

North Carolina Beef Quality Assurance

Focused on the safety, wholesomeness, and quality of beef



***North Carolina
Certification Manual***

Beef Quality Assurance: Putting the Pieces Together

Across the nation, beef producers face the challenge of making a living from the land, while producing safe, wholesome beef that will provide a great eating experience each and every time for American and International consumers.

To meet that challenge, the industry's Beef Quality Assurance (BQA) program was created in 1987 to assist beef producers in raising, feeding, and harvesting high quality beef.

Through the use of science, research, and educational initiatives, the BQA program has identified production practices producers can

The BQA Mission

To maximize consumer confidence and acceptance of beef by focusing the producers' attention to daily production practices that influence the safety, wholesomeness, and quality of beef and beef products.

implement each day. The ultimate goal of these BQA practices is to maximize consumer confidence.

Because the BQA program is a comprehensive approach to beef production – practices implemented can impact a producer's bottomline in profits/returns, decreased animal health costs, and improved records that allow for better tracking of production practices.

Foodservice and packing industries are implementing similar management principles to ensure the quality and safety of products leaving their production facilities. The entire focus of the BQA program centers around good business management practices and incorporates current FDA, EPA and USDA regulations.

By participating in the North Carolina – Beef Quality Assurance (NC-BQA) program and adopting BQA production practices, you are positioning your business to take advantage of opportunities that lie ahead. Making a commitment to BQA isn't just the right thing to do for the consumer, it can also open doors to new marketing opportunities for participating producers. ■





North Carolina - Beef Quality Assurance Program

2228 N. Main Street

Fuquay-Varina, NC 27526

(919) 552-9111

website: www.nccattle.com

e-mail: ncbqa@nccattle.com

This manual was originally developed through the efforts of the Nebraska Cattlemen's Technical Advisory committee, board of directors, and staff. Developed January 2003; Version 3, revised October 2003/Version 4.

Special thanks to the following: N. C. Cattlemen's Association, N. C. Cattlemen's Beef Council, N. C. Cooperative Extension, N. C. State University, and N. C. Department of Agriculture and Consumer Services. These organizations have assisted with the development and implementation of the NC-BQA program. Their vision has provided further improvements to the program and to the industry.

Also, a special thanks goes out to the Nebraska Cattlemen's Association.



Funded by
Americas' Beef
Producer

Table of Contents

North Carolina's
Role4

History of
BQA.....5

Beef Quality
Audits6

Quality Control
Points7

BQA
Guidelines8-9

Feedstuffs/10-11
Feed Additives

Processing/
Treatment and
Records12-19

Injection Site
Management20-23

Care and
Husbandry
Practices24-28

Industry
Issues29-31

NC-BQA
Test32

NC-BQA
Contract33

Appendix34

North Carolina's Role

In the mid-1990s, BQA in North Carolina was introduced as the North Carolina Certified Beef Production program. The program, now entitled North Carolina - Beef Quality Assurance (NC-BQA), is a cooperative effort between beef producers, veterinarians, nutritionists, extension staff, and other professionals from North Carolina State University, the North Carolina Department of Agriculture and Consumer Services, the North Carolina Cattlemen's Association, and the North Carolina Cattlemen's Beef Council.

The NC-BQA program is designed to assist producers to –

1. Set production standards that can be met or exceeded.
2. Establish systems for data retention and record keeping.

The program also provides training and education encompassing the BQA guidelines and technical assistance through the North Carolina Cattlemen's Association, NC-BQA certified veterinarians, and North Carolina State University extension staff.



How can you participate?

Participation in the BQA program is voluntary. Any person who works regularly with beef cattle in a cow/calf, stocker, backgrounding or feedlot business is encouraged to be certified.

Certification requirements can be achieved by participating in a training

session conducted by a NC-BQA certified trainer. To be certified, participants must complete the NC-BQA Test and the Personal Contract (a sample of which can be found on pages 32-33). These forms must be signed by a BQA trainer and include a Trainer BQA Number. The certification fee is \$15 for a three-year certification for North Carolina Cattlemen's Association members. For non-NCCA members the certification fee is \$40 for three years.

Recertification is required every three years. Those previously certified will be contacted by the North Carolina Cattlemen's Association three years after their initial certification and asked to complete the recertification process. A recertification contract and exam will be required to complete this process. The recertification fee is \$15 for three years for N. C. Cattlemen's Association members. For non-NCCA members the recertification fee is \$40.00 for three years.

For questions regarding certification, please contact the North Carolina Cattlemen's Association at (919) 552-9111 or e-mail them to ncbqa@nccattle.com, or contact your local extension agent.

NC-BQA Trainers

To maintain the level of training necessary to comply with the guidelines, only certain people will be eligible to conduct NC-BQA certification. These individuals include: veterinarians, extension faculty, and N. C. Cattlemen's Association staff. Trainers are provided with a separate training manual, are responsible for keeping their certification current, and must follow the guidelines when training producers.

NC-BQA trainer certification must be repeated every two years in order to stay current with industry information, maintaining a high level of integrity. For a list of certified trainers in your area, contact the N. C. Cattlemen's Association or your local extension agent. ■

By uniting animal scientists, veterinarians, feed suppliers, animal health companies, packers, retailers, and state and federal regulators with producers, the BQA program acts as a catalyst to encourage use of the latest science and technology to meet expectations about beef quality and safety.

In 1982 the United States Department of Agriculture – Food Safety and Inspection Service (USDA-FSIS) began working with the beef industry in the United States to develop the Pre-harvest Beef Safety Production Program. Not wanting any additional government regulatory programs, the beef industry adopted the term Beef Quality Assurance (BQA).



In 1985, after three years of careful analysis and adjustment of production practices at three participating feedlots, they were certified by the USDA-FSIS and called Verified Production Control feedlots.

What was learned during those three years now serves as the foundation for the NCBA's BQA program established in 1987.

Involvement with BQA provides cattlemen an important key for avoiding additional government regulation. USDA's FSIS has commended the national BQA program. There are currently more than 45 states involved in the voluntary program.

The BQA program acts as a catalyst to encourage use of the latest science and technology, to meet expectations about beef quality and safety.

HACCP: The Basis of BQA

The Hazard Analysis and Critical Control Point (HACCP) program (*pronounced hassip*) gained USDA acceptance and is presently the dominant outline for quality assurance programs in processed foods and the packing industry. The BQA program incorporates HACCP principles.

At the farm level, HACCP is as simple as creating a plan – ahead of time – to deal with something that doesn't go well. It includes planning to avoid physical, chemical and biological problems, and documenting corrective actions. HACCP's seven principles are incorporated in this manual. They include:

1) Review of all management programs to identify production practices that affect food safety, quality, and the environment. For example, educating those who might be giving injections about the proper technique and injection location.

2) Identify the critical points where potential problems can occur and steps to prevent or control such problems. For example, storing vaccines at improper temperatures or exposing them to sunlight.

3) Establish critical limits associated with each control point. For example, understanding and following withdrawal times associated with animal health products.

4) Establish control point monitoring requirements to ensure that each control point stays within its limit. For example, keeping records on pesticide application withdrawal times so the records can be checked before cattle graze treated forage crops.

5) Establish corrective actions in the event a problem occurs. For example, training employees to avoid previous problems such as improper injection technique.

6) Establish effective record keeping procedures that document the system is working properly. For example, taking the time to complete the processing map, recording where injections are given, how much, etc.

7) Establish procedures for verifying that the system is working properly. For example, periodic review of records, production practices, and treatment protocols. ■

Beef Quality Audits

A series of landmark studies called the National Beef Quality Audits have taken a closer look at the quality and consistency of production practices.

Commissioned by the National Cattlemen's Beef Association (NCBA), leading meat science departments including Colorado State University and Texas A&M University began the audits in 1991, followed by another comprehensive study in 1995 and again in 2000.

The results were eye-opening, with injection-site blemishes costing the beef industry \$188 million annually and costing producers

approximately \$7.05 per head, according to the 1995 audit.

In 1991, 21.6% of all top butts in fed cattle evaluated had injection-site blemishes, with the majority of those being fluid filled.

BQA guidelines have fostered ways to improve management practices and reduce economic loss while improving carcass qualities. The implementation of BQA has been critical in reducing injection-site lesions to less than 3% in the 2000 Audit.

Results from the 2000 National Beef Quality Audit calculated a loss of \$100.10 per slaughter steer or heifer due to carcass inconsistency, a 15.73% improvement over the economic losses tallied in the 1995 audit. The industry recaptured \$20.96 per marketed fed animal from 1995 to 2000. ■

Beef Quality Audit Findings

Management Factors BQA Can Influence

| | |
|------------------------|---------------------|
| Hide defects | \$1.70/head |
| Injection-site lesions | 3.59/head |
| Dark cutters | 5.43/head |
| Bruises | .75/head |
| TOTAL..... | \$11.47/head |

(Source National Beef Quality Audit, 2000)

Quality Control: Market Cows and Bulls

The industry conducted its first market cow and bull audit in 1994. That audit, called the National Non-Fed Beef Quality Audit, discovered that the industry lost about \$70 per cow or bull marketed due to product-quality defects. A repeat study conducted in 1999 tallied the economic loss at \$68.82. The 1999 audit identified specific areas where the quality of market cows and bulls could be improved.

Regardless of herd size, all beef cow operations produce some cull animals. Many of these animals are marketed because they are beyond their prime producing years. Cull cows and bulls represent 15-20% of producer revenue.

In addition, cull animals supply between 15-20% of the total U. S. beef production, depending on market conditions.

Ground beef is an important product of cull cattle and accounts for 43% of the total beef consumed in the United States. However, cull cow packers today are also utilizing tenderloins, ribeyes, and strip loins for merchandizing to steakhouses.

One of the larger quality losses among non-fed cattle is bruising. This often occurs with non-fed cattle because:

- They possess less fat cover.
- Many cull cattle are lame, which increases the incidence of bruising.
- The audit noted that groups of horned cattle had twice as many bruises as groups of non-horned cattle.

