due allows producers to properly check on cows and first-time heifers reducing the risk of losing cows and calves from birthing difficulties.

**Improving Herd Health**
This is simple -- if a cowherd is in sync, all cows and heifers can be worked at the same time. Vaccinations, deworming, and weaning can all be taken care of at the same time. All bull calves can be castrated and watched for proper healing. Vaccines and dewormers that are based on animal weight will be more efficient, because the calves will be more uniform in size. A controlled calving season can lead to better management practices, because the herd is more uniform.

**Improving Nutrition**
Feeding the same ration to cows requiring different amounts of nutrients doesn’t make sense and can waste money. If cows have a controlled breeding season, a ration can be developed for their current situation. Cows nursing calves need 50 percent more protein than dry cows. Higher quality hay and rations can be fed to just the cows nursing instead of the whole herd. Lesser quality hay and rations can be fed to dry cows that require less protein and energy. If cows and heifers are on the same cycle, producers can more effectively use management techniques such as body condition scoring. If one animal has a lower body condition score, than the others, it may bring attention to a problem, with that cow or heifer. However, if the whole herd has a low body condition score, it will make the producer aware that there is a problem, and the ration might not be suitable for the herd’s needs.

Having a controlled breeding season means having a uniform calf crop. This can increase productivity of the farm by improving marketing opportunities, reducing time and labor needs, improving herd health, and improving nutrition. Even if a producer already has a calving season, it may be beneficial to tighten it just to increase the uniformity of the calves. The chart below simply shows the differences in a 180-day calving season verses a 60-day calving season. The 60-day calving season average weight at weaning is 542 pounds. For a 50-head herd, this would mean 3,100 more pounds at weaning.

**Differences in 180-day and 60-day calving seasons***

<table>
<thead>
<tr>
<th>Weight at Weaning</th>
<th>180-Day Calving Season</th>
<th>60-Day Calving Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months of Age</td>
<td>4 - 8</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Average Weaning Weight</td>
<td>480 lbs.</td>
<td>542 lbs.</td>
</tr>
<tr>
<td>Average Weaning Weight x 50-Head Herd</td>
<td>24,000 lbs.</td>
<td>27,100 lbs. (+3,100 lbs.)</td>
</tr>
</tbody>
</table>

* Information adapted from *Length of Calving Season Can Affect Your Bottom Dollar*, Barbi Riggs, Oregon State University

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Your Bottom Dollar

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`By: Michelle Shooter`
Many equine emergencies can be prevented; however, some are inevitable. This article will discuss some emergency situations and how to handle them. An emergency is described as a medical condition that requires immediate care. Some emergencies you can deal with on your own while other emergencies require the assistance of your veterinarian. In any emergency, the steps you take immediately can improve the situation. Some of the most common veterinary emergencies are colic, lacerations, and lameness.

The first rule of handling an emergency is to stay calm. Take a minute to assess the situation. After assessing the situation, call your vet for advice or to visit if you don’t think you can handle the problem. Think about your personal safety; if you are hurt, you can’t help your horse. If the situation allows, move the horse to a barn or place you can restrain it. Examine the horse to determine the problem. Look at the entire horse and decide what needs to be done.

Below are some areas to examine. Normal rates may vary between horses. It is recommended to take these measurements for each horse you own before an actual emergency.

1. **Take the horse’s temperature** - The normal rectal temperature of most adult horses is 99°F - 101.5°F. A horse’s body temperature can go up in the case of infection and other situations.

2. **Take the horse’s pulse rate** - Pulse rate can go up when the animal is excited or in pain. The pulse can be taken in several areas of the horse - see diagram 1. A normal pulse rate is 25 - 48 beats per minute. Resting pulse rates above 60 may indicate a problem.

3. **Measure the horse’s breathing rate** - The breathing rate can go up if an animal is excited or if oxygen needs are not being met. Measure the breathing rate by watching the chest and flank or putting one’s hand in front of the nostrils. The normal rate of breathing for a calm adult horse is between 8 and 20 breaths per minute.

