Helping Arizona Produce Safe, Wholesome, Healthy Beef

Sponsored by:
Allied Industry Members &

Arizona Cattle Growers Association

The University of Arizona
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School of Animal & Comparative Biomedical Sciences
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ARIZONA AGRICULTURAL UNIVERSITY
Arizona Beef
www.arizonabeef.org
Introduction

Across the country, beef producers face the challenge of making a living from the land while producing safe, healthy beef. This beef must give a great eating experience each and every time for consumers in America and around the world. To meet that challenge, the Beef Quality Assurance (BQA) program was created in 1987 to help beef producers raise, feed, and harvest high-quality beef.

Using science, research, and education, the BQA program has identified practices producers can use each day. The major goal of these BQA practices is to improve consumer trust. The BQA program is a holistic way to produce beef. The practices a producer uses can impact the bottom line in all areas, including better profits and returns, lower animal health costs, and improved records that allow for better tracking of production practices.

In today’s marketplace, consumer concerns about contaminants in the food chain are increasing. We know that compounds used in cattle production are safe and strictly regulated. However, consumers and public officials will continue to question the beef industry about its use of antibiotics, growth stimulants and other compounds. Pressure will be put on regulatory officials to more closely monitor the beef supply.

How should these issues be managed? Experience dictates that the best approach is to directly address consumer concern. The Beef Quality Assurance program does this by taking the offensive in developing the scientific data and training necessary to avoid residues. This will create a positive program that demonstrates how the industry can best continue with high standards to avoid residues. The industry wants a program that verifies that beef is produced “safe at the source.” This is consistent with the USDA drive to safe-source production. Participation in the BQA program is one way to show our customers, whether they are cattle buyers or beef consumers, that producers take every possible step to raise beef responsibly. Furthermore, each aspect of a BQA program is part of good business management.

Other segments of the industry, from feedyards to foodservice, have already adopted similar management principles. These companies are looking to do business with cow-calf producers and stocker operators who utilize similar management philosophies to further help to ensure the safety of products leaving their operations, whether fed cattle or case-ready meat products. Adoption of BQA principles as a method of doing business helps position an operation to take advantage of these opportunities. The BQA program focuses on good business management practices and includes current FDA, EPA, and USDA regulations.

BQA can also help a producer become more competitive. Active participation in this program is beneficial as the world’s image of beef originating from the United States is enhanced.

When you take part in the Arizona Beef Quality Assurance (AZBQA) program and use BQA production practices, you are creating opportunities for your business. Making a commitment to BQA isn’t just the right thing to do for the consumer; it also can open doors to new marketing opportunities for participating producers.

Following BQA guidelines helps beef producers give consumers the great eating experience they expect and deserve.

Cover Photos: David W. Schafer
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Note: This manual briefly outlines state and federal rules and regulations. The information here is not meant to be taken as legal advice. In addition, this manual does not cover all aspects of the legal issues that relate to beef production.

Portions of this manual were adapted from the National Beef Quality Assurance Manual
A successful beef quality assurance program has numerous segments. Everything from the initial selection of a breed and foundation bloodlines to the preparation of the final product to be served at the table impacts the quality, satisfaction and enjoyment of beef.

The Arizona Beef Quality Assurance Program (AZBQA) provides hands-on training and education on BQA guidelines and technical assistance through Arizona Cattlemen, AZBQA certified veterinarians and Arizona Extension personnel. This program is to assist Arizona cattle producers in producing cattle that are healthy, wholesome and meet FDA, USDA and EPA guidelines, rules and regulations. Through voluntary participation in the AZBQA, the Arizona beef industry can persist in the production of safe, wholesome beef in a manner that continues to inspire consumer confidence and can base its future certification on scientifically developed Arizona data and training.

Arizona BQA Mission
To enhance income protection by assisting Arizona cattle producers in producing cattle that are healthy and wholesome. Through voluntary participation in the Arizona Beef Quality Assurance, a certification program based on scientifically developed data and training, the Arizona beef industry will continue to produce safe, wholesome beef in a manner that inspires consumer confidence.

The program has several objectives. These involve training in the basic principles of quality assurance and the development of specific herd Beef Quality Assurance (BQA) programs. The development of a successful BQA program is a joint effort by the Arizona Cattle Growers’ Association, The University of Arizona, the Arizona Department of Agriculture and Allied Industry Partners.

How can you participate?

Participation in the BQA program is voluntary, and membership in the Arizona Cattlemen’s Association or the National Cattlemen’s Beef Association is not a requirement. We encourage any person who regularly works with beef or dairy cattle in a cow/calf, stocker, backgrounding, feedlot, transportation or production-related business to become certified.

To become BQA certified, you must take part in a training session conducted by an AZBQA certified trainer. You must complete the BQA test and contract. You must agree to all of the program standards on the agreement and sign the contract. Completed tests and contracts should be returned to the AZBQA trainer.

The BQA manual also can be found at www.cals.arizona.edu/ans/bqa. You will receive your BQA certificate and number through the mail. There is a $5 charge to become certified. This initial certification is good for 3 years.

In order to maintain certification, a minimum of 4 hours of continuing education is required every 3 years. The certified individual is responsible for submitting continuing education class information to the BQA office along with another completed contract. Please submit continuing education information to:
Rancher Beef Quality Assurance
School of Animal & Comparative Biomedical Sciences
P.O. Box 210090
Tucson, AZ 85721

To receive continuing education credit, a class must be approved by the Arizona Beef Quality Assurance Program. If a class has not received prior approval, a list of class topics may be requested to determine if the class meets continuing education requirements.

Once you are recertified, you will be able to participate in AZBQA for another 3 years. If you have any questions about the certification process, please contact the BQA coordinator at the University of Arizona Livestock Extension at (520) 626-7107.
HAACP: The Basis of BQA

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

At the ranch level, HAACP is as simple as creating a plan ahead of time to deal with something that doesn’t go well. It includes making plans to avoid physical, chemical, and biological problems and keeping records of what was done to correct the problem. HAACP’s seven principles are incorporated throughout this manual and 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, storage of feed and/or chemical products is a control point. To help ensure that feed is not accidentally contaminated, batteries, fuel containers or paint should never be stored in the same location as feedstuffs.

3. Establish critical limits associated with each control point. For example, identify the proper withdrawal time associated with a drug treatment to determine the earliest date the treated animal could be sold.

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, corrective actions for a drug residue violation might include improving record keeping and employee training.

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.

Control Points

Control points are the common steps in an overall management plan, such as calving, purchasing feedstuffs, weaning calves, and transporting cattle. Use BQA practices during these control points to prevent problems with food safety and quality.

Within each segment of the beef industry, there are three broad types of control points they are Food Safety control points, Quality control points and Environmental control points.

Important Points to Remember:

1. Cattlemen cannot foresee all potential challenges. One area at a time should be identified and then a plan should be developed and implemented for assuring quality in that area of production. The experience gained will help make it easier to develop quality assurance in other areas of the operation.

2. Cattle will be free of violative residues and product-related defects if products are administered according to USDA/FDA/EPA standards, withdrawal times are followed and BQA record keeping procedures are utilized without exception.

3. There are a number of safeguards integrated into beef production that help the beef industry avoid quality defects. These safeguards include: handling animals on an individual basis, the length (long period) of time required to produce a finished product, and the quality and safety built into modern health-related beef production technologies.

4. Every employee/caretaker must be trained to know, understand and identify areas where the possibility of violative residues or quality defects may occur. Anyone who supplies services, commodities or products to a producer must also understand the beef operation’s quality assurance objectives.

5. Cattlemen must be able to document each step of production. Good production records are necessary to allow for documentation, analysis and improvements in financial decision making.

6. There are production areas that have higher residue and carcass defect risks than others. High-risk production areas include, but are not limited to: non-performing cattle, unusual single-source feed ingredients and providers of non-standard supplies.
Beef Quality Assurance Guidelines

The following is a summary of the Arizona BQA program guidelines. These guidelines closely follow those of the national BQA program, which have been approved and implemented by the National Cattlemen's Beef Association. The next sections of this manual look at the details of each of these guidelines.

1. Record Keeping

- Keep individual treatment records with the following information:
  1) Individual animal identification.
  2) Date treated.
  3) Product used and manufacturer's lot/serial number.
  4) Dosage used.
  5) Route and location of administration.
  6) Earliest date animal will have cleared the withdrawal period
  7) Name of individual administering the treatment.

- When cattle are treated/processed as a group, all cattle within the group shall be identified as such, and the following information recorded:
  1) Group or lot identification
  2) Date treated
  3) Product administered and manufacturer's lot/serial number
  4) Dosage
  5) Route and location of administration
  6) Earliest date animal will have cleared the withdrawal period
  7) Name of individual administering the treatment

- Check all cattle (fed and non-fed) shipped to slaughter to make sure that all treated animals meet or exceed label or prescription withdrawal times for all animal health products they have been given.

- Transfer all processing and treatment records with the cattle to the next production level. Inform possible buyers of any cattle that have not met withdrawal times.

- Keep records for at least 3 years. Examples of records to keep include processing and pesticide application records.

2. Care and Husbandry Practices

- Follow the Animal Care and Well-Being Guidelines to make sure you are using good veterinary and husbandry practices.

- Handle and transport all cattle in ways that will reduce stress, injury, and bruising.

- Regularly inspect facilities (fences, corrals, load-outs, etc.) to make sure animals can be handled easily and safely.

- Keep feed and water handling equipment clean.

- Properly manage nutrition and feedstuffs.

- Maintain an environment appropriate to the production setting.

- Keep records for a minimum of 3 years or longer as required by laws/regulations.
3. Processing/Treatment

- Follow all FDA/USDA/EPA guidelines for the products you use.
- Follow label directions for all products.
- Extra-label drug use should be kept to a minimum, and used only when prescribed by a veterinarian working under a Veterinary/Client/Patient Relationship (VCPR).
- Avoid the extra-label use of aminoglycosides because this is strictly prohibited.
- Strictly follow guidelines for extended withdrawal periods.
- Always follow label requirements.
- Give products labeled for subcutaneous or intramuscular (SQ or IM) injection in the neck region only (no exceptions, regardless of age).
- All products can cause tissue damage when injected IM. Therefore all IM use should be avoided if possible.
- Try to use products that can be given orally or through SQ or intravenous (IV) injection.
- Try to use products with low dosage rates.
- Follow proper spacing guidelines when giving more than one injection.
- Give no more than 10 cc of products in each IM injection site.