Quality Losses Per Head on Market Cows and Bulls

| Quality Defect | Cost Per Head |
|--|-------------------|
| Inadequate muscling | \$18.70 |
| Excess external fat | 10.17 |
| Arthritic joints (trim loss) | 9.72 |
| Yellow external fat | 6.48 |
| Hide losses: brands, injury, disease | 6.27 |
| Condemnation of edible offal | 4.49 |
| Whole cattle/carcass condemnation | 4.14 |
| Bruises (trim loss) | 2.24 |
| Injection-site blemishes | 1.46 |
| Dark cutters | 1.41 |
| Lightweight carcass | 1.28 |
| Trim loss -birdshot/buckshot, zero tolerance | .98 |
| Antibiotic residue | .92 |
| Disabled cattle | .56 |
| TOTAL..... | \$68.82/hd |

(Source 1999 Non-fed Beef Quality Audit)

Quality Control Points

Using the HACCP program as a basis – finding improvements in the beef production system requires a look at control points throughout the production process.

These control points are common management steps such as calving, purchasing feedstuffs, weaning calves, and transporting cattle as part of an overall management scheme.

It is during these control points that BQA practices should be incorporated in order to limit any potential hazards from occurring to food safety and quality.

The chart below provides some examples of control points impacting the BQA program.



For example, prevention and treatment of health disorders may occur at weaning time by administering animal health products.

If properly administered during this control point, any potential food safety hazards – such as injection-site lesions or antibiotic residues should be eliminated. ■

| Process | Control Point | Potential Hazard |
|--|---|--|
| Feeding/supplementation | Purchasing Receiving Storage Feeding livestock | Antibiotic residues Chemical residues Feed toxins |
| Prevention and treatment of health disorders | Calving Weaning calves Receiving breeding or stocker cattle | Injection-site lesions Antibiotic residues Broken needles |
| Processing and cattle handling | Working cows and calves Weaning calves Shipping cattle | Injection-site lesions Bruises Hide damage Carcass defects Poor health |
| Pasture chemical use | Herbicide/Pesticide applications Container disposal | Water quality Soil contamination Residues |
| Alternative watering systems | Farm | Animal health Water quality Erosion |

Beef Quality Assurance Guidelines

The following is a summary of the North Carolina - BQA program guidelines. These guidelines closely follow those of the National BQA program, which have been approved and implemented by NCBA. More details on each of these guidelines are explained in the remaining sections of the manual.

Details on how to obtain more specific information or resources on these topics are listed in the Appendix (page 34) or at www.nccattle.com.

Feedstuffs

- ☐ Maintain records of any pesticide/herbicide use on pasture or crops that could potentially lead to violative residues in grazing cattle or feedlot cattle.
- ☐ Adequate quality control program(s) are in place for incoming feedstuffs. Program(s) should be designed to eliminate contamination to incoming feed ingredients. Supplier assurance of feed ingredient quality is recommended.
- ☐ Suspect feedstuffs should be analyzed prior to use.
- ☐ Ruminant-derived protein sources cannot be fed per FDA regulations.
- ☐ Feeding by-product ingredients should be supported with sound science.

Feed Additives and Medications

- ☐ Only FDA-approved medicated feed additives will be used in rations.
- ☐ Medicated feed additives will be used in accordance with the FDA Good Manufacturing Practices (GMP) regulations.
- ☐ Follow judicious antibiotic use guidelines.
- ☐ Extra-label use of feed additives is illegal and strictly prohibited.
- ☐ To avoid violative residues, withdrawal times must be strictly adhered to.
- ☐ Complete records must be kept when formulating or feeding medicated feed rations.
- ☐ Feed records are to be kept a minimum of three (3) years.
- ☐ Operator will assure that all additives are withdrawn at the proper time.

Processing/Treatment and Records

- ☐ Follow all FDA/USDA/EPA guidelines for product(s) utilized.
- ☐ All products are to be used per label directions.
- ☐ Extra-label drug use shall be used only when prescribed by a veterinarian, working under a valid veterinary-client-patient-relationship (VCPR).
- ☐ Extra-label drug use of Aminoglycosides is strictly prohibited.
- ☐ Strict adherence to extended withdrawal periods shall be employed.
- ☐ **Individual treatment records** will be maintained with the following recorded:
 1. Individual animal or group identification.
 2. Date treated.
 3. Product administered and manufacturer's lot/serial number.



4. *Dosage used.*
5. *Route, location, and person administering the product.*
6. *Earliest date animal will have cleared withdrawal period.*

☐ **When cattle are processed as a group,** record the following:

1. *Group or lot identification.*
2. *Date treated.*
3. *Product administered and manufacturer's lot/serial number.*
4. *Dosage used.*
5. *Route, location, and person administering the product.*
6. *Date animals will have cleared withdrawal period.*



- ☐ All cattle shipped to slaughter will be checked by appropriate personnel to assure that all treated animals meet or exceed label or prescription withdrawal times for all animal health products administered.
- ☐ All processing and treatment records should be transferred with the cattle to the next production level. Prospective buyers must be informed of any cattle that have not met withdrawal times.
- ☐ Records should be kept for a minimum of three (3) years. For example, processing and pesticide application records.

Injectable Animal Health Products

- ☐ Products labeled for subcutaneous (SQ) administration should be administered in the neck region only (regardless of age), unless specifically labeled for another route (i.e., ear for certain antibiotics).
- ☐ All products cause tissue damage when injected intramuscular (IM). Therefore, IM use should be avoided if possible.
- ☐ Products cleared for SQ, intravenous (IV), or oral administration are recommended.
- ☐ Products with low dosage rates are recommended. For multiple injection-sites, proper spacing should be followed.
- ☐ No more than 10 cc of products is administered per injection site.

Care and Husbandry Practices

- ☐ Follow the 'Animal Care and Well-Being Guidelines' that conform to good veterinary and husbandry practices.
- ☐ All cattle will be handled/transported in such a fashion to minimize stress, injury, and/or bruising.
- ☐ Facilities (fences, corrals, load-outs, etc.) should be inspected regularly to ensure ease of handling and animal well-being.
- ☐ Strive to keep feed and water handling equipment clean.
- ☐ Provide appropriate nutritional and feedstuffs management.
- ☐ Strive to maintain an environment appropriate to the production setting.
- ☐ Biosecurity should be implemented and evaluated regularly. ■

IV - intravenous injection
(injection of a drug or other substance directly into a vein)

IM - intramuscular injection (an injection into the muscle)

SQ - subcutaneous injection (an injection under the skin)

Note: In this manual, the editors have summarized requirements or provisions of state or federal statutes and regulations. This is not intended as legal advice. Moreover, this manual is not intended to be a comprehensive study of these legal provisions.

Feedstuffs/Feed Additives

It is important to maintain quality control on feeds to ensure good cattle performance and health and to prevent chemical residues in beef animals. Across our industry, forages make up, by far, the highest percentage of total beef feed.

Producers should use good fertility, grazing, and harvest management to ensure that forages have an adequate nutritional value to meet the needs of the cattle to which they are being fed.

Chemical Usage

Use only chemicals in feed production that are approved for pasture or harvested crops destined to be fed to livestock. Make sure that you follow all label directions on such agrochemicals and keep records of where and at what rate they were used.

Chemical use is especially a concern when using crop residues (such as peanut hay) or drought-stricken grain crops (such as soybeans).

Before feeding forages grown by another farmer, know what chemicals were used on them and make sure the label does not restrict feeding them to livestock.

Mixed Feeds

Backgrounding and finishing operations commonly make mixed feeds at home. These producers should monitor the nutrient levels in the ingredients they purchase and provide a balanced ration. Samples of each truckload of commodities

should be taken and kept for one year.

When producers are purchasing commercial feeds, either for brood cows or stocker cattle, they need not keep samples, but it is advisable to keep a label from each batch purchased.

If purchasing a mixed feed, the producer needs to have paperwork from the supplier indicating the ingredient composition of the mix.

By-Products

It is common for producers to feed unusual by-products to cattle, and it is critical that producers know what they are feeding.

For example, producers occasionally feed waste oil from small restaurants as a part of a concentrate mix. In that case, **producers must make absolutely sure that the oil they are receiving contains only used cooking oil and that the containers do not contain any other waste products.**

Other unusual waste items might also be useful feeds, but before feeding, contact your extension agent or nutritional advisor to make sure they are viable feed ingredients.

Use common sense; **if you do not know what is in it, do not feed it!**

Communication with feed suppliers is a critical step in feed quality control.

Feed Room Hygiene

Good feed room hygiene is another important part of a feed quality program. **Do not store agrochemicals, fertilizers, and other**

Ruminant By-Products:

The ban on feeding ruminant-derived proteins is one of the main firewalls in place to keep Bovine Spongiform Encephalopathy (BSE) from spreading through the U. S. cattle herd. This law primarily prevents meat and bone meal produced from ruminants from being fed back to ruminants.

Ruminant by-products exempt from the ban include blood and blood by-products, gelatin, and tallow.

Any feed that contains banned material will indicate on the label that it is not to be fed to ruminants. In some cases, producers may have feeds on hand that are intended for other species that they desire to feed to cattle. Feeds intended for poultry, swine, or even dogs may be available, but in most cases, should not be fed to cattle. The only situation where such feeds may be fed is if the manufacturer provides assurance in writing that they do not contain any of the banned materials.

Feeding Recycled Poultry Bedding to Cattle

Recycled Poultry Bedding (abbreviated RPB and sometimes referred to as poultry litter) is a by-product feed that has been used in the Southeastern U. S. for many years. Research has shown it is a safe and effective feed ingredient. However, it may contain spilled poultry feed and is therefore under scrutiny due to increased concern about BSE in the United States. At the time of this publication RPB is an approved feed ingredient and producers who wish to feed it may continue; they should approach feeding it as they would any other by-product feed. However, due to the general concerns with feeding RPB, producers are encouraged to seek alternatives. Producers are also discouraged from mixing RPB with large amounts of feed for stockpiled storage (such as mixing RPB with corn silage) due to the potential loss of those feeds should a ban on the feeding of RPB be enacted. Producers who have not fed RPB in the past are not encouraged to enter a RPB feeding program due to the investment in infrastructure required.

non-feed items in a feed room.
Sweep the room frequently and **do not**
ever feed floor sweepings to cattle.

