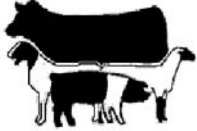


Bladen County Center

Livestock News

July 2017



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Contact Us

NC Cooperative Extension
Bladen County Center
450 Smith Circle Drive
PO Box 249
Elizabethtown, NC 28337
(910) 862-4591 Phone
bladen.ces.ncsu.edu

Becky Spearman

Becky Spearman
Extension Agent, Livestock
becky_spearman@ncsu.edu

North Carolina Cooperative Extension is a strategic partnership comprising NC State Extension, The Cooperative Extension Program at N.C. A&T State University, USDA-NIFA, and 101 local governments statewide. Extension professionals in all 100 counties and the Eastern Band of Cherokee translate research-based education and technology from our state's land-grant universities, NC State and N.C. A&T, into everyday solutions that enrich the lives, land and economy of North Carolinians. Extension specializes in agriculture, youth, communities, food, health and the environment by responding

NC State Extension works in tandem with N.C. A&T State University, as well as federal, state and local governments, to form a strategic partnership known as N.C. Cooperative Extension.

Soil Sample Fees

Samples are free until late November.

Pesticide License Classes at Bladen County Extension Office

August 15 from 5-7 pm - V Credit
August 15 from 7-9 pm - X credit

Awards for Newsletter Writers

Congratulations to several of our newsletter writers for winning awards at the annual meeting of the North Carolina Association of County Agricultural Agents. Liz Lahti, Cumberland and Hoke Counties Livestock Agent, won the Young Agent Award. Dan Wells, Johnston County Livestock Agent, and Richard Goforth, Southwest NC Specialized Area Poultry Agent, won the Achievement Award and Becky Spearman, Bladen County Livestock Agent, won the Distinguished Service Award.

Bermudagrass Field Day - July 25

There will be a bermudagrass field day at **Michael Inman's Farm in Tar Heel on Tuesday, July 25th from 3:30 - 5:30 pm.** (Rain date is July 27th). **Register by July 24th** by calling the Bladen Office at 910-862-4591.

Agenda topics: bermudagrass establishment - land prep, issues, tips, fertility management, weed control, pest control - armyworms and bermudagrass stem maggot, and walk plots and discuss varieties and 2016 sprigged bermudagrass variety trial of Midland 99, Ozark, Tifton 85, Tifton 44 and coastal.

2 hours of animal waste (must attend 3:30-5:30 pm) and 1 hour of X pesticide credit (must attend 4-5 pm) have been applied for.

The Bladen County 4-H Youth Livestock team participated at the Junior Beef Round-up skillathon contest on June 3rd. They won several awards.

Bizzell Pate was 1st and Luke Barber was 2nd overall junior individual and they were on the winning junior team combined with Stokes County. Olivia Barnes was 4th overall intermediate individual. Sean Nunnery was 1st overall senior individual. The Bladen/Stokes team consisting of Olivia Barnes, Amelia Harris and Henry Pate was 1st place intermediate team.



Members front from the left: Henry Pate, Luke Barber and Bizzell Pate. Back from left: Sean Nunnery, Olivia Barnes and Amelia Harris.

For any meeting in this newsletter, persons with disabilities 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.

Disclaimer - The use of brand names and any mention or listing of commercial products or services in this publication does not imply endorsement by North Carolina State University nor discrimination against similar products or services not mentioned.

Animal Waste Management

By: Amanda Hatcher, Livestock Extension Agent and County Director with N.C. Cooperative Extension in Duplin Co.

Initial 10-hour Animal Waste Operator Classes (OIC)

Bladen County Extension Office (Elizabethtown) - July 31 & August 1 starting at 12:30 pm. To register, contact the Bladen Extension Office at 910-862-4591 or register at <http://go.ncsu.edu/bladenoic2017> by July 14th. Cost for the class and manual is \$35 or \$5 just for class. * Exam date is September 14th.

Hookerton Recreational Complex, 484 Morris BBQ Rd, Hookerton (Greene County) - August 1 and 2 starting at 9 am both days. Call 252-521-1706 to register or email eve_honeycutt@ncsu.edu. \$30 for text book and \$25 for exam. *Exam date is September 14th.

Duplin County Extension Office (Kenansville) - October 24 & 25 from 10 am - 4 pm. Contact Wanda Hargrove at 910-296-2143 to register. Cost is \$35 for manual and \$25 for exam application. *Exam date is in December.