4. Feedstuffs/Feed Additives and Medications

- Keep records of any pesticides or herbicides you use on pasture or crops that could possibly leave violative residues in grazing cattle or feedlot cattle.
- Make sure adequate quality control programs are in place for incoming feedstuffs. Design these programs so that molds, mycotoxins, or chemicals do not contaminate incoming feed ingredients. Be sure your supplier guarantees the quality of the feed ingredients.
- Test feedstuffs before using them if you think they may have been contaminated.
- Do not feed ruminant-derived protein sources per FDA regulations.
- Avoid the use of by-product ingredients for feed unless you have scientific proof that the ingredients are safe.
- Use only FDA-approved medicated feed additives in rations.
- Use medicated feed additives according to the FDA Good Manufacturing Practices (GMP) regulations.
- Follow sensible guidelines for using antibiotics.
- Extra-label use of feed additives is illegal and strictly prohibited.
- Strictly follow withdrawal-time guidelines to avoid violative residues.
- Keep complete records when formulating or feeding medicated feed rations.
- Keep feed records for at least 3 years.
- Withdraw all additives at the correct times.

5. Management and Emergency Preparedness

- Develop a security management strategy to protect your operation against danger, damage, loss and crime.
- Use a system to ensure biosecurity, and regularly evaluate that system.
- Create a disaster preparedness plan for your operation.
1.) Record Keeping

Accurate and updated records are the key factor in a successful rancher quality certification program. More importantly, they are the rancher’s only defense if faced with an FDA inspection. The only way to accurately determine if the operation is in compliance with withdrawal periods is to know exactly what was given, how it was given and when it was given to each animal. Updated records allow the rancher to make well-informed decisions about marketing cattle without worrying whether enough time has elapsed since the last treatment. Not only are accurate records and animal identification essential if a chemical residue is to be avoided, but they also save valuable time.

Treatment records are important for three reasons if a residue is detected:
1. Though it is unlikely to have a residue when label directions and withdrawal times are followed, animals previously treated for an illness may have delayed drug clearance beyond that on the label. 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 required.
3. Should an operator be cited for a residue violation and that operator believes a mistake in identity has been made, good records are the only proof of evidence.

Accurate records also allow the operation 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 a veterinarian what treatments the cattle ranch is applying so he/she can make sure that treatment recommendations are being followed and judge whether treatment regimens need to be adjusted for different conditions.

When developing a record keeping system, select one that best fits the operation needs. Records are meant to make jobs easier, not create new headaches. Employees should feel comfortable using the system. This will help assure that all treatments and information are correctly entered.

Any form of record keeping is better than none at all. The most common methods are computer spreadsheets or manual, handwritten records. Refer to the appendix for examples.

Treatment Protocol Book

Ask your veterinarian to develop a Treatment Protocol Book for your operation. Keep the Treatment Protocol Book on file at the treatment facility.

Treatment Protocol Books often are used in feed yards and large stocker operations. But this can be a valuable management tool for cow-calf producers as well. The book includes a written plan for what treatments you will use when cattle get sick.

Also write down your plan for follow-up and/or alternative treatments if the first treatment does not work.

Regularly review the book and update it at least every 90 days, or as often as you need to. Keep old versions of your protocol book on file for a year or more so you can look back to see which treatments worked before. Your veterinarian must sign and date the Treatment Protocol Book each time it is updated.

Veterinary Drug Order

A Veterinary Drug Order (VDO) is a veterinarian-approved list of medications used in your operation that fit BQA guidelines.

The VDO should include all products that have a withdrawal time, including vaccines, antiparasitic drugs, and all injectables (including vitamins). You get an additional measure of quality assurance and safety when you manage all medications, vaccines and other products as though they are prescription items. Have your VDO updated at the same time as your Treatment Protocol Book.

Common Types of Records

Animal Treatment Records
1. Keep all records for at least 3 years from the date you transfer or market cattle.
2. Treatment records should contain:
   • Treatment date
   • Animal or group identification
   • Approximate weight of animal or group average
   • Treatment product given
   • Product lot/serial number
   • Earliest date the animal could clear withdrawal time
   • Dose given
   • Route of administration (IM, SQ, IV, or oral)
   • Location of injections
   • Name of person who gave the treatment
3. Give copies of treatment records to the buyer of your cattle. Copies of records should go with cattle as they are moved from one unit of your ranch to another.

Animal Health Product Records
1. Health product records show origin and expiration dates of products utilized. Most systems fall into one of two categories – receiving records or inventory records. The most common type of system is a receiving record of all animal health products. A calculated or theoretical usage calculation cannot be determined by a receiving record. However, it will allow for tracing product origination and expiration dates.
2. Some facilities employ an inventory record system which allows processing medications and implants to be recorded under a running or beginning and ending inventory. This also allows for product usage calculation.

Feed Records
1. Keep all feed records for at least three years from the date of transfer or sale of the cattle.
2. It’s a best management practice to require that all feed products be accompanied by an invoice that includes the date, amount, lot/batch number and signatures of both the person who delivered the product and the person receiving the product.

Chemical Records
1. If you are a licensed pesticide applicator (required for purchasing restricted-use chemicals), your state Department of Agriculture already requires you to keep records on your use of these chemicals. These records are sufficient.
2. An additional set of records should be maintained for non-restricted pesticides. Records should include:
   - Product ID
   - Serial/lot number
   - Date used
   - Amount used
   - Person who administered the pesticide
   - The animal or animals exposed to the pesticide
   - Withdrawal time
3. If a pesticide, such as a pour on, is used at processing, the record of its use can be included on the processing record for the group of cattle. If a premise pesticide is used, a record of its use can be included on a Premise Pesticide Use Record. Restricted Use Pesticides (RUP) require records be kept for three years.

2.) Care and Husbandry Practices

Good animal husbandry practices improve the well being of cattle, individual animal health and herd productivity. Your job and your future are tied to the state of the beef industry. The best job insurance is to handle and treat cattle with responsibility and respect. If you wouldn’t want a TV camera recording what you are doing, DON’T DO IT! You are important to every cow, calf, heifer, steer and bull that you work, and each animal is important to the future of the beef industry.

These practices are based on research and many years of hands-on experience. Cattle are produced using a variety of management systems in Arizona. As a result, all cattle producers should not use the same set of production practices. Personal experience, training, and professional judgment are very important for giving good animal care.

Herd Health Programs

Producers must practice herd health programs to prevent and treat disease. Any animal can become infected with a disease if it is exposed to enough infectious agents and its resistance is lowered. Similarly, animals can be protected from disease by reducing the number of infectious agents and increasing the animals’ resistance. In developing a herd health program, you will not be able to protect every animal from every disease,

Why is a Good Health Program Important?
1. Healthy cattle perform better later in life, particularly during the stocker and feedlot phases.
2. Producers who get a reputation for unhealthy cattle will be discriminated against.
3. Superior genetics are more completely expressed in healthy calves.
4. Backgrounded and/or preconditioned calves can generate moderate price premiums if marketed aggressively in select markets.
but you will develop methods to protect more animals in the herd so that the overall resistance of the herd is increased. The program you choose to implement will vary depending on the type of operation and the prevalence of disease.

Although herd health programs are unique to each operation they will still have several things in common. All herd health programs will provide a management outline for the yearly cycle of operation, incorporate good animal care and husbandry practices, maintain a veterinarian-client-patient relationship, keep a record of animal health and production and analyze production records and results to improve the operation.

To begin developing a herd health program for your operation first identify what the goals for the herd are, formulate a plan to reach those goals and after implementation and a predetermined amount of time evaluate actual performance with the original goals. If your results are unsatisfactory the original goals may need to be reevaluated or the herd health plan adjusted. One of your best resources in establishing an effective herd health plan is your veterinarian.

**Things to Consider When Developing a Herd Health Plan**

**Feeding and Nutrition**

Cattle must have plenty of quality nutrients (energy, protein, water, minerals, and vitamins) to maintain their bodies and to grow. The nutrient needs of cattle depend on age, sex, weight, body condition, stage of production and environmental conditions.

Body Condition Score (BCS) is a tool used to measure the nutritional status of cattle. The range is from 1 (very emaciated) to 9 (overly fat). The best range for cows at calving time is BCS 5. The colostrum produced by cows calving below a BCS 5 is lower in volume and quality. These cows also have decreased milk production and rebreeding rates. Nutritional stress can hurt the animal’s health and immune system. A correct balance of protein and energy is very important to the nutritional needs of cattle. A nutritionist can tell you what nutrients your cattle need and what nutrients are in your feed ingredients.

Give cattle enough clean drinking water. Water needs vary greatly, but a good rule of thumb is to give 1 gallon of water for every 100 pounds of body weight during cold weather; give nearly 2.5 gallons for every 100 pounds of body weight during hot weather.

**Livestock Facilities**

Keep your facilities (fences, chutes, etc.) in good working condition to allow ease of movement and to reduce stress when working cattle. Whenever possible, remove sharp or protruding objects because these can cause bruising.

The equipment you use should let you restrain cattle quickly and securely. This will minimize stress or injury to the animal or the operator. Allow only experienced, trained personnel to operate restraining equipment.

**Shelter**

Beef cattle are produced in a variety of 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 do well in just about any environment without man-made shelter. However, during severe weather conditions, give cattle access to well-drained resting areas and/or natural or constructed shelter.

**Handling Sick, Disabled or Dead Livestock**

As a cattle producer, you are responsible for the humane care of your animals. You must do everything you can to get veterinary care for sick or injured animals. Cattle that show signs of advanced disease and those that cannot walk (“downers”) should not be transported to market facilities.

Sick or injured cattle that do not respond to medical treatment for a reasonable period of time should be euthanized in a humane way on the farm or ranch. Euthanasia is defined as humane death that occurs without pain or suffering. If you must euthanize an animal, follow the guidelines of the American Veterinary Medical Association and the American Association of Bovine Practitioners. See the best management practices section in the appendix of this manual for more information.

Follow federal, state, and local regulations to

**Culling Management**

- Do not market cull animals that pose a public health threat.
- Ensure ALL marketed animals have cleared proper withdrawal times.
- Do not market cull animals that have a terminal condition.
- Do not send cull animals to market that are disabled.
- Market cull animals BEFORE they become severely emaciated.
- Do not market cull animals with advanced eye lesions.
dispose of dead livestock. If you use a rendering service, keep dead livestock in a screened area away from public view.

Transportation

Use good handling and transportation techniques when moving cattle to and from farms, ranches, feedlots, and marketing facilities. This will keep the animals safe and comfortable.

Move cattle as quietly and patiently as possible to prevent stress or injury during loading and unloading. Separate cattle by size or gender and, if you can, load the different groups into separate compartments of the truck or trailer. Avoid sudden starts and stops and sharp turns to keep livestock from falling during the drive. Make sure the floors of trucks and trailers are clean and slip-resistant. Stop from time to time during the drive to make sure cattle are still standing and not crowded together.

