


DAIRY ANIMAL CARE QUALITY ASSURANCE

ABOUT DACQA

Dairy producers are encouraged to participate in the voluntary Dairy Animal Care and Quality Assurance (DACQA) Certification program. The purpose of this program is to enhance and demonstrate quality animal care practices, which assure food safety, quality and value as well as enhance consumer confidence in the milk and beef products that are harvested from cattle on America's dairy farms.

Through training, certification, self-evaluation and verification, this program not only demonstrates the producer's commitment to quality animal care and marketing decisions, it also provides the tools that help dairy producers manage their herds in a way that contributes to the farm's bottom line.

Dairy Animal Care & Quality Assurance (DACQA) upgrades the previously existing Dairy Beef Quality Assurance (DBQA) program to be user-friendly for the dairy producer. DACQA incorporates both the existing national Quality Assurance and Food Safety guidelines of the National Beef Quality Assurance Program in conjunction with the umbrella of principles and guidelines set forth by the National Dairy Animal Well-Being Initiative (NDAWI).

DACQA implementation is primarily accomplished through voluntary training and standards.

This DACQA Certification manual is a producer resource, which represents the program's core elements. This manual lists the program's guidelines, describes Best Management Practices, and offers Critical Management Point checklists for Internal Assessment (self-evaluation). This manual also provides a sample Personal Contract for Certification.

Who is a Quality Assurance Certified Producer?

- Any person who is responsible for the well-being of cattle.
- This person will have completed a Dairy Animal Care and Quality Assurance (DACQA) training session, signed a Personal Contract for Certification, and conducted an Internal Assessment (self-evaluation) of their dairy operation using the Critical Management Point checklists.

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WHAT IS DAIRY ANIMAL CARE & QUALITY ASSURANCE?

Quality Assurance programs were developed over the past 25 years to ensure both dairy and beef cattle are produced and managed in a manner that will result in safe, wholesome food for consumers.

Dairy Animal Care and Quality Assurance (DACQA) is a natural extension of Beef Quality Assurance (BQA) because it takes food safety and quality one step further by systematically addressing consumer concerns about dairy animal care and well-being. The two concepts—animal care and quality assurance—are synergistic because the condition of dairy market cows at the end of their productive life is a reflection of care, handling, and marketing decisions, as is the quality of beef harvested from these market dairy cows.

"BQA (or in this case, DACQA) is a process of figuring out what could go wrong, planning to avoid it—then validating and documenting what you have done. Quality Assurance programs are just part of good business," explains Dee Griffin, DVM, associate professor at the University of Nebraska's Great Plains Veterinary Education Center. Griffin was among the original Quality Assurance pioneers, and his words ring true for beef and dairy producers, alike.

DACQA is a voluntary program, designed for dairy producers who derive their primary income from the production and sale of milk, but also make a significant contribution to the beef supply—between 15 and 20% of total U.S. beef sales. In dairy states, this percentage is even higher.

When the economic losses of quality defects in beef from dairy market cattle are added together, the impact translates to an average loss to all dairy producers of $70 to $100 for every market dairy cow sold. Individual per-cow losses can add up to more than $300, depending on the quality of an individual market cow.

When producers implement DACQA on their dairy farms—following simple guidelines learned through classroom and cow-side training—they are promoting the well-being of their animals, maximizing the quality and value of their dairy animals, and at the same time, strengthening consumer confidence in milk and beef products.

Guidelines. The DACQA program guidelines are a combination of National Beef Quality Assurance (BQA) Guidelines and National Dairy Animal Well-Being Initiative Guidelines (NDAWI).

Best Management Practices. The DACQA program uses production standards and benchmarks to develop Best Management Practices (BMPs) in areas such as: Identification, record keeping, cow comfort and handling, Body Condition and Locomotion Score monitoring, herd health and nutrition, biosecurity, timely marketing, proper handling of non-ambulatory and special needs animals, proper euthanasia techniques and planning, proper use and handling of animal health products, and proper injection site techniques.

Training. The DACQA program emphasizes these BMPs and how to implement them.

Certification. After completing the training, producers take an open book test and are encouraged to conduct an Internal Assessment (self-evaluation) of their dairy to identify "Critical Management Points" or risk areas. They also sign and complete a Personal Contract for Certification, which outlines the BMPs in place on the farm to meet program specifications.

Re-certification. The DACQA program includes mandatory Re-Certification every three years by completing the Re-Certification Training offered online or in face to face meetings. At this three-year interval, the Certified Producer is expected to conduct another Self-Assessment of his/her dairy operation. This Re-Certification process keeps producers up-to-date on regulatory changes, quality issues, emerging health or food safety issues, advances in animal care.

Track record. Over the past 15 years, Quality Assurance programs—funded in part by beef, dairy, and veal producers through the $1-per-head beef checkoff—have been praised by government officials as a successful self-regulating program. For dairy producers, the DACQA Certification program replaces the pre-existing Dairy BQA Certification program.

Management. By providing management tools and BMPs for animal care, the program assures food safety and quality, animal well-being, and consumer confidence. Specifically, the program is designed to identify the dairy animal care and timely marketing practices that help producers avoid quality issues, including: poor condition, antibiotic residues, bruises, hide damage, lameness, downers/condemnation, and injection-site blemishes.

Well-being. Managing dairy cattle to avoid these quality defects has the combined effect of promoting dairy animal well-being, herd health, performance, and profitability. The DACQA Certification program is based on good husbandry and scientific research, enabling dairies to enhance product quality, maximize market value of cull animals, and strengthen consumer confidence in the milk and beef products that are derived from the dairy industry.

Is DACQA Necessary?

(order of the following points has been re-arranged: quality, safety, care, trust, economics, decisions, regulations, value)

The production of high quality milk is central to the dairy operation. Beef harvested from dairy market animals must also meet consumer expectations. DACQA is necessary because it demonstrates the dairy producer's commitment not only to safe, wholesome milk, but also beef—the dairy cow's last crop.

Quality. When better quality cows leave the farm and reach the market place—producers and consumers both benefit. In short, DACQA helps the quality-conscious dairy producer meet the expectations of the quality-conscious consumer, while also increasing the dairy's profitability.

Safety. It is of the utmost importance that the public is assured that dairy and beef products produced on our dairy farms are safe.

Care. But consumers also want to know more about how their food is produced and how animals are cared for, including disease prevention and appropriate use of antibiotics as well as safe, humane handling and marketing practices.

Trust. At the same time, consumers trust dairy farmers and demonstrate this trust by keeping our dairy and beef products at the center of the plate. This trust is something we can never take for granted. Beef produced from dairy cows and bulls has become an increasingly important food item in America. It's no longer just fast food hamburgers. It's roasts, steaks, fajitas and other value-added food items—available at just about every restaurant and grocery store.

Economics. Furthermore, the economic importance of DACQA can be seen when reviewing the past 15 years of National Market Cow and Bull Quality Audits. DACQA helps producers identify the most profitable marketing condition for cull cows that produce the highest quality beef product for consumers. Through DACQA, producers recognize that every time they market an animal from the dairy herd, they make the same commitment to food safety and quality that they make when they market their milk.

Decisions. DACQA is a good business practice for identifying potential risk areas related to care and quality.

"Dairy producers must stop thinking of market cows and bulls as culls and start managing, monitoring, and marketing them as the important food source they are," says Dr. Bill Henning, a professor of animal and meat science at Penn State University who has worked closely with the National Dairy Market Cow and Bull Quality Audits since 1990. "One of the things Quality Assurance programs do is to instill guidelines into the management, treatment, and culling decisions of the dairy farm. At some point, dairy animals are destined for food. DACQA gives producers, and their veterinarians, a better understanding of how their decisions will impact the safety, quality and value of that product."

Regulations. DACQA provides an important key for avoiding additional government regulation. Successful voluntary producer-driven programs allow the industry the flexibility needed to produce safe, wholesome food in an economical manner.

Value. By following DACQA guidelines, dairy producers increase the value of their products, while enhancing their stewardship of natural and financial resources.

DACQA Objectives

1. **Be proactive** to ensure food safety and integrity, and demonstrate to consumers our commitment to animal well-being through established guidelines and best management practices based on science and practical experience.

2. **Recognize and optimize** cattle value by meeting and exceeding industry production standards.

3. **Monitor dairy cattle health and condition** by scoring Body Condition and Locomotion, keeping good records on the dairy operation, and self assessments of management activities to fulfill program goals.

4. **Market dairy cattle in a timely and appropriate manner.** Technical assistance is provided through a variety of supporting dairy and beef organizations and initiatives as well as certified veterinarians and university extension staff. These individuals will be available for on-site assistance if desired.

5. **Prevent** quality defects by providing hands-on training and education for participants to meet or exceed the DACQA guidelines and to realize the benefits of such programs.

History of Quality Assurance & DACQA

The concept of Beef Quality Assurance began in the late 1970s and early 1980s to assure that beef was free of violative chemical residues. Originally called Beef Safety Assurance, the emphasis at that time was on addressing both the real and perceived beef and veal safety issues in the harvest of all classes of cattle (dairy cows, beef cattle and veal calves).

BQA. This program later developed into Beef Quality Assurance (BQA), using the same quality control principles developed by Pillsbury for supplying food to the NASA space program. Pillsbury's Hazard Analysis Critical Control Point (HACCP) program is the model for federally inspected beef harvest and processing plants, and it is the model for producer Quality Assurance programs.

DBQA. As the BQA concept matured during the 1990s, states with large populations of dairy cattle adapted the principles of BQA to implement Dairy BQA (DBQA) for their dairy producers—launching state and regional DBQA programs with materials and instruction geared to dairy producers.

"What we've accomplished initially is to raise the awareness of dairy producers about the issues associated with food safety and quality through these Quality Assurance education programs," notes Penn State University meat scientist Dr. Bill Henning.

Dairy Animal Well-Being Initiative. As consumers show more interest in how food animals are cared for, a producer-led coalition formed the National Dairy Animal Well-Being Initiative (NDAWI). In October 2008, after more than three years of work, they set forth an umbrella of national principles and guidelines.

Common Ground. The NDAWI principles and guidelines share much common ground with the goals, guidelines, and Best Management Practices of existing Dairy BQA programs for protecting food safety, herd health and dairy animal well-being. It was a natural fit.

National BQA Program and DHIA launch national program. Working together in 2009, the National BQA Program and the National Dairy Herd Improvement Association (DHIA) adopted, streamlined and launched DACQA as a voluntary national program for dairy producers.

DAIRY ANIMAL CARE & QUALITY ASSURANCE GUIDELINES

Dairy Animal Care & Quality Assurance (DACQA) encompasses the National Beef Quality Assurance Guidelines issued by the National Beef Quality Assurance Program and the Principles & Guidelines set forth by the National Dairy Animal Well-Being Initiative.

FEEDSTUFFS QUALITY CONTROL *(Refer to Section IV-C)*

- Maintain records of any pesticide/herbicide use on pasture or crops that could potentially lead to violative residues in cattle.
- Assure adequate quality control program(s) are in place for all incoming feedstuffs. Program(s) should be designed to eliminate contamination from molds, mycotoxins, or chemicals. Supplier assurance of feed ingredient quality is recommended.
- Suspect feedstuffs should be analyzed prior to use.
- Protein sources derived from mammalian tissue **cannot be fed** as stipulated by Food and Drug Administration (FDA) regulations *(page 45-47)*.
- Feeding by-product ingredients should be supported with sound science.

GENERAL NUTRITIONAL CARE *(Refer to Section IV-C)*

- Provide all classes of cattle with appropriate nutrition, water, and feedstuffs management to achieve appropriate body condition, promote health, and minimize risk of disease.
- A dairy cow's Body Condition Score (BCS) will naturally vary from the dry period through stages of lactation. In general, a BCS range of 2.75-3.5 is considered desirable for health and production. **Cows below BCS 2.5 should be monitored and evaluated for intake and wellness.**
- During periods of decreasing temperature, feeding plans should reflect increased energy needs as appropriate to the animal's housing environment.
- Avoid feed and water interruption longer than 24 hours.
- Provide newborn heifer and bull calves with sufficient colostrum or equivalent at birth. *(See page 13).*
- Keep feed and water handling equipment clean.

FEED ADDITIVES & MEDICATIONS *(Refer to Section IV-A)*

- Only FDA approved medicated feed additives will be used in rations.
- Any use of medicated feed additives will be in accordance with FDA Good Manufacturing Practices (GMP) regulations. This applies to both suppliers and on farm ration formulation.
- Follow Judicious Antimicrobial Use Guidelines *(page 26)*.
- Extra-label use of feed additives is illegal and strictly prohibited.
- To avoid violative residues, withdrawal times must be strictly followed. ***(Withdrawal times for meat are often longer than the withholding time for milk.)***
- Complete records must be kept when formulating or feeding medicated feed rations. Records are to be kept a minimum of 24 months from date of transfer of ownership.
- Operators assure that all additives are withdrawn at the proper time to avoid violative residues.

TREATMENTS *(Refer to Section IV-A)*

- Follow all FDA/USDA/EPA guidelines for product(s) utilized.
- All products are to be used according to label directions.
- Extra-label drug use shall be kept to a minimum, and used only when prescribed by a veterinarian working within a Valid Veterinary Client/Patient Relationship (VCPR).
- When Extra-label drug use is prescribed, extended withdrawal periods shall be strictly followed as determined by the veterinarian within the valid VCPR
- All dairy cattle shipped for harvest must first be checked by appropriate personnel to assure that any animals that have been treated meet or exceed label or prescription withdrawal times for all animal health products administered.

TREATMENT RECORDS *(Refer to Section IV-E)*

- All processing and treatment records should be transferred with the cattle to their next production owner or location. Prospective cattle buyers—or owners receiving dairy replacements from another location in the dairy enterprise or from a heifer raising facility—must be informed of treatment dates and the corresponding milk and/or meat withdrawal times.
- Treatment records must be maintained for a minimum 24 months (3 years for Restricted Use Pesticides) after change of ownership or location. The following information should be recorded:
    1. Pen / Group / or Individual Identification
    2. Date treated
    3. Product used
    4. Dosage used
    5. Route and location of administration
    6. Earliest date animal will have cleared milk withhold and meat withdrawal period
    7. Tentative diagnosis
    8. Outcome of treatment
    9. Name of person administering product

**These Items may be referenced by Protocol.*

- When cattle are processed as a group (i.e. vaccines / dewormer), identify the group and record the following information:
    1. Group or lot identification
    2. Date treated
    3. Product used (and lot/serial #)
    4. Dosage used
    5. Route and location of administration
    6. Earliest date animals will have cleared milk withhold AND meat withdrawal period
    7. Supervisor's signature

**These Items may be referenced by Protocol.*

INJECTABLE ANIMAL HEALTH PRODUCTS *(Refer to Section IV-A)*

- Antibiotic and vaccine products labeled for subcutaneous (SQ) administration should be administered in front of the shoulder, preferably in the neck region, unless there is a handler safety issue. *(see page 31, Fig. 2)*.
- Antibiotic and vaccine products labeled for intramuscular (IM) use should be given in the neck region.
- All products cause tissue damage when injected IM. Whenever possible, avoid IM use.
- Products cleared for SQ, IV, or oral administration are recommended whenever possible.
- Products with low dosage rate are recommended, and proper spacing should be followed.