Avoid Feeding Mycotoxins

Mycotoxins are naturally occurring chemicals produced by fungi. They can develop in feeds either before or after harvest. They can be found both in grains and forages and if present in sufficient quantities, can cause animal health problems as well as residues in meat and milk.

Never feed concentrate products that are moldy and try to avoid feeding hay that has a significant amount of mold present. If you suspect a problem with mycotoxins, contact your extension agent and veterinarian for advice on testing and managing mycotoxins in feeds. ■

Handling Feedstuffs:

- 1) Maintain a quality control program for incoming feeds.
- 2) Store feeds in a dry area to prevent molds and other types of contamination.
- 3) Store all chemicals including pesticides, lubricants, solvents, and other non-feed items away from feed storage area.
- 4) Thoroughly clean any equipment (including buckets, barrels, loaders, etc.) before using for feeding purposes.
- 5) Protect all feed troughs, water supplies, and feed from chemical contamination.
- 6) If you are not sure about what a feed contains or if it has been contaminated, do not feed it!

Feed Additives

Feed additives are often used in the production of medicated feeds for cattle. In most cases, concentrated sources of feed additives will be used by feed manufacturers to create more dilute products that are used by producers either as premixes, free-choice supplements, or complete feeds. It is critical that producers understand the proper use of these items and that they follow label directions. Following are key guidelines to be considered when using feed additives:

- 1) No extra-label use of feed additives is allowed. No one, including a veterinarian or nutritionist, may advise a producer to use a feed additive in a way other than what is indicated on the product label.
- 2) When using medicated feed additives, only permitted feed manufacturers are allowed to use the most concentrated forms. Permitting is obtained through the FDA.
- 3) Make sure you follow all withdrawal times to avoid residues.
- 4) Identify animals which have received medicated feeds in your production records.

Withdrawal Time:

The time required between the application or feeding of a drug or additive and the harvest of the animal to prevent any residue of the drug from remaining in the carcass. Withdrawal times are legally specified by the FDA.

Aminoglycosides:

The NC-BQA program does not allow the extra-label use of products such as neomycin, gentamicin, or kanamycin because of the potential violative residues.

The FDA prohibits extra-label use of fluoroquinolones.

Examples are Baytril and A180.

Below: Label from veterinarian for "Extra Label" use

Processing/Treatment and Records

Calves moving through the production chain must stay healthy. Sickness requires treatment and increases the probability of death loss, poor performance, injection-site lesions, and residues. Proper handling/administration of vaccines is critical to this program. The highest quality vaccine available is useless if it's not handled and administered properly. Many treatment regimes include vaccines to stimulate immune system response and lessen the chance of re-treatment.

Find and work with a veterinarian who is willing to be involved with the Beef Quality Assurance program. Your veterinarian must be a team player and understand that each animal carries the reputation of your business and the beef industry. Only FDA-, USDA-, and EPA-approved products can be used in processing and treatment programs. Caution: Not all products offered to producers meet these guidelines.

Extra-Label Drug Use

There are two classes of drugs. Over the counter (OTC) and prescription drugs. OTC drugs can be purchased and used as directed on the label without establishing a relationship with a veterinarian. (See example label, page 13.)

Prescription drugs can be used only on the order of a veterinarian within the context of a valid veterinarian-client-patient relationship.

FDA Requirements for the Extra-Label Use of Drugs

1. A careful diagnosis is made by an attending veterinarian within the context of a valid veterinarian-client-patient relationship. This relationship exists when:

a) the veterinarian has assumed the responsibility for making clinical judgments regarding the health of the animal and the need for medical treatment, and the client has agreed to follow the veterinarian's instruction,

b) the veterinarian has sufficient knowledge of the animal to initiate at least a general or preliminary diagnosis of the medical condition, and

c) the veterinarian is readily available for follow-up evaluation in the event of adverse reactions or failure of the treatment regimen.

2. A determination is made that:

a) there is no marketable drug specifically labeled to treat the condition diagnosed, or

b) treatment at the dosage recommended by the labeling was found clinically ineffective.

3. Procedures are instituted to assure that identity of the treated animal is carefully maintained.

4. An extended period is assigned for drug withdrawal prior to marketing the treated animal.

The Food Animal Residue Avoidance Databank can aid the veterinarian in making these estimates.

Veterinarian: _____ Phone: _____
 Address: _____ Date: _____ Exp: _____
 Owner/Farm: _____ Animal ID: _____ Species: _____
 Active Ingredients/ Concentration: _____
 Quantity: _____ Drug Trade Name: _____
 Indications: _____
 Directions: Give _____ cc/bolus/oz _____ times each day for _____ days
 Drug Withdrawal Time for Slaughter _____ days
 Test for Residues: Urine _____ Blood _____

Example Of Label Type:

Over the Counter (OTC) product

| | | |
|-----------------------------|---|--|
| Instructions for Use | <p>COWBIOTIC (hydrocillin and streptazolidin)</p> <p>Directions for use: See package insert</p> <p>Warning: The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat or milk beyond the withdrawal time.</p> <p>Net Contents: 100 ml</p> <p>Distributed by ABC Animal Health, Inc. NADA #555-555 approved by FDA</p> | <p>Name of Drug</p> <p>Active Ingredients</p> <p>Withdrawal Time</p> <p>Name of Distributor</p> <p>Note: A prescription label would include an additional caution stating "Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian."</p> |
|-----------------------------|---|--|

Implants

When used properly, implants have been proven safe and effective through both research and actual use in the beef industry. Proper administration of implants is critical to achieve desired results.

Location for Implant Administration

The only approved location for implant administration is the middle third of the back side of the ear. (See illustration at right.) All implants must be located subcutaneously within this area. Implants should never be placed in locations other than the ear.

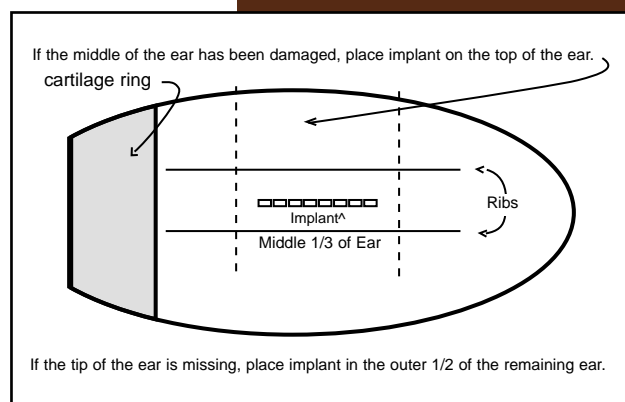
Restraint bars can be added to processing chutes to increase the likelihood of properly placing the implant. The processing facility should be adaptable to easily accommodate multiple weights of cattle.

Additional health procedures can also be administered when cattle are run through the chute system for re-implant.

Sanitation is important. Use sharp, clean needles and lay the needle on a disinfectant-soaked sponge between uses. (See photo).



When implanting, lay the needle on a disinfectant-soaked sponge between uses to keep it sanitized.



Ear Implant Location

Cause of implant failures:

- Improper site (in the cartilage)
- Abscess due to poor sanitation, prevents active ingredients from being absorbed
- Missing implant (through the ear)
- Partial implant due to technique or gun failure
- Bunched or crushed pellets
- Improper implant storage

Your veterinarian is a key player on your farm's team as part of a successful BQA program. Employ a veterinarian who understands and is willing to participate in Beef Quality Assurance by working with you to write your Preventative Herd Health Plan/Calendar, your Treatment Protocol Plan, and your Treatment Records.

Record Keeping

Record keeping, either computer or hand-generated, is a critically important management tool. To ensure consumer confidence and maintain market share, beef producers must be able to document the safety and quality of their product.

This includes effective documentation to demonstrate control over risk factors that have a residue potential. Controlling violative drug residues can be accomplished by placing emphasis on the identification and handling of individually treated cattle.

Record the use of all processing products (vaccines, dewormers, pour-ons, etc.).

Potential regulatory inspections by FDA, USDA, EPA, or OSHA will prove the necessity of good records. Effective documentation that shows appropriate compliance with training, inventory control, use orders, animal identification, withdrawal, and disposal will help avoid liability from a residue contamination.

The only way to accurately determine if you are in compliance with withdrawal times is to know exactly what was given, how much was given, where it was given, and how and when it was given.

The key to record keeping is finding a method you are comfortable with and you will continue to conduct on a regular basis.



All processing products (vaccines, dewormers, pour-ons, etc.) should be recorded and follow label directions for administration.

Treatment records should include:

- a animal treated**
- a treatment type**
- a treatment date**
- a treatment dose**
- a prescribed withdrawal time**

Treatment Protocol Plan

Even in herds with excellent prevention plans, animals still get sick and need treatment. Treatment includes all the interventions used to take care of an existing disease condition.

A "Treatment Protocol Plan" specific to your operation should be written by you and your veterinarian and kept on file. It is simply a written plan for what treatment(s) should be used when cattle get sick for various reasons.

The concept of a Treatment Protocol Plan is more familiar to feedyards and larger stocker operations; however, cow/calf producers will find it a valuable management tool also.

It should be reviewed by you with your veterinarian no less than annually, and more often in larger herds and operations involving movement of cattle in and out.

Because a veterinarian may not be able to be present to diagnose and treat every sick animal, the Treatment Protocol Plan should include a brief description of the symptoms associated with health disorders along with treatments recommended for each. Because effective treatment and appropriate use of pharmaceuticals (drugs) depends on a good diagnosis as early as possible in the course of a disease, it is important to list the *indications for treatment*.

A primary treatment is the initial treatment prescribed by a veterinarian. A secondary treatment is the treatment that should be administered in case the condition does not respond to the primary treatment.