Consider severe weather conditions when transporting livestock. Provide ventilation and protection as needed during the drive.

Training and Education

Make sure all the people who work with your livestock understand correct care and handling techniques. Closely watch your employees to make sure they know how to handle cattle and they use proper techniques.

Your management plan must include ongoing education for anyone who works with your livestock. Make sure all of your employees understand the flight zone for cattle. Avoid sudden movement, loud noises, or other actions that could frighten or confuse animals. Use handling devices humanely. These include canes, prods, sorting sticks, and paddles.

Management Practices

Management practices like euthanasia, branding, dehorning and castration are of concern to some consumers. It is important to document how these procedures will be performed, provide proper training to anyone who will be performing these procedures and document the training. Refer to the appendix for examples of these types of documents.

Dehorning: Cattle with horns can cause significant bruising damage in all segments of the industry. Bruises are trimmed from the beef, which results in lost carcass weight, devalued prime cuts, and reduced carcass value. If calves are born with horns, use electrical or surgical dehorners to stop horn growth. Horns also can be removed through genetic selection. See the best management practices section in the ap-

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Key Points for Handling Cattle

1. Cattle can be moved quietly by using their natural flight zone to move forward, move toward their rear past their point of balance (shoulder); to stop or back up in chute, move forward past their point of balance (see flight zone diagram this page).

2. Handling facilities should have curved chutes and round crowding pens.

3. Use wide, curved lanes leading up to crowding pens.

4. Use three or more sorting pens in front of the squeeze chute.

5. Never fill a crowding pen more than three-quarters full; cattle need room to move around.

6. Cattle should easily go up in the chute. If not, it could be because: they see a person ahead, hanging/jingling chains, shadows, the flapper gate where the crowding pen joins the chute or a number or things that can distract the animal.

7. Cover the sides of the squeeze chute, especially the back three-quarters, to reduce balking when they see a person chuteside.

8. Reduce cattle prod use (electric and others that bruise). Instead, wave sticks with plastic streamers on the end.

9. Keep the processing area clean.

10. Reducing stress on the animal will reduce animal injuries and sickness, employee injury and increase overall efficiency.
Appendix of this manual for more information.

**Castration:** The need for intact males in feed yard and stocker settings is very low. Beef from intact bulls has a coarse texture, low marbling score, and uneven tenderness. Castrate males early, between birth and 4 months of age, to reduce stress for the animal. See the best management practices section in the appendix of this manual for more information.

**Branding:** Branding and brand registration are required in Arizona. Branding is a permanent way to identify cattle and prove ownership. Where you place the brand can impact the value of the hide. If possible place the brand (freeze brand or hot iron) high up on the hip, close to the tailhead. This allows the brand to be cut away from the hide without losing very much of the valuable portions. Freeze branding causes less damage to the hide than hot iron branding and should be used when appropriate. However, improper freeze branding can scar, similar to a hot iron, which lowers the value of the hide. Improper branding procedures can also create beef quality problems. Brands that are too hot or held too long can result in scar tissue that toughens the underlying muscle tissue. In extreme cases, the brand is visible on the muscle tissue below the hide. Contact the Arizona Department of Agriculture for more information on brand registration, requirements and regulations. See the best management practices section in the appendix of this manual for more information.

**Individual Animal ID:** A good method of recording treatments is individually identifying each animal in the operation. The most common identification method is ear tags. The tag should include an individual number unique only to that animal and a number that identifies each animal to its group.

**Pre-Conditioning:** 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 removed from its mother's daily nutrition and often shipped to a new environment. The calf joins many other calves at the new location, and it is started on a new ration or feeding method.

Preconditioning is the process by which calves are weaned and “conditioned” before moving them to grass or a backgrounding yard for growing or sending them straight to a feedyard for finishing.

The preconditioning process improves the likelihood that a calf can deal with future stressors and exposure to pathogens without health complications. Bridging the management gap from suckling calf to weaned calf is not that difficult when it’s done at the ranch. It involves enhancing and managing the immune system, controlling stress and preventing overexposure to pathogens during this brief period of time.

Calves that have fewer health problems after they leave the ranch will require less medication, which reduces costs but also lowers the potential for injection site lesions and residues, suffer less death loss, perform more efficiently and potentially have higher-valued carcasses.

Preconditioning is a value-added management practice. In the past, it’s been difficult for a calf producer to realize the added value in preconditioned calves they’ve sold. However, this appears to be changing, and there are more opportunities through both direct sales and auction markets for calf producers to receive extra value for preconditioned calves. The following are just a few of the things to consider about preconditioning calves.

1. **Plan ahead**

Locating markets, allocating pasture, shopping for feed and health products, scheduling other farm and ranch activities, and finally the preconditioning process itself, takes time. So allow adequate time to plan, evaluate and implement your program.

2. **Identify your market**

In agriculture, producers are good managers, but they often fall short with their marketing efforts. A key to realizing the added value in preconditioned calves is finding the outlets that have buyers seeking preconditioned calves and pursuing those markets. These may be auction venues or direct sales to buyers. This effort must start well in advance of the time calves are weaned.

3. **What does the market require?**

Once market outlets have been identified, determine the buyers’ expectations in those outlets. These may include specifications for vaccination and parasite control practices, nutritional management, number of days weaned, weight and cattle type and individual animal identification. Know what is expected and plan to deliver.

<table>
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<th>Item</th>
<th>Preconditioned</th>
<th>Unknown Origin</th>
</tr>
</thead>
<tbody>
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<td>$40.45/head</td>
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<td>6.95 lbs.</td>
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<td>Average Daily Gain</td>
<td>2.67 lbs./day</td>
<td>2.35 lbs./day</td>
</tr>
<tr>
<td>Deaths</td>
<td>.69%</td>
<td>2.93%</td>
</tr>
<tr>
<td>Total cost of gain</td>
<td>$51.60/cwt</td>
<td>$62.84/cwt</td>
</tr>
<tr>
<td>Total weight gain</td>
<td>543 lbs.</td>
<td>525 lbs.</td>
</tr>
<tr>
<td>Total cost of production/hd</td>
<td>$280.19</td>
<td>$345.66</td>
</tr>
</tbody>
</table>

Total Advantage/hd (345.66-280.19) = $65.47
3.) Processing/Treatment

Calves moving through the production chain must stay healthy. Sickness requires treatment and increases the chances of death loss, poor performance, injection-site lesions, and residues. A very important part of the BQA program is handling and giving vaccines correctly. A very high-quality vaccine is useless if it is not handled and given correctly. Many treatment systems use vaccines to stimulate immune system response and lower the chances of having to retreat for illnesses.

Understanding Vaccines

It is important to understand the difference between passive and active immunity. Because antibodies are made of protein, they are broken down by the body at a constant rate. The half-life of most antibodies is about six weeks. When a calf absorbs the antibodies in its colostrum, it will be protected for about 6-8 weeks. After that time, enough of the colostral antibodies will have been removed from the blood that the calf will no longer have protection. Active immunity is produced by the body. It requires six or more weeks for the body to respond to an antigen and start to produce sufficient antibodies to protect the animal, but because the body is producing these antibodies, there will usually always be some being made. So the big difference between passive and active immunity is that passive immunity starts protecting the animal immediately, but is gone from the system in about 6 weeks. Active immunity takes 6-8 weeks to start protecting the animal, but protection will last several months (in some cases – a lifetime).

Mechanism of Immunity

The introduction of a foreign protein, an antigen (Ag), acts to stimulate the formation of specific proteins, antibodies (Ab). The formation of antibodies requires the interaction of several different cells of the immune system. Antibodies can be found in the circulating blood (humoral) or found in specific tissues such as the GI tract, eyes and lungs (local immunity). Humoral antibodies are antibodies that are measured when the titer is done. Titer tells us the level of specific antibodies in the blood. A higher titer indicates a recent exposure to that specific Ag, which means the individual has recently been vaccinated against that disease or has recently been exposed to the disease.

The other type of resistance is cell mediated immunity (CMI). It is called cell mediated because it requires the interaction of antibodies and small lymphocytes (a type of white blood cell). It is very important in developing resistance to some types of bacteria and viruses, especially those invaders that are intracellular. Intracellular invaders cannot be attacked by the humoral antibodies. The CMI system acts to make other defense cells more efficient killers.

Types of Immunity

Passive: Immunity is provided by Ab (antibodies) that are produced by some other animal and then passed into the host animal. A good example is colostrum that is produced by the dam and the antibodies are absorbed from the intestinal tract in the newborn calf.

Active: Immunity is provided by the animal’s own body. This is done naturally when an animal is vaccinated.
The development of the antibodies system and the CMI system requires the interaction of several different types of white blood cells.

To be an effective vaccine, it must stimulate the correct type of response in the host animal.

Vaccine Failure

Producers often wonder why animals get sick even when they have been vaccinated for a specific disease. Some of the reasons for vaccine failure are given below.

Failure of the host to respond (small %)
With any vaccine, there are some animals that will not respond. In some cases, it is because the animal is stressed at the time of the vaccination. In other cases, it is because the animal does not have a competent immune system.

Types of Vaccines

Bacterin: Usually made from the parts of specific bacteria cell wall or the whole bacteria is killed and used to produce the vaccine. This type of vaccine will produce humoral antibodies.

Toxoid: Protection against specific toxin. The toxin is produced in the lab and then inactivated to make the vaccine. This type of vaccine will produce humoral antibodies.

Modified Live Vaccine (MLV): (mostly viral vaccines) Strains of the specific virus are grown in the lab so they become unable to cause disease in the host animal (attenuated). These viruses are injected into the host animal where they must grow and replicate to provide protection. This type of vaccine will produce cell mediated immunity (CMI). Brucellosis or Bang’s Disease vaccine is an example of a modified live vaccine that is bacteria and not a virus.

Killed Vaccine (KV): Killed microorganisms, organism components or organism by-products.

Chemically Altered Vaccine (CA): Contain modified live organisms that have been grown in a media containing adjusted levels of certain chemicals that trigger and amplify mutation of the organism, changing the organism’s metabolism in such a way as to alter the ability to cause disease.