Administer no more than 10 cc of product per IM injection site. (In addition to injection site blemishes, higher amounts of product delivered to one site, will affect the labeled withdrawal time for meat and withhold time for milk.)

GENERAL CARE & HUSBANDRY PRACTICES *(Refer to Section IV-B)*

- Provide all animals / groups with access to a nutritionally adequate diet and clean, fresh water. Clean water sources regularly and use backflow preventers or water lines.
- Have a valid Veterinary Client / Patient Relationship (VCPR) and a current "Quality Assurance Herd Health Plan" (p. 37), which conforms to good veterinary and husbandry practices.
- Adopt written management protocols for special needs animals, including protocols for painful procedures and/or conditions.

- Follow appropriate euthanasia guidelines and develop a euthanasia decision plan for animals that are not recovering. Train key employees who may need to perform euthanasia *(p. 41)*.
- Evaluate biosecurity practices *(p. 41-43)*.

CARE OF YOUNG STOCK *(Refer to Section IV-B)*

- Calves and young stock should be given adequate space for animal care, comfort, and safety and be provided with clean, dry bedding as well as protection from seasonal weather extremes.
- Newborn heifer and bull calves need prompt and sufficient feedings of colostrum or equivalent to ensure they develop an effective immune system. All calves—whether they are kept on the farm or sold—should be fed in a way that promotes health and minimizes the risk of disease.
- Bull calves must not be marketed before three days of age, must have a dry navel, and must be able to walk and stand without assistance before being transported.
- Calves must be handled carefully to reduce stress and prevent injury.
- Dehorning and castration are done for the protection of the animal, other cattle in the herd, and the people who handle the cattle. If animals are to be castrated, doing so prior to 120 days of age is strongly recommended.
- When horns are present, it is strongly recommended that calves be dehorned prior to 120 days of age and before the diameter of the horn base grows to one-inch in diameter or greater.
- When the horn base is one-inch or more in diameter, it is strongly recommended that a local anesthetic be used during dehorning.
- Provide proper pre-weaning nutrition before transitioning calves from liquid diet to dry diet.

HOUSING & HANDLING *(Refer to Section IV-D)*

- Handle and transport cattle in an appropriate manner that minimizes stress and reduces the potential for injury or bruising.
- Handle animals quietly and calmly. Minimize use of electric prods. Use other driving aids—such as plastic paddles, sorting sticks, flags or streamers attached to long handles—to quietly guide and turn animals. Utilize the cattle's natural flight zone and point of balance to move them.
- When cattle prods must be used for safety of the animal and/or handlers, do not use these devices in front of the shoulders, head area, eyes, rectum, genitalia, or udder.
- Regularly inspect facilities (freestalls, alleys, milking areas, holding pens, fences, corrals, load-outs, etc.) to ensure proper care and ease of cattle handling.
- Maintain environment appropriate to the production setting. Cattle should be provided with adequate space for animal care, comfort and safety; clean, dry bedding and protection from weather extremes.
- Avoid slippery surfaces, particularly in high traffic areas.

Producer Code of Conduct

(Refer to page 63 for more detail)

- I received training in DACQA and use it on my dairy because I have a commitment to consumers to produce the safest, highest quality milk and beef products in the world.
- I use DACQA production practices because maintaining an optimum environment for cattle to produce at their best fulfills my ethical obligation to animal well-being and promotes efficient, safe, high quality food production at the same time. DACQA training has shown me that keeping records of all my production practices is the best way for me to reduce liability, provide quality assurance to my customers, and continue to ensure a safe milk and beef supply through strict adherence to residue avoidance practices.
- DACQA has taught me to think about all of my production practices in the light of animal well-being and the effect on the safety and quality of the final product.
- DACQA is a combination of technology, common sense, a concern for animal well-being, and a consumer oriented production system.

Code of Cattle Care

- Provide adequate 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.
- Use humane methods to euthanize sick or injured livestock and dispose of them properly.
- Have management protocols for addressing painful procedures and conditions.
- Provide housing/facilities designed to promote animal health, comfort, and safety.
- Provide facilities that allow safe, humane, and efficient movement and/or restraint of cattle.
- Provide employee training to properly handle and care for cattle, including proper movement and care of special-needs and non-ambulatory cattle.
- Make timely observations of cattle to ensure basic needs are met.
- Provide transportation that minimizes stress, discomfort, potential for injury or disease by avoiding overcrowding, excess time in transit, and improper handling during loading and unloading.
- Stay updated on industry advancements and changes to make decisions based on sound production practices with consideration for animal well-being, biosecurity and food safety.
- Persons who willfully mistreat animals will not be tolerated.

TRAINING AND MANAGEMENT *(Refer to Section IV-D)*

- Animal caretakers on the dairy are appropriately trained and periodically evaluated for skills in animal handling, observation, and routine care. They should have written protocols to follow and access to record keeping systems in relation to their animal care/handling duties.
- In addition to training for new employees, provide periodic re-training for existing employees.
- Establish and review standard operating procedures annually, revising as necessary.
- **Abuse of cattle is not acceptable under any circumstances.**
- Develop an emergency management plan for the dairy farm that includes animal care procedures.
- Keep good records to evaluate effectiveness of animal management practices and protocols.

MARKETING DECISIONS/TRANSPORT *(Refer to Section III)*

- Only market animals that do not pose a known public health threat, do not have a terminal condition (incl. suspected septicemia lymphosarcoma or nervous system disease), have cleared proper meat withdrawal times for medications given, and are not disabled, severely lame, extremely thin, dehydrated, or exhausted.
- Handle and transport animals in accordance with accepted animal husbandry practices.
- Before shipping animals, visually appraise them for appropriate Body Condition and Locomotion scores, to be sure they are in sufficient physical condition to be transported.
- Only market calves that are able to stand and walk unassisted and are at least 3 days old.
- Cattle showing signs that they may be unable to withstand the rigors of transport should not be shipped.

CERTIFICATION & THIRD-PARTY VERIFICATION *(Refer to Section V)*

- DACQA Certification includes a Training and Internal Assessment (self-evaluation) process and a signed Personal Contract.
- DACQA Certified dairy producers maintain their Certified status through Re-Certification Training and Internal Assessment every two years.
- In addition, random Third-Party Verifications—using a Statistical Sample of Certified and Re-Certified producers—are conducted by independent, trained representatives of the program.

DACQA QUALITY ASSURANCE
Our Business, Our Future

GENERAL GUIDE FOR DACQA IMPLEMENTATION

Dairy producers cannot foresee all potential problems. The important thing is to begin using the strategies and checklists in this manual to fine-tune the management of your dairy operation in key risk areas that affect animal well-being and food safety and quality.

- #1 Evaluate your dairy using the information learned through DACQA Certification Training and in reviewing the Best Management Practices in the sections of this manual to help you meet and/or exceed the minimum DACQA guidelines. The information contained in Sections III (Marketing Decisions) and IV (Management) is comprehensive and will help you improve the overall management of your operation for greater success.

- #2 Use the Critical Management Points Checklists—provided in this Guidelines Section on pages 16-18—to identify one area at a time, then develop and implement a plan for assuring quality in that area of dairy production. The experience gained will make it easier to develop quality assurance in other areas of the operation as you move forward. Continue using the checklist as a way to monitor progress in these Critical Management Points.

- #3 Remember, cattle will be free of violative residues and product-related defects if products are administered according to USDA/FDA/EPA standards. Utilize the DACQA record keeping procedures as outlined in the DACQA Guidelines on the previous page.

- #4 Document all steps of production. Good production records allow for documentation, analysis, and improved financial decisions. Some samples of suggested record forms may be found in the Appendix of this DACQA manual or may be available from DACQA program administrators.

- #5 Make your DACQA objectives clear to others, by training every employee to understand proper animal care and handling and to identify risk areas where food safety and quality could be jeopardized. Anyone who supplies services, commodities, or products to a Certified dairy producer must understand these Dairy Animal Care and Quality Assurance objectives. Sample employee training sheets and templates for communicating DACQA objectives to service providers may be found in the Appendix of this DACQA manual or made available from DACQA program administrators.

- #6 Be aware of—and manage carefully—the areas of production that carry higher risk. High-risk production areas include, but are not limited to: The handling and care of special-needs cattle, lame or disabled cattle, non-ambulatory (downer) or non-recovering cattle that may require euthanasia. Other examples of high-risk areas include unusual single-source feed ingredients and suppliers of non-standard supplies.

CRITICAL MANAGEMENT POINTS

Use this Critical Management Points (CMP) checklist to identify where potential quality problems can occur. Establish limits for preventive measures associated with each CMP, corrective actions and a record keeping procedure.

DAIRY HERD — PRODUCER CHECKLIST

Feed Supply

_____ 1 All pesticides used on crops fed to cattle are applied according to label directions.

_____ 2 Pesticides are stored in a room separate from feed supplies and feed additives.

_____ 3 Records are kept for purchased feed—indicating source, date, and amount purchased.

_____ 4. Feed additives are used at recommended levels and directions for any milk withhold and/or meat withdrawal times are strictly followed.

_____ 5. Only feedstuffs manufactured in compliance with the Ruminant Feed Ban are utilized.

_____ 6. Non-ruminant feeds are separately stored and handled in a manner that ensures any feeds labeled “do not feed to ruminants” are kept safely away from feeds fed to ruminants.

_____ 7. All feeds are checked at regular intervals for color, temperature, odor, moisture and foreign matter.

_____ 7. Suppliers of fat or oil pre-test for contaminants.

_____ 8. An accurate inventory record of all feeds is maintained for 24 months.

Notes:_____

Feeding Practices

_____ 1. Cows are maintained in appropriate Body Condition Score (BCS). Herd BCS trends are routinely evaluated (weekly or monthly), and individual BCS is evaluated at critical times in the production cycle (dryoff, calving, breeding).

_____ 2. Replacement heifers are appropriately grouped for feeding and monitored for BCS and appropriate growth.

_____ 3. Pre-fresh and post-fresh cows are housed, fed and monitored in a manner that strives to avoid excessive body condition score loss.

_____ 4. Feedbunk cleaning management is practiced to avoid accumulation of stale feed.

_____ 5. Ration changes are made gradually.

_____ 6. Cattle are provided access only to supplies of clean, fresh, uncontaminated drinking water in tanks or other watering devices that are routinely cleaned.

_____ 7. All newborn calves (both heifers and bulls) receive 2 to 4 quarts colostrum within 2 hours of birth.

_____ 8. Loaders and bunks are kept clean and free of manure.

Notes:_____

Livestock Insecticides

_____ 1. All insecticides are applied on the basis of label dosages and routes of administration.

_____ 2. All insecticides are stored in a designated area away from the feed supply.

_____ 3. All insecticides are appropriately labeled.

Notes:_____

Drug Storage & Inventory Control

_____ 1. Drug storage location in compliance with Pastuerized Milk Ordinance requirements.

_____ 2. Drugs stored in compliance with label storage requirements.

_____ 3. Drug storage location secured.

_____ 4. Access to drugs limited tp authorized employees.

_____ 5. Records kept of drugs withdrawals and additions.

_____ 6. All drugs properly labeled.

_____ 7. No expired drug products present.

_____ 8. No illegal or unapproved drug products present.

Notes:_____

Individual Treatments & Records

_____ 1. All medications and drugs are used according to label directions.

_____ 2. All procedures and products are periodically reviewed by a veterinarian.

_____ 3. A Valid Veterinary Client/Patient Relationship (VCPR) is in force on the farm.

_____ 4. When extra-label animal health products are administered, their use and drug withdrawal observance for both milk withhold and meat withdrawal times are based on a veterinarian's recommendations.

_____ 5. All individual animals receiving treatment are individually identified.

_____ 6. Records are kept for a minimum of 24 months after cattle are sold or moved to another location , including individual identification, date of treatment, product used, amount given, route and location of administration, milk withhold and meat withdrawal times, tentative diagnosis, and outcome of treatment. Or these items are referenced by protocol.

_____ 7. Should there be any question about withdrawal periods being met, a veterinarian will evaluate the treatment history against information provided by the Food Animal Residue Avoidance Databank or the animal will be subject to pass a residue screening test.

Notes:_____

Injections

_____ 1. Extra care is taken to keep injection sites free of manure and dirt.

_____ 2. Extra care is taken to see that needles are sharp and breaking off is avoided.

_____ 3. Chemical disinfectants are avoided when using modified live virus products.

_____ 4. Needle size used is never larger than necessary to adequately perform the injection.

_____ 5. Antibiotic and vaccine injections are given in the neck region (or as specified by the product label).

_____ 6. Label directions are followed for maximum volume per injection site (no more than 10cc per site).

_____ 7. Methods of administration—IV (intravenous), IM (intra-muscular), SQ (subcutaneous), or IN (intranasal)—are followed according to label directions.

_____ 8. All farm personnel, who give treatments and injections, are trained to understand appropriate techniques.

Notes:_____

Housing & Handling Facilities

_____ 1. Loading facilities are maintained to ensure quick and safe loading and unloading in a manner that reduces the potential for bruising or injury.

_____ 2. Housing facilities are maintained for animal safety, comfort, and hygiene.

_____ 3. Adequate water space is provided, and water pressure is sufficient.

_____ 4. Adequate space is provided for all animals to have adequate access to feed, and and freestall facilities offer alternative routes to feeding areas.

_____ 5. Uncrowded, clean facilities are provided for calving and special-needs animals.

_____ 6. Traffic areas provide non-slip flooring.

_____ 7. Overcrowding of facilities is avoided with appropriate planning and timely culling.

Notes:_____

Cattle Handling & Transportation

_____ 1. Cattle are moved and handled quietly and in a humane manner, which reducesthe potential for bruises or injury.

_____ 2. All farm personnel who handle cattle have been provided with training for appropriate cattle handling and to understand cattle behavior, including flight zones and point of balance.