The following is an example of a Treatment Protocol Plan. One sheet should be provided for each "Disorder" that your veterinarian feels you need to prepare to treat. Note that at the bottom

there is also a section on "Prevention" of that disorder. This prevention step should also be included in your Preventative Herd Health Plan/Calendar (see next section).

Example of a Treatment Protocol Plan

Preventative Herd Health Plan

Disorder: _____

Indications for Treatment (symptoms of affected animals): _____

Primary Treatment

Product/Active Ingredient: _____

Dose: _____ Route of Administration: _____

Duration/Frequency of Treatment: _____

Withdrawal Period: _____

Other Comments: _____

Secondary Treatment

Product/Active Ingredient: _____

Dose: _____ Route of Administration: _____

Duration/Frequency of Treatment: _____

Withdrawal Period: _____

Other Comments: _____

Prevention

Product: _____

Dose: _____

Route of Administration: _____

Frequency of Administration: _____

Withdrawal: _____

Special Instructions: _____

A Preventative Herd Health Plan/Calendar

Prevention or health maintenance includes immunization with vaccines, parasite control, vitamin injections, etc. In addition, your veterinarian may recommend management strategies that help prevent health problems, such as cow body condition monitoring, breeding season management, biosecurity plans (prevention of disease entry), and sanitation measures. A good prevention plan will decrease the risk of food safety and beef quality defects such as injection-site damage and drug residues.

The most useful Preventative Herd Health Plans are written in the form of a *year-round management calendar*, which lists the dates when events will occur year-round. The most successful health maintenance plans are designed around a controlled breeding season. This is because preventative measures such as vaccines and dewormers are most effective (and cost-effective) when used on cows, calves, and bulls in groups of similar ages and stages of the reproductive cycle. If breeding occurs during a predictable period, the cows

will be pregnant at the same time and calves will be born during a predictable interval.

The most valuable time you spend with your veterinarian may well be when you go over your herd health management calendar. You should do this no less than annually, in time to order supplies and to make timely decisions on management events and strategies.

Veterinary Drug Order

The Veterinary Drug Order (VDO) should accompany the Treatment Protocol Plan. A Veterinary Drug Order, also referred to as a Veterinary Drug Authorization (VDA), is an approved list of medications used in your operation that conform to BQA guidelines.

The VDO includes all products that have a withdrawal time, including vaccines, parasite treatments, and all injectables including vitamins. All vaccines and medications should be included on the VDO, which should be updated at the same time the Treatment Protocol Plan is updated by you and your veterinarian.

Veterinary Drug Order

The following products are approved for use on
Farm

| Product Category | Brand Name | Active Ingredient | Manufacturer | Route of Administration | Withdrawal Time |
|------------------|------------|-------------------|--------------|-------------------------|-----------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Product Category = antibiotic, parasite treatment (anthelmintic), vaccine, vitamin, anti-inflammatory, etc.

Active Ingredient = penicillin, Ivermectin, clostridial vaccine, etc.

Route of Administration = oral, topical, intranasal, injectable (IV, SQ, IM)

Date Reviewed: _____

Producer Signature: _____

Veterinarian Signature: _____

For additional forms and records, visit the NC-BQA website at www.nccattle.com or contact the North Carolina Cattlemen's Association at 919/552-9111.

Animal Treatment Records

Record keeping is critical to BQA. You should establish a systematic method of documenting the use of animal health products, feed, and chemical applications such as pesticides.

To insure consumer confidence and to get the most out of the dollars spent on preventing and treating disease, beef producers must be able to document the use of these products: “what, when, where, why, who, and how.”

Why Are Treatment Records Important?

- 1) Cattle not responding to therapy may require a delayed drug clearance. Good records would indicate if this was the case.
- 2) Extra-label drug usage is only permitted under FDA guidelines involving a veterinarian-client-patient relationship. Individual animal identification and record keeping is important.
- 3) Should a producer be cited for a residue violation and that producer believes a mistake in identity has been made, good records may be the only proof of compliance.
- 4) Records will indicate the list of drugs used by the producer. Accusations that certain drugs have been used can be avoided when the producer can prove they do not use specific drugs.

Accurate records also allow you to know exactly what is going into each animal. This information prevents the re-administration of treatments that have previously failed to work. Furthermore, the information tells the consultant/veterinarian what treatments you are applying so they can:

- make sure treatment recommendations are being followed, and
- judge whether treatment regimens need to be adjusted for changing animals and conditions.

Keep all treatment records for at least three (3) years from the date of transfer or sale of the cattle. A copy of the treatment records should be made available to the buyer of your cattle or as they are transferred between units of the same operation. Records should include all individual and group treatment/processing history and other information as deemed appropriate.

Treatment records should include:

- Treatment date
- Animal or group identification
- Approximate weight of animal or group average
- Product used
- Product lot/serial number
- Earliest date the animal could clear withdrawal time
- Dose given

- Route of administration (IM, SQ, IV, oral, topical, and other)
- Location of injections
- Name of person administering the treatment



There is no single-approved form generated. The following examples or method of keeping records. They can be adapted for use on most can be handwritten or computer operations.

Example Records and Forms

Treatment Record for Individual Cattle

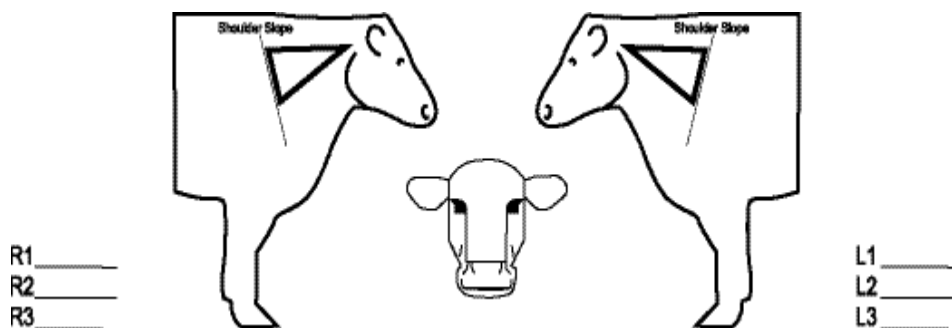
Animal ID: _____ **Home Group/Pen:** _____ **Color:** _____
(Rx = medication name)

| Date | Diagnosis | Temp | Severity (1-5) | Rx 1 | Withdrawal Time 1 | Rx 2 | Withdrawal Time 2 | Rx 3 | Withdrawal Time 3 | Comments |
|------|-----------|------|----------------|------|-------------------|------|-------------------|------|-------------------|----------|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

PROCESSING/TREATMENT MAP

Give all injections in the neck region, and when possible, use SQ products.

Date: _____ **Time:** _____ **No. of Head:** _____
In Weight: (average/variation): _____ **Breed:** _____
Sex: S, H, Bulls, Mixed **Frame Size:** S, M, ML, L **Air Temperature:** _____
ID: Right Ear or Left Ear/Group Number: _____ **/Individual** _____



| Product | Lot or Serial # | Supplier | Route of Admin. | Dose | Withdrawal Time (WD) | Crew Initials | Comments |
|---------|-----------------|----------|-----------------|------|----------------------|---------------|----------|
| | | | | | | | |

Feed Records

- 1) Keep all feed records for at least three (3) years from the date of transfer or sale of the cattle.
- 2) It is a good management practice to require that all feed products be accompanied by an invoice that includes the:
 - date
 - amount
 - lot/batch number
 - signatures of both the person who delivered the product and the person receiving the product.

Chemical Records

Private pesticide applicators must maintain a record of each restricted-use pesticide or general-use pesticide application for three years. Restricted-use pesticides require a private applicators license to apply the product. Records must include the following:

- Brand or product name and the EPA registration number of the pesticide applied.
- Total amount of pesticide applied.
- Location of application, size of treated area and the crop, commodity, stored product or site to which the product was applied.
- Month, day, and year of application.
- Name and certification number of certified applicator who made or supervised the application.
- The animal(s) exposed to the pesticide and the withdrawal time.

Pour-on product usage can be included on the processing record for the group of cattle. ■



Injection-Site Management

Injection-site lesions were first identified as a serious problem in the 1991 National Beef Quality Audit. Thanks to the work of BQA and the efforts of cattle producers, the frequency of lesions has been substantially reduced.

In March 1991, injection-site blemishes were found in 22.3% of the top-sirloin butts studied in the audit. The 2000 audit recorded an incidence rate below 3% for top-sirloin butts.

Economic Loss Per Retail Cut

\$0.71 top-sirloin butts
\$2.88 bottom rounds

\$3.59/hd TOTAL

(Results from NBQA 2000, based on each steer/heifer slaughtered, 30.31million head)

This lesion from an IM injection traveled deep into the tissue. Tenderness can often be impacted within a three-inch diameter of the resulting lesion.



However, as further study continued, the researchers learned that in addition to the loss in product caused from the removal of an injection-site lesion, there was a substantial impact on tenderness of the wholesale cut as well.

In 1994, Colorado State University researchers revealed a highly significant increase in the Warner-Bratzler shear force values (toughness) in cooked steaks extended outward up to 3 inches from the center of a lesion, when compared to shear force values for steaks without lesions.

Factoring in the impact on tenderness, the 1995 Quality Audit recorded a loss of \$7.05 for every fed steer and heifer marketed that year.

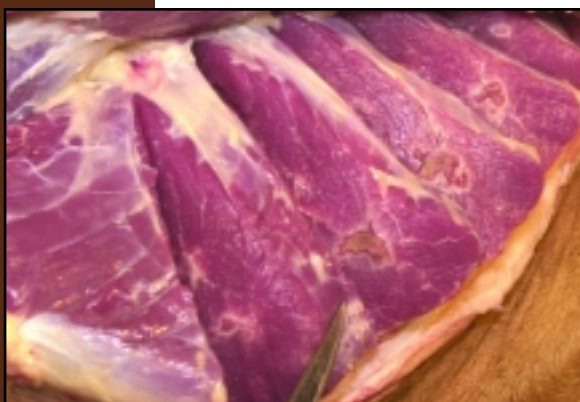
Injection-site lesions are the

Injection-site lesions are scar tissue that results when an intramuscular injection is administered within the muscle tissue.

result of an injection such as clostridial bacterins, antibiotics, and vitamins administered intramuscularly (IM).