****New** NC State Extension Animal Waste Portal Available**

A new animal waste portal has been developed by NC State Extension. The portal is in place to provide some frequently needed resources to farmers, certified technical specialists, and agents. The portal can be found at: <https://animalwaste.ces.ncsu.edu/>

On the left side, click the “Swine Animal Waste Operator Resources” red tab. This section contains record keeping forms, including IRR-1, IRR-2, and Freeboard forms.

Scroll down in this section, and you’ll see some helpful resources:

- NCDA & CS website for looking up reports for soil, waste, plant, etc.
- Sludge survey form in Excel format
- Irrigation calibration forms
- Irrigation manufacturers’ charts for common types
- Link to permit information
- Contacts for sludge removal
- Continuing and initial education classes
- Exam information

Another red tab includes information about poultry waste management, including a video on how to calibrate a litter spreader and guidelines for litter.

There are also tabs for certified technical specialists, agencies, extension agents, and publications.

At the top of the page, there is a search option, a link “County Centers,” that takes you to a specific county’s

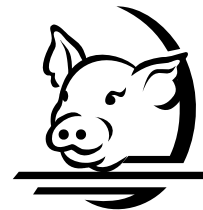
extension website, and “Topics” that allow you to find information about other subjects such as 4-H or blueberries.

If you have suggestions on other resources that could be helpful, please contact your county agent or someone on the “Meet Our Staff” red tab.

Animal Waste Reminders

To prepare for your annual inspection, here are a few reminders to help you get ready:

- Ensure all records are up to date and in a legible and chronological format.
- Sludge surveys are due each year, unless your lagoon has an extension. Check the extension date on the letter from DEQ to see when the next survey is due.
- Irrigation calibrations are due every other year.
- Soil testing is due on each field receiving animal waste once every three years. Currently the process time for a soil sample through NCDA & CS is 1-2 weeks.
- Waste testing is to be done within 60 days before or after irrigation.
- Freeboard recordings are done weekly and precipitation events are recorded as they occur.
- Check that all required records are in their proper place so that they’re easy to access at inspection.



Hay Directory

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. It lists people selling hay or looking for hay to buy. It is free to list your hay.

Local NC Alfalfa

By: Brian Parrish, Agriculture Extension Agent with N.C. Cooperative Extension in Harnett County

Will alfalfa grow in Harnett County? We currently have three farmers that are growing alfalfa in the Harnett County NC area (Coats, Erwin, and Duncan) and the crop is doing very well in all three locations. Two of the growers target the (high quality) horse hay market. They sell small square bales as a valuable cash crop. The third grower is baling the alfalfa as haylage to use as a protein supplement for his cattle herd during the winter. The alfalfa haylage should help save the cattle producer money based on what he has been spending on protein supplements in previous years. It has amazed me how well the alfalfa has grown here during the last two growing seasons.

How is the quality of the local Alfalfa hay? Last year I was called out to help test hay shipments coming in to a large horse boarding operation. I mentioned to the owner that we have some local alfalfa growers and he said, “I have some of the local alfalfa here in my barn” so we tested it as well. The hay test results showed that the locally grown Harnett alfalfa was just as good as the alfalfa coming in from other states and in many instances the local hay was better in quality. High quality alfalfa hay has Crude Protein (CP) levels between 18% to 23% with acid detergent fiber (ADF) below 30%. The Harnett alfalfa tested 24% crude protein with acid detergent fiber ranging from 25.90 % to 27.64%, which is very high quality alfalfa hay.

Can alfalfa produce its own Nitrogen (N)? Alfalfa is a legume and has the ability to produce between 250 to 400 pounds of Nitrogen (N) per acre per year. Alfalfa can basically allow producers to grow their own nitrogen (N). This can be a big deal from a financial standpoint, especially when considering the high prices of

Nitrogen in today’s market. Also, not all forage and hay producers have access to lower cost litter and other organic sources of nitrogen (N). Can alfalfa be grown in combination with Bermuda? Growing alfalfa with bermudagrass can have many benefits in addition to improving hay and forage quality. Bermuda mixed with alfalfa allows the alfalfa to dry faster. Alfalfa grown with bermudagrass also retains more leaves and has less ash content, because the grass sod minimizes soil contamination. The alfalfa bermudagrass mix also has a degree of built in risk management. When the alfalfa eventually plays out the bermudagrass remains.