_____ 3. All farm personnel are trained in appropriate care, handling, and treatment of non-ambulatory (downer) animals, including how to properly move/carry a young calf.

_____ 4. Transportation quality assurance guidelines are followed for stocking rates, bedding,length of time without food and water, proper loading and offloading. *(See pages 55-57.)*

Notes:_____

DACQA QUALITY ASSURANCE
Our Business, Our Future

Management & Marketing

_____ 1. Cows are observed regularly for BCS, particularly at critical times in the production cycle (dryoff, calving, breeding).

_____ 2. Springing cows and heifers are monitored for calving assistance.

_____ 3. Locomotion Scoring is used to identify early signs of lameness. The herd health plan includes a process for addressing early lameness (Score 2) and for providing prompt and special attention to cows identified at Locomotion Score 4 or 5.

_____ 4. Record keeping, such as DHI reports and/or other methods of evaluation, are used for early detection of mastitis and other conditions.

_____ 5. Cows are treated or culled in a timely manner to prevent the marketing of over-fat cows, extremely thin cows, lame cows, and cows with overt physical problems.

_____ 6. BCS, Locomotion Score, and reason for culling are recorded for all market cows removed from the herd.

_____ 7. Lactating cows that are to be marketed are given 3 days dry-off time at the farm before they are transported to the beef plant or livestock auction; or they are milked within a short time before transport.

_____ 8. Disabled cows and cows that show poor mobility or BCS below 2.0 are not transported or marketed off the farm.

_____ 9. Thin cows, animals showing weakness, exhaustion, or have recently calved (within 48 hours) are rehabilitated before marketing, or they are marketed directly to the closest beef plant instead of a livestock auction to reduce the amount of transportation and handling.

_____ 10. Dairy bull calves are not marketed before three days of age and are only transported after the naval is dry and they can walk and stand unassisted.

_____ 11. Written protocols are in place for managing special needs animals.

_____ 12. Written protocols are in place for the handling of painful procedures or conditions, including timely and appropriate dehorning.

_____ 13. Written protocols are in place for handling non-ambulatory cattle on the farm, including a plan of action for appropriate euthanasia and proper disposal.

_____ 14. The farm has a biosecurity plan, which is posted for employees and visitors.

_____ 15. The farm has a livestock emergency care management plan.

_____ 16. Employee training and retraining are provided, including written protocols for animal care and handling as well as enforced consequences for inappropriate treatment of animals.

_____ 17. Willful mistreatment of animals is not tolerated.

Notes:_____

ECONOMIC VALUE OF COWS & BULLS MARKETED FROM DAIRY FARMS

The sale of market cows and bulls accounts for 25% of all U.S. beef consumption. More than half of this beef comes from dairy cows. Dairy producers must realize the important food value their animals contribute— beyond milk and ground beef.

Today, more than half of the beef from dairy cows is fabricated as whole muscle products and sold to supermarket and foodservice operators as entrees in family steak houses, marinated beef items, and "quick-to-fix" beef products like fajitas. Fast-food roast beef sandwiches and "Philly steak" sandwiches are also examples of products that result from dairy market cow beef.

The 1999 National Market Cow and Bull Quality Audit showed that producers lose about $70 in average market value on every dairy cow sold due to product defects like: bruises, injection site lesions, hide damage, poor condition, and condemnations. In addition to these industry-wide average losses, individual producers can lose as much as $325 to $400 when individual dairy market cows are sold in poor condition or produce beef that is defective or condemned.

These economics are important at the individual farm level when considering the revenue cull animals provide to the dairy farm. According to the National Animal Health Monitoring Service (NAHMS), **the income from the sale of market cows can account for 5-10% of a dairy's annual gross revenue; including bull calves, up to 15%. Today, the stakes are even higher because...**

- Public attention is focused not only on food safety and quality, but also on the care and well-being of dairy animals in production.
- Producers must uphold the public's trust and secure the dairy industry's positive image by marketing dairy cows in appropriate condition so they do not become disabled during transit.
- More value is found today in quality, defect-free subprimal cuts from market dairy cows and bulls, which are sold as economically-priced, higher-value beef products for consumers.

Market Cow & Bull Quality Audits

Profit gained from the sale of animals culled from the dairy herd is dependent on the Quality Assurance practices used by the producer. This Dairy Animal Care and Quality Assurance (DACQA) program addresses the results of three National Market Cow and Bull Quality Audits commissioned by the National Cattlemen's Beef Association (NCBA) in 1994, 1999, and 2007. The Audits were conducted by Texas A&M University, North Dakota State University, California Polytechnic State University, Pennsylvania State University, University of Georgia, University of Florida, and West Texas A&M University.

These Quality Audits reveal levels of improvement and decline in the various areas of Quality Assurance, which also reflect animal care objectives. Thus, the Quality Audits are not only economically significant for dairy producers, they also have become a "window" through which overall performance of all sectors—dairy producers, truckers, auction markets, and beef processors—can be viewed, in terms of dairy animal care and well-being.

The Quality Audits were conducted in three phases. Phase I consisted of face-to-face interviews, with industry experts, to identify the most frequent quality problems. In Phase II, university researchers examined dairy market cows and bulls at beef processing plants (holding pens, slaughter floor, and chill coolers). In Phase III, researchers, industry leaders, packers, processors, restaurateurs, and producers met to compare the results. They also developed strategies to reduce quality defects and improve performance.

The main objective of the Quality Audits is to identify quality problems, set targets, and measure progress achieved between Audits. For example, from 1994 to 1999—carcass condemnations decreased, while the industry saw a significant increase in trim losses due to arthritic joints (severe lameness) and injection site blemishes (improper injection site and/or technique). And, from 1999-2007, there was a decrease in bruising, injection site blemishes, and arthritic joints.

In the 2007 Audit, however, there was a continued increase in the percentage of dairy market cows showing lameness in holding pen audits at beef processing plants—49% of plant receipts in 2007 vs. 39%

in 1999 and 23% in 1994. The 2007 Audit also showed 63% of dairy cows marketed in 2007 had Body Condition Score (BCS) of 2.5 and below, 41% were BCS 2.0 and below.

Quality Assurance in the production, management, and marketing of dairy animals improves profitability for all segments of dairy and beef production.

Quality Assurance guidelines and recommendations are easy to use and based on sound science. Most of these practices simply require good common sense. Dairy producers who implement DACQA guidelines and recommendations will reap dividends in other areas of productivity, herd health, and profitability—in addition to producing a more valuable market cow or bull.

Producers must think of their cows and bulls as part of the food supply and treat them accordingly.

Quality Assurance is a necessary mindset, which adds value to beef from dairy market cows and also strengthens consumer confidence and trust in all food products generated by the dairy industry.

National Market Cow Audits (Dairy) — Top Quality Challenges

1994

- Inadequate Muscling
- Disabled Cattle
- Condemnations
- Excessive Bruises
- Injection Site Lesions

1999

- Bruises
- Antibiotic Residues
- Birdshot / Buckshot
- Arthritic Joints (trim loss)
- Condition (leanness)
- Condemnations

2007

- Food Safety
- Animal Handling
- Poor Condition
- Antibiotic Residues
- Lameness
- Condemnations

National Market Cow and Bull Quality Audits Losses per Head (1994 vs. 1999)

Defect	Value Loss 1994	Value Loss 1999
inadequate muscling	$ 14.43	$ 18.70
excess external fat	$ 17.74	$ 10.17
trim loss (arthritic joints)	$ 2.13	$ 9.72
yellow external fat	$ 2.27	$ 6.48
hide losses: brands, disease, injury	$ 6.92	$ 6.27
condemnation of edible offal	$ 3.99	$ 4.49
whole cattle/carcass condemnation	$ 11.99	$ 4.14
trim loss (bruises)	$ 3.91	$ 2.24
injection site lesions	$ 0.66	$ 1.46
dark cutter	$ 0.84	$ 1.41
lightweight carcasses	$ 3.12	$ 1.28
antibiotic residues (cost of handling/testing)	$ N/A	$ 0.92
trim loss (bird/buckshot)	$ N/A	$ 0.52
trim loss (zero tolerance)	$ 1.87	$ 0.46
TOTAL	**$ 69.90**	**$ 68.82**

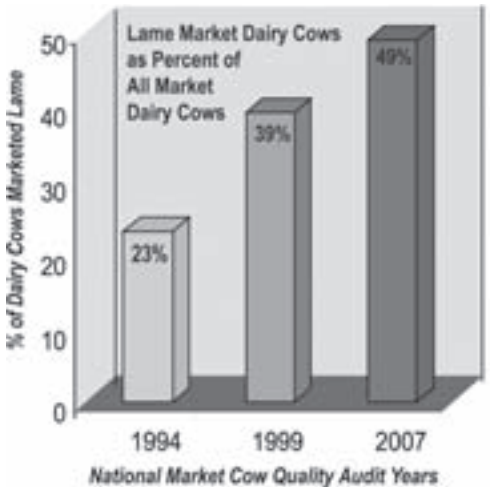
2007 Audit Report Card

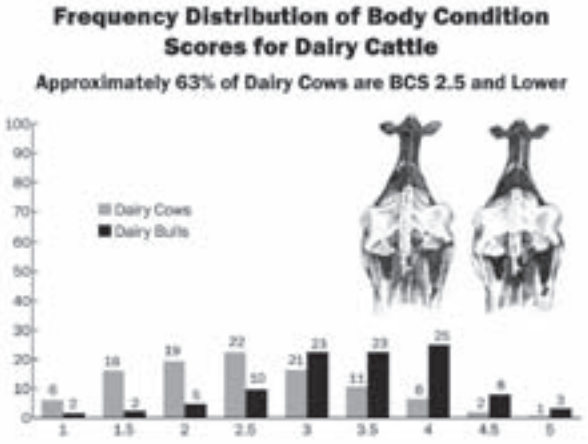
PROGRESS:

- Fewer cattle had mud and manure problems.
- Improved traceability: 92% had ID (mainly back tags), 54% full traceability.
- 97% had no evidence of cancer eye (an improvement over 1999 and 1994).
- Fewer dairy animals with inadequate muscle scores.
- Fewer dairy cattle had bruises than in 1994 & 1999.
- Fewer dairy cattle had arthritic joints than in 1999.
- No buckshot or birdshot was observed, but still a concern for processors.
- Fewer cows were pregnant at harvest than in 1999.
- Cows and bulls had a lower fat thickness & more desirable fat color (whiter) than in1999.
- Cows and bulls were heavier.
- 11% of dairy cows had visible injection-site blemishes, down from 1999.

DECLINE:

- 49% of dairy market cows lame, up from 1994 & 1999.
- 63% of dairy cows had body condition score of 2.5 or less.
- Although fewer down cows and fewer animals condemned, more offal was condemned.





Culling Methods & Management

One of the key differences between BQA for beef producers and DACQA for dairy, relates to how and when animals are sold from the dairy operation when their level of productivity is no longer profitable.

Culling is the process of eliminating less productive or less desirable cattle from a herd. Dairy producers improve herd productivity and efficiency by using effective culling strategies. Marketing cull dairy cows in better condition —a result of effective monitoring—puts more dollars in the dairyman's pocket.

What does a "Valued" Quality-Assured dairy market cow look like? DACQA helps dairy producers understand what determines the market value of cull dairy cows, so better decisions can be made about when and how to market these animals in a manner that captures this value. In the process, other aspects of animal well-being, herd productivity and dairy profitability will also benefit.

Cows in the 3.0 to 3.75 Body Condition Score (BCS) range produce the most valuable beef. The difference in value between BCS of 2.0 and BCS of 3.0 is estimated to be about $140/head, and the difference between a Utility cow with BCS 3.0 compared to a superior 'White Cow' with BCS 3.25 to 4.0 is estimated to range $150 to $250/head.

Loss of one BCS over 30 days is equal to a beef value loss of $4.60/day. The graph (left) shows the relationship between the declining value of body condition vs. milk income when Income Over Feed Cost (IOFC) is $7.50/cwt of milk to $8.85/cwt of milk.

Timely culling to avoid marketing cows in low BCS, or rehabilitating (feeding but not milking) cows that are in low BCS before marketing, make a value difference of $300-$425/head between a "forced" cull at BCS 2.0 and a "voluntary" cull or rehabilitated market cow at BCS 3.5. (See additional information on page 24. Handout available on marketing 'Premium White Cows.')

USDA Cow Beef Grades	USDA Market Report Terminology	Dressing %	% Lean of Tissue	Backfat Thickness (inch)	Avg DAIRY COW BCS	Live Basis Avg Wt.	2007-08 Live Basis Avg Price $/cwt	2007-08 Avg Value Per Head Price x Wt	Avg. Value Diff Between Grades
Canner	Lean (Shelly/Lite) 1000+ lb	35-45	85-90	0.0 - 0.1	1	1050	$44	$460	
Cutter	Boners & Cutters 1100+ lb	46-48	80-85	0.2 - 0.3	2.0 - 2.5	1175	$50	$585	$125+
Utility & Comm.	Breakers 1250+ lb	48-51	75-80	0.4 - 0.5	2.75 - 3.0	1325	$55	$725	$140+
Boning Util.&Comm.	*Premium White 1400+ lb	50-55	65-75	0.6 - 1.0	3.25 - 4.0	1475	$60	$885	$160+
Discounts for overfat cows BCS 4.0+ to 5.0							Total Value Difference		$425+

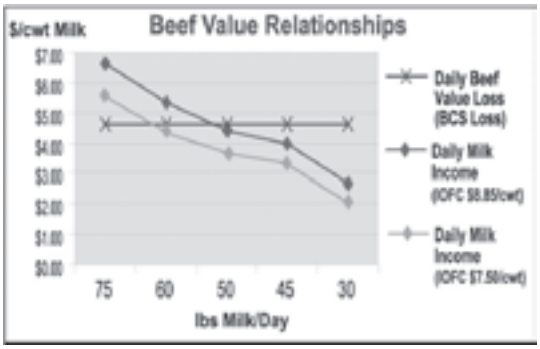
*"Premium White" Cow Beef merchandised as "No Roll" or "House Grade/Brand"

Data Sources: USDA Grading Standards-USDA Market News-Cornell Univ BCS/Wt.-Processor Interviews

One Score (BCS) =

- 120-125 pounds liveweight
- $5.00 / cwt on Market Price (live basis)
- $125-$160 Total Value (Weight x Price)
- $4.60 / Day Beef Value Loss

For each day a declining cow continues to be milked while the marketing decision is delayed.