The lesions are scar tissue that develop from the irritation in the muscle.

Contaminated needles and syringes can contribute to the resulting lesions.



Injection lesions don't just affect one steak, but IM injections in the hind-quarter can damage numerous high priced cuts.



Injection lesions may appear small, but in this case the lesion occurred in the center of the eye of the round - damaging this entire retail cut.

Injections Guidelines:

- 1) Regardless of animal age, injections (all IM and SQ medications and vaccines) should be given in front of the shoulders, in the neck region – never in the rump, top loin, or back leg.
- 2) Preference is given to injections that can be administered SQ, IV, or orally.
- 3) Never exceed more than 10cc per IM injection site. (If 24cc is recommended, use three 8cc injections instead of two 12cc injections).
- 4) Do not use chemical disinfectants in the syringes when using a modified-live virus product, as effectiveness of the product will be decreased.
- 5) Provide proper restraint to avoid breaking needles in animal tissue.
- 6) Use the needle size proper for the situation. Consider a) route of administration; b) size of animal; c) location or site of injection; and d) product administered.
The volume or amount of fluid injected may also be considered.
 - a. 16-18 gauge 1/2 to 1 inch needles for SQ
 - b. 16-18 gauge 1 to 1-1/2 inch needles for IM
- 7) Space injections at least four inches apart. (See photo below.)
- 8) Never mix products. Mixing products can cause unnecessary tissue damage and reduce the effectiveness of the products and may extend the withdrawal time.
- 9) Processing cattle in wet, muddy conditions can increase the chance of injection-site contamination. Injection sites should be clean.
- 10) Follow the proper record keeping protocol. (Refer to section on Records.)
Records will document individual and group treatment. Include route of administration, product used, product lot number, and serial number.

S.A.F.E. Steps to Processing and Treating Cattle:

Self – Safe to the person administering the injectable

Animal – Safe to the animal being injected

Food Supply – Safe to the food supply

Everyone – Safe to everyone around you.

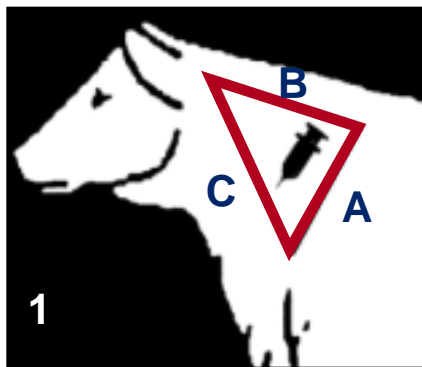
When administering an injection, follow these guidelines:

1. Give injections within the injection zone triangle, located in the neck.

Draw the triangle locating:
A) slope of the shoulder,
B) nuchal ligament

(or approximately 3 inches below top of neck),
and C) vertebrae.

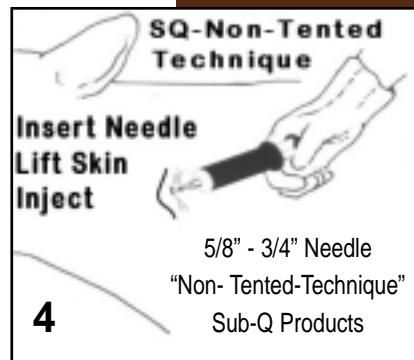
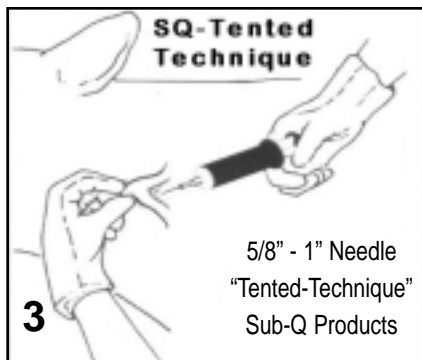
All IM injections must be administered in the triangle region.



2. Space injections at least 4 inches apart.

3. The SQ-tented injection is the preferred method of the National BQA program.

4. The SQ-non-tented injection technique may be required when the safety of the person giving the injection would be compromised by the tented technique.



Needle Know How

Gauge – diameter of the needle, adjust to match cattle weight.
Length – fit the route of administration, adjust to cattle weight.

Change Needles

- immediately if the needle bends
- if the needle becomes contaminated with feces, dirt, or irritating chemicals
- if the needle point is damaged/burr develops
- before the needle becomes dull (every 10 to 15 head)
- between cattle with known blood-borne infectious disease

| | Route of Administration | | | | | | | | |
|--|-------------------------|-------------|----------|---------------------|-------------|-------------|--------------------------|-------------|-------------|
| | SQ | | | IV | | | IM | | |
| | (1/2 to 1 inch needle) | | | (1 1/2 inch needle) | | | (1 to 1 1/2 inch needle) | | |
| | Cattle Weight | | | Cattle Weight | | | Cattle Weight | | |
| Injectable Viscosity | <300 | 300 - 700 | >700 | <300 | 300 - 700 | >700 | <300 | 300 - 700 | >700 |
| Thin Example. Saline | 18 gauge | 18-16 gauge | 16 gauge | 18-16 gauge | 16 gauge | 16-14 gauge | 20-18 gauge | 18-16 gauge | 18-16 gauge |
| Thick Example: Oxytetracycline | 18-16 gauge | 18-16 gauge | 16 gauge | 16 gauge | 16-14 gauge | 16-14 gauge | 18 gauge | 16 gauge | 16 gauge |
| SELECT THE NEEDLE TO FIT THE CATTLE SIZE (THE SMALLEST PRACTICAL SIZE WITHOUT BENDING) | | | | | | | | | |

Foreign Object Avoidance

Birdshot/Buckshot – The 1999 Market Cow and Bull quality audit revealed more than 10,000 head of slaughter cattle were condemned due to the presence of lead shot. Lead birdshot/buckshot poses a food safety threat and if detected, the entire carcass is condemned.

Broken Needles – Under no circumstances can animals carrying broken needles be sold or sent to a packer. Broken needles can migrate in the tissue and if not removed immediately, the needle fragment will be impossible to find and require the animal to be destroyed rather than sold.



Syringe Care

Inadequate vaccine syringe cleaning is frequently responsible for localized infections associated with vaccination. If the infection is severe, it may become generalized and the animal may die.

Injection-site swelling is common, especially when vaccines such as clostridial bacterins are given SQ. If the swelling is hard, it could be due to getting the subcutaneous injection too deep and penetrating part of the first layer of muscles. If this is the cause, consider using a “B-Bevel” 5/8-inch needle or a short (1/2 or 3/4-inch) regular bevel needle. The injection point on the B-Bevel needle is shorter than a regular injection needle.

Sterile disposable syringes will virtually eliminate injection-site infections. If you require multiple-dose syringes, several brands of disposable sterile automatic vaccine syringes are available.

Syringe cleaning steps for multiple-dose syringes:

1. Clean the external syringe surface with soap, water, and a brush.

2. Rinse the inside components of the vaccine syringe, including tubes and connectors with distilled or de-ionized water that is near the boiling point (greater than 180° F). This is accomplished by drawing water that is greater than 180° F into the syringe and squirting it out. Three to five rinses should be adequate.

Remove as much water from inside the syringe as can be squirted out and let the syringe cool before using. Heat kills modified-live vaccine (MLV) products.

You should not use a soap or disinfectant on internal components as residues may kill MLV vaccines.

3. Store the vaccine syringe in a dust free, dry (low humidity) environment. It is best if the newly-cleaned vaccine syringe is stored in a new zip-lock bag and placed in the freezer. ■



Repeatedly draw boiling water into a syringe, then squirt it out to clean the syringe. Heat without pressure will not kill bacterial spores.

Vaccines

Even experienced producers overlook many key aspects when preparing and administering vaccines. With the increased use of Modified-Live Virus (MLV) and Chemically-Altered (CA) vaccines, you need to re-evaluate how everyone involved with your operation handles products.

First, purchase vaccines from a reputable dealer. A vaccine will be less than 100% effective if it has ever been stored improperly. Management practices can increase the percentage of cattle that respond to vaccine, and greater efficacy of the vaccine greatly enhances immune response.



Source: Thrift, University of Florida
Do not allow vaccine or syringes to sit in direct sunlight. Example: Styrofoam cooler used to keep syringes cool and out of direct sunlight.

Reducing exposure, stress and improved nutritional management, along with proper timing of vaccination, will increase the response rate to the vaccine.

Handling Vaccines

1. When purchasing an animal health product, always transport it in a closed, refrigerated container. Keep vaccine shielded from UV light by storing it in a refrigerator and transport it using cold packs.

2. Always keep the vaccine cool while you process cattle. Keep the working bottle of vaccine and syringes in a cooler. Unused and unmixed product should be in a closed, refrigerated container until used.

3. Only mix MLV product within an hour of use.

4. If you are processing a small number of cattle, purchase the product in small containers with fewer doses.

Improper handling causes more than 50% of all bruises.

Care and Husbandry Practices

Sound animal husbandry practices – based on research and decades of practical experience – are known to impact the well-being of cattle, individual animal health, and herd productivity.

Because cattle are produced using a variety of management systems, in very diverse environmental and geographical locations in the United States, there is not one specific set of production practices that can be recommended for all cattle producers to implement. Personal experience, training, and professional judgment are key factors in providing proper animal care.

Feeding and Nutrition

Cattle should have access to an adequate quantity and quality of nutrients (feed, water, minerals, and vitamins) for body maintenance and growth.

The nutrient requirements of cattle vary according to age, sex, weight, body condition, stage of production, and environmental temperature.

Nutritionists can provide specific information on the nutrient needs of cattle and nutrient availability in feed ingredients.