4. **Look at capillary refill time** - The gum color should be a light pink color. Blood loss and shock may cause pale or gray gums. Capillary refill time measures how quickly a horse can move blood to distant parts of the body. Measure refill time by pressing firmly on the gums above the teeth using a finger or thumb, causing the area to become blanched out. After releasing the pressure, that area of the gums should return to normal color in 2 seconds or less in a normal horse.

5. **Measure dehydration** - Horses can lose body water faster than they can take it in during times of stress or disease. Measure dehydration using your thumb and forefinger to pull the horse’s skin away from the point of the shoulder. When the skin is released, it should return to its normal position in 2 seconds or less. If this takes longer than 2 seconds, the horse is dehydrated.

![Diagram 1 - Areas to measure pulse rate in horses:](image)

1. The inner surface of the groove under the lower jaw
2. The back edge of the lower jaw (the cheek), 4 inches below the eye
3. Under the tail, close to the body
4. Point where heartbeat can be monitored with stethoscope
5. Inside the left elbow, up and forward, against the chest wall (heart)
6. The inside of the foreleg
7. Behind the carpus or knee
8. Medial or lateral pastern

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**Normal Adult Horse**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>99°F - 101.5°F</td>
</tr>
<tr>
<td>Pulse Rate</td>
<td>25 - 48 beats per minute</td>
</tr>
<tr>
<td>Breathing Rate</td>
<td>8 - 20 breaths per minute</td>
</tr>
<tr>
<td>Capillary Refill Time</td>
<td>Skin returns to normal in 2 seconds or less</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Skin returns to normal in 2 seconds or less</td>
</tr>
</tbody>
</table>
If you ask a goat farmer what to feed your goats, you are guaranteed to get as many different answers as there are goats in this world. That’s because there are many ways to meet the nutritional needs of goats. The most profitable way to feed goats is to let them graze your pasture or eat brush in the woods. If you get your pasture and hay tested, then you know exactly what nutrients they are getting. Then, based on the goat’s nutritional requirements, you can supplement them with concentrate feed as needed.

Goats need energy, protein, fiber, minerals, vitamins, and, most importantly, water. Proper nutrition affects reproduction aspects such as fertility, embryo survival, litter size, and kid vigor. It affects milk production, which can mean higher weaning weights for kids. Nutrition also affects how well the kid grows after weaning and how effectively the goats can fend off disease and parasites. Basically, the way the goat lives, breathes, and grows all are affected by nutrition. When needed, goat producers feed well-balanced rations that are purchased commercially or mixed together from ingredients themselves. Young kids and lactating does need the most nutrition. Lactating and growing goats will consume anywhere from 3.5 to 5 percent of their body weight on a dry matter basis in one day. The table below gives the basic protein (%CP) and energy (%TDN) values needed for each class of goat.

Also, don’t forget to give your goats fresh, clean water every day. Each animal needs anywhere from ¼ to 4 gallons of water per day depending on activity level and weather conditions. If you need help with what to feed your goats, please call your county Extension agent.

<table>
<thead>
<tr>
<th>Class</th>
<th>%CP</th>
<th>%TDN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucks</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>Dry Doe</td>
<td>10</td>
<td>55</td>
</tr>
<tr>
<td>Late Gestation</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>Lactation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Milk</td>
<td>11</td>
<td>60</td>
</tr>
<tr>
<td>High Milk</td>
<td>14</td>
<td>65</td>
</tr>
<tr>
<td>Weanling</td>
<td>14</td>
<td>68</td>
</tr>
<tr>
<td>Yearlings</td>
<td>12</td>
<td>65</td>
</tr>
</tbody>
</table>

It's a WILD THANG!

By: Tiffanee Conrad-Acuña

Once again, it's time to show off your wild game cooking skills! North Carolina Cooperative Extension - Richmond County Center, Extension and Community Association (formerly Extension Homemakers), and Sandhills Rod and Gun Club are sponsoring the tenth annual Wild Game Cookery Contest.