As with any crop there are places where alfalfa is not a good fit. Alfalfa needs a well-drained soil so that it can send its roots deep into the soil profile. Wet and poorly drained soils are not a good fit. Alfalfa also needs a soil pH of 6.5 or greater. In addition, alfalfa needs the subsoil pH (8 to 24 inches) to be above 5.5 pH. Alfalfa also requires significant (P) phosphorus and (K) potassium fertility of the soil. If either is low, problems with establishment can occur. Alfalfa tends to like and do well on clay soils but sandy loam soils have proven capable of producing alfalfa. Another thing to watch out for is soils that are too sandy. Avoid soils that are classified by soil type as “sand” and have less than one percent organic matter. Herbicide residues can also be a problem for alfalfa. Hay or former crop field herbicides can remain active in the soil for months and can damage alfalfa seedlings.

Sources: Dennis Hancock (Associate Professor and State Forage Extension Specialist University of Georgia) Professional Forage Grower June 2015.



On Farm Euthanasia of Cattle

Submitted by: Paul Gonzalez, Livestock Extension Agent with N.C. Cooperative Extension in Sampson County
From The Beef Site, "Euthanasia Guidelines for Cattle"

The following is a summary of the American Veterinary Medical Association guidelines for euthanizing cattle, with assistance from Dr. Dee Griffin, University of Nebraska, Professor James P. Reynolds, Western University of Veterinary Medicine, Pomona and Glen T. Johnson, director at the Reedsburg Veterinary Clinic.

Euthanasia means a "good death" whereby the methods applied to cause death induce an immediate loss of consciousness followed by cardiac and respiratory arrest and death without a return to consciousness. In the updated version of the AVMA Guidelines, euthanasia techniques are classified as 1) Acceptable, 2) Acceptable with Conditions, 3) Adjunctive, and 4) Unacceptable.

Methods recognized as appropriate for euthanasia of cattle are: 1) barbiturates and barbituric acid derivatives ("Acceptable"), gunshot and penetrating captive bolt ("Acceptable with Conditions"). Penetrating and non-penetrating captive bolt are suitable for euthanasia of calves. Whether used in mature animals or in calves penetrating captive bolt requires an "Adjunctive" method to assure death.

Barbiturates and barbituric acid derivatives - Barbiturates are preferred by some because of their rapid action and ability to induce a smooth transition from consciousness to unconsciousness and death. Drawbacks to the use of these agents for euthanasia include: cost, the need for restraint to deliver the drug, necessity to maintain a careful accounting of amounts used, requirements that these agents be administered only by a veterinarian or personnel who are registered with the US Drug Enforcement Administration and finally, residues that limit carcass disposal options.

"Free Bullet" from Gunshot - a 2008 study by Fulwider found that gunshot is the most common method used for on-farm euthanasia of cattle. Death by means of a "free bullet" is caused by massive destruction of brain tissue. Despite its popularity and effectiveness for the purpose of euthanasia, those who are less familiar with firearms often find gunshot violent and objectionable. However, as stated in a previous edition of the Guidelines: "Properly applied, "euthanasia by either gunshot or penetrating captive bolt, causes less fear and anxiety and induces a more rapid, painless, and humane death than can be achieved by most other methods."

Handguns. For the purposes of euthanasia, handguns are limited to close-range shooting (within 1 to 2 feet or 30 to 60 cm) of the intended target. Calibers ranging from .32 to .45 are recommended for euthanasia of cattle. Solid-point lead bullets are recommended over hollow points because they are more likely to traverse the skull. Hollow point bullets are designed to expand and fragment on impact with their targets which reduces the depth of penetration. The .22 caliber handgun is not recommended for routine euthanasia of adult cattle regardless of the type of bullet used, because of the inability to consistently achieve desirable muzzle energies with standard commercial loads.

Rifles. Rifles are the preferred firearm for euthanasia when necessary to shoot from a distance. Rifles are capable of delivering bullets at much higher muzzle velocities and energies and are therefore not the ideal choice for euthanasia of animals in indoor or short range conditions. General recommendations on rifle selection for use in euthanasia of cattle are .22 magnum, .223, .243, .270 and .308 and others.