Cattle should have access to an adequate supply of clean water. Although water requirements vary greatly, as a rule of thumb, water consumption will range from 1 gallon per 100 pounds of body weight during cold weather, to nearly 2 gallons per 100 pounds of body weight during hot weather.

Livestock Facilities

Facilities (fences, chutes, etc.) should be maintained in good working condition to provide efficient movement and reduce stress when working cattle. Sharp objects and protrusions can result in bruising and should be avoided whenever possible.

Equipment to restrain cattle should allow for quick and secure restraint in order to minimize stress or injury to the animal or the operator.

Experienced and trained personnel should operate restraining equipment.

Shelter

Beef cattle are produced in a variety of production settings, from pasture and range, to dry lot and confinement facilities.

When behavioral and physiological characteristics of cattle are matched to local conditions, beef cattle thrive in virtually any environment without artificial shelter. However, during extreme weather conditions cattle should have access to well-drained resting areas and/or to natural or constructed shelter.

Animal Health Practices

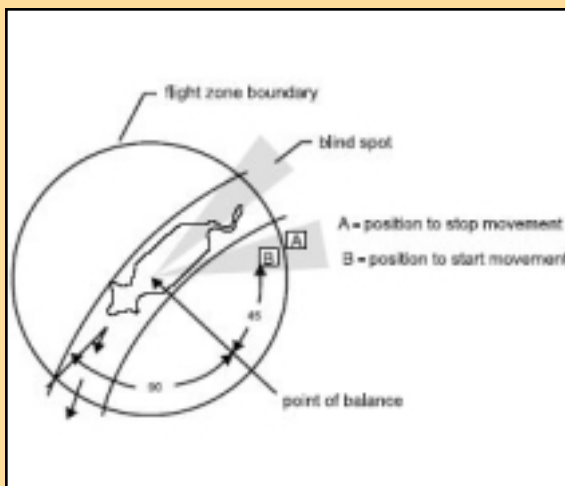
Producers should implement herd health programs that address the prevention and treatment of disease. These programs will vary depending upon the type of operation and disease prevalence. Cattle producers are encouraged to consult with their veterinarian to establish effective herd health programs.

Cattle should be observed



Cattle Handling Key Points:

- 1) Be aware of the flight zone for cattle. To move cattle forward, move toward their rear past their point of balance (shoulder). To stop or back up cattle in a chute, move forward past their point of balance.
- 2) Never fill a crowding pen more than three-quarters full; cattle need room to turn around.
- 3) Cattle should move easily up the chute. Avoid hanging chains, shadows, backstops, noises, dogs, or people that might prevent movement.
- 4) Loading ramps and handling chutes should have solid walls to prevent animals from seeing distractions outside the working area.
- 5) Minimize the use of electric cattle prods.
- 6) Reducing stress on the animal will reduce animal injuries and sickness, employee injury and increase overall efficiency.



Understanding an animal's flight zone, can make cattle handling easier and less stressful on the animal.

regularly, particularly during critical periods of the year such as calving season or weather-related events.

When procedures such as vaccination, castration, dehorning, and branding are performed, proper techniques and/or equipment should be utilized. Only experienced or properly trained personnel should perform these procedures.

Beef producers are encouraged to follow state or national BQA guidelines.

Handling Sick, Disabled, or Deceased Livestock

It is the responsibility of cattlemen to humanely care for their animals and make every effort to obtain veterinary care for animals that are sick or injured.

Livestock that are sick or injured and non-responsive to medical treatment for a reasonable period of convalescence should be humanely euthanized on the farm or ranch.

Moreover, cattle exhibiting symptoms of advanced disease or cattle that are non-ambulatory, "downers," should not be transported to market facilities.

Euthanasia is defined as humane death occurring without pain and

suffering. Techniques for euthanasia should follow guidelines established by the American Veterinary Medical Association and the American Association of Bovine Practitioners.

Producers should use proper methods of disposing of deceased livestock in accordance with federal, state, and local regulations. If utilizing a rendering service, keep deceased livestock in a screened area away from public view.

Transportation

During the movement of cattle to and from farms, ranches, feedlots and marketing facilities, proper handling and transportation are important for the safety and welfare of the animals.

When loading and unloading cattle, personnel should move cattle as quietly and patiently as possible to prevent stress or injury.

Cattle should be separated by size or gender prior to shipping and if possible, different groups loaded into separate compartments of the truck or trailer. To prevent livestock from falling while in transit, drivers should avoid sudden starts/stops and sharp turns. Moreover, the floors of trucks and trailers should be clean and slip resistant.

During the movement of livestock to and from farms, feedlots and marketing facilities, proper handling and transportation are important for the safety and welfare of the animals.

For current guidelines on animal care and handling of beef cattle go to: www.nccattle.com "NC-BQA Program"

While in transit, occasional stops should be made to ensure that cattle are well dispersed and still standing.

Severe weather conditions must be considered when transporting livestock.

As appropriate, adequate ventilation and protection should be provided during transit.

Training and Education

All individuals working with livestock should be provided with a sound working knowledge of proper care and handling techniques.

Cattle producers should observe their employees to ensure they are properly trained. Never assume that anyone can properly handle cattle, or

Ongoing education of individuals working with livestock should be a part of every management plan.

that they will always utilize proper techniques.

Ongoing education should be a part of any management plan.

When working with cattle, individuals should understand an animal's flight zone. (See figure page 25).

Workers should be taught to avoid sudden movements, loud noises, or other actions that may frighten or confuse animals. They should also be trained to use handling devices, including canes, prods, sorting sticks, and paddles, humanely.



Environmental Quality

A key to the success of a cattle operation includes environmental management. Examples include appropriate stocking rates, grazing systems, soil conservation, and water quality. Each of these areas should be analyzed on a regular basis to enhance the effectiveness of the overall system. Maintaining vegetated pasture cover, especially in riparian areas, is key to maintaining water quality.

Breeding and Genetics

Industry targets will allow the beef industry to meet requirements for portion size, marbling preferences, and efficiency in the packing industry. Knowing the industry targets and understanding how to reach those is the first step towards developing a sound, logical breeding program. (See Fed Cattle Targets below.)

Some specialty targets such as: high yielding cattle, extra lean cattle, or "all-natural" cattle may require slightly different specifications to reach those goals.

Discounts are usually applied to cattle that are in the undesirable category – often referred to as "out cattle."

Networking with calf buyers, stocker operators, and feedyards that purchase your calves and feeder cattle is one way to find out how your cattle will perform once they leave your business.

Performance traits such as daily weight gain, feed efficiency, and health are also "quality" factors that should be measured.

The Texas A&M University Ranch to Rail program documented healthy calves were \$93.20/head more profitable than sick calves. (12,595 head tested)

Fed Cattle Targets

| | Desirable | Undesirable |
|-----------------------|-------------------------|--------------------------------|
| Carcass Weight | 650-850 lbs. | <600 or >950 lbs. |
| Quality Grade | Select or higher | Standard |
| Yield Grade | 1, 2 or 3 | 4 or 5 |

(Source National Beef Quality Audit, 2000)

Management Practices

Dehorning: Cattle with horns can cause significant damage due to bruising in all segments of the industry. Bruises from horns are trimmed, resulting in lost carcass weight, devalued primal cuts, and reduced carcass value. If calves are born with horns, electrical or surgical dehorning should be used to prevent horn growth. Dehorning is recommended prior to 120 days of age.

Castration: Historically, intact males sell at a discount in comparison to steers at the same age and weight. Beef from intact bulls has a coarser texture, lower marbling score, and more variable tenderness. Early castration will reduce the stress impact on the animal. Castration is recommended to occur between birth and four months of age. Castration, prior to 120 days of age, is strongly recommended.

Identification: This topic has received a lot of attention in recent years since the United States Department of Agriculture (USDA) announced the development of a national animal identification system. The purpose of such a traceable system is to quickly identify infectious diseases so nationwide epidemics can be minimized. For example, if foot and mouth disease were to be imported from a foreign country, it would need to be identified and the infected animals quarantined within 24 hours or a multi-state or even possibly a nationwide infection zone would occur.

While the current National Identification System (NAIS) is still being developed, the North Carolina

Department of Agriculture and Consumer Services (NCDA&CS) has initiated a program to allocate producers with national ID premise numbers. Premise numbers will form the foundation for future NAIS plans. Producers can get a premise ID number from NCDA&CS through the North Carolina Farm ID program. You can find this information at their website at: www.ncagr.com/ncfarmid.

Current assumptions about NAIS are that it will use radio frequency ID tags (RFID) and basically track animals offered through regular commerce and after they leave the farm. Breeding animals staying on the farm will not have to be tagged until entering commerce (though the producer's farm will eventually have a premise number).

Currently, NAIS is a voluntary program, but USDA has targeted 2009 as the year compliance will become mandatory.

Regardless of NAIS, identification is very important to production records and management. Identification can be divided into two classifications: permanent and temporary.

Permanent identification is basically limited to tattoos and freeze or hot-iron branding. Tattoos are generally more reliable than brands, are economical, and require the least amount of skill for small producers.

Calves tattooed shortly after birth are relatively easy to restrain and the tattoo grows with the ear, providing a life-long form of identification as well as pre-weaning ID, which is critical for good records. Older animals must be properly restrained to apply proper tattoos.



To find more information about this program, you can contact Dr. Mary Ann McBride, Program Development Veterinarian with the NCDA&CS at (919) 807-4340 or email her at: maryann.mcbride@ncmail.net or visit the website at: www.ncagr.com/ncfarmid.

Quality defects in mature cows and bulls include:

- *Inadequate muscling*
- *Excessive fat trim*
- *Lightweight or heavy carcasses*
- *Lameness and downer animals*
- *Eye Lesions*
- *Horns*
- *Brands*
- *Bruising*

Culling Management:

- 1) Do not market cull animals that pose a public health threat or that have a terminal condition.
- 2) Be certain that ALL animals shipped to market have cleared proper withdrawal times.
- 3) Do not send cull animals to market that are disabled or have advanced eye lesions.
- 4) Market cull animals BEFORE they become severely emaciated.
- 5) Using products properly and observing withdrawal times will prevent violative residues.