Proper Vaccine Handling

1. Purchase vaccines from a reputable dealer.
2. Always prevent exposure of vaccine to heat and UV light by storing them in a refrigerator and using cold packs to transport them. While processing cattle keep the working bottle of vaccine and syringes in a cooler. Keep unused and unmixed products in a closed, refrigerated container until you are ready to use them.
3. Never refill a syringe using a needle that has been in an animal. This introduces non-sterile matter into the vaccine and contaminates the remainder of the bottle. Adopt the practice of changing needles before filling a syringe to keep needles sharp and prevent contamination of the vaccine.
4. Always read label and dosing instructions prior to processing to make certain you’re administering the proper dose of each product. Many products have changed their dosage rate or approved route of administration.
5. Do not mix MLV products more than 1 hour before you use them.
6. If you are processing a small number of cattle, purchase vaccines in small containers that have fewer doses.
7. Booster vaccines as outlined on the label. To establish immunity, almost all products require a second vaccination two to four weeks after the initial vaccination. If a booster is required, one initial dose will not achieve immunity.
8. You can increase the chances that animals will respond to the vaccine by reducing exposure and stress, improving nutritional management, providing treatment for parasites and timing vaccinations correctly.

Degree of resistance insufficient

In any population of animals, the degree of response to any vaccine is not uniform. If we vaccinated a herd of cattle, and then came back and measured the level of antibodies present (titer), we would find the degree of response would follow a bell curve. Those individuals at the tail of the bell may not have sufficient antibodies to protect them against infection. By stressing animals, we can move more of the population into the section that will not respond. This is an important factor to remember when vaccinating cattle.

Protection by vaccine is not immediate

Remember that it takes the body some time to respond to a vaccine. If the animals are exposed to a disease before they have had time to respond to a vaccine, they will become infected.

Failure to boost vaccine (lower resistance)

The first time an animal is vaccinated, this acts to “prime the pump.” The immune system responds to the vaccine and also develops some memory cells that respond the time the same
Muscle tissue lesions and scarring can result from improper injection hygiene and technique, as well as from the use of certain intramuscular (IM) administered animal health products regardless of animal age.

Initially, it was thought that the injection-site lesion problem occurred primarily once cattle entered the feeding period. Research now clearly shows that muscle damage (lesions and/or scars) can occur at any age when the animal is given an IM injection that causes tissue irritation.

Intramuscular (IM) injections given even to young calves (i.e., calfhood vaccinations, antimicrobials and even vitamin shots) that result in tissue irritation can cause measurable and visible scars when cattle are slaughtered at typical market weights.

The 1991 National Beef Quality Audit was the first to identify injection-site lesions as a serious problem. The work of BQA and the efforts of cattle producers have greatly lowered the number of lesions. In March 1991, injection-site blemishes were found in 22.3 percent of the top-sirloin butts studied in the audit. The 2000 audit found these blemishes in fewer than 3 percent of top-sirloin butts.

More studies showed that losing beef at the lesion site was not the only problem caused by injection-site lesions. These lesions also greatly lowered the tenderness of the wholesale cut.

In 1994, Colorado State University researchers found that cooked steaks cut from up to 3 inches from the center of a lesion had a much higher Warner-Bratzler shear force value (toughness) than steaks without lesions.

Factoring in the impact on tenderness, the 1995 quality audit showed a loss of $7.05 for every fed steer and heifer marketed that year. Although packers identified the lowered frequency of injection site lesions to be the greatest improvement in the industry, abscesses and lesions in meat cuts remained one of the top five beef quality defects identified by end-users in the 2005 audit.
Injection Guidelines

1. All injections, regardless of age, must be given in the NECK ONLY NO EXCEPTIONS! Never give injections in the rump, top loin, or back leg.

2. Use subcutaneous (SQ), oral or intravenous (IV) administration of medication of vaccinations whenever possible.

3. Never exceed 10cc in one location site. (If 24cc is recommended dosage, use three 8cc injections instead of two 12cc injections.)

4. Use needles no larger than necessary; needle size can contribute to abscesses. 16 -18 gauge ½ to ¾ inch needles work well for SQ (use “tenting” technique). 16 -18 gauge 1 to 1½ inch needles work well for IM.

5. Protect needles from contamination. Store unused needles in a protected area.

6. Change needle if contaminated or damaged. If needle bends, replace it never straighten it and use it again. Next time it bends, it could break off in the animal.

7. Change needles frequently (10-15 head per needle) to ensure minimal damage due to burrs or risks of carrying contamination to the injection site.

8. Restrain animals properly to avoid breaking needles in animal tissue.

9. During bad weather, take care to see that injection sites are free of manure and dirt and that syringes and needles are clean and disinfected. Injecting cattle during wet weather increases the potential for carrying a contaminant into the injection site.

10. Wetting down the processing area will help reduce dust and risks of contamination in injection sites and castration incisions.

11. Do NOT clean/disinfect syringes or needles with chemical sterilants or disinfectants. Many of these products will kill MLV vaccines and cause damage to Killed vaccines. Do NOT use products like alcohol, soap, Lysol®, Betadine®, Nolvasan® or Chlorox® to clean or disinfect the syringe. Disinfectants also cause severe tissue irritation.

12. Space injections at least 4 inches apart.

13. Never mix products. Mixing products can cause unnecessary tissue damage and make products less effective. It also may increase withdrawal times.

14. Follow good record-keeping guidelines. Records should show individual and group treatments. Include route of administration, product used, and product lot number and serial number.

15. Dispose of needles and syringes properly – check local laws for disposal regulations.

Foreign Objects

Broken Needles
Under no circumstances can animals carrying broken needles be sold or sent to a packer. Broken needles can migrate in the tissue. If broken needles are not removed immediately, the needle fragment will be impossible to find. Animals carrying broken needles must be destroyed rather than sold.

Birdshot/Buckshot
Lead birdshot/buckshot poses a food safety threat. If the shot is detected on the slaughter floor, the entire carcass will be condemned.
Injection-site swelling is common, especially when vaccines like clostridial bacterins are given SQ. Injection swellings that are the result of infection will be full of fluid. Normal injection site nodules should not contain fluid. If the swelling is hard, you may have given the injection too deeply and penetrated part of the first layer of muscle. If this is the case, you should try 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 on a regular injection needle.

**Syringe Care**

Localized infections often are caused by vaccine syringes that were not cleaned properly. Severe infections can spread and even kill an animal. Sterile disposable syringes will prevent almost all injection-site infections. If you require multiple-dose syringes, several brands of disposable sterile automatic vaccine syringes are available.

If you prefer to use reusable multiple-dose syringes do NOT clean/disinfect syringes or needles with chemical sterilants or disinfectants. Any sterilant other than boiling water will leave a residue in the syringe, altering the effectiveness of the vaccine it contacts.

Disinfect syringe components in boiling water. Reusable multiple-dose syringes need to be completely disassembled and cleaned after each working. After sterilizing, reassemble syringes and store in a clean, dry environment until needed. If not, re-sterilize prior to next use. Many continuous-feed syringes cannot be cleaned effectively because they cannot be disassembled and boiled. However, drawing boiling water through the syringes and feeder tubes can clean them.

**Treatments**

**Extra-Label Drug Use**

There are two classes of drugs over the counter (OTC) and prescription. You can buy and use OTC drugs as directed on the label without a veterinarian's permission. (See the example label on next page.) Using a drug at a dose, by a route, for a condition or indication, or in a species not on the label is called extra-label drug use and can only be ordered by a veterinarian in a valid veterinarian-client-patient relationship. Similarly prescription drugs can only be used as ordered by a veterinarian in a valid veterinarian-client-patient relationship.

Choose a veterinarian who is willing to take part in the Beef Quality Assurance program. Your veterinarian must be a team player and understand that each animal can impact the reputation of your business and the beef industry. Use only FDA-, USDA-, and EPA approved products in your processing and treatment programs.
FDA Rules for Extra-Label Drug Use

1. The attending veterinarian must make a careful diagnosis within the context of a valid veterinarian-client-patient relationship. All of the following must be true for a veterinarian-client-patient relationship to be valid:
   a) The veterinarian is responsible for making clinical judgments about the health and medical treatment of the animal, and the client agrees to follow the veterinarian’s orders.
   b) The veterinarian knows enough about the animal to give at least a general or preliminary diagnosis of its medical condition.
   c) The veterinarian will make a timely follow-up evaluation if the animal has a bad reaction or the treatment does not work.

2. The veterinarian must determine one of the following:
   a) No available drug is specifically labeled to treat the condition diagnosed.
   b) The label’s treatment dosage has been proven clinically ineffective.

3. You must take actions to make sure the identity of the treated animal is carefully maintained.

4. You must assign a longer drug withdrawal period before marketing the treated animal. The Food Animal Residue Avoidance Databank can help your veterinarian make these decisions.

Withdrawal Time:
The amount of time that must pass between when an animal receives an application or feeding of a drug or additive and when the animal is harvested. The purpose is to make sure no residue of the drug or additive remains in the carcass. The FDA sets withdrawal time regulations.

Aminoglycosides:
The BQA program does not allow the injectable extra-label use of products such as neomycin, gentamicin, or kanamycin because of the extremely long withdrawal, over two years, and possible violative residues.

The FDA does not allow extra-label use of fluoroquinolones. Examples are Baytril and A180.
Implant Recommendations

When used properly, growth-stimulating implants offer the commercial cow-calf producer a fast, easy-to-use method of increasing weaning weights. Implants have been proven safe and effective through both research and actual use in the beef industry.

- Proper administration of implants is critical to receive desired results.
- Choose the appropriate product according to the sex and age of the animal.
- Use proper handling and storage of products to ensure shelf life.
- Pellets should be implanted under the skin on the back of the ear, where the skin is no longer firmly attached to the ear cartilage, with pellets placed in the middle third of the ear.
- Wipe the implanter needle clean with a disinfectant after each animal.
- Dirty conditions at time of implantation can cause abscesses, preventing active ingredients from being absorbed and/or loss of the pellet.

Relative Location of Implants and Vaccine

Note: It is not recommended to give implants and vaccines in the same ear.

If the tip of the ear is missing place the implant in the outer 1/2 of the remaining ear. If the middle of the ear has been damaged place implant towards the top of the ear.

4.) Feedstuffs and Sources

It is essential to monitor feed sources to prevent chemical residues and ensure high quality feeds. Operations purchasing outside feeds should set up a sampling program to test for quality standards in feedstuffs. Most good suppliers have a quality control testing program of their own. For example, bonded suppliers often test for polychlorinated biphenyls, chlorinated hydrocarbons, organophosphates, pesticides, herbicides, and microbes (Salmonella).

Products, such as pesticides and chemicals, used on raised feeds must be FDA/USDA/EPA-approved. As required by the federal Worker Production Standard, proper training for pesticide handling should be available to all who work with these products.

It is neither efficient nor economically feasible to test every load of grain or forage for contaminants. However, it makes good sense to obtain and store a representative sample of each batch of newly purchased feed. Commonly, investigation of suspected feed-related problems is hampered because no sample is available for testing.