THREE KEYS TO QUALITY ASSURED MARKETING

MANAGE dairy cattle to minimize defects and quality deficiencies.

MONITOR health and condition of dairy cattle and identify potential culls early to improve herd profitability and produce a better food product for consumers at a better price for producers.

MARKET in a timely and prudent manner to reduce the potential for disabled cattle, advanced inflammation, lameness, and poor condition. Thin cows and slow cows are more likely to become disabled during transport and marketing.

In addition to losing value as beef animals, when low milk cows are kept past breakeven, or health-compromised cows are kept until biologically broken, they are not putting income back into the dairy. They are costing the dairy money and taking up space that a more productive animal could be using. When voluntary culling decisions are put off, the result is more "forced" removals on the market. By then, substantial value to the beef industry and profit opportunities for the dairy producer are lost. These animals carry more risk for food quality and safety issues and erode consumer confidence, particularly if they become disabled. The dairy's approach to culling and treatment decisions has become a human health issue, in both perception and reality. With Quality Assurance in mind, dairy producers can improve culling management and market cow income.

1) Establish strategic culling methods to identify culling triggers based on production, health, and economics. Records and observation identify voluntary culls before they become forced culls.

2) Consider Quality Assurance issues when making the culling and treatment decisions.

3) Establish management and marketing practices for dairy animals culled from the herd.

4) Document the following information for market cows that leave the dairy farm:

    - Reason for culling the animal
    - Locomotion Score at time of sale (See p. 99 for scoring procedures)
    - Body Condition Score at time of sale (See p. 100 for scoring procedures)
    - Treatments (type, length, withdrawal dates)

Quality Control

In this DACQA manual and training, producers also learn to identify quality control points throughout the productive life of the dairy animal, for example:

- Giving injections in the proper location, using proper techniques (i.e. in the neck not the hip).
- Reading and following meat withdrawal times on product labels.
- Monitoring body condition and consider a feeding / rehabilitation period for cull animals prior to marketing to improve poor body condition.
- Preventing lameness by promoting foot health, monitoring and scoring cattle regularly for early signs of lameness, and addressing conditions promptly before they progress to severe lameness.
- Improving food safety by implementing practices that reduce bacterial condemnations.
- Reducing potential for bruises by dehorning, correcting deficiencies in facilities and transportation equipment, and using proper cattle handling techniques.
- Limit hide damage with parasite control practices and permanent ID instead of branding.

DACQA QUALITY ASSURANCE
Our Business, Our Future

Quality Assurance marketing code of ethics

I will only participate in marketing cattle that:

- Have cleared proper withdrawal times.
- Do not have a terminal condition (i.e. lymphosarcoma, septicemia, or suspected nervous system disease.)
- Are not disabled or severely lame.
- Are not severely emaciated.
- Do not have uterine/vaginal prolapses or open wounds.
- Do not have advanced eye lesions.
- Do not have advanced Lumpy Jaw.

Furthermore, I will:

- Do everything possible to humanely gather, handle and transport cattle in accordance with accepted animal husbandry practices.
- Visually appraise Body Condition Score and Locomotion Score before transport.

Finally, I will:

- Humanely euthanize cattle when necessary to prevent suffering and protect public health.

SECTION IV. RECOMMENDED BEST MANAGEMENT PRACTICES (BMPS) TO MEET QUALITY CHALLENGES

Residue Avoidance

Drug residue avoidance in dairy and livestock food products is a top priority for food safety. In general, producers are doing a good job with meat residue avoidance. According to USDA's Residue Monitoring Program, the overall incidence of antibiotic meat residue violations is very small. **However, within this small occurrence of residue violations, dairy cows and dairy bull calves still have the highest rate of violative residue among all classes of cattle.**

Ultimately, the final food product of every dairy animal is beef, and meat withdrawal for most medications is a longer period of time than for milk withhold. The time to consider the meat withdrawal period is before treating the animal. Meat residue violations and condemnations can be avoided by implementing and following control systems that incorporate the following segments:

- Maintain proper individual animal identification.
- Maintain complete records of treatments and vaccinations.
- Properly store, label, and account for all medication.
- Obtain and use animal health products only as they are labeled.
- Maintain a valid "Veterinary Client/Patient Relationship." (VCPR Validation form available in Manual Appendix).
- Train all employees and family members about your control systems.

Penicillin accounts for more than 20% of all antibiotic residue violations in beef. It is the most commonly-used drug and is routinely purchased over the counter. Gentamicin and streptomycin run a close second in the number of residue violations attributed to these antibiotics. Also, there is no FDA approved pre-slaughter withdrawal period when Flunixin Meglumine (trade name Banamine) is administered IM.

Common Mistakes

The following are some common mistakes made when label directions on medication are not carefully followed:

- Treating a condition that is not indicated on the label. (Other than prescribed by a veterinarian.)
- Treating a type of animal not indicated on the medication label.
- Using more than the dosage indicated on the label. (Other than prescribed by a veterinarian.)
- Not following the proper withdrawal time of the medication. Often the meat withdrawal is longer than the milk withdrawal. Be aware of this when making treatment decisions on cows that have a high probability of being culled.
- Failing to clean out water and feed systems when medications are used.
- Improper administration of a drug.
- Improper storage of drugs.

Open and consistent communication between dairy producers and a veterinarian is needed to assure: quality control, animal well-being, and prevention of drug and chemical residues. Using animal health products exactly as they are labeled or prescribed by a veterinarian, with whom the producer has a valid Veterinary Client/Patient Relationship (VCPR), is required for DACQA Certification.

Producer's Guide for Judicious Use of Antimicrobials in Cattle...

Guidelines 1-13 adapted by NCBA, from AVMA, AABP and AVC Appropriate Veterinary Antibiotic Use Guidelines.

1. **Prevent Problems:** Emphasize appropriate husbandry and hygiene, routine health examinations and vaccinations.
2. **Select and Use Antibiotics Carefully:** Consult with your veterinarian on the selection and use of antibiotics. Have a valid reason to use an antibiotic. Therapeutic alternatives should be considered

prior to using antimicrobial therapy.

3. **Avoid Using Antibiotics Important In Human Medicine As First Line Therapy:** Avoid using as the first antibiotic, those medications that are important for treating strategic human or animal infections.
4. **Use the Laboratory to Help You Select Antibiotics:** Cultures and susceptibility test results should be used to aid in the selection of antimicrobials, whenever possible.
5. **Combination Antibiotic Therapy Is Discouraged Unless There Is Clear Evidence The Specific Practice Is Beneficial:** select and dose an antibiotic to affect a cure.
6. **Avoid Inappropriate Antibiotic Use:** Confine therapeutic antimicrobial use to proven clinical indications, avoiding inappropriate uses such as for viral infections without bacterial complication.
7. **Treatment Programs Should Reflect Best Use Principles:** Regimens for therapeutic antimicrobial use should be optimized using current pharmacological information and principles.
8. **Treat the Fewest Number of Animals Possible:** Limit antibiotic use to sick or at-risk animals.
9. **Treat for the Recommended Time Period:** This will minimize the potential for bacteria to become resistant to antimicrobials.
10. **Avoid Environmental Contamination with Antibiotics:** Steps should be taken to minimize antimicrobials reaching the environment through spillage, contaminated ground run-off, or aerosolization.
11. **Keep Records of Antibiotic Use:** Accurate records of treatment and outcome should be used to evaluate therapeutic regimens. Always follow proper milk withholding and meat withdrawal times.
12. **Follow Label Directions:** Follow label instructions, and never use antibiotics other than as labeled without a valid veterinary prescription.
13. **Extra-Label Antibiotic Use Must Follow FDA Regulations:** Prescriptions, including extra- label use of medications must meet the Animal Medicinal Drug Use Clarification Act (AMDUCA) amendments to the Food, Drug, and Cosmetic Act and its regulations. This includes having a valid Veterinary/Client/Patient Relationship.
14. **Subtherapeutic Use Of Antibiotics Is Discouraged:** Antibiotic use should be limited to prevent or control disease and should not be used if the principle intent is to improve performance.

Drug / Vaccine Labeling and Classification

The FDA has the responsibility for determining the market status of animal drugs, based in part upon whether or not it is possible to prepare "adequate directions for use" under which a layperson can use the drugs safely and effectively. The two basic classes of drugs available to livestock producers are over-the-counter (OTC) and prescription (Rx) drugs. A drug that has significant potential for toxicity in humans or animals (or other harmful effects), which may have a unique method of use, or which requires other special considerations for its use, is usually labeled as a prescription drug. Such products can be used or dispensed only by or on the order of a licensed veterinarian, and the label must contain the legend: "Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian." Please refer to the Compendium of Veterinary Products.

USDA APHIS Center for Veterinary Biologics (CVB) is responsible for assigning all withdrawals for livestock biologicals. The USDA-APHIS-CVB assigns 21 days withdrawal for all livestock biologicals that do not contain an oil adjuvant and a 60 day withdrawal for all that do contain an oil adjuvant.

Extra-Label Use of Drugs

OTC drugs can be purchased from multiple sources and must be used as directed on the label. For example, most procaine penicillin G products are labeled for use at 1 cc/cwt and are given intramuscularly (IM). So, a 600-pound calf would get 6 cc IM. Producers are not allowed to change the dose or give it by any other route, such as subcutaneously (SQ). OTC products must be used exactly as labeled.

"Extra-label use" is defined as the "actual or intended use of a drug in a manner that is not in accordance with the label." Under the provisions of the Animal Medicinal Drug Use Clarification Act of 1994, the FDA recognized the professional judgment of veterinarians and allows the extra-label use of drugs (either OTC

or Rx) by veterinarians under certain conditions. Extra-label use is limited to situations where the health of an animal is threatened or suffering and death may result from failure to treat and only by or under the supervision of a veterinarian. Example: FDA does not recognize extra label use of Flunixin Meglumine by an IM route for reasons of convenience.

Veterinarians may only consider using drugs (OTC or Rx) in an extra-label manner when the following conditions apply:

1. There is no approved drug that is labeled for such use and that contains the same active ingredient in the required dosage form and concentration, or a currently approved and labeled drug is clinically ineffective for its intended use (for example: drug resistant bacterial infections)
2. Prior to using or dispensing a drug in an extra-label manner, the veterinarian must use the following criteria:

EXTRA-LABEL Rx CRITERIA

- Make a careful diagnosis and evaluation of the conditions for which the drug is to be used;
- Establish a substantially extended withdrawal period prior to marketing of milk, meat, eggs, or other edible products;
- Institute procedures to assure that the identity of the treated animal(s) is carefully maintained; and
- Take appropriate measures to assure that the assigned withdrawal times are met and that no illegal drug residues occur in any food-producing animal subjected to extra-label treatment.

3. Drugs prescribed or dispensed to producers for extra-label use must have additional labeling, including at least the following information:

ADDITIONAL LABELING

- The name and address of the prescribing veterinarian;
- The name of the active ingredient(s);
- Directions for use including identity of the animal being treated, dosage, frequency and duration of treatment, and route of administration;
- Any cautionary statements specified by the veterinarian; and
- The veterinarian's specified withdrawal time.

4. Extra-label use of drugs may only take place within the scope of a valid Veterinary Client/Patient Relationship (VCPR). A valid VCPR exists when:

CRITERIA FOR VALID VCPR

- The veterinarian has assumed the responsibility for making clinical judgments regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions.
- The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s), or by medically appropriate and timely visits to the premises where the animal(s) are kept.
- The veterinarian is readily available, or has arranged for emergency coverage, for follow-up evaluation in the event of adverse reactions or failure of the treatment regimen.

Limitations to the Extra-Label Use Privilege

The privilege of extra-label use of drugs is not permitted for extra-label use of drugs in or on animal feeds. A veterinarian cannot use or prescribe drugs for use in feed in any manner except for the approved use and at the approved dosage. Extra-label use of drugs in treating food-producing animals for improving rate of weight gain, feed efficiency, or other production purposes is also prohibited. Some specific drugs are completely prohibited for extra-label use in food-producing animals, including: chloramphenicol, clenbuterol, diethylstilbestrol, dimetridazole, ipronidazole, other nitroimidazoles, furazolidone, nitrofurazone, fluoroquinolones, and glycopeptides.

Drug Withdrawal Times

Check all labels of animal health products for the specified milk withholding time as well as the withdrawal time (WD) for meat. These are listed separately and typically the meat withdrawal time is longer than the milk withhold time. The withdrawal time is the period of time that must pass between the last treatment and the time the animal will be slaughtered. For example, if a medication with a 14-day withdrawal period was last given on August 1st, the withdrawal would be completed on August 15th, and that would be the earliest the animal could be harvested for human consumption. Be sure to know the difference and to record and observe the date of milk withhold and meat withdrawal for all products used.

It is important that you follow withdrawal time directions as given by the label or as prescribed by your veterinarian. From the day you acquire your animals until the day they leave your care, you should maintain feed and treatment records. This is important for the day-to-day care of your animal and for whomever may later purchase your animal.

Observe label instructions and withdrawal times carefully. When using drugs by “extra-label,” work closely with the veterinarian on dosages and withdrawal times. Never use an approved veterinary drug in an extra-label manner without consulting the veterinarian. Doing this without direction by a licensed veterinarian is an **illegal act.**

Unacceptable levels of drug residues detected in **edible** tissues collected at slaughter may result in traceback, quarantine, and potential fines or jail time. Substantial economic losses may result for the individual producer as well as negative publicity for the entire beef industry. **Dairy producers are responsible for any meat residue in the animals they market.**

All federally approved drugs will include the required withdrawal time for that drug on the product label or package insert. These withdrawal times can range from 0 to as many as 60 days or more. Consult the Compendium of Veterinary Products, published by the North American Compendiums, Inc., for a comprehensive list of drugs approved for use in dairy animals as well as a description of each drug. In addition, the Compendium includes a chart of the withdrawal times for meat and also includes time of milk withholding. The drug label, itself, always supersedes the Compendium if there is a discrepancy. It is your responsibility to be aware of the withdrawal times of any drugs that you use on your dairy cattle. More information is available at these websites:*http://www.fda.gov/* or *http://www.farad.org/*.