Shotguns. Shotguns loaded with birdshot (lead or steel BBs) or slugs (solid lead projectiles specifically designed for shotguns) are appropriate from a distance of 1 to 2 yards (.9 to 1.8 meters). Although all shotguns are lethal at close range, the preferred gauges for euthanasia of mature cattle are 20, 16, or 12. Number 6 or larger birdshot or shotgun slugs are the best choices for euthanasia of cattle.

Birdshot begins to disperse as it leaves the end of the gun barrel; however, if the operator stays within short range of the intended anatomic site, the birdshot will strike the skull as a compact bolus or mass of BBs with ballistic characteristics on impact and entry that are similar to a solid lead bullet. At close range, penetration of the skull is assured with massive destruction of brain tissue from the dispersion of birdshot into the brain that results in immediate loss of consciousness and rapid death. For safety reasons it is important that the muzzle of a shotgun (or any other firearm) never be held directly against the animal's head.

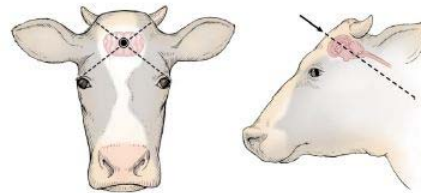


Figure 4 - Anatomical site for gunshot or placement of a captive bolt and desired path of the projectile in bovids.

Unacceptable Methods of euthanasia include:

- 1) manually applied blunt force trauma (ex. large hammer)
- 2) injection of chemical agents or other substances not specifically designed or labeled for euthanasia (i.e. disinfectants, cleaning solutions, etc.)
- 3) air injection into the vein
- 4) electrocution as with a 120 volt electrical cord
- 5) drowning
- 6) exsanguination of conscious animals
- 7) deep tranquilization as with xylazine or other alpha-2 agonist followed by potassium chloride or magnesium sulfate. While some have been forced out of desperation to resort to one or more of these methods, readers are strongly advised against their use.

Confirmation of Death: Regardless of method used for conducting euthanasia procedures, it is important to confirm death. It is sometimes more easily said than done. However, the most reliable criteria include lack of pulse, breathing, corneal reflex and response to firm toe pinch, inability to hear respiratory sounds and heart beat by use of a stethoscope, graying of the mucous membranes, and rigor mortis. None of these signs alone, with exception of rigor mortis, confirms death.

Managing Horses During Hot Weather

By: Dan Wells, Livestock Extension Agent with N.C. Cooperative Extension in Johnston County

Adapted from a Univ. of Minnesota publication of the same name available online at: <http://www.extension.umn.edu/agriculture/horse/care/managing-horses-during-hot-weather/>

The heat and humidity of a sweltering North Carolina summer can be hard on animals as well as humans. It is important to keep in mind that animals have a generally lower “thermo-neutral” zone than people, and for horses this zone is roughly from 40 to 77°F. However, several factors can influence whether or not a horse experiences heat stress, including coat length and color, physical condition, acclimation, and even age.

Horses normally cool themselves by sweating, and an adult horse that is working hard in a hot environment can lose 2 to 4 gallons of sweat per hour! Sweating is much more effective in lower humidity, so it is important to consider the potential effects of the heat and humidity together, rather than just focusing on temperature. A very handy way to find this information is to go to weather.gov and enter your city and state. The table below indicates the relative efficiency of cooling at various indices of heat plus humidity.

Air temperature (°F) + relative humidity (%)	Horse cooling efficiency
Less than 130	Most effective
130-150	Decreased
Greater than 150	Greatly reduced
Greater than 180	Condition could be fatal if horse is stressed

It is recommended to avoid riding if the combination of temperature and humidity is over 150 (see table above.) If a horse must be exercised or ridden during such times, try to adjust the schedule to early morning or late evening, and keep the work as light as possible, with frequent breaks to provide water. There is no reason to withhold water from a hot horse. Watch for normal sweating, and be ready to take immediate action if the horse exhibits any signs of heat stress or heat stroke, as indicated below.

Prolonged exposure to high temperatures can cause heat stress, heat stroke, dehydration, muscle spasms and colic. Heat stress is usually indicated by increased heart and respiratory rates, profuse sweating, droopy ears, and signs of dehydration. One such sign is to perform a “pinch test” on the skin of the neck or shoulders by pinching or “tenting” a small piece of skin upward, then releasing. If the skin maintains the tented or pinched shape for several seconds after releasing, the horse is dehydrated and needs immediate attention. More severe than heat stress is heat stroke, which presents with rapid heart and respiratory rates that do not drop within 20 minutes of stopping exercise, marked dehydration with dry mucous membranes and a prolonged skin tent of 4 to 10 seconds, muscle weakness, incoordination, and collapse.