One suggestion for purchased grains, supplements or complete feeds is to randomly sample each batch of feed in five to ten locations and pool the individual samples into a larger sample of two to five pounds. The pooled sample can be placed in a paper bag or small cardboard box and labeled. Dry samples can be kept in a dry area. Higher moisture samples should be frozen. A feed tag can be attached to the sample for future reference.

High-risk feeds include fats, rendered by-products, plant by-products, supplements and additives. These may be single loads or batches that will be fed to cattle over a prolonged period of time. If purchasing fats and oils, monitor for potential contaminants. Letters of guarantee from companies supplying these materials that state these materials have been tested may be requested.

Feed Contamination

EPA pesticide product registration and licensed pesticide applicator requirements provide significant protection from pesticide residues in the U.S. feedgrain supply.

Feed Toxins

Mycotoxins are naturally occurring chemicals produced by fungi. They can be found in grains and for-
ages and, if present in sufficient concentrations, can cause reduced feed consumption, poor production and adverse health effects that may result in residues in meat and milk products. Mycotoxins can be produced in feedstuffs prior to harvesting or during storage. Mycotoxins may include vomitoxin, aflatoxin or fumonisins.

**Chemical Residues**

Use only agricultural chemicals approved for application to land grazed by livestock or on land where feedstuffs are removed for animal consumption at a later time.

Follow label directions and observe grazing restrictions on pastures, rangeland and crops treated with pesticides. Keep records of pesticide use and be sure you allow the correct withdrawal time before marketing cattle. Use only approved products to control internal or external parasites.

### Handling Feedstuffs

1. Maintain a quality control program for incoming feed ingredients in an attempt to eliminate contamination resulting from molds, mycotoxins, chemicals and other contaminants.
2. Store feed in a manner that prevents development of molds and mycotoxins and exposure to chemicals and other potential contaminants.
3. Prior to usage, submit any feed ingredient suspected of contamination for analysis by a qualified laboratory.
4. Store all chemicals (pesticides, lubricants, solvents, etc.) away from feed supplies. Follow the label directions when using and throwing away chemicals.
5. Thoroughly clean feeding equipment that is used for other jobs (like cleaning pens) before using it to handle feed again.
6. If a feed-related poisoning is suspected, it is critical for the producer or veterinarian to contact a diagnostic laboratory for assistance in confirming the suspicion.
7. If purchasing fats and oils, monitor for potential contamination. Letters of guarantee from companies supplying these materials may be requested that state these materials have been tested.
8. Do your best to protect feedstuffs, feed troughs, and water supplies from contamination.

### Feed Additives and Medications

The term "medicated feed" includes all medicated feed products intended to be a substantial source of nutrients in the diet of an animal. The term includes products commonly referred to as supplements, concentrates (grain mixture that contains medication), premix feeds (concentrated medications mixed with additional roughage or concentrates) and base mixes, and is not limited to complete feeds (preconditioning chow for used at receiving/weaning). Medicated feeds must contain the proper drug level and be fed at appropriate levels.

1. Only FDA-approved medicated feed additives can be used in rations.
2. Feed only at recommended rates. Exercise caution when calculating rates for medicated feeds.
3. All medicated feed additives will be used in accordance with the FDA approved label. Extra-label use of feed additives is strictly prohibited by federal law. **No one, not even a veterinarian, can legally prescribe the extra-label use of any feed additive.** All directions for the use of a medicated feed additive will be on the label attached to the bag or will be supplied with a bulk order.
4. Ensure that all additives are withdrawn at the proper time to avoid a violative residue.
5. Keep records with the additive used, date used, ration name or number, name of person responsible for adding the additive or mixing the feed, and amount produced. Use separate mixers for mixing medicated feeds and nonmedicated feeds, or clean mixers between batches of each.
6. Pre-mixed or formulated supplements typically used by many smaller beef operations and most cow-calf operations do not require FDA registration of any type. Larger beef operations that use certain highly concentrated medications may be required to register with the FDA via a FD-1900 permit.
7. Identify treated individuals or groups as described in the record keeping section.
5) Security Management and Emergency Preparedness

You should develop a security management strategy to protect your operation against danger, damage, loss and crime. The security management strategy should include measures to prevent the intentional introduction of organisms that cause disease into an operation. To develop this strategy, you must first identify any possible threats. Next, think about the steps you would take to manage each threat. Finally, make a written security plan that you will follow in the future. At the very least, you should take the following steps to help keep your operation secure:

- Create a buffer zone or perimeter fence to separate livestock from the public.
- Lock all access gates.
- Set up visitor and intruder policies.

Biosecurity

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 and feed, and between animals and equipment that may directly or indirectly contact animals. While developing and maintaining biosecurity may be challenging it is likely the cheapest, and the most effective, means of disease control available. No disease prevention program will work without biosecurity.

Biosecurity Basics

To implement a biosecurity program, consider these practices for:

1. Controlling disease within the herd:
   - Vaccinate the herd against all common diseases (BVD, Clostridial disease, etc.).
   - Keep stress low when moving and processing cattle.
   - Provide enough feed, water, and shade.
   - Separate 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.

2. Purchasing replacement animals:
   - Quarantine all new animals for 30 to 60 days.
   - Test new animals for disease (BVD, Johnes, Salmonella, etc.).
   - Purchase animals from healthy and reputable herds.

3. Environmental and pest control:
   - Provide human footbaths at entrances and exits of confinement facilities.
   - Remove manure and dead animals in a timely fashion.
   - Keep grounds and feed bunks as dry as possible.
   - Use an insect control program (insects can be carriers for diseases such as anaplasmosis and bluetongue).
   - Use a rodent control program.
4. Disinfection:
- Before disinfecting, clean and remove as much organic material as possible.
- Choose a disinfectant that will work on 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.

5. 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 5 days.
- Do not allow foreign visitors to bring onto the farm any clothing, food, or accessories they have had in another country.

6. Employees:
- Be sure all employees understand and follow your biosecurity guidelines.
- Realize that employee-owned animals (horses, dogs, etc.) could be a possible source of contamination to your facility.

Potential Disease/Infection Risks

Many foreign animal diseases (FAD) and bacterial and viral pathogens threaten the safety and economic success of the U.S. livestock industry. The following is a list of some of the threats and any available treatment or prevention methods. Work with your veterinarian to identify threats specific to your area and/or operation.

Producer’s should note that the most common livestock health problem, as reported by the Arizona Livestock Incident Response Team (ALIRT), in range livestock is exposure to toxic plants. University of Arizona Cooperative Extension can help with range monitoring and plant identification. If unexpected livestock losses are occurring contact the ALIRT program. Some common infectious disease problems seen in Arizona:

Reproductive/ herd health

Bovine Viral Diarrhea (BVD): is a viral disease that affects the respiratory, reproductive, digestive, immune, and nervous systems of cattle. It is spread through urine, feces, nasal secretions, and semen. Persistently infected (PI) cattle often spread and keep the disease in a herd. Control BVD with biosecurity, vaccination and testing.

Trichomoniasis (Trich): is a true venereal disease of cattle. It is caused by a single cell protozoan parasite, Tritrichomonas foetus and is characterized by early fetal death and infertility. It is found worldwide and is constantly...

Arizona Livestock Incident Response Team (ALIRT)

ALIRT is a response team composed of Veterinarians, University of Arizona Cooperative Extension, Department of Agriculture Livestock Officers and other specialists as dictated by the situation.

ALIRT is designed to enhance the diagnosis of unexplained animal deaths. It is composed of multiple agencies, The University of Arizona and industry groups. The ALIRT goal is to minimize response time during an animal health crisis. Collection of critical information and timely, adequate laboratory analysis are often the keys to a successful diagnosis.

ALIRT is NOT designed to respond to normal production animal health events or to replace normal responses between producers and Veterinarians. However, if after examination by a veterinarian a potential general threat is perceived, ALIRT intervention may be warranted.

ALIRT will only respond at the invitation of the owner or manager, or in response to specific agency requests. If your operation is experiencing a health problem including a numerous amount of unexplained sick or dead animals contact your local veterinarian (preferable), ALIRT Veterinarian, the local University of Arizona Extension Office or an Arizona Department of Agriculture Livestock Officer. It is important to also compile a herd history with respect to health programs, pasture moves, supplementation, contact with outside livestock, etc.

Office of the Arizona State Veterinarian 1-888-742-5334
Arizona Veterinary Diagnostic Laboratory 1-520-621-2356
For more information on ALIRT go to www.cals.arizona.edu/ans/alirt
bacteria and the infection is established in the respiratory tract. There is no vaccine approved for use in cattle to prevent infection with TB and there is no approved treatment. Cattle TB can be transmitted to people and other livestock species. This is one of the primary reasons to attempt to eradicate this disease in livestock. Testing, through slaughter surveillance and herd testing, remains the core of the USDA eradication efforts. Arizona is an accredited TB free state therefore producers who may be importing cattle from infected states should make sure they have complied with all health requirements and get a valid health certificate. Prevent TB with biosecurity and testing.

Johne's Disease: Johne's is an infectious bacterial disease of animals that mainly affects the intestinal tract. It is caused by Mycobacterium avium subsp. paratuberculosis, a distant relative of the bacterium that causes tuberculosis (TB) in humans and animals, but it is a different disease than TB. There are no vaccines or treatments for Johne's, but there are several tests to diagnose it. Cows get Johne's Disease only when they are young, but clinical signs do not develop until they are adults. Johne's usually is spread through colostrum and feces. Rarely, it is spread from cow to calf through the placenta. Prevent John's Disease with biosecurity and testing.

Federal/State Regulatory Diseases:
Brucellosis (Bangs disease): is caused by infection with the bacterium Brucella abortus, which can also cause a disease of humans known as "undulant fever". Brucellosis infection of cattle causes abortion or premature calving of recently infected animals, most often between the fifth and eight month of pregnancy. Brucellosis is contagious to people through eating or drinking something that is contaminated with Brucella, breathing in the organism (inhalation), or having the bacteria enter the body through skin wounds. Although federal and state regulations have helped to control this disease, there is still a threat. Brucellosis is spread from the vaginal discharge of an infected cow or from an aborted fetus. Breeding bulls which are infected can transmit the disease to cows at the time of service by infected semen. There is no treatment for Brucellosis. Prevention of Brucellosis is accomplished by vaccination and biosecurity. Calf hood vaccination for heifers is highly recommended; often non vaccinated adult cows CANNOT be exported from Arizona except for slaughter. Arizona is validated brucellosis-free therefore producers who may be importing cattle from infected states should make sure they have complied with all health requirements and get a valid health certificate.