Anyone can participate from Richmond or surrounding counties. This year, we have added a youth category for children under 16 years of age. We will also give an award for the most “authentic dish.” This award is for the overall recipe that is the most natural, such as those who cook with honey instead of sugar or maybe have cooked the food over an open fire instead of using the oven.

The contest will be held on Tuesday, March 10, at the First Presbyterian Church located at 133 W. Ballard Street across from the Junior High School in Ellerbe. Entries must be registered from 6:00 to 6:30 p.m. Once the dish is judged, the leftovers will be used for the Tasting Party. Judging will begin promptly at 6:30 p.m. Dr. Chris Moorman, Extension forestry professor, will present an educational presentation on Guatemalan Birds between 6:30 and 7:15 p.m.

If you are not preparing a dish but would like to attend this event as a visitor, there will be a $3 charge per person (children under 12 are free). This charge will cover the costs incurred for the facility and supplies. There will also be copies of the cookbook containing recipes entered from 1999-2008 for $10 each.

If you or a friend would like to enter your favorite recipe, please call Carol Capel, secretary at the Extension Center in Richmond County, at 910-997-8255. Please register no later than Monday, March 9.
Organic Hay and Grain Meeting  
By: Tiffanee Conrad-Acuña

North Carolina Cooperative Extension, Richmond County Center, invites those interested producers from surrounding counties to attend an informational meeting on producing organic hay and grains for the organic feed market. The meeting will be held on Thursday, March 12, from 6 - 8 p.m. at the Sandhills Research Station located at 2148 Windblow Road, Jackson Springs, N.C.

The organic market continues to be strong despite the economic downturn; however, the organic dairy, meat, and egg production sectors are experiencing difficulties in obtaining organic feed. Organic crops can receive 2-3 times the price of conventionally grown crops. This is a great opportunity for our local producers to learn about this important market. A light meal will be served at 6 p.m. The cost for the program is $5, charged at the door.

To register, contact the Extension Center in Richmond County at 910-997-8255 by March 10. You must register in order to ensure a meal for yourself.

Requirements for Nutrient Management Plans  
By: James Parsons, Area Specialized Poultry Agent, N.C. Cooperative Extension

By now, all poultry farmers with dry litter systems should have a Nutrient Management Plan in place. Nutrient Management Plans for poultry with dry litter systems do not have to be certified or written by a certified technical specialist, at least not yet. Since these plans are not "certified" plans, I did not include the required specifications for waste utilization plans in all of the plans I have written. This was a mistake. I want to take this opportunity to correct that mistake. You will find the list of required specifications listed below. Be sure to read and follow these specifications. If you have any questions about these specifications or need a Nutrient Management Plan for your poultry litter, please call me at 910-296-2143.

WASTE UTILIZATION PLAN  
(Required Specifications)

1. Animal waste shall not reach surface waters of the state by runoff, drift, man-made conveyances, direct application, or direct discharge during operation or land application. Any discharge of waste which reaches surface water is prohibited.

2. There must be documentation in the design folder that the producer either owns or has an agreement for use of adequate land on which to properly apply the waste. If the producer does not own adequate land to properly dispose of waste, he/she shall provide a copy of an agreement with a landowner who is within a reasonable proximity, allowing him/her the use of the land for waste application. It is the responsibility of the owner of the facility to secure an update of the Waste Utilization Plan when there is a change in the operation -- increase in the number of animals, method of utilization, or available land.

3. Animal waste shall be applied to meet, but not exceed, the nitrogen needs for realistic crop yields based on soil type, available moisture, historical data, climatic conditions, and level of management, unless there are regulations that restrict the rate of application for other nutrients.

4. Animal waste shall be applied to land eroding less than 5 tons per acre per year. Waste may be applied to land that is eroding at 5 or more tons but less than 10 tons per acre per year providing grass filter strips are installed where runoff leaves the field. (See FOTG Standard 393 - Filter Strip.)