Reducing the Economic Impact of Injection Site Blemishes/Lesions

Based on the National Quality Audits, injection site blemishes (or lesions) cost the beef industry $188 million annually. In 2007, 11% of market dairy cows had injection site blemishes.

Fluid-filled injection site lesions indicate more recent occurrence. However, improper injections given to calves result in non-fluid-filled injection site lesions, which are later found in the muscle meat of cattle when harvested as adults.

Contrary to popular belief, not all beef from market dairy cows is sold as ground beef. For example, ribeye rolls and rounds from market cows and bulls are used as whole muscle cuts in popular consumer food products.

Research sponsored by The Beef Checkoff uncovered a negative relationship between meat tenderness and injection sites, including those injection sites that had no visible lesion.

Findings concluded that all intramuscular (IM) injections, including sterile water, create permanent damage — regardless of the age of the animal at the time the product was given. At the very least, tenderness is reduced in a 3-inch area surrounding the injection site.

The biggest concern with injection site blemishes in whole muscle cuts is that they result in trim loss, turning the cut from a higher value beef product to ground beef trimmings. Also, these blemishes may sometimes not be found until they reach the consumer. The unpalatable lesions, blemishes, discoloration and toughness of the meat are not a food safety issue, but they are definitely a food quality and consumer confidence issue.

Injections — Site and Techniques

Moving the injection site area to the neck stops costly damage to economically important cuts of beef. It also makes it easier for packers to identify lesions at the plant level, so they do not end up inadvertently on a consumer's plate. To lessen injection site defects, the preferred site for all injections has now been reduced to the smaller injection area of the neck region compared with the larger area introduced as the preferred site in the 1990s (Fig. 2).

This is particularly important when administering intramuscular (IM) products. The reason for this is, even the shoulder chuck primal contains value-added cuts in today's beef trade. The food industry has introduced a number of new, "value added" beef cuts utilizing this area of the carcass. Furthermore, the food industry has moved to a modified atmosphere (MA) packaging process for case-ready meats. This process contains 80% oxygen and 20% carbon dioxide mixture, which can cause green discoloration of the meat close to an injection site, even when no blemish or lesion has occurred.

Several animal health products are now approved for injection into the ear of cattle. This location is excellent from a Quality Assurance perspective as ears are removed at harvest and do not enter the food chain. Certain antibiotics are approved for the ear injection site. The exact location on the ear depends on the product. However, the route approved for lactating dairy cows is the base of the ear. The ear must be very clean, and care must be taken to avoid blood vessels. Read product labels carefully. An example of the base of ear (BOE) injection technique can be found on the internet at: *http://www.excede.com/docs/excede/boe_admin_biling.pdf*

Whenever possible, choose products formulated and labeled for injection under the skin (subcutaneous/SQ) rather than intramuscular (IM). Figures 1 and 2 illustrate proper injection site and techniques.

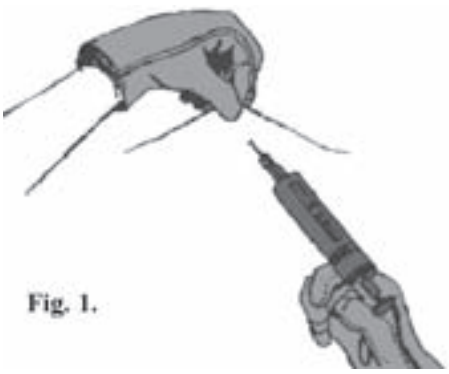


Fig 1. "Tent" Technique for SQ injection

Calf necropsy demonstrations prove that when SQ products are given with one hand sliding the needle under the skin, some of the product and needle penetrate the muscle. The "tent" technique ensures that the product is truly being administered in the subcutaneous region.

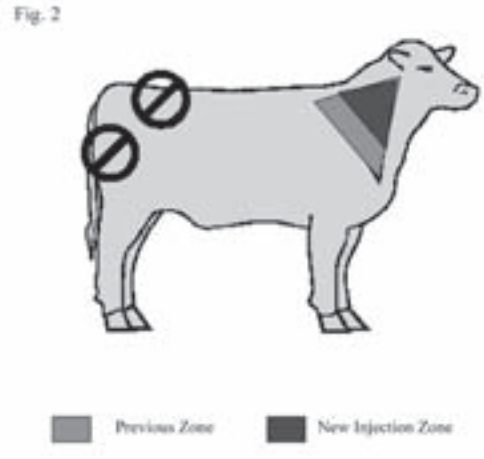


Fig. 2. New Injection Zone

To lessen injection site defects the preferred injection site has been reduced to the smaller (dark red) injection area shown above -- particularly with IM products. This has become necessary to ensure the quality of new value-added products from the chuck. Even in the absence of blemishes, case-ready packaging processes can cause discoloration of meat near an injection site.

Needle Selection

Primary considerations in needle selection are: route of administration, size of the animal, and location or site of the injection.

Secondary considerations include: viscosity of the fluid (how thick and tenacious the fluid is) and volume injected.

Route of Administration

	SQ (1/2 - 3/4 inch needle)			**IV** (1 1/2 inch needle)			**IM** (1 inch needle)		
	Cattle Weight			Cattle Weight			Cattle Weight		
Injectable Viscosity	<300	300-700	>700	<300	300-700	>700	<300	300-700	>700
Thin Ex: Saline		18-16	16	18-16	16	16-14	20-18	18-16	18-16
Thick Ex: Oxytetracycline	18-16	18-16	16	16	16-14	16-14	18	16	16

Select the <u>needle gauge</u> to <u>fit the cattle size</u> (the smallest practical size without bending)

Proper Sanitation is Essential

- Keep the contents of the bottle sterile.
- Clean transfer needles regularly to avoid contamination.
- Do not go back into the vaccine bottle with a needle once it has been used for anything else.
- When vaccinating groups, change needles frequently.
- When using killed vaccines, keep a saucer or sponge of alcohol or disinfectant nearby, and wipe off the needle after each use. However, do not disinfect needles between injections when using a modified live vaccine, as the disinfectant can destroy the vaccine.
- Make sure the injection site is clean. Injecting into a wet or muddy site increases the risk for spreading disease, and it increases the incidence of injection site lesions.

Cleaning Syringes and Needles

The use of disposable equipment is recommended and preferred. However, if used, reusable syringes, needles, and other injection equipment should be heat-sterilized by boiling. If any disinfectants are used—including alcohol — they must be thoroughly rinsed from equipment because they neutralize vaccine and chemically react with some antibiotics. If disinfectant is used, syringes should be thoroughly rinsed with sterile water before use. Sterile water can be purchased. Distilled water is not sterile water.

Consult your veterinarian before sterilizing equipment to ensure proper techniques. Improper sterilization can reduce the effectiveness of future injections and result in infection at the injection site. Do not contaminate modified live virus products with disinfectants as effectiveness will be decreased or even eliminated.

Needle Quality Control and Safety

For DACQA purposes, single-use needles are preferred; they also help prevent the spread of blood-borne diseases like Leukosis. This virus is a leading cause of carcass condemnation in slaughter facilities. At the very least, be sure to change needles at a maximum of every 10 head to prevent using a dull needle, which can develop a burr on the end.

Change needles immediately if the needle bends. Do not straighten it or use it again. Obtain a new needle if the needle in use becomes contaminated with feces or an irritating chemical. Your veterinarian must determine how animals will be handled should a needle break in the neck muscle. A broken needle is an emergency, and time is of the essence. Broken needles migrate in tissue. If not immediately handled, they will be impossible to find — requiring the animal to be destroyed. Under no circumstances should animals with broken needles be sold or sent to a packer.

Needle Storage/Disposal

Store unused needles in protected area using these disposal guidelines:

- Place in container with secure lid.
- Place container in rigid container lined with plastic.
- Dispose of as solid waste.

Drug Storage

Maintain complete physical control over the drug inventory on your dairy, limit access to authorized persons who are trained in proper drug use, and keep complete records of treatment. Animal health products usually have specific storage requirements. Some require refrigeration. All should be stored in a clean place where they cannot become dirty or contaminated. Observe and obey the manufacturer's recommended storage instructions for each product. Where refrigeration is needed, be sure it is kept clean and located in a safe place—not likely to be overheated or contaminated by dirt or manure. Animal health products should be stored away from feed ingredient or mixing areas unless regularly mixed feed additives. Storage of partially used medication or vaccine bottles is discouraged because they may become contaminated and could cause infections or tissue reactions, if re-used.

DACQA QUALITY ASSURANCE
Our Business, Our Future

Vaccine Handling Precautions

Safety First...

- Always read and follow label instructions and supply them in Spanish if needed.
- Post the local poison control center number by all phones.
- Use proper restraints when injecting cattle.
- With medication known to be toxic to humans, use extra precautions—[particularly when using the two-handed SQ tent technique. Do not use automatic-powered syringes for these medications.

Ensure Effectiveness...

- Never use outdated drugs or vaccines. Purchase fresh vaccines and store in a refrigerator.
- Purchase vaccines in containers holding the number of doses appropriate for the task at hand. Storing partially used containers may lead to infections at injection sites and result in ineffectiveness of the vaccine.
- Use transfer needles to reconstitute vaccines. Place one end of needle into the sterile liquid and the other into the bottle containing the freeze-dried cake of vaccine. There should be a vacuum that immediately pulls the liquid down. If not, discard the vaccine, as it may not be effective.
- Mix vaccines thoroughly, and do not mix too much at one time. Modified live vaccine (MLV) begins to degrade after about an hour. Direct sunlight also degrades these products; so keep vaccines and syringes in a cooler while working cattle. Gently shake mixed vaccine bottles from time to time.
- Do not use the same syringes to inject modified live and killed products. A trace of killed product can harm the effectiveness of the modified live product.
- Clean the top of the vaccine bottle before inserting needles, and keep the equipment clean. Depending on what product is being injected, be careful how you clean.
    - MLV: clean with only hot water. Disinfectants leave residues, which destroy MLV vaccines.
    - Bacterin: clean with hot water or mild disinfectant.
- Don’t put the injecting needle back into the bottle to avoid contaminating the vaccine.
- Change needles at a maximum of every 10 uses. Discard any bent needles.
- Use only approved combinations. Mixing unlike products can destroy effectiveness.
- Do not store veterinary products (or pesticides) in the feed room, to avoid accidental mixing in ration.
- Make sure veterinary and chemical products are clearly labeled in storage.

Calf Care

Healthy calves are the result of a conscious, planned effort on the part of the producer. The heifer calf crop of the dairy industry is its very future. But all dairy calves have value. Strong, healthy bull calves are the basis of the fed dairy steer and veal industry, which purchases not only starter animals, but also feed ingredients, from the dairy industry.

Ensure healthy dairy calves with a comprehensive herd health program, stressing preventive management through sanitation, observation, preparation and appropriate vaccination of the cow herd.

- Calves should be born in clean, dry calving pens and then housed in clean, sanitized, dry housing facilities that are well-ventilated but draft free, and observed closely after birth.
- Colostrum feeding at birth is critical because calves are born without natural immunity. Provide a sufficient quantity of high quality colostrum to ensure that each calf develops an effective immune system. Current best management practice is 2 to 4 quarts colostrum or equivalent within 2 hours of birth and at least three times within the first 18 hours of life. (Refer to Section IV-C.)
- Dip navels in iodine as soon as possible after birth and continue daily until navel is dry (7% tincture of iodine is best).
- Minimum milk replacer standards: 18-20% protein/20% fat for large breed calves, composed of dairy ingredients, not soy protein. Jersey milk replacer standards: 28% protein/25% fat.
- Limit exposure to older animals to prevent transfer of pathogens and parasites.
- Clean, fresh water should be available to young animals, even for calves receiving liquid milk or milk-replacer diets.
- Handle calves carefully to reduce stress and prevent injury.
- When horns are present, it is strongly recommended that calves be dehorned prior to 120 days of age. Tipping of horns (removing the tip only) can be done with little impact on the well-being of individual animals.
- Weaning to dry feed can be less stressful when other changes, like moving calves to new housing, are performed 2 weeks after weaning.
- Vaccinate calves according to the herd health plan developed with the herd veterinarian. DO NOT vaccinate bull calves going to market. Some may be purchased as “bob veal” for immediate harvest.
- To prevent diseases like Johne’s eliminate exposure of calves and young stock to manure and any water runoff from adult animal housing.
- Calves and young stock should be given adequate space for animal care, comfort and safety, provided bedding that is clean and dry, and be protected from seasonal weather extremes.
- DO NOT MARKET dairy bull calves until at least 3 days of age and be sure they can walk and stand unassisted before marketing or transporting.
- Calves require special care during transit. Their size and age make them more sensitive to stress, including temperature changes. It is important to keep them dry and protected from weather in a covered vehicle with an enclosed front and suitable side panels. It is also important to understand the limitations of young animals and handle them carefully during loading/unloading.
- Conventional methods for handling older livestock are not acceptable, nor efficient, for handling young calves. Calves are uncoordinated, fearful of new things, prone to over-exertion, and have undeveloped herding responses.
- The thermoneutral point for newborn dairy calves is 48 deg F. At or below that temperature calves need abundant clean, dry bledding for nesting and/or provision of calf jackets. If you can smell ammonia in the bedding at the level of the calf’s nose, the bedding needs changing.
- Provide enough clean, dry bedding, and allow space for all calves to lie down during transit. Wet calves with excessive manure soil are heavily discounted in price.
- Unfit animals must not be transported.

By following these Quality Assurance guidelines, and making sure the truckers who transport calves also follow them, you are contributing to the quality and future performance of heifers being transported to other facilities for raising as well as for bull calves going to market, where they will earn a higher market value for the dairy.

DAIRY BULL CALVES

Quality-value-price

❑ Age: 3 to 7 days old

✓ Weight: 85+ lbs (100-110 ideal)

✓ No. 1: thickness and fleshing

_____

✓ Locomotion: walks unassisted

- ○ Resumes normal standing posture
- ○ Joints strong, straight, not-swollen
- ○ Hooves firm, flat; not bulbous or soft

_____

✓ Health: dry, healed naval!

- ○ Breathing normal, moist nose
- ○ No diarrhea or evidence of scours
- ○ Naval area: clean, dry, healed;
- ○ No swelling; cord dry and shriveled

_____

✓ Appearance:

- ○ head up, ears alert, bright eyes
- ○ hair coat smooth, dry & clean (discounts for wet calves and excessive manure soil)

_____

✓ Drug Residues: zero tolerance.