Tuberculosis in Cattle (TB): is an infectious bacterial disease and is a chronic disease that usually takes many months to a year before the development of clinically evident infections. The clinical signs in cattle are weight loss (often extreme), depression, weakness, a low grade fever and often a mild moist cough. The disease is usually transmitted by animals with active disease exhaling or coughing up the TB bacteria. Other cattle inhale the TB bacteria and the infection is established in the respiratory tract. There is no vaccine approved for use in cattle to prevent infection with TB and there is no approved treatment. Cattle TB can be transmitted to people and other livestock species. This is one of the primary reasons to attempt to eradicate this disease in livestock. Testing, through slaughter surveillance and herd testing, remains the core of the USDA eradication efforts. Arizona is an accredited TB free state therefore producers who may be importing cattle from infected states should make sure they have complied with all health requirements and get a valid health certificate. Prevent TB with biosecurity and testing.

Bovine Spongiform Encephalopathy (BSE): is a rare, chronic degenerative disease affecting the central nervous system of cattle, often referred to as Mad Cow Disease. Based on USDA surveillance efforts, there are no documented cases of BSE in the U.S. Since 1997, the U.S. has 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. Prevent BSE by following FDA regulation and not feeding mammal-derived animal protein by-products to cattle.

High risk Foreign Animal Diseases:
Foot and Mouth Disease (FMD): is a highly contagious viral disease that is devastating to cloven-hoofed animals such as cattle, swine, sheep, goats, and deer. FMD usually does not affect humans. The last U.S. case of Foot and Mouth Disease happened in 1929. Infected animals, contaminated vehicles, and contaminated facilities used to hold animals can spread FMD. People can carry the virus on clothing and other surfaces. You can greatly reduce the economic losses from an outbreak of FMD by reporting it immediately. The main symptoms of the disease in animals include excessive slobbering, not eating, and lameness. Affected animals may have blisters in the mouth or other areas of tender skin such as udders, nostrils, and between the hooves. Prevent FMD with biosecurity.

Disaster Preparedness

It is impossible to prevent all of the losses that will occur during a wide-spread disaster but with advanced planning you can help minimize animal loss, the health problems associated with disasters and the economic impact to your operation. Producers should have a plan in place for how their operation will endure such disasters as fire, hazardous material spills or animal disease outbreaks.

Meet with producers in your area to create a community wide disaster preparedness plan. Producers should coordinate plans with other local agriculture-
related groups such as Extension Services, USDA’s Natural Resource Conservation Services and Farm Service Agencies, Farm Bureau, local cattlemen’s associations, livestock auction markets, feed stores, etc.

Different tasks such as livestock hauling; feed, fuel and generator acquisition and distribution; and animal evacuation, rescue and treatment should be assigned to individuals or groups in advance.

Primary and contingent holding areas for evacuated and/or rescued cattle as well as staging areas for feed and fuel distribution should be identified in advance.

There is no way to prepare for every situation that arises in a disaster. However, by working closely with other producers and agricultural leaders and having an emergency preparedness plan in place you can lessen the impact of a disaster on your operation and your community.

### Disaster Planning Considerations

- Herd health and vaccinations up-to-date
- Animal identification
- Herd prioritization (which cattle are evacuated first)
- Records stored in safe location
- Evacuation plan
- Food and water for cattle if supplies are cut off
- Emergency equipment and first aid supplies

---

## Appendix

### Contact Information for Beef Quality Assurance Team

<table>
<thead>
<tr>
<th>Name of Operation:</th>
<th>Name</th>
<th>Phone</th>
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<tr>
<td>Owner/Manager:</td>
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<td>Feed Employee:</td>
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<td>Maintenance Employee:</td>
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<td>Extension Educator:</td>
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<td>Nutrition Adviser:</td>
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<td>University Specialist:</td>
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<tr>
<td>BQA Trainer:</td>
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Glossary of Terms

**Additive:** An ingredient or substance added to a basic feed mix, usually in small amounts, to fortify it with certain nutrients, stimulants, and/or medications.

**Antibiotic:** A class of drugs, such as penicillin, used to control or cure disease. Antibiotics are used to treat both human and animal disease.

**BQA:** Beef Quality Assurance.

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

**Dosage:** The amount of a drug or other substance given to an animal.

**EPA:** Environmental Protection Agency.

**Exogenous:** Not made by the body, as in hormones.

**Extra-label use:** Administering a drug or other substance under the direction of a veterinarian in a manner not specified on the label; must meet certain FDA criteria; also known as “Off Label” use.

**Foreign animal disease (FAD):** A disease that is not present within the U.S.

**FSIS:** Food Safety and Inspection Service.

**HACCP (Hazard Analysis and Critical Control Points):** A systematic, science-based approach to make sure the food produced on a farm is safe. The USDA Food Safety and Inspection Service (FSIS) requires that all U.S. meat and poultry processing facilities use this system.

**Hormone:** Naturally occurring chemical substance in all animals that affects such things as growth and development. Neither naturally occurring hormones, nor growth promoting hormones used in beef production pose any sort of health risk to consumers.

**Immunity:** The ability of an animal to resist or overcome an infection that most members of its species could not.

**Immunization:** The processes and procedures that create immunity in an animal. Vaccination is a form of immunization.

**Implants:** All growth-promoting hormone products used in the U.S. beef industry are manufactured as implants that are placed beneath the skin on the back side of an animal’s ear.

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

**Intravenous injection (IV):** An injection directly into a vein.

**Medicated feed:** Any feed with drug ingredients that is used to cure, mitigate, treat, or prevent diseases in animals.

**Oral:** Placement of something in the mouth.

**Over the Counter (OTC):** Drugs that can be purchased by anybody over the counter without a veterinary prescription.

**Pathogen:** A type of bacteria such as Salmonella or E.coli 0157:H7 that causes food borne illnesses.

**Pesticides:** A broad class of compounds used to fight crop insects, fungus, and rodents.

**Residues:** Leftover parts of drugs and other substances that are found in animal fluids, tissues, and feeds.

**Route of Administration:** The method you use to give a drug or other substance to an animal (oral, subcutaneous, intramuscular, topical, etc.).

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

**Sanitary:** Clean; the absence of organisms that can cause disease.

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

**Vaccination:** An injection of vaccine, bacterin, antiserum, or antitoxin to stimulate an animal’s immune system response and therefore protect against future exposure to any disease causing agent(s).

**Vaccine:** A drug that is given to an animal to increase its immunity.

**Vitamin:** An organic compound needed in small amounts for nutrition.

**Zero-Tolerance:** The standard that U.S. beef producers must adhere to when it comes to fecal and ingesta carcass contamination. In layman’s terms, no visible contamination is allowed on beef carcasses.
Best Management Practices

Castration of Cattle

Castration of beef cattle is performed in many production systems to reduce inter-animal aggression, improve human safety, and avoid the risk of unwanted pregnancies in the herd.

Where it is necessary to castrate beef cattle, producers should seek guidance from a veterinarian as to the optimum method and timing for their type of cattle and production system.

Methods of castration used in beef cattle include surgical removal of the testes, ischaemic methods, and crushing and disruption of the spermatic cord.

Where practical, cattle should be castrated before the age of three months, or at the first available handling opportunity beyond this age. The use of method(s) that promote the well-being and comfort of cattle should be encouraged.

Producers should seek guidance from a veterinarian on the availability and advisability of analgesia or anesthesia for castration of beef cattle, particularly in older animals.

Operators performing castration of beef cattle should be trained and competent in the procedure used, and be able to recognize the signs of complications.

Sample Protocol for Castration of Cattle

1. (Specific Names) is/are the person(s) responsible for the castration of any cattle, and making the final determination of the need to castrate a particular animal.

2. (Specific Names) has/have been trained in proper castration techniques by (Veterinarian's name or trainer's name).

3. Our operation will utilize (name procedure) for castration of cattle. The (list castration equipment) is stored in (list storage location). Maintenance of the castration equipment is done by (Specific Name or Position Title).

4. (Specific Names) has/have been shown by (Veterinarian's name) the technique(s) used for proper castration, has demonstrated this competence, and is able to recognize signs of complications.

5. (Specific Names) has/have been informed that if they are unable to complete this task for any reason to contact management immediately.

Signed by:
Management/Operator: __________________________ Date: ______________________________

Veterinarian: ____________________________________ Date: ______________________________
Dehorning of Cattle (including disbudding)

Cattle that are naturally horned are commonly dehorned in order to reduce animal injuries and improve human safety. The selection of polled cattle is an alternative for horn management.

Where it is necessary to dehorn cattle, producers should seek guidance from a veterinarian as to the optimum method and timing for their type of cattle and production system.

Where practical, cattle should be dehorned while horn development is still at the horn bud stage, or at the first available handling opportunity beyond this age. This is because the procedure involves less tissue trauma.

Methods of dehorning (disbudding) at the horn bud stage include removal of the horn buds with a knife, thermal cautery of the horn buds, or the application of chemical paste to cauterize the horn buds.

Producers should seek guidance from a veterinarian on the availability and advisability of analgesia or anesthesia for dehorning of beef cattle, particularly in older animals, where horn development is more advanced.

Operators performing dehorning of cattle should be trained and competent in the procedure, and be able to recognize the signs of complications.

Sample Protocol for Dehorning of Cattle

1. (Specific Names) is/are the person(s) responsible for the dehorning of any cattle, and making the final determination of the need to dehorn a particular animal.

2. (Specific Names) has/have been trained in proper dehorning techniques by (Veterinarian's name or trainer's name).

3. Our operation will utilize (name procedure) for dehorning cattle. The (list dehorning equipment) is stored in (list storage location). Maintenance of the dehorning equipment is done by (Specific Name or Position Title).

4. (Specific Names) has/have been shown by (Veterinarian's name) the technique(s) used for proper dehorning, has demonstrated this competence, and is able to recognize signs of complications.

5. (Specific Names) has/have been informed that if they are unable to complete this task for any reason to contact management immediately.

Signed by:
Management/Operator: __________________________ Date: ______________________________

Veterinarian: __________________________ Date: ______________________________
Branding of Cattle

Ear-tagging, ear-notching, tattooing, and radio frequency identification devices (RFID) are methods of identifying cattle. Hot iron or freeze branding may be required or be the only practical method of permanently identifying cattle in some situations. If cattle are hot iron or freeze branded, it should be accomplished quickly, expertly and with the proper equipment. BQA guidelines recommend branding only on the hip areas. Cattle should never be branded on the face or jaw.

Operators performing hot iron or freeze branding procedures should seek the guidance of a veterinarian, be trained and competent in the procedure, and be able to recognize the signs of complications.

Sample Protocol for Hot Iron Branding of Cattle

1. (Specific Names) is/are the person(s) responsible for the hot iron or freeze branding of any cattle, and making the final determination of the need to hot iron or freeze brand a particular animal.