5. Odors can be reduced by injecting the waste or disking after waste application. Waste should not be applied when there is danger of drift from the irrigation field.

6. When animal waste is to be applied on acres subject to flooding, it will be soil incorporated on conventionally tilled cropland. When applied to conservation tilled crops or grassland, the waste may be broadcast provided the application does not occur during a season prone to flooding. (See "Weather and Climate in North Carolina" for guidance.)

*7. Liquid waste shall be applied at rates not to exceed the soil infiltration rate such that runoff does not
occur off-site or to surface waters and in a method which does not cause drift from the site during application. No ponding should occur in order to control odor or flies.

8. Animal waste shall not be applied to saturated soils, during rainfall events, or when the surface is frozen.

9. Animal waste shall be applied on actively growing crops in such a manner that the crop is not covered with waste to a depth that would inhibit growth. The potential for salt damage from animal waste should also be considered.

10. Waste nutrients shall not be applied in fall or winter for spring planted crops on soils with a high potential for leaching. Waste nutrient loading rates on these soils should be held to a minimum, and a suitable winter cover crop should be planted to take up released nutrients. Waste shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.

11. Animal waste (other than swine waste from facilities sited on or after October 1, 1995) shall not be applied closer than 25 feet to perennial waters. (See Standard 393 - Filter Strip.)

12. Animal waste shall not be applied closer than 100 feet to wells.

13. Animal waste shall not be applied closer than 200 feet of dwellings other than those owned by the landowner.

14. Waste shall be applied in a manner not to reach other property and public right-of-ways.

15. Animal waste shall not be discharged into surface waters, drainage ways, or wetlands by discharge or by over-spraying. Animal waste may be applied to prior converted cropland provided they have been approved as a land application site by a "technical specialist." Animal waste shall not be applied on grassed waterways that discharges directly into water courses. On other grassed waterways, waste shall be applied at agronomic rates in a manner that causes no runoff or drift from the site.

*16. Domestic and industrial waste from washdown facilities, showers, toilets, sinks, etc., shall not be discharged into the animal waste management system.

*17. A protective cover of appropriate vegetation will be established on all disturbed areas (lagoon embankments, berms, pipe runs, etc.). Areas shall be fenced, as necessary, to protect the vegetation. Vegetation, such as trees, shrubs, and other woody species, are limited to areas where considered appropriate. Lagoon areas should be kept mowed and accessible. Berms and structures should be inspected regularly for evidence of erosion, leakage, or discharge.

*18. If animal production at the facility is to be suspended or terminated, the owner is responsible for obtaining and implementing a "closure plan" which will eliminate the possibility of an illegal discharge, pollution, and erosion.

*19. Waste handling structures, piping, pumps, reels, etc., should be inspected on a regular basis to prevent breakdowns, leaks, and spills. A regular maintenance checklist should be kept on site.

20. Animal waste can be used in a rotation that includes vegetables and other crops for direct human consumption. However, if animal waste is used on crops for direct human consumption, it should only be applied preplant with no further applications of animal waste during the crop season.

*21. Highly visible markers shall be installed to mark the top and bottom elevations of the temporary storage (pumping volume) of all waste treatment lagoons. Pumping shall be managed to maintain the liquid level between the markers. A marker will be required to mark the maximum storage volume for waste storage ponds.

22. Waste shall be tested within 60 days of utilization, and soil shall be tested at least annually at crop sites where waste products are applied. Nitrogen shall be the rate determining element. Zinc and copper levels in the soils shall be monitored, and alternative crop sites shall be used when these metals approach excessive levels. The pH shall be adjusted for optimum crop production and maintained. Soil and waste analysis records shall be kept for 5 years. Poultry dry waste application records shall be maintained for 3 years. Waste application records for all other waste shall be maintained for 5 years.

23. Dead animals will be disposed of in a manner that meets North Carolina regulations.

*Liquid Systems