Horses displaying signs of heat stress or heat stroke need

immediate cooling. Heat stroke also requires emergency veterinary care. Stop all exercise and get the horse into shade. Provide cool, clean water, use fans and misters, and spray and scrape cold water to help reduce the horse’s body temperatures. Be sure to immediately remove any water sprayed onto a hot horse with a scraper. The horse’s body heat is transferred to the water and removed by scraping off that water. If the water is not removed, however, it can act as an insulator and trap heat in the horse’s body. Heat stroke often requires treatment with IV fluids. If possible, check the rectal temperature and monitor pulse and respiratory rate of a horse exhibiting any symptoms of heat stress or heat stroke. The following table lists normal and critical values.

Vital Sign	Normal adult horse	Adult horse w/ heat stroke
Rectal Temp (F)	99.5 to 101.5 at rest; up to 103 during exercise	Over 105
Pulse rate (beats per minute)	30 to 44	More than 60
Respiration rate (breaths per minute)	8 to 12	More than 40

Following are some more recommendations to help reduce the effects of heat.

- Turnout during cooler times of day (late evening-early morning)
- Use trees or buildings to provide shade.
- Watch for sunburn, especially on light colored areas.
- Use fans to increase airflow. Keep cords out of reach of horses.
- Allow cool, clean water at all times. Clean buckets and tanks frequently in hot weather to prevent algae.
- Provide loose salt supplement free choice to encourage drinking.
- Consider providing electrolytes to horses that are or will be sweating heavily.
- Reduce riding intensity and length. Ride during cooler periods, if possible.
- Clip long hair coats.
- Transport horses during cooler parts of the day. Ensure trailer ventilation and offer water frequently. Do not park trailer in full sunlight.

Besides the immediately obvious signs of heat stress and heat stroke, hot summer temperatures can have less visible effects on horses. Often horses will not eat as much during hot weather, and can actually lose body condition. This may be more pronounced in older or weaker animals, and may require a modification of diet to offset the effects. For more information on managing horses in hot weather, talk with your veterinarian or your local Extension agent.

Small Ruminant Water Needs

By: Stefani Garbacik, Livestock Extension Agent with N.C. Cooperative Extension in Wayne County

With the heat of the summer starting to beat down on us, this is the perfect time to discuss water requirements for your small ruminants. During the hot, humid days we experience in North Carolina, sheep and goats need more water than you might expect for evaporative cooling.

In general, small ruminants consume between $\frac{3}{4}$ -1.5 gallons of water a day, and water consumption usually increases 40% when comparing summer drinking habits to winter ones. Heat stress can be extremely hard on livestock, so it's important that your animals have access to shelter or shade, and clean, fresh water. Signs of heat stress include: bunching in the shade, slobbering or excessive salivation, panting, lack of coordination, trembling and many more. Poor breeding efficiency and reduced milk production are common effects of livestock heat stress.

The suitability of water for livestock use depends on several aspects, including water quality, environmental factors, and animal factors. Water quality includes salinity (dissolved salts in the water), acidity, toxic elements and algae. Surface waters are generally low in dissolved salts compared to other water sources. Salinity will increase the intake of water by animals, to balance everything out. Acidity is important if your animals are sensitive, pH changes can influence the digestive system of small ruminants. Acidic water (pH below 6.5) or basic water (pH above 8.5) may be a cause for depressed appetite and loss of production in your animals. Another factor that may influence water quality

is the presence of toxic elements or compounds; iron, magnesium, arsenic, lead, mercury, and selenium are compounds that may reach toxic levels. The NCDA & CS labs have a water solution test that can show you some of this information; it is a simple form and \$5 fee. <http://www.ncagr.gov/agronomi/uysoln.htm>

Water suitability is influenced by environmental factors, in particular the temperature the animal is exposed to. When it's hot, your sheep and goats will use more water for evaporative cooling. The amount of water your animals drink may also depend on the water temperature itself; most small ruminants prefer water that is at, or below, body temperature. During a drought, your animals require more water because their normal forage supplies are weakened and drier. So moisture they normally would get from grazing isn't there in the same levels. It's important to realize what's going on with your pastures and your animals.