2. (Specific Names) has/have been trained in proper hot iron or freeze branding techniques by (Veterinarian's name or trainer's name).

3. The (list branding equipment) is stored in (list storage location). Maintenance of the branding equipment is done by (Specific Name or Position Title).

4. (Specific Names) has/have been shown by (Veterinarian's name) the technique(s) used for proper hot iron or freeze branding, has demonstrated this competence, and is able to recognize signs of complications.

5. (Specific Names) has/have been informed that if they are unable to complete this task for any reason to contact management immediately.

Signed by:
Management/Operator: __________________________ Date: ______________________________

Veterinarian: __________________________ Date: ______________________________
Euthanasia of Cattle and Calves

Important Considerations
The loss of productive function due to disease or injury in livestock presents at least two options: slaughter or euthanasia. Slaughter should be considered for animals that are not in severe pain, freely able to stand, and walk, capable of being transported, and free of disease and drug residues that would constitute a public health risk. Euthanasia, death induced by methods that do not cause pain or distress to an animal, is the appropriate choice whenever the above conditions cannot be met.

Indications for Euthanasia
- Fractures of the legs, hip or spine that are not repairable and result in immobility or inability to stand
- Emergency medical conditions that result in excruciating pain that cannot be relieved by treatment
- Animals that are too weak to be transported due to debilitation from disease or injury
- Paralysis from traumatic injuries or disease that result in immobility
- Disease conditions where no effective treatment is known, prognosis is terminal, or a significant threat to human health is present. For more information refer to: www.BQA.org

Methods of Euthanasia in Cattle
Acceptable methods for conducting euthanasia in cattle include gunshot and penetrating captive bolt with a secondary step to insure death.

Firearms for Conducting Euthanasia in Cattle
Gunshot is the most common method used for on-farm euthanasia of cattle. Effectiveness depends upon selection of the appropriate caliber of firearm, type of bullet or shotshell, and accuracy of aim. If a firearm is used it should be used within 3 feet of the target, when possible.

Firearm and ammunition selection
- **Calves**
  - Handgun - .32 to .45 caliber, Solid-point bullet
  - Rifle - .22 LR caliber or larger, Solid-point bullet
  - Shotgun - .410 to 12 gauge, #4-6 birdshot or slug

- **Adult**
  - Handgun - .38 to .45 caliber, Solid-point bullet
  - Rifle - .22 magnum or higher caliber\(^1\), Solid-point bullet
  - Shotgun - 12 to 20 gauge, #4-6 birdshot or slug

\(^1\) .22 LR is discouraged for use in euthanasia of adult cattle because it lacks sufficient ballistic energy to yield consistent results. Higher caliber rifles should be avoided as bullets may exit the body and place by-standers in danger.

Penetrating Captive Bolt for Conducting Euthanasia of Cattle
Captive bolt guns are designed to cause damage to the brain sufficient to cause an immediate loss of consciousness. However, death is not certain in all cases. Therefore use of penetrating captive bolt should be followed with a secondary step to assure death. Methods used to assure death include a second or third shot if necessary, exsanguination (bleeding out), or use of a pithing rod.
Anatomical Landmarks
Current information for adult cattle and calves indicates that the point of entry of the projectile should be at (or slightly above) the intersection of two imaginary lines, each drawn from the outside corner of the eye to the center of the base of the opposite horn. If a firearm is used it should be used within 3 feet of the target when possible and positioned so that the muzzle is perpendicular to the skull to avoid ricochet. When using penetrating captive bolt, operators are advised to restrain the head so that the captive bolt may be held flush with the skull.

Indications of Unconsciousness
When conducting euthanasia procedures one should always observe animals for the following behaviors:
- Animal collapses immediately when shot and makes no attempt to right itself
- Body and muscles become rigid immediately upon collapse followed by relaxation of the body, brief tetanic spasms and eventually uncoordinated hind limb movements
- An absence of vocalization
- An absence of eye reflexes and eyelids remain open facing straight forward
- Immediate and sustained cessation of rhythmic breathing

These signs should be observed and monitored in all animals for which euthanasia procedures have been applied. Animals that attempt to right themselves, vocalize, blink with their eyes or begin rhythmic breathing are likely returning to a conscious state. In these cases one should immediately recheck the anatomical site used and re-shoot or re-apply the captive bolt.

Confirmation of Death
Criteria to be used for confirmation of death include lack of pulse, breathing, lack of corneal reflex, response to firm toe pinch (as with a hoof tester), failure to detect/hear respiratory sounds or 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. Rechecking of the animal for these parameters after a period of 20 minutes is a very useful method for confirmation of death.

This document does not cover all situations. When situations arise that are not addressed in the guidelines the well-being of the animal should be evaluated and appropriate actions should be taken. Other acceptable methods may be used by a licensed veterinarian.
Humane Euthanasia of Cattle

Euthanasia should be utilized when an animal’s condition is such that additional treatment options will not be effective. In these cases it is the only practical way to prevent unnecessary suffering. To that extent, it is the responsibility of all who own or work with livestock to have the proper equipment and knowledge to conduct this procedure effectively. Euthanasia is a Greek term meaning “good death”. In this context, its objectives are met when death is induced which causes a minimum of pain and/or distress to an animal. Avoidance of pain and distress requires that euthanasia techniques cause immediate loss of consciousness followed by cardiac and respiratory arrest that ultimately results in loss of brain function. Persons who perform this task must be technically proficient and have an understanding of the relevant anatomical landmarks and the protocols used for humane euthanasia of animals.

Sample Protocol for the Humane Euthanasia of Cattle

1. (Specific Names) is/are the person(s) responsible for the euthanasia of any cattle, and making the final determination of the need to euthanize a particular animal.

2. (Specific Names) has/have been trained in proper euthanasia techniques by (BOA Euthanasia Training Module/Veterinarian’s name or trainer’s name).

3. Our operation will utilize (list euthanasia method) for euthanizing cattle.

4. The (gun or penetrating captive bolt) is stored in locked box in (list storage location). Maintenance of the euthanizing equipment is done by (Specific Name or Position Title).

5. (Specific Names) has/have been shown by (Veterinarian’s name) the anatomical landmarks used for proper euthanasia and have demonstrated this competence on cadavers.

6. (Specific Names) has/have been trained on the signs used for confirmation of the death of cattle by (Veterinarian’s name).

7. (Specific Names) has/have been informed that if they are unable to complete this task for any reason to contact management immediately.

Signed by:
Management/Operator: __________________________ Date: ______________________________

Veterinarian: __________________________ Date: ______________________________
Biosecurity Best Management Plan for Cattle Operations

The dictionary definition of Bio is "life" and the definition for Security is: "freedom from danger, risk, etc. with a synonym being "safety." With this in mind, it is important that each operation have a biosecurity plan and setting biosecurity goals is a decision each operation must make individually. Assessment of health risks, individual levels of tolerance of risks and type of cattle enterprise are some of the components that affect herd health goals.

Plan for introduction of new animals into a herd

- Evaluate risk by assessment of herd health history of animals being introduced
  - Disease status (test status, presence or absence of observed/diagnosed disease, risk)
  - Vaccination best management practices
- Isolation of new animals for at least 21 days
  - Observe for clinical disease, extend isolation time if appropriate
- Testing of animals to be introduced
  - Determination of herd health goals to specify test requirements including
    - BVD PI test of new herd introductions (including offspring of pregnant herd introductions)
    - Johne’s disease, where appropriate
    - Trichomoniasis, where appropriate
    - Anaplasmosis, where appropriate
    - Bovine leukosis, where appropriate.
    - Brucellosis, tuberculosis, according to state regulations and as appropriate
    - Other tests
- Vaccinations of animals to be introduced

Increasing ability of animals in existing herd to resist disease

- Vaccination best management practices
- Nutrition best management practices

There are a number of sources of information that can be used to develop a good biosecurity plan for your ranch. For additional information see: www.BQA.org
Sample Protocol for Biosecurity Plan

1. People
   a. Visitors are allowed on-site only (list requirements for visitors example: during business hours and must be accompanied by an employee).
   b. Steps to prevent trespassers from entering the operation include (list prevention measures example: locked gates, fencing, signs).
   c. Annual biosecurity training for employees was conducted on (list date).

2. Animals
   a. Known disease threats on the operation, if any, include (list disease threats example: Trichomoniasis, BVD, Brucellosis).
   b. Testing programs for these disease are in place and include these procedures (list testing procedures here).
   c. A VCPR with veterinarian (Veterinarian's name) is in place.
   d. Best management practices for introducing new animals to your herd include (list here examples: quarantine times, pre-purchase health requirements such as vaccination history or other health history and health test requirements).
   e. If wildlife disease threats are in your area best management practices are in place including (list here examples: fencing, vaccination, testing).
   f. Basic animal needs are planned for including (list here examples: adequate clean water, feed, bedding, weather protection).

3. Facilities/equipment
   a. Working areas are checked for cleanliness by (list employee title) on a (list how often checked example: weekly, monthly) basis.
   b. Working areas are checked for proper conditions and good repair by (list employee title) on a (list how often checked example: weekly, monthly) basis.

Signed by:
Management/Operator: __________________________ Date: ______________________________
Sample Forms

**BQA Supplier Agreement:**

Supplier: ________________________________

Address: ________________________________

City/State/Zip: ________________________________

Phone: ________________________________

As a professional supplier of products and services to the beef industry I will personally or through my agents assist the beef producer, their veterinarian, their nutritionist, and their other consulting professionals maintain quality control over the products and services we provide. This will include assisting the beef producer select products that fit the BQA guidelines, record all serial / lot numbers for the products delivered, and assist in the development of a MSDS / product insert file. Services will also include advice on the proper inventory control, storage, special handling, precautions, use, and disposal of used containers and supplies.

Signed: ________________________________ Date __________

Signed: ________________________________ Date __________

Signed: ________________________________ Date __________

Signed: ________________________________ Date __________

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Signed: ________________________________ Date __________

Signed: ________________________________ Date __________

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Signed: ________________________________ Date __________

Signed: ________________________________ Date __________
## Animal Health Product Inventory Record

Product ______________________
Manufacturer __________________
Expiration Date ________________
Supplier ______________________

### Record of Usage

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# Cattle Processing Map

![Diagram of a cow showing right and left sides.](image)

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Comments:

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Signed: ____________________________ Date: _______________
# Cattle Processing Work Order

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## Parasite Control

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- Dipping
- Injectable
- Pour On
- Other

## Vaccines

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- 7/8 way Clostridials
- 4 way Resp.: IBR, BVD, PI3, BRSV

## Antibiotics

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## Other

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- Vit ADE

**Processed By: ____________________________**

* Please cross reference with Cattle Processing Map
# Hospital Record and Movement

Animal ID# ____________________________  

Location ____________________________  

Approx. Wt. __________

## Treatment Record

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Cleared for Shipment on:

### Check One:

- Bull □
- Open Cow □
- Bred Cow □
- Wet Cow □
- Calf □

- Replacement Heifer □
- Steer □

### Diagnosis Codes:

- Abs: Abscess
- Blt: Bloat
- Cir: Circulatory
- CP: Calving/Prolapse
- DL: Downer/Lameness

- Eye: Pink Eye
- FR: Foot Rot
- NS: Nervous System
- Res: Respiratory
- Other:
# Veterinary Drug Authorization

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A legitimate veterinarian/client/patient relationship exists. Owner/operator has agreed to the prescription instructions and withdrawals.