Premiums for pre-conditioned and origin- and age-verified cattle have increased substantially over the last ten years.



Branding requires more skill than tattooing as well as a larger investment in equipment. Brands are more useful because they can be read in the field and do not require restraint for reading if properly maintained. Freeze branding takes more skill than hot-iron branding but does less damage to valuable hides and could be considered more humane.

All forms of branding require clipping of hair to be readily identified in winter months. Brands, for individual identification purposes, are not applied until animals reach post-weaning age and are, therefore, not useful to ID calves pre-weaning.

Ownership brands are not used as individual identification and, therefore, are not useful for record keeping purposes. Ownership brands can be registered with the North Carolina Department of Agriculture and Consumer Services.

Temporary means of identification include numbered ear tags, radio frequency ID tags, neck chains, and other forms. Numbered tags are a very useful means of identification as they are easily read without any means of restraint and can thus be read in the field. Even radio frequency ID buttons can be lost, so a producer should have a form of permanent ID to fall back on. Numbered tags in each ear for mature cows and bulls is a common practice and is useful if lost tags are replaced at every working.

When considering choices in identification, the best approach may be to use several different forms of both permanent and temporary ID. Larger operations may tattoo and tag all calves and then brand and tag replacement heifers.

Though expensive, radio frequency ID tags are being used by larger operations as the electronic capabilities allow the recording of weights and movements almost automatically. Even farms using radio frequency ID tags still need a permanent form of identification as well as one they can read in the field.

One form of identification will not be useful for all needs. Contact your local

extension agent or BQA team members for additional information.

Nutrition: Body Condition Score (BCS) is a measurement tool to determine the nutritional status of cattle. The range is from 1 (very emaciated) to 9 (overly fat).

Optimum range for cows at calving time is BCS 5. Cows calving below a BCS 5 produce less volume of colostrum, lower quality colostrum, and have decreased milk production.

Producers should monitor body condition of brood cows to determine if the requirements of the cows are being met. Taking samples of harvested forages is recommended so producers can balance rations fed during the winter.

Feeding a good mineral supplement that meets the major- and trace-mineral needs of the cows is also essential to maintaining cow performance. Producers are encouraged to contact their extension agent for advice on developing a sound feeding program.

Nutritional stress can impact the animal's health and immune system. A proper balance of protein, energy, and minerals is very important to the nutritional needs of cattle.

Weaning Management: Weaning is one of the most stressful periods of time for young calves. Stress will decrease immune response.

In a short period of time – a calf is weaned, removed from their mother's daily nutrition, and often shipped to a new environment, commingled with other calves, and started on a new ration or feeding method.

Preconditioning allows for calves to be managed and transitioned into the next phase of their life cycle. Preconditioning programs with a 45-day post-weaning period have been accepted by the industry to improve animal performance, health, and carcass quality.

Calves with fewer health problems after leaving the farm will 1) require less medication, 2) suffer less death loss, 3) perform more efficiently, and 4) potentially have higher valued carcasses. ■

Food Safety

Food safety continues to be a challenge for the industry. On-going research is being conducted to identify new and improved technologies and to explore opportunities to strengthen the safety of today's meat supply. Due to public concern over the incidence of *E.coli* 0157:H7 in the food supply in the early 1990s, the 1996 Pathogen Reduction – HACCP Final Rule was developed. This rule mandated the implementation of HACCP throughout the meat industry. (See page 5 for HACCP information).

The USDA/FSIS inspects all meat sold in interstate commerce and reinspects imported products to ensure they fulfill all U. S. food safety requirements.

FSIS inspectors are in packing plants daily to ensure that the products are fit for human consumption and in compliance with all federal laws governing food safety.

Current microbiological decontamination technologies include:

- Spot cleaning of carcasses by knife-trimming or steam/hot water vacuuming.
- Spraying/washing/rinsing of carcasses with water, chemical solutions, and/or steam or hot water during carcass processing.
- Animal cleaning.
- Chemical dehairing at slaughter.

Contamination can enter packing plants on the hides of animals as well as



Steam vacuuming carcasses is one management option to reduce the incidence of pathogens.

through an animal's digestive tract. Research efforts currently address live animal interventions to reduce pathogen levels in and on live animals.

Management and Emergency Preparedness

Security is designed to prevent intentional introduction of pathogen(s) into an operation. Developing a security management strategy involves evaluating potential risks, outlining steps to manage the identified risks and instituting a security plan based on the risk assessment.

At the very least, posting security signs, establishing a buffer-zone or perimeter fence to separate livestock from the public, securing all access gates and establishing visitor and intruder policies should be considered.

Biosecurity management and practices are designed to prevent the spread of disease. The goal of biosecurity is to prevent, minimize, or control cross-contamination of body fluids (feces, urine, saliva, etc.) between animals, between animals to feed, and between animals to equipment that may directly or indirectly contact animals.

Foodborne Pathogens Include:

Proper cooking of food will kill bacteria in each of the following foodborne infections:

***E. coli* 0157:H7** – a virulent strain of this bacteria found in the intestinal tract and feces in animals and humans.

Salmonella – a family of bacteria that includes more than 2,000 strains, 10 of which are responsible for most cases of reported illness associated with bacteria. It can be found on any raw food of animal origin.

Listeria Monocytogenes - a bacterium which grows in a damp environment and may commonly be found in dairy products, raw meats, and poultry.

Biosecurity

To implement a biosecurity program, consider these practices for:



Posting check-in signs at livestock entry points can aid in animal health biosecurity.

Maintaining a biosecurity program is the cheapest, most effective means to control disease, and no disease prevention program will be effective without it. More information at farmandranchbiosecurity.com

Controlling disease within the herd

- Vaccinate the herd against all endemic diseases (BVD, Clostridial disease, etc.).
- Use low stress management for movement and processing. Provide ample feed, water, and shade.
- Isolate all sick animals.
- Maintain a closed herd, if possible.
- Purchase feed from reputable sources.
- Minimize fence line contact with neighboring animals.
- Do not place cattle of different ages in the same pen.
- Keep records of all disease occurrences.

Purchasing replacement animals

- Quarantine all new animals for 30-60 days.
- Test new animals for disease (BVD, John's, Salmonella, etc.).
- Purchase animals from healthy and reputable herds.

Environmental and pest control

- Provide human foot baths at entrances and exits of confinement facilities.
- Provide timely manure and dead animal removal.
- Keep grounds and feed bunks as dry as possible.
- Have an insect control program in practice (insects can be vectors for diseases such as anaplasmosis and bluetongue).
- Have a rodent control program in practice.

Disinfection

- Clean and remove as much organic material as possible before disinfecting.
- Choose a disinfectant that will work against the pathogen you want to control.
- Be aware of any toxic, harmful, or corrosive effects of the disinfectant.
- Follow the label on the disinfectant package.

Visitors

- Minimize the number of visitors to the facility and their contact with animals.
- Be sure all visitors have clean clothing/coveralls, boots, and hands.
- Be sure all vehicles or equipment brought onto the farm are disinfected.
- Do not allow foreign visitors on the farm until they have been in the country for three (3) days. Do not allow foreign visitors to bring clothing, foods, or accessories they have had in another country onto the farm.

Employees

- Be sure all employees understand and follow the biosecurity protocol.
- Realize that employee-owned animals (horses, dogs, etc.) can be a possible source of contamination to your facility.

Infectious Diseases Can Be Spread By:

- The introduction of diseased cattle or healthy cattle incubating disease.
- Introduction of healthy cattle who have recovered from disease but are now carriers.
- Vehicles, equipment, clothing, and shoes of visitors or employees who move between herds.
- Contact with inanimate objects that are contaminated with disease organisms.
- Carcasses of dead livestock that have not been disposed of properly.
- Feedstuffs, especially high risk feedstuffs which could be contaminated with feces.
- Contaminated water (surface drainage water, etc.).
- Manure handling and aerosolized manure and dust.
- Non-livestock (horses, dogs, cats, coyotes, raccoons, other wildlife, rodents, birds, and insects).

Potential Disease/Infection Risks

There are a number of foreign animal diseases and bacterial and viral pathogens that pose a threat to the safety and economic viability of the U.S. livestock industry. Following are brief definitions and the treatment protocol if available:

BVD – Bovine Virus Diarrhea is a viral disease that affects the respiratory, reproductive, digestive, immune, and nervous system of cattle. It is transmitted in urine, feces, nasal secretions, and semen. Persistently-infected cattle play a key role in transmitting and maintaining the disease in a herd. Biosecurity, vaccination, and testing are important in controlling BVD.

BSE – Bovine Spongiform Encephalopathy (part of the Transmissible Spongiform Encephalopathy or TSE family) is a rare, chronic degenerative disease affecting the central nervous system of cattle, often referred to as Mad Cow Disease. It was first identified in Great Britain in 1986. One form of human TSE is Creutzfeldt-Jakob Disease (CJD). An additional TSE in humans that has been associated with BSE in cattle is new variant (nv)CJD.

The U. S. has banned the importation of beef, ruminant animals, and rendered animal products from Europe and other countries that have confirmed cases of BSE. Since 1997 the United States has also banned feeding mammal-derived animal protein by-products in cattle feed.

Affected animals may display aggression, difficulty in coordination and rising, decreased milk production, and loss of body weight. There is no treatment or vaccine to prevent the disease and no test to detect the disease in a live animal. BSE is confirmed by postmortem microscopic examination of brain tissue protein.

FMD – Foot-and-Mouth Disease is a highly contagious viral disease that usually does not affect humans but has devastating effects on cloven-hooved animals such as cattle, swine, sheep, goats, and deer. The United States has not had a case of foot-and-mouth disease since 1929. FMD can be spread by movement of infected animals, movement of contaminated vehicles, and by contaminated facilities used to hold animals. People can carry the virus on clothing and other surfaces. Quick reporting will greatly reduce the economic losses associated with an outbreak of FMD.