The animal factors mentioned above include the physiological status of your animals, their breed differences and several others. Young animals, heavily pregnant or lactating animals may be a bit more finicky with the water they will drink. It's important to note the water consumption of your animals and what they need. You should consider the quality and amount of water your livestock need during every season, but it is especially vital in the summer. Please contact your local veterinarian or extension office if you have any questions regarding water for your sheep and goats!

Eastern Carolina Showmanship Circuit

Fall will be here before we know it and with the cooler weather comes an abundance of youth livestock show. In the eastern portion of North Carolina, youth are invited to participate in several different circuits. Each circuit requires a set number of shows to attend, participants earn showmanship points and the winners are announced at the State Fair. It is a great opportunity for youth to get plenty of practice showing and plenty of experience before they head to the State Fair.

The heifer and lamb circuit in our area is called the Eastern Carolina Showmanship Circuit. Youth ages 9-18 are allowed to show heifers while lambs may be shown by any age youth (although the rules for some shows may differ). Participants must show in 4 of the 9 competitions to become eligible for awards.

The Carolina Swine Showmanship Circuit is for individuals showing pigs in the fall. They must attend 4 of the 6 showmanship events and become PQA (pork quality assurance) certified. Youth ages 5-18 are eligible to show in this circuit.

The last species shown on a circuit in eastern NC are market goats, they are shown on the Carolina Youth Meat Goat Circuit. Again, youth ages 5-18 are eligible to show in this circuit. They must attend 6 of the 10 events to be eligible for awards.

All of these circuits are important in giving our youth the opportunity to show livestock in a variety of settings before going to the State Fair. Please contact your local extension agent if you have any questions! For more information find the circuit pages on Facebook or visit the county extension websites.

4-H Farm Credit Showmanship Circuit

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

4-H youth are busy preparing for the start of the 2017 4-H Farm Credit Showmanship Circuit season. They have been selecting and purchasing their animals for the past month. Many of them get their animals as soon as school lets out for the summer or before. The entire Circuit is proudly sponsored by Carolina Farm Credit and Cape Fear Farm Credit. This funding is used to operate the Circuit. The county shows are in both Farm Credit territories, which makes it a great partnership. The first show will be held in Randolph County on August 4th. Youth ages 5-19 have the opportunity to compete against other youth from across the region at each of the 12 County Shows between August and the State Fair in October. Youth can show goats, heifers or lambs as part of the Show Circuit. Points are accumulated for placings in showmanship at a series of shows in the South Central area of North Carolina. The Showmen will finish the season at the 4-H Farm Credit Showmanship Circuit Banquet held in November.

Youth compete in Showmanship and Confirmation classes at each show. The Showmanship classes are designed to gauge the 4-H'ers knowledge and skill with the animal while Confirmation classes are all about the animal itself. Females will be bred and will continue production on the farm. They are judged on their frame and structure based on how they would carry the extra weight of being pregnant and the stress of milking. Castrated market animals are judged on the total meat marketability of the animal. Rules, the schedule, and how to register will be listed by July on the Richmond County Cooperative Extension website at: <https://richmond.ces.ncsu.edu> You must register on-line this year through the Cvent system. The deadline to register is July 21st.

There are three divisions for all species. First place in each division will win a belt buckle and a banner ribbon, second place will win a banner ribbon, and third place through fifth place will win a tri-fold ribbon. Each youth participant receives a Circuit tee shirt. 4-H Showmen will also win ribbons, trophies, and premium money at each individual show. Some youth put their winnings into the bank to save it for college while others may use it to invest in next year's show animal. There are several college scholarships available for youth to apply for which are strictly for 4-H members or 4-H Showmen.

What these youth learn from showing livestock is only the beginning. They learn leadership skills, animal husbandry, record keeping, self-esteem, and responsibility to name a few. They make friends for life across the state and learn how to communicate with adults and other youth. The future of agriculture lies in our youth, as they are the future farmers, doctors, teachers and agricultural advocates in our community. This is why we want to send a huge thank you to our sponsors and to all the parents, friends and family of the showmen who support them throughout the show season! If you have questions about how to get involved with showing animals, please call me at 910-997-8255.