Quality Criteria Total_____

Heifer Care

- Young stock should be given adequate space for animal care, comfort and safety, provided bedding that is clean and dry, and be protected from seasonal weather extremes.
- Feed and water should be available at all times.
- Heifers should be housed in clean facilities with dry bedding and adequate ventilation. House heifer calves separately from adult herd.
- Evaluate proper nutrition and care by observing, measuring and body scoring heifers as they grow.

Adult Cattle Care — Calving

- Body Condition Score (BCS) of 3.0 to 3.5 is desirable before calving. (Refer to Nutrition Section IV-C.)
- Manage transition animals closely and check them regularly for difficulties.
- First-calf heifers may require more frequent observation and care. Move outdoor springers, particularly the heifers, where they can be easily and frequently observed during the normal course of the day and night. Depending on the size of the herd, labor force and building site layout, monitoring of inside maternity pens can be enhanced with the use of closed-circuit video cameras.
- Keep good breeding records to assure cows are moved from group housing or freestalls into calving areas before calving.
- Cows and heifers should calve in clean, uncrowded pens or on pasture—providing ample space for the cow or heifer to deliver her calf naturally.

- Fresh bedding should be provided and changed frequently to avoid soiling and disease transmission. According to statistics compiled by the National Animal Health Monitoring System, 54% of U.S. dairy producers allow two or more calvings to occur in a maternity area before cleaning it. Accumulated waste is a reservoir for the build-up and spread of disease at a time when the cow and calf are most vulnerable. Ideally, cows should calve in separate pens that are cleaned and provided with fresh bedding between each calving.
- Manage post-calving cows carefully and observe frequently for signs of milk fever, other metabolic disorders, and excessive BCS loss or negative energy balance.

Adult Cattle Care — Records Evaluation

- DHIA records and computerized milk metering, activity monitors, and conductivity meters offer excellent performance indicators for evaluating cows individually and as a group. Health assessment and strategic culling require regular review of these records and close daily observation of the cows. This is particularly important as herds move from tie-stalls to freestall environments where cow recognition becomes more challenging and managers may not immediately notice the early warning off-feed cow in bunk feed delivery systems.
- Evaluate herd tests for protein and butterfat components, somatic cell scores, and other indicators to discuss the health of the herd with the attending veterinarian.

Disease Prevention Practices and Health Care — All Ages

Like other species, cattle are susceptible to infectious diseases, metabolic disorders, toxins, parasites, and injury.

- The dairy manager should work with a veterinarian and /or nutritionist to determine the risk of infectious, metabolic, and toxic diseases and to develop effective management programs when designing a herd health plan.
- Producers and their employees should have the ability to recognize common health problems and know how to properly utilize animal health products and other control measures.
- The use of a diagnostic laboratory to provide a definitive diagnosis is highly recommended for unusual or questionable cases.
- Observation is a critical component for identifying health issues early and is the key to effective treatment. Problems in the herd often arise from lack of prevention. The most important tool you have is your trained eye. Things don't happen overnight.

Walk through the barn. Make the cattle move. Watch how they walk. Listen. Movement can produce a cough if it is there. Look for:

- Reluctance to go to the bunk
- Body Condition Score/appearance
- Lameness
- Crusted muzzle
- Sunken eyes
- Nasal discharge
- Rough dry coat
- Diarrhea
- Coughing, sneezing
- Drooped head and ears
- Arched back
- Straining to urinate

If in doubt, take the animal's temperature. If an animal dies, have a necropsy performed by your vet or the state lab, or you can be trained to do it yourself. That dead animal holds the key to avoiding lost dollars on treatments that do not solve the problem. Knowing what you have on the farm helps your veterinarian make targeted recommendations.

- Use Body Condition Scoring (BCS) to improve many areas of herd management and the beef value of the market cows removed from the herd. (See p. 100)
- Daily management practices for disease prevention, include:
  - Cows should calve in clean, uncrowded pens.
  - Feed bunks and troughs should be used for feeding and watering all stock on the farm.
  - Different equipment should be used for handling feed and manure.
  - Udders and teats should be cleaned thoroughly before collecting colostrum.
  - Feed only colostrum from healthy dams.
- Evaluate and treat mastitis cases early. When cows are marketed with swollen, distended udders, it's an animal welfare issue because transportation and handling are more difficult and stressful, and at the same time, the animal is less valuable as a market cow for beef.
- Be persistent and systematic in the prevention and control of mastitis. Monitoring and diagnostics help pinpoint infection sources, patterns and trends. Knowing if the mastitis agent is incurable helps make the decision to cull, not treat, chronic cases.
  - If the agent is one that responds to treatment, gain control by using individual DHIA somatic cell scores to identify and treat subclinical mastitis early. Whether the agent is contagious or environmental, manage existing infections with eradication in mind. A good plan generally includes management of clean calving and milking environments, consistent prepping procedures, properly maintained milking equipment, early detection and treatment, and planned culling.
- Check eyes for early signs of ocular neoplasia (cancer eye), which begins as small white plaques. When culled in the advanced stages, the carcass will be condemned.
- Examine mouths at least once a year. Healthy animals have eight teeth on the bottom jaw. Broken, gapped teeth mean not enough forage, and consequently not enough milk.
- Use locomotion scoring to monitor the herd. Watch the cows walk as they enter the milking area. Evaluate their mobility, and look for the early signs of lameness: The arched back of a standing or walking cow, and reluctance to bear full weight on a limb. It is best to perform Locomotion Scoring while cattle are walking on a flat surface. Also, check for injuries, and evaluate swollen arthritic joint conditions for treatment or culling decisions.

  (More on lameness and Locomotion Scoring on page 99.)

Quality Assurance Herd Health Plan—Minimum Guidelines

FOR ALL AGES AND CLASSES OF DAIRY CATTLE

- VCPR. Have a Valid Veterinary Client/Patient Relationship (See Appendix).
- Consult with your veterinarian to develop a Herd Health Plan, which outlines procedures appropriate for your dairy farm's location, management practices and assessed health risks.
- Include in the Herd Health Plan(s)
  1. Vaccination protocols.
  2. Observation protocols.
  3. Action plans for animals that develop disease or injury.
  4. Protocols for prevention, detection and action for common conditions (i.e. mastitis, lameness, post-calving disorders, and infectious diseases).
  5. Testing and, if necessary, a control /eradication plan for Johnes disease.
  6. Training programs for family members and employees in the detection and action plan(s).
- Consult with your veterinarian for additional health procedures, including:
  1. Management protocols for painful procedures and conditions.
  2. Management protocols for special needs animals.
  3. Appropriate euthanasia guidelines and training, consistent with recommendations from the American Veterinary Medical Assn. and American Association of Bovine Practitioners.

- Develop a plan and protocols for handling disabled or down cattle, including calves. The plan should include:
  1. Proper methods of movement so animals are not dragged.
  2. Care and husbandry that provides shelter, water, feed and isolation from other cattle and protection from predators.
  3. Appropriate medical care.
  4. Euthanasia, if warranted.
- Handle, and instruct caretakers to handle, all dairy cattle in a manner that reduces stress and the potential for bruising or injury.
- Vaccine and antibiotic injections administered in the neck region.
- Individually identify treated animals to ensure proper withdrawal time for both meat and milk.
- Always read and follow label directions and keep records of all products administered including: product used, amount given, route of administration, administrator, and withdrawal time.
- Make all records available to the next owner.
- Evaluate biosecurity protocols.
- Control parasites.
- Keep all records a minimum of 24 months after ownership or location transfer.

A Closer Look at Lameness

According to the 2007 National Market Cow and Bull Quality Audit, 49% of dairy cows arriving at beef processing plants show signs of lameness. This is an increase from 39% in 1999 and 23% in 1994.

With only a quarter inch of hoof protecting the soft, deeper structures of the foot from the rest of the world, it behooves dairymen to address foot care aggressively. Once the problem gets into those deeper structures, it becomes very expensive to treat.

Experts estimate that at any given time, an estimated 20% of cows suffer from clinical conditions of the foot, which are costly to the dairy operation.

Research indicates the following statistics based on Locomotion Scoring:

SCORE 3
5% LOSS in milk production

SCORE 4
17% LOSS in milk production

SCORE 5
36% LOSS in milk production

Score 3 to 5 Cows are 8 times more likely to be culled
and 15 times more likely to have delays in confirmed pregnancy.

The National Animal Health Monitoring Service estimates the percentage of cow deaths due to lameness or injury increased from 12.7% in 1996 to 20% in 2007. Hoof health management and marketing decisions include:

- Pay attention to herding methods, comfort, and trim feet regularly.
- Identify early and deal with subtle problems before they become advanced clinical disease.
- Use footbaths and clean them regularly to control pathogens and improve hoof health.
- Employ a competent hoof trimmer for control and prevention of hoof problems.
- Pay attention to nutrition issues such as particle length in the ration and effective fiber.
- Provide non-slip surfaces for confident footing, especially in high traffic areas. Grooving for traction should be patterned to complement the cow's natural way of walking. A well-designed surface provides good footing, but is not abrasive. Edges should be smoothed.

- Scrape or flush alleys routinely to keep passageways drier, which helps avoid injury and infection.
- To avoid injuries, keep cows calm by directing their movements through rounded curves instead of sharp turns. Circular patterns offer alternative routes for getting to and from the feedbunk.
- Provide yielding surfaces such as rubber mats around feedbunks and in parlor holding areas where cows will stand. In some management settings, giving cows a few hours a day on sod is another alternative.
- Avoid overcrowding, allowing adequate space for animals to lay down.
- Minimize time in the holding pen prior to milking to improve comfort and productivity.
- Properly formulate ration with care to include effective fiber and transition feeding.
- Learn to spot foot problems early. Evaluate cow posture and gait (right). The subtle problems occurring at Score 2 will not be noticed unless you are looking for it. Once discovered, steps can be taken to prevent significant economic losses. When problems are not discovered until Score 3 or 4, greater treatment costs and performance losses are the result, and the cow may not recover.
- Cows at a Score of 3 or 4 are at increased risk for becoming disabled during transportation and pre-harvest handling. They will require evaluation for special handling or alternative marketing strategies to reduce transportation stress. A cow in this condition can walk onto the truck one day and be non-ambulatory (downer) the next. Even though "downer" cattle represent a small percentage of occurrences on dairy farms or in the marketing and beef processing system, they are the number one consumer confidence and public trust issue facing the dairy industry today.
- A Score 5 animal that resists getting up is well beyond the window for profitable and responsible culling. These animals are a liability to both the dairy and beef industries and must not be marketed. The condition of Score 5 animals should be evaluated for treatment or euthanasia.

A Closer Look at Treatment and Culling Decisions

Antibiotic use, observance of drug withhold for milk and withdrawal for meat, along with the condition in

Rear feet posture offers clues. Research indicates that 92% of lameness involves the rear feet, of which 68% affects the outside claw. Often viewed as weak conformation, the "cow hock" posture pictured at left is the result of over-burdening of the outside rear claw because the heel has been allowed to grow too long. Because of the way cows walk, the outside claw is vulnerable to irritation, which stimulates increased hoof formation and throws the foot out of balance. She stands this way to get comfortable. This can be corrected with good claw trimming. If allowed to persist, lameness will result. Other rear feet postures to look for include feet that are "camped back" or held well back. Often confused with "post leg" conformation, this posture indicates the animal has pain in the heels. Conversely, when rear feet are "camped under" or held well forward, often confused with "sickle hock" conformation, the posture indicates pain in the tip of the toe. Knowledge and awareness are the first lines of defense. Hoof trimming is as essential as teat dipping to herd health. It rebalances the unbalanced growth created by walking on irritating, unyielding surfaces.

Score 1 - Normal posture and gait, level back.

Score 2 - An arched back when walking is the first sign of lameness. This is the stage for identifying and treating lameness before it progresses.

Score 3 - "V-posture." Arched back while walking and standing, but her gait may not be recognized as abnormal. At this point, the total cost of her lameness averages more than $300.

Score 4 - At this point the cow has an arched back while walking and standing. Plus, her gait has become abnormal.

Score 5 - Cow may resist standing and MUST NOT be marketed or transported.

which cows are marketed from the dairy herd—these are human food safety issues that are managed at the farm level. Producers and their veterinarians have an obligation to consider the cow's final destination when making choices about her treatment. The best way to avoid marketing animals that are disabled, or animals with meat residues is to evaluate health conditions early, before they get out of hand.

Waiting to treat for overt signs of illness is costly, and jeopardizes the health of the herd as a unit. Plus, the producer runs a greater risk of losing the cow, or losing the option of marketing the animal for its beef value.

Researchers estimate that each year 30% of dairy cows come to the packing plant with clinically apparent inflammation of the mammary gland, which presents challenges in appropriately handling the cows during transportation and harvest. Researchers also estimate, based on packing house audits, that 49% of cows are lame and 7% are disabled.

These inflammatory conditions are typically treated with animal health products on the farm, before the animal is finally culled. Thus, the beef from animals showing inflammatory conditions is held for further testing. More attention must be paid to early disease evaluation, culling and treatment.

When a producer makes the decision to treat, rather than cull, a persistent or declining health condition, he is believing the cow will recover to sound health. If the animal's health continues to decline while the prescribed meat withdrawal period is still in effect, the animal can not be marketed and euthanasia is the only option.

Work with your herd veterinarian to evaluate cows with health conditions. When disease events occur, know both the milk and the meat withdrawal for the treatment being considered.

Then decide before treating: if she does not show a good chance of recovery before treatment, will there be enough time after the withdrawal period to cull the animal? (See Appendix for suggested record keeping forms; Consult Section IV-A page 30 for drug label decision-making factors.)

Non-Ambulatory (Downer) Cattle

Dairy cattle can become downers for different reasons, including injury, advanced disease, calving trauma, emaciated condition (BCS below 2.0) and severe negative energy balance. It is the responsibility of dairy owners and managers to make every effort to provide proper care for disabled, non-ambulatory livestock.

- A prompt diagnosis should be made to determine whether the animal should be humanely euthanized or receive additional care.
- Signs of a more favorable prognosis include the ability to sit up unaided, eating, and drinking.
- Care of non-ambulatory cattle is the responsibility of livestock owners and caretakers, who must make every effort to provide proper care.
- Animals that are likely to recover should be moved to an area with adequate bedding, access to feed and water and without risk of trampling by other animals. They should also be provided with appropriate shelter from direct sunlight and inclement weather.
- Cattle that are cannot stand and walk on their own—and those that resist rising— must not be sent to a livestock market or to a beef processing facility. Cattle that have been injured, subsequent to calving or a fall, and cattle that exhibit pain when walking fall into this category. Provide care and allow them time to recover; however, if the prognosis is unfavorable, or the animal has not responded to veterinary care, it should be humanely euthanized.
- Cattle with suspected or confirmed nervous system disease must not be marketed, even if they are able to walk without assistance.
- There are other problems that fall into the "do not market" category. Whenever there is a question about animal fitness for market and/or transport, discuss options with the herd veterinarian.