The most obvious signs of the disease in animals are excessive slobbering, going off feed, and lameness. Affected animals may have blisters in the mouth or other areas of tender skin such as udders in females, nostrils, and between the hooves.

Johne's Disease – Johne's is an infectious bacterial disease of animals, primarily affecting the intestinal tract. It is caused by *Mycobacterium paratuberculosis*, a distant relative of the bacterium that causes tuberculosis (TB) in human and animals, but is a different disease than TB. There is no vaccine for Johne's, but there are several diagnostic tests available. Clinical signs of Johne's disease do not develop until cattle are adults, even though transmission of the disease occurs as a calf. Johne's is spread via colostrum, feces, or rarely, trans-placentally.

For more information about these or other diseases, contact your local veterinarian or refer to the Appendix on page 34 to locate a website reference. ■

Name: _____

Please circle:

Recertification

Training Location: _____

Certification

Identify the letter or symbol that indicates the correct answer for each of the questions.

1. ____ True or False. All products labeled for intra-muscular (IM) use shall be given in the neck region only (no exceptions, regardless of age). (Page 21)
2. ____ Who may advise a producer to use a feed additive in a way other than indicated on the product label. (Page 11)
a) feed supplier b) veterinarian c) both a and b d) no one
3. ____ When administering a subcutaneous (SQ) injection to a calf weighing 500 lbs., which needle is recommended? (Page 22)
a) 18 gauge x 1-inch b) 18 gauge x 1 1/2-inch c) 20 gauge x 1-inch d) 16 gauge x 1 1/2-inch
4. ____ Which of the following is not true when giving injections? (Page 21)
a) give injections within the injection zone triangle c) when possible use IM injections
b) tent skin for all subcutaneous (SQ) injections d) space injections 4 inches apart
5. ____ For a vaccine to be most effective it must be: (Page 23)
a) kept out of direct sunlight and UV light c) administered in a clean injection site
b) kept cool at all times d) all of the above
6. ____ Market cull cows and bulls must follow NC-BQA regulations. Non-fed beef is what percentage of total U.S. beef production? (Page 6)
a) 30 – 35% b) fewer than 5% c) 7-12% d) 15 – 20%
7. ____ True or False. All products cause tissue damage when injected IM. Therefore, IM use should be avoided if possible. (Page 9)
8. ____ Bruising in market cows and bulls is a large problem because: (Page 6)
a) They possess less fat cover c) They have a higher incidence of lameness
b) They encounter more situations where bruising can occur d) Both A&C
9. ____ The NC-BQA program is designed to assist producers to: (Page 4)
a) Set production standards c) Be educated on industry issues and practices
b) Establish systems for data retention and record keeping d) All the above
10. ____ Under NC-BQA guidelines, records should be maintained for a minimum of: (Page 9 and 19)
a) Three years b) Two years c) One year d) Until the cattle have been transferred
11. ____ True or False. Over-the-counter (OTC) drug dosage can be adjusted by a veterinarian within the context of a valid veterinary-client-patient relationship. (Page 12)
12. ____ The federal mammalian (ruminant) protein ban prohibits the use of which by-products in formulating ruminant feed products: (Page 10)
a) Blood and blood by-products b) Meat and Bone Meal c) Gelatin d) Tallow

Detach here

NORTH CAROLINA - BEEF QUALITY ASSURANCE PROGRAM

BQA Checklist and Contract

I am committed to producing beef cattle which are safe, wholesome, high quality, consistent, and produced in an environmentally-sound manner. To do this, I will strive for the following:

Feedstuffs/Feed Additives

- ✓ A quality feed control program will be maintained for all incoming feed ingredients.
- ✓ Only FDA-approved medicated feed additives will be used in rations.
- ✓ Proper withdrawal time for all additives and pesticide/herbicide use will be observed to avoid violative residues.
- ✓ Ruminant-derived protein sources will not be fed.

Processing/Treatment and Records

- ✓ Extra-label drug use will only be used when prescribed by a veterinarian with a valid veterinarian-client-patient relationship.
- ✓ Records will be maintained for all treatments (individual or group) following BQA-suggested record keeping guidelines and will be kept for a minimum of three years.

Injectable Animal Health Products

- ✓ All injections will be administered in the neck region only. This includes both subcutaneous and intramuscular injections.
- ✓ All individual treatments will strictly follow only FDA/USDA/EPA guidelines, and products which cause tissue damage will be avoided.

Care and Husbandry Practices

- ✓ Cattle management will follow animal care and well-being guidelines that conform to good veterinary and husbandry practices to avoid bruising, stress, or injury.
- ✓ Regularly evaluate and implement biosecurity practices.

* * * * *

By signing below, you understand and accept that the personal information you provide on this enrollment application may be shared with other departments and affiliated organizations of the North Carolina Cattlemen's Association, including, but not necessarily limited to Membership Services. The personal information provided will NOT be shared with any person or entity outside of the North Carolina Cattlemen's Association and its affiliated organizations.

Name: _____ **Business Name:** _____

Address: _____ **City:** _____ **ST:** ____ **Zip:** _____

Email: _____ **Phone:** _____ **Fax:** _____

Signature: _____ **Date:** _____

Circle all that apply to your business: Feedlot Cow/Calf Seedstock Stocker Other

Employees please list employer's name and address:

NC-BQA Certified Trainer Signature: _____ **Trainer BQA #:** _____

| | | | |
|---------------|------------|---------------------------|-----------------------|
| Check # _____ | Cash _____ | BQA Certification # _____ | Date Processed: _____ |
|---------------|------------|---------------------------|-----------------------|

Detach here

Websites For More Information:

| | |
|---|--|
| Biosecurity Information | www.farmandranchbiosecurity.com |
| Centers for Disease Control | www.cdc.org |
| FDA – Food and Drug Administration | www.fda.org |
| Johne's Information Center | www.johnes.org |
| NCBA – National Cattlemen's Beef Association | www.beefusa.org |
| North Carolina Cattlemen's Association | www.nccattle.com |
| North Carolina Cattlemen's Beef Council | www.nccattle.com/council.html |
| North Carolina State University - Cooperative Extension | www.ces.ncsu.edu |
| North Carolina State University - Department of Animal Science | www.cals.ncsu.edu/an_sci |
| North Carolina Department of Agriculture and Consumer Services | www.agr.state.nc.us |
| USDA – United States Department of Agriculture | www.usda.gov |

Glossary:

Additive: An ingredient or substance added to a basic feed mix, usually in small quantities for the purpose of fortifying it with certain nutrients, stimulants and/or medications.

Antibiotic: A class of drugs, such as penicillin, used to control or cure disease.

BQA: Beef Quality Assurance

Cutability: An estimate of the percentage of salable meat (muscle) from the round, rib, and chuck vs. percentage of waste fat.

EPA: Environmental Protection Agency

Extra label usage: Administering a drug or other substance in a manner not specified on the label.

FSIS – Food Safety and Inspection Service

HACCP (Hazard Analysis And Critical Control Points): A systematic, science-based approach to assuring the production of safe food. The USDA Food Safety and Inspection Service (FSIS) requires all U.S. meat and poultry processing facilities to implement the system.

Immunity: The ability of an animal to resist or overcome an infection to which most members of its species are susceptible.

Immunization: The process and procedures involved in creating immunity in an animal. Vaccination is a form of immunization.

Intramuscular injection (IM): An injection into the muscle.

Intravenous injection (IV): Injection of a drug or other substance directly into a vein.

Medicated feed: Any feed which contains drug ingredients intended or represented for the cure, mitigation, treatment or prevention of diseases of animals.

OTC: Drugs and other substances that can be bought by anyone over-the-counter because adequate instructions for layman use can be printed on the label.

Pesticides: Broad class of crop protection compounds used to combat insects, fungus, and rodents.

Residues: Remnants of compounds in drugs and other substances found in fluid, tissues, and feeds.

Route of Administration: The method by which a drug or other substance is given to an animal (oral, subcutaneous, intramuscular, topical, etc).

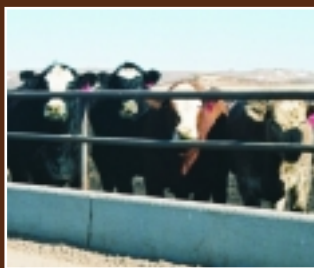
Rx (prescription drugs): Drugs that must be prescribed by a licensed veterinarian.

Subcutaneous injection (SQ): An injection under the skin.

Vaccination: An injection of vaccine, bacterin, antiserum, or antitoxin to produce immunity or tolerance to disease.

Vaccine: A preparation containing microorganisms controlled in such a way as to create a response by the recipient animal's body that results in increased protective immunity.

Zero-Tolerance: The standard to which U.S. beef processors must adhere when it comes to fecal and ingesta carcass contamination. In layman's terms, no visible contamination is allowed on beef carcasses. ■



Producer Code of Cattle Care

Beef cattle producers take pride in their responsibility to properly care for cattle on their farms and ranches. The following are general recommendations for producers to consider in raising and handling cattle:

- **Provide necessary food, water, and care to protect the health and well-being of animals.**
- **Provide disease prevention practices to protect herd health, including access to veterinary care.**
- **Provide facilities that allow safe, humane, and efficient movement and/or restraint of livestock.**
- **Use appropriate methods to euthanize sick or injured livestock and dispose of them properly.**
- **Provide personnel with training experiences to properly handle and care for cattle.**
- **Make timely observations of livestock to ensure basic needs are being met.**
- **Minimize stress when transporting cattle.**
- **Keep updated on advancements and changes in the industry to make decisions based on sound production practices and consideration to animal well-being.**
- **Persons who willfully mistreat animals will not be tolerated.**



**North Carolina - Beef Quality Assurance
c/o North Carolina Cattlemen's Association**

2228 N. Main Street

Fuquay-Varina, NC 27526

919/552-9111

website: www.nccattle.com

e-mail: ncbqa@nccattle.com