Worker Protection Standards (WPS)

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

The Worker Protection Standard (WPS) is a regulation originally issued by the U.S. Environmental Protection Agency (EPA) in 1992 and most recently revised in 2015. This regulation is primarily intended to reduce the risks of illness or injury to workers and handlers resulting from occupational exposures to pesticides used in the production of agricultural plants on agricultural establishments. Workers are generally those who perform hand-labor tasks in pesticide-treated crops, such as harvesting, thinning, and pruning. Handlers are usually those that are in direct contact with pesticides such as mixing, loading or applying pesticides. This article will review some of the revisions to the standard. The goals of the standard are to inform workers and handlers about potential exposure to pesticides, protect workers, handlers and other people from exposure to pesticide, and mitigate any pesticide exposures that workers or handlers receive. Farms that produce hay are under the WPS. Owners/farmers are not exempt from wearing labeled personal protective equipment (PPE).

** Recently the NC Department of Agriculture and Consumer Services, who is the lead state agency, received a letter from the EPA stating “to extend the implementation of all revised provisions to WPS until the necessary guidance and training have been completed which would allow state lead pesticide agencies to successfully implement the rule changes. We will soon begin the regulatory process to formally extend the compliance date for all revised provisions of the WPS.”***

Added or revised definitions:

- **Immediate family** is limited to the spouse, parents, stepparents, foster parents, father-in-law, mother-in-law, children, stepchildren, foster children, sons-in-law, daughters-in-law, grandparents, grandchildren, brothers, sisters, brothers-in-law, sisters-in-law, aunts, uncles, nieces, nephews, and first cousins. “First cousin” means the child of a parent’s sibling, i.e., the child of an aunt or uncle.

Revisions that were to be effective January 2, 2017:

- Pesticide training is required every year for workers and handlers. There is no “grace period” for training. Recordkeeping of training is to be kept for 2 years. There are resources available online at the Pesticide Education Resource Collaborative to help you train employees at <http://pesticideresources.org>. Iowa State Extension also has videos that can be used to train workers and handlers. They can be found at <http://www.extension.iastate.edu/psep/workerprotect.html>
- Post outdoor treated areas with no-entry signs if restricted-entry interval (REI) is greater than 48 hours.
- Early-entry workers must be provided personal protective equipment (PPE) and oral notification of infor-

mation about the pesticide application, specific task to be performed, amount of time that the worker is allowed to remain in the treated area, and the PPE required by the label.

- Hazard information includes the application-specific information and the pesticide safety data sheets (SDSs). Information must be posted within 24 hours of the application or prior to worker entry. Hazard information must be posted at a central display for 30 days after REI expires and retain for 2 years.
- Minimum age of 18 years old for pesticide handlers or early-entry workers entering into a treated site before the REI has expired. Immediate family members are exempt from this requirement. Also no minimum age for workers entering field after REI expires.
- Requires medical evaluation, fit testing and specific training for use of respirators and the associated recordkeeping. This is for any pesticide that label requires a respirator. Some pesticides that we know require a respirator are paraquat, chlorpyrifos, acephate, diuron, diazinon, sulfurix, BT products, cotton defoliant with diuron, and many fruit fungicides in dust formulation. There is not an overall list, it is the owners responsibility to check all pesticides used.
- Establishes application exclusion zones (AEZ) based on distance from the application equipment for farms, forests, and nurseries. The AEZ is the area surrounding the application equipment that must be free of all persons other than appropriately trained and equipped handlers during pesticide applications. This can be from 25 to 100 feet depending on several factors. Employers must keep workers and other persons out of the treated area & AEZ that are WITHIN the boundary of the owner’s property. Handlers must suspend application if persons are in AEZ.
- For routine decontamination supplies, provide 1 gallon of water for each worker and 3 gallons for each handler and each early-entry worker.
- Provide water for emergency eye flushing for handlers at mixing/loading sites if protective eyewear is required by the pesticide product label. 1 pint of water must be immediately available to each applicator.

Revisions that are to be effective January 2, 2018:

- Expanded training content for workers and handlers.
- Expanded content that must be included in the pesticide safety information display (safety posters).
- The requirement to suspend application exclusion zones (AEZ) NOT limited by the boundary of the establishment owner’s property is delayed until 2018.

More information is on the EPA website - <https://www.epa.gov/pesticide-worker-safety/agricultural-worker-protection-standard-wps> There are comparison charts and a How to Comply Manual.