Owner/Client ____________________ Date ___________  Veterinarian ____________________ Date ___________
Herd Health Plan
Fall

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## Herd Health Plan

### Spring

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### Treatment Record for Individual Cattle

Animal ID: __________

Home Group/Pen: __________

Color: __________

Rx = medication name, withdrawal = withdrawal complete

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<th>Method (IM, SQ, etc.)</th>
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<th>Person</th>
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# Mass Medication Pen Record

**Group / Pen:** __________

Rx = medication name, withdrawal = withdrawal complete

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*Arizona Beef Quality Assurance Manual* 43
## Premise Pesticide Use Record

\( Rx = \text{medication name}, \text{withdrawal} = \text{withdrawal complete} \)

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Arizona Beef Quality Assurance Manual
# Mass Medication in Feed Group / Pen Record

Number Cattle _______ Approximately Wt/hd _____(lbs.) Pen # _______

Approved by: __________________ Date: ________

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**Arizona Beef Quality Assurance Manual**

Page 45
BQA Shipping / Transfer Release Record

I have checked the Health Maintenance, Feeding, and Treatment records for Group/Pen/Lot identification(s) or individual animal identification listed below. All the cattle have been managed to meet the recommendations and comply with all the requirements which apply to this operation in the National Beef Quality Assurance program.

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<th>Head</th>
<th>Group / Pens / Lot</th>
<th>Individual animal numbers</th>
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Date: _______________ Signature: ____________________________________________

Manager and/or Owner _______________________________________________________

Name of Operation _________________________________________________________

Phone (Day and Evening) __________________________________________________

Address _________________________________________________________________

City/State/Zip ___________________________________________________________
Write the letter for your answer to each of the following questions.

1. _____ True or False: All products labeled for intra-muscular (IM) use should be given in the neck region only (no exceptions, regardless of age).

2. _____ Who can legally prescribe the extra-label use of any feed additive?
   a) feed supplier
   b) veterinarian
   c) both a and b
   d) no one

3. _____ Which one of the needle gauges listed below is the least desirable for use in administering vaccines and drugs to beef animals?
   a) 14 gauge
   b) 16 gauge
   c) 18 gauge

4. _____ Which of the following is NOT true when giving injections?
   a) give injections within the injection zone triangle
   b) tent skin for all subcutaneous (SQ) injections
   c) when possible, use IM injections
   d) space injections 4 inches apart

5. _____ For a vaccine to be most effective it must be:
   a) kept out of direct sunlight and UV light
   b) kept cool at all times
   c) given in a clean injection site
   d) all of the above

6. _____ True or False: Cattle can be moved quietly by using their natural flight zones.

7. _____ The AZBQA program is designed to assist producers to
   a) produce safe, wholesome beef
   b) establish systems for record keeping
   c) follow good veterinary and husbandry practices
   d) all the above

8. _____ Under AZBQA guidelines, records should be kept for at least:
   a) 3 years
   b) 2 years
   c) 1 year
   d) until the cattle have been transferred
9. True or False: Over the counter (OTC) drug dosage can be adjusted by a veterinarian within the context of a valid veterinarian-client-patient relationship.

10. Which of the following is NOT an acceptable feed additive for cattle because of concerns about the possible presence of the agents that cause Bovine Spongiform Encephalopathy?
   a) Dried distillers grains
   b) Meat and bone meal
   c) Whole cottonseed
   d) Rice bran

11. Infectious disease can be spread by:
   a) footwear
   b) feedstuffs
   c) sick cattle
   d) healthy cattle
   e) all of the above

12. Treatment records should include:
   a) Treatment dose
   b) Treatment type
   c) Animal treated
   d) Prescribed withdrawal time
   e) all of the above

13. Disabled and downer cattle are not allowed in the food chain and should be:
   a) Transported to a livestock marketing facility
   b) Marketed directly to a harvest facility
   c) Humanely euthanized on the farm under the direction of a veterinarian

14. True or False: Maintaining a valid “Veterinary Client/Patient Relationship” should be an integral part of a BQA certification Program.

15. Which attributes of BQA are important at the consumer level?
   a. Tenderness
   c. Safety
   b. Flavor
   d. All of the above
Arizona Beef Quality Assurance Program Agreement

Objective:
To certify that all cattle shipped from this ranch are healthy, wholesome and meet all state and federal standards. This certification program applies to the procedures utilized by the ranch for producing cattle. This program is a cooperative effort between this operator, the ACGA, The University of Arizona, USDA and the Arizona Department of Agriculture.

Procedures:
Training:
1. To be eligible for the Beef Quality Certification Program, key ranch personnel are required to participate in appropriate training programs.
2. In order to maintain certification, a minimum of 4 hours of continuing education and completion of a new agreement is required every 3 years.

Feed Sources:
1. Operator will inform suppliers that feedstuffs are periodically sampled and tested for pesticides.

Feed Additives:
1. Operator will certify that only approved additives are used in the feed and that all additives are withdrawn according to law to avoid violative residues.

Individual Treatments:
1. Medication of individual animals has followed treatment schedules developed in consultation with a licensed veterinarian or OTC medications are used per label instructions. Medication of each animal has been recorded by showing the individual identification. The record includes the date the medication was administered, the type of medication used, the dosage administered and the administration site.
2. All animals scheduled for slaughter have been checked to assure proper withdrawal times have been met to avoid violative residues.
3. All veterinarians working on the animals will be advised that they must provide an up-to-date, on-site file of written prescriptions for any extra label drug use.
4. USDA randomly samples carcasses at the packing plant to check for potential residues.

Livestock Pesticides:
1. Operator assures that only state and federally approved pesticides have been used for cattle treatment in accordance with label directions.

Records:
1. All records of rations fed, feed additives added to specific rations and individual treatments are maintained by the operator for a period of three years.
2. Should illegal residues be found in any cattle shipped, the operator shall make applicable records available to FSIS personnel to aid in determining the source and cause of residue.
3. These records will be available for use by University of Arizona research personnel. The cooperator may be asked to supply copies of the records for off-site analysis.
4. Compliance reviews will be performed periodically.
Action Concerning Residues:
1. Any violative residue found by FSIS will be reported by telephone to the operator.
2. When a violative residue is found and reported, a joint assessment by the rancher and appropriate agencies will be made on the source and cause of the residue and corrective action will be taken. The University of Arizona will be advised of the availability of data related to the event for their analysis.

This Program is subject to review and modification by the ACGA BQA Task Force.

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<th>Name:</th>
<th>Phone Number:</th>
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<tr>
<td>Address:</td>
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<td>City:</td>
<td>Ranch:</td>
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<td>State:</td>
<td>Owner or Manager (if different than applicant):</td>
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<td>Zip:</td>
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Applicant Signature ___________________________  UA Representative ___________________________

Date ___________  Date ___________

_The original document will be maintained by the ranch and a copy in the Livestock Extension office._

**Compliance and Review:**

The Beef Quality Assurance Program requires a periodic review of the ranch’s record keeping system and will require copies of certain records. The review will be performed by University of Arizona personnel.

The data collection review will examine the following:

1. Individual treatment records – Reviewer will see if individual animals are being identified, dosages are correct, routes of administration are proper and veterinarian-client-patient relationship exists when required by law.
2. Feed medication records – Review will check for proper FDA forms if the ranch mixes their own premix or copies of premix ingredients from a commercial source. Reviewer will also see that proper withdrawal times are observed as necessary.

If the data collector finds significant compliance deficiencies, the Arizona Cattle Growers’ Association will be notified. Corrective action will be taken according to a confidential addendum.
## For More Information

<table>
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<tr>
<th>Organization</th>
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<tr>
<td>Arizona Beef Council</td>
<td>arizonabeef.com</td>
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<td><a href="http://www.cals.arizona.edu/ans/bqa">www.cals.arizona.edu/ans/bqa</a></td>
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<tr>
<td>Arizona Cattlemen's Association</td>
<td><a href="http://www.azcattlemensassoc.org">www.azcattlemensassoc.org</a></td>
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<tr>
<td>Arizona Cooperative Extension</td>
<td>extension.arizona.edu</td>
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<tr>
<td>Arizona Department of Agriculture</td>
<td><a href="http://www.azda.gov/">www.azda.gov/</a></td>
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<tr>
<td>Arizona Livestock Incident Response Team</td>
<td><a href="http://www.cals.arizona.edu/ans/alirt">www.cals.arizona.edu/ans/alirt</a></td>
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<tr>
<td>Centers for Disease Control and Prevention</td>
<td><a href="http://www.cdc.org">www.cdc.org</a></td>
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<td>FDA – Food and Drug Administration</td>
<td><a href="http://www.fda.org">www.fda.org</a></td>
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<td>National Beef Quality Assurance Program</td>
<td><a href="http://www.bqa.org">www.bqa.org</a></td>
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<tr>
<td>NCBA – National Cattlemen’s Beef Association</td>
<td><a href="http://www.beefusa.org">www.beefusa.org</a></td>
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<tr>
<td>USDA – United States Department of Agriculture</td>
<td><a href="http://www.usda.gov">www.usda.gov</a></td>
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Producer Code of Cattle Care

- 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 cattle.
- Use appropriate methods to humanely euthanize terminally sick or injured livestock.
- Provide personnel with training/experience to properly handle and care for cattle.
- Make timely observations of cattle to ensure basic needs are met.
- Minimize stress when transporting cattle.
- Keep updated on industry advancements and changes to cattle well-being.
- Persons who willfully mistreat animals will not be tolerated.

BQA Basics

1. Recruit your BQA Team - Employees, Family, Suppliers, Specialists
2. Take a look at what could go wrong and figure out a plan to avoid problems.
3. Train and educate yourself, your employees and your family.
4. Develop checklists and complete records.
5. Document and double check what you have implemented.

Remember - it’s a safety program

NEVER jeopardize YOUR safety, the safety of OTHERS working around an animal, or the safety of an ANIMAL trying to follow BQA guidelines.