- Examples include: thin cattle with BCS below 2.0, cattle showing signs of weakness, dehydration or exhaustion, "shocky" cattle or cattle that appear to be dying, cattle with rectal temperature greater than 103°F., cattle with uterine prolapse or open wounds.
- The dairy must have a plan for handling non-ambulatory cattle, including calves that cannot stand or walk without assistance. The non-ambulatory cattle plan should include:
    - Proper movement so that the animal is not dragged. Animals that cannot be carried should be moved with an appropriate sled, sling, or bucket with the exception of necessity to move a short distance to safety (i.e. from the parlor) before an appropriate method can be used.
    - Husbandry and care that provides shelter, water, feed and isolation from other cattle as well as protection from predators.
    - Appropriate medical care.
    - Euthanasia should be considered for animals that are highly unlikely to recover or disabled animals that have been treated with drugs that have a long meat withdrawal period.

Euthanasia

Euthanasia is humane death occurring without pain and suffering. The producer may need to perform on-farm euthanasia because a veterinarian may not be immediately available to perform the service. The person performing the procedure should be knowledgeable of the available methods and have the necessary skill to safely perform humane euthanasia; if not, a veterinarian must be contacted.

When euthanasia is necessary an excellent reference is the Practical Euthanasia of Cattle. These guidelines were developed and published by the Animal Welfare Committee of the American Association of Bovine Practitioners (AABP), detailing the following acceptable methods of euthanasia. This booklet is reprinted on pages 93 through 98 of this DACQA manual and is available on AABP's website at: http://www.aabp.org/resources/euth.asp. Additional excellent resources —including desk cards and wall charts for posting as well as demonstration slides—are offered by the Univ. of Florida Dept. of Veterinary Medicine: *http://www.vetmed.ufl.edu/lacs/humaneeuthanasia*

Disposal

Use appropriate methods for disposing of deceased livestock (within 24 to 48 hours) in accordance with federal, state and local regulations. As new federal regulations are pending concerning the rendering of older cattle, some renderers have announced they may stop receiving all cattle mortalities. University cooperative extension services can provide further information on options such as mortality composting and proper methods of carcass burial or incineration. It is important to document all incidents of euthanasia and carcass disposal, including the date, animal identification, confirmed or tentative diagnosis, euthanasia method, and carcass disposal method.

About Biosecurity:

Biosecurity is a system of management procedures designed to prevent or greatly reduce the risk for the introduction of new diseases to a dairy operation. Biosecurity affects food safety and quality directly in the case of diseases that pose a risk to public health. Biosecurity is also a positive step for animal health, well-being and performance, which can indirectly affect milk and meat quality by reducing the potential impact of a disease or its treatment.

A biosecurity program is like an insurance policy for the health and productivity of the herd. Producers, with the help of a qualified veterinarian, must make decisions about the risk tolerance level they will accept, based on the chances of a disease occurring and the expected economic losses from the disease. When the risk tolerance level is determined, then appropriate risk management measures can be initiated.

Biosecurity levels and concerns will differ with production and marketing strategies: a dairy replacement heifer grower's plan may be different than a plan used by milking operations.

Many diseases of cattle cause decreased production and reproduction, sickness and death, and loss of marketing options. For example, our increased understanding of Johnes is leading to greater liability in selling animals. The result can range from altered or reduced cash flow to large loss of equity.

Sources of new disease

New diseases can be introduced to your dairy operation in a number of ways, including:

- Other cattle, including replacements from other herds, bulls, fence-line contact with neighboring herds, shows and fairs, and stray cattle.
- Feed, especially feed which could be contaminated with feces, urine, molds, or ruminant byproducts.
- Water, including pools of standing water, which animals may have access to.
- Humans, particularly those moving between herds, but also consider intentional acts against you.
- Non-livestock, including pets, birds, deer, coyotes, rodents, ticks, and other insects.
- Equipment and vehicles.
- Manure handling.

Typical ways to practice Biosecurity

The goal is to prevent disease from ever entering the operation, and to minimize the risk of infection if it does occur. You cannot exclude all wildlife and may not wish to exclude visitors, but you can take steps to greatly reduce the risk of them introducing a new disease.

Animals new to your herd:

- Know the herd health status of herds supplying replacements.
    - Obtain the health/vaccination history of new animals.
    - Have your veterinarian speak with their veterinarian.
- Do not introduce cattle that are:
    - Actively diseased.
    - Healthy but possibly incubating disease.
    - Healthy but recovered from a disease and are potential carriers.
- Isolate and observe new animals for a period of time (3-4 weeks) before introducing to the herd.

Animals within your herd:

- Be a diligent observer of your cattle.
    - Know signs of important diseases, which include:
        - Blisters around animals' mouths, noses, teats, or hooves.
        - Central nervous system disorders, (i.e. staggering, falling).
        - Abortions or abnormal discharges.
    - Watch for and report any sudden, unexplained death loss.
        - Consider having your veterinarian necropsy every dead animal, unless you are certain of the cause of death.
    - Report to your veterinarian any severe illness affecting a high percentage of animals.
- Dispose of dead animals properly.
- Minimize non-livestock traffic, including pets, wildlife, rodents, birds, and insects.
- Keep feed storage areas free of all animals.

Animals returning from shows or fairs

- Do not share equipment with other exhibitors.
- Change or wash clothing and shoes worn at the fair before working with animals at home.
- Isolate returning animals a minimum of 14 days.

Visitors

- Minimize the number of access routes to your operation. Consider locking or obstructing alternative entry sites.
- Minimize unnecessary visits.
- Place signs describing visiting policies in clear view.
- Keep a record of visitors, including dates.
- Determine if visitors have been on other farms prior to visiting you. Special care is needed if visitors have recently been in another country.
- Consider using footbaths or plastic boots.
- Report suspicious individuals or abnormal activities.

Vehicles and equipment

- Designate parking places for visitors.
    - Minimize their crossing tracks with feed suppliers/deliveries.
- Minimize all vehicle traffic in livestock and feed areas.
- Do not contaminate feed with manure.
    - Have separate equipment for feed and for manure handling, or
    - Clean and disinfect any equipment used for handling manure and dead animals before handling feed.

Biosecurity Summary:

An effective biosecurity plan will involve your employees, veterinarian, and other specialists. It will provide reasonable protocols, which are more likely to be followed, to minimize introduction of new diseases. This will require education of farm visitors and may include physical barriers. The biosecurity plan and the actual adherence to the plan must be periodically reviewed, with adjustments made as needed.

Unfortunately, intentional acts against you and your animals are a possibility. The most important piece of advice is to be alert. Be aware of who is visiting your operation, what their activities are, and whether they might pose a potential risk. In other words, know what is happening at your operation at all times.

Biosecurity is a food safety related issue; it is a portion of DACQA that benefits dairy producers and consumers alike.

FEEDSTUFFS QUALITY CONTROL

Purchased Feeds

Federal law prohibits the use of any protein derived from mammalian tissue in any feed fed to cattle (ruminants).

Maintain documentation of compliance by keeping a label or letter from the manufacturer for all purchased feeds for 24 months.

Be aware that as a result of new rules issued in 2008 (effective Jan. 2009), the exception for tallow has been changed, granting exception status only to tallow that does not contain more than 0.15% impurities and to tallow derivatives.

Also be aware that proteins banned for cattle can be found in hog, poultry, and pet food. If other species of animals are fed on the same farm where the dairy is located, implement and document safeguards to prevent cross-contamination—including separation and clean-out procedures for mixing and feeding equipment as described for manufacturer's in the Ruminant Feed Ban Fact Sheet (turn to pages 56-57). Also refer to FDA Guidance for Feeders of Ruminant Animals With On-Farm Feed Mixing Operations. This document is available on FDA's website posted at: *http://www.fda.gov/cvm/Guidance/guidance69.pdf*. FDA Guidance is also available for Feeders of Ruminant Animals Without On-Farm Feed Mixing Operations, available online at: *http://www.fda.gov/cvm/Guidance/guidance70.pdf*.

To assure quality, incoming feeds should be analyzed for ingredients. Select feed suppliers who have quality control programs in place and who stand behind their products. Some ingredients are naturally more perishable than others. Most incoming feed ingredients should be evaluated for:

- Moisture
- Color
- Odor
- Texture
- Presence of foreign material
- Heat damage
- Mold or other spoilage.

Presence of any suspected problems requires further testing. Keep a sample of suspect feedstuffs for later testing in a cool but not frozen state. Fats should be analyzed for:

- Moisture
- Free fatty acid content
- Rancidity, and
- Impurities.

Or purchase feed from a source that guarantees the analysis of their products. Work with your nutritionist or veterinarian and use sound science when feeding alternative sources of protein and energy in the dairy ration.

Feed Source Biosecurity

Develop, implement, and document a feed-sourcing program that incorporates good manufacturing practices established by the American Feed Industry Association (AFIA). This includes strict adherence to the FDA regulations: "Animal Proteins Prohibited from Ruminant Feed" and "Recommended Salmonella Control for Processors of Livestock and Poultry Feeds." Use protein ingredients from plants participating in the "Animal Protein Producers Industry (APPI) Salmonella Reduction Education Program," or equivalent programs. Obtain a letter of guarantee from the feed supplier for documentation on these issues.

Homegrown Feeds

Quality control can be easy when you have complete control of the feed production process. Most herbicides and insecticides, when used on crops according to the guidelines on the label, provide a safety margin against the potential for harmful residues in dairy and beef products. Producers should be aware of label restrictions for feed or grazing of crops after treatment with pesticides. It is imperative that the labels be reviewed for any pesticide or herbicide used.

Silage and Hays

Ensiling is an effective method for preserving feed with a minimum of nutrient loss. If ensiled properly, the nutritive value is similar to that of the standing crop, but not better. The ultimate comparison between hay and silage (haylage) will be influenced by the weathering and leaf losses during the haying process and the type of fermentation, which existed during the ensiling process.

Wrapped hays (haylage, balelage) have become popular in some regions due to the frequency of rains in the early spring. Producers should use the same harvest precautions as for ensiling hay as silage stored in a trench or upright silo. Special precautions should be used when feeding silage or haylage. A higher incidence of listeriosis and botulism has been reported and traced to improperly ensiled or stored wrapped bales.

Other common problems are ketosis, nitrate poisoning and dicumarol poisoning. Many of these problems occur when transitioning animals to different feed sources or due to the mold or bacteria that can sometimes develop during storage. Small amounts of mold, in most instances, will not cause problems when fed to livestock. However, feeding moldy hay for prolonged periods to some classes of animals, such as pregnant heifers or younger animals, could be harmful. Test forages for mold and mycotoxin contamination.

Producers feeding endophyte-infected fescue to cattle can expect high concentrations of toxins in pasture, green chop, and silage. However, the toxin can be reduced by making dry hay or ammoniated hay.

Feed Storage, Processing, Handling

Harvesting and storing feeds at the correct moisture level will help prevent contamination by molds, mycotoxins, and pathogenic bacteria and at the same time, improve feed efficiency. Equipment used for loading feed should be routinely inspected for leaks in the hydraulic or other fluids. These fluids can be toxic if ingested and pose a residue threat.

Clean tractors and equipment and routinely inspect for fluid leaks. When equipment is used for other non-feed purposes, such as a front-end loader, clean it again before using it for feeding purposes.

Never store crop chemicals, petroleum products, or other potentially hazardous material in areas near where feed is stored, mixed, or processed.

Water Quality

It is a good practice to allow access only to clean, fresh, uncontaminated drinking water in tanks or other watering devices that are cleaned routinely.

Although it is a common practice to allow cattle to drink from ponds and streams, these water sources can become contaminated with manure and other potential run-off contaminants. To avoid potential sources of disease, pathogenic bacteria, or chemical contamination, consider restricting cattle from these water sources.

Also, cattle will commonly consume highly contaminated water, even when fresh water is available. Observe cattle-holding lots for areas that will allow pooling of standing water that has become contaminated with manure, and take steps to improve drainage in these areas.

RUMINANT FEED BAN FACT SHEET

Resources: http://www.fda.gov/cvm/BSE_laws.htm
http://www.fda.gov/cvm/Guidance/guidance70.pdf
http://www.fda.gov/cvm/Guidance/guidance69.pdf

Purpose and Scope of Ruminant Feed Ban Regulation

The Food and Drug Administration (FDA) adopted the "Animal Proteins Prohibited from Ruminant Feed" regulation to prevent the establishment of Bovine Spongiform Encephalopathy (BSE) in the U.S. through feed, and thereby minimize any risk to animals and humans. The final rule went into effect on August 4, 1997.

On April 25, 2008, this rule was expanded to make protein derived from mammalian tissues for use in ruminant feed a food additive subject to section 409 of the Federal Food, Drug, and Cosmetic Act. The use or intended use in ruminant feed of any material that contains protein derived from mammalian tissues causes the feed to be adulterated and in violation of the act.

The regulation has established certain requirements for renderers, protein blenders, feed manufacturers, distributors, haulers, and individuals and establishments that are responsible for feeding ruminant animals (including dairy farms that are grinding and/or mixing feed).

The Ruminant Feed Ban regulation prohibits from use in ruminant (cattle) feed, any protein derived from mammalian tissue. Protein derived from mammalian tissues means any protein-containing portion of mammalian animals.

Exceptions to this ban, as of the April 25, 2008 FDA ruling, are:

1. Blood and blood products.
2. Gelatin.
3. Tallow containing no more than 0.15% insoluble impurities and tallow derivatives as specified in §589.2001.
4. Inspected meat products, which have been cooked and offered for human food and further heat processed for feed (such as plate waste and used cellulosic food casings).
5. Milk products (milk and milk proteins).
6. Any product whose only mammalian protein consists entirely of porcine or equine protein.

***It is the dairy producer's responsibility to know and comply with any changes that occur to the Ruminant Feed Ban as these regulations develop over time.**

Consult FDA resources for updates at:

http://www.fda.gov/cvm/BSE_laws.htm

Requirements and Guide for Establishments and Individuals:

This regulation applies to establishments, both large and small feeding operations, and individuals that are responsible for feeding ruminants.

Producers are required to keep the following records for 24 months:

1. Maintain copies of all purchase invoices for all feeds received that contain animal protein.

   If a feed intended for ruminants contains animal protein, the protein can consist only of non-prohibited material (previous page). The regulation requires maintenance of invoices for all feeds containing animal protein, so that FDA can verify if necessary that the animal protein contained in the ruminant feed is from non-prohibited sources.

2. Maintain copies of labeling for feeds received, which contain permissible animal protein products.

   The agency recognizes that bulk shipments of feed are commonplace and that labeling information typically is contained in the invoices for bulk shipments. In those instances, maintenance of the invoice is sufficient.

   If the only labeling for a bulk product is on a placard, the placard for each shipment should be retained. Feed may also be received in bags or other containers that have attached labeling. In those instances, the labeling should be removed and retained. However, maintenance of only one such labeling piece is necessary from each shipment that represents a different product.

Finally, if the labeling cannot be removed from the bag or other container, maintenance of a representative bag or a transposed copy of the labeling information from a container that cannot feasibly be stored, will suffice.

3. Make copies of both invoices and labeling available for inspection and copying by FDA.
4. Records should be legible and easy to retrieve. (See Manual Appendix for sample for recording feed shipments)

Requirements for Manufacturers

Following are requirements for protein blenders, feed manufacturers and distributors that separate prohibited material and non-prohibited material.

"Distributor" is defined as any firm or individual that distributes or transports feeds or feed ingredients intended for animals. Haulers are included in this definition. Haulers who haul both prohibited and non-prohibited material, including blended animal protein products, are subject to the same separation procedures as manufacturers. Haulers of complete and intermediate feeds are "distributors."

These regulations for manufacturers, blenders, distributors and haulers shall be observed for on-farm feed preparation on dairy farms where non-ruminant animals are also fed.

- **Provide for measures to avoid commingling or cross-contamination:**
  - (A) Maintain separate equipment or facilities for the manufacture, processing, or blending of such materials; or
  - (B) Use clean-out procedures or other means adequate to prevent carry-over of products that contain or may contain protein derived from mammalian tissues into animal protein or feeds that may be used for ruminants; and
  - (C) Maintain written procedures specifying the clean-out procedures or other means, and specifying the procedures for separating products that contain or may contain protein derived from mammalian tissue from all other protein products from the time of receipt.

Additional Precautions on the Farm

1. Store in an area separate from cattle feeds any non-ruminant feed and/or pet feeds.
2. Observe equipment requirements (above) for preparing and feeding different species on the farm, particularly when non-ruminant feeds contain material that cannot be fed to cattle.
3. Be sure non-ruminant feeds containing prohibited materials for ruminants are clearly marked: "Do Not Feed To Cattle."
4. Label pet foods and keep them separate to avoid accidental cross contamination with cattle feeds. Even though pet feeds often contain mammalian protein, they are not required to carry the "Do Not Feed to Cattle" label, unless they are distressed feeds sold for salvage.

For FDA Guidance Documents and

Federal Register Notices, reference FDA's BSE homepage:

http://www.fda.gov/cvm/bsetoc.html

CATTLE NUTRITION QUALITY ASSURANCE

Newborn Heifer and Bull Calves

The amount and quality of colostrum a calf receives within the first hours of life is universally agreed to be the single most important management factor affecting the animal's well-being as demonstrated by calf mortality and treatment costs as well as growth, performance, and profitability for the first six months of life... and beyond.

Aside from being the only way to provide the calf with necessary antibodies (which do not cross the placenta), colostrum also provides the necessary vitamins A, D, and E. These vitamins also do not cross the placenta, which means calves are typically born vitamin-deficient. They rely on colostrum not only for immunity, but also for the vitamins that help develop the immune system and set the stage for growth. Other products found in colostrum that are all very important to the initial health of the calf include: growth factors, antioxidants, a higher fat content, white blood cells, and essential amino acids.

The concentrations of these nutrients is usually highest in the first colostrum produced after calving because the mammary gland secretes colostrum for only the first 24 hours after birth. Transition milk is secreted from 24 to 72 hours. Milk is secreted after 72 hours. On the calf side, the ability to absorb the necessary colostrum antibodies from the digestive tract into the bloodstream diminishes hourly after birth as the cell structures in the calf's intestinal lining begin to change and mature. At the same time, the calf is most vulnerable to ingested bacteria or viruses because these molecules are also absorbed easily into the bloodstream before gut closure.

Recommendations for all calves, including bull calves that will be sent to market:

- Feed a sufficient quantity of high quality colostrum to ensure that each calf develops an effective immune system. Current best management practice is to feed 2 to preferably 4 quarts of colostrum within the first 1 to 2 hours of life, followed by 2 more feedings within the first 18 hours. (The higher amount of 4 quarts is a management tool to ensure enough grams of antibodies are received by the majority of calves when the quality of the colostrum is unknown or mediocre. Feeding targets will also depend on the breed of the calf.)
- Reserve "first-milking" colostrum for first feedings of newborns as the concentrations of vitamins, nutrients, and antibodies will be highest.

Other Nutritional Recommendation from Birth to Weaning

- Calves should be eating starter grain three weeks before weaning. That's about how long it takes for the starter grain to develop the rumen to where the calf is able to meet its nutritional requirements from dry feed.
- Calves should be eating 2 to 2.5 quarts (or pounds) of starter grain daily before weaning.
- During adverse weather conditions, calves will require increased nutritional attention.

Calves and Heifers (Post-Weaning)

The goal of feeding growing heifers is to provide adequate nutrition to meet targets for weight and height at a specific age. A series of rations will be fed during this growth period.

Nutritional management of growing heifers relies on monitoring. Evaluate heifers frequently for size and age/weight variations within groups and to track progress toward goals for growth. Nutritional management is greatly improved when producers take time to visually observe heifers to maintain uniform groupings and to give attention to individuals that are lagging behind.

Monitoring during the first 12 weeks of life is especially important because this is when the foundation is laid—determining how the calves will grow, develop, and eventually mature in the dairy herd.

Dry Cow Nutrition

Achieving optimum dry cow condition and nutrition is a balancing act. Dry cows have different nutritional needs than lactating cows. They require more roughage, less concentrate, and do better when the level of fermented feeds in the ration is not excessive. They do not need, nor should they have, the forages that are produced with the milk cow in mind. However, this does not mean the dry cows are the dumping ground for poor quality leftovers, refusals, or moldy feed deemed unfit for the milking herd.

Plan the dry cow nutrition program around what the dry cows should be eating, not what the milk cows won't or shouldn't eat. Then produce, buy and store the forages and ration ingredients designed to meet the needs of the dry cow and her growing calf, keeping in mind that during the last six to eight weeks of gestation, the growing calf puts its greatest nutritional demand on the cow.

Avoid over- or under-feeding energy so the dry cows remain in optimum condition for calving. Watch intakes, especially during times of stress such as extreme temperatures. Adequate protein and energy are essential in the ration for the dry cow to maintain herself and grow her calf. Not only is this the basis for profitable milk production and fresh cow health, the result is a more vigorous calf, born in the condition to withstand stress. Plus the colostrum will be of higher quality for better transfer and absorption of the antibodies, which will protect the calf for the next four to eight months while its own immune system is developing.

A good dry cow program also addresses mineral and vitamin deficiencies. Consult your veterinarian and nutritionist to decide on a supplement that meets the needs of the cow and the growing calf. Vitamins A, D and E do not cross the placenta, thus the calf depends on colostrum quality to receive these vitamins necessary for growth and immune system development. Research demonstrates that colostrum from supplemented cows contains higher levels of these vitamins, and that calves born from supplemented cows have better antibody absorption from the colostrum. Testing the serum protein levels in sample calves helps determine the quality of the colostrum being produced. Test kits are available to test the immunoglobulin status of the calf as well.

During the two weeks leading up to calving, the dairy cow will experience increased nutritional requirements, reduced feed intake and hormonal changes, followed by sudden metabolic and rumen changes at calving and early lactation. In the typical dairy herd, 90% of all treatment costs are incurred in the first three weeks after calving. This is also a time when statistics show a high percentage of "forced" removals culled from the herd due to a variety of calving-related inflammatory and metabolic disorders. Sound nutritional management during the dry period and intensive management of cows in the transition period, pay dividends.

Avoid over-conditioned cows at dry-off as they tend to consume less feed as a percentage of their bodyweight during the calving transition, tending to have more health problems within 75 days of calving. On the other hand, too many thin cows are a sign that cows are losing too much body weight, too rapidly, post-calving.

Feeding the Milking Cows

Nutritional strategies for milking herds vary from farm to farm based on farm-specific production goals, environment, facilities, available forages and feeding practices. Many dairy farms today use the services of professional nutritionists to balance rations for different classes of animals on the farm and for groups within the milking herd.

For the bovine, consistency is paramount. Some key nutritional factors to manage are:

- Provide sufficient effective fiber in the ration to stimulate cud chewing.
- Avoid sudden changes in the diet.
- Avoid slug feeding and practice good bunk management.
- Focus on quality forages from the field to the feedbunk with particular attention on management of harvest, storage, and feeding practices.
- Test forages periodically for changes that will affect quality and nutritional value.
- Calibrate weights on TMR mixers for proper mixing.
- Regularly test dry matter of ration forages and wet feed ingredients so the cows receive the full nutritional value of the balanced ration.
- Track dry matter intake and monitor Body Condition Scores and milk components to evaluate the sufficiency of the nutritional program. (See p. 100 for scoring procedures)
- Put a high priority on keeping fresh feed in front of the cows at all times; frequently push feed up to the cows and clean stale feed from the bunk.
- Adjust rations for weather conditions to avoid a drop in feed intake.

- Displaced abomasums (DA) and foot diseases like laminitis and sole abscesses are frequently signs of feeding errors.

Summary

The nutrient requirements of cattle vary according to age, sex, weight, body condition, stage of production and environmental temperature. The National Research Council has developed guidelines describing these requirements. Nutritionists are a good resource and can provide specific information on the nutrient needs of cattle, nutrient availability in feed ingredients, and suggest diets based on regional differences in nutrient values of available feedstuffs.

DACQA QUALITY ASSURANCE
Our Business, Our Future

CATTLE CARE & HANDLING GUIDE

Housing ♦ Handling ♦ Training ♦ Transportation

Dairymen have long recognized the importance of proper cattle management. Humane animal care, handling, and transportation practices — based on practical experience, sound science, and animal behavior research — have a positive impact cattle health, well-being, and productivity. At the same time, these practices enhance food quality, producer profitability, and consumer confidence. *(Refer to Section IV-B)*

Because dairies operate in diverse environments, geographic locations and management systems, there is not one specific set of production practices for all producers to implement. Personal experience, DACQA training, and professional judgment are key factors in providing appropriate animal care and management.

Housing Considerations

Cow comfort is recognized as both an ethical and economic issue. And it affects herd health, reproduction, longevity, milk production, and milk and beef quality.

►**SHELTER:** Cattle are managed in and adaptable to a wide range of production settings, from natural pasture and range environments to artificial dry lot and confinement facilities. Shelter should provide sufficient protection from temperature extremes and be structurally safe.

Housing should match the physiological and behavioral characteristics of cattle and their levels of production. Dairy facilities should be clean and well-ventilated with good drainage and manure removal systems (scraping, flushing, slatted floors) to avoid standing water and excess manure accumulation. Fans and/or sprinklers provide heat stress abatement for improved animal well-being, health and milk production. Facilities should be well maintained, resulting in better animal performance and a higher quality end-product in both beef and milk production.

Avoid overcrowding, which can lead to lower feed intake, reduced milk production and may compromise animal health and well-being. Facilities should also provide a comfortable separate environment for special needs animals where recovering cows will not have to compete with the rest of the herd for food, water, and stall space.

►**SPACING:** In any type of facility, cattle should be offered adequate space for comfort and environmental management. The amount of space depends on animal size and environmental conditions. The amount of space allotted per animal will directly affect manure moisture content, which affects dust, runoff, and mud conditions.

In addition, spacing at the feed bunk and water supply is equally important to reduce competition for the essential nutrients required to promote well-being, health and optimum performance efficiency.

Superior housing will not make up for poor management. In fact, good management in less than optimum facilities can still produce good results. By using adequate fresh bedding and routinely grooming stalls and removing manure from alleyways, animal hygiene, health and condition all improve. At the same time, the cleaner, drier environment will enhance air quality in the facilities.

►**STALL USAGE:** Well-designed, comfortable stalls encourage cows to lie down. This is good for production and in preventing lameness. Much can be accomplished with improved management and modest renovation.

Evaluate stall comfort for optimum usage. When observing cattle, 80-90% or more of the animals with any part of their body in the stall, should be lying down properly in the stall. Of cows lying down, at least 50-70% or more should be chewing their cud.

Cows will not lay down as much as they should if stalls are designed in a way that makes it difficult for them to rise from a lying position. Brisket locators should be a reminder of the stall perimeters but not an obstacle to the cow's forward movement as she reclines and rises.

A comfortable stall is one that is used, and thus will require more attention to grooming for a clean level surface with adequate bedding. To evaluate your stall maintenance and use of adequate bedding, look for hock lesions and swelling, which indicate stalls are too short or 'hollowed out.' Scuffed or injured knees indicate insufficient bedding.

►**MOVEMENT:** Grooved nonslip flooring is essential in freestall environments where cows walk to the feedbunk, stalls and parlor multiple times a day. Grooved concrete should be cured and smoothed free of sharp edges before cattle enter a new facility.

To evaluate if your flooring provides adequate traction, observe cattle for slippage. A good goal is to see that no more than 3% of animals are slipping at any given time.

Cattle Handling

Dairy cattle are gathered to perform routine husbandry procedures, such as: milking, veterinary care, breeding, pregnancy checks, and transportation. Handling procedures must be safe for the cattle and caretakers, and cause as little stress as possible. Sorting and treatment facilities should be designed and constructed to take advantage of the cattle's natural instincts and for the safety of caretakers and cattle.

Animals should always be handled in a calm, controlled, and gentle manner. Employees and other caretakers should be trained in proper cattle handling techniques with enforced consequences for inappropriate treatment or handling methods.

Understanding Cattle Behavior — Ways to Reduce Stress

►**VISION:** Cattle have a wide-angle vision field in excess of 300 degrees. Loading ramps and handling chutes should have solid walls to prevent animals from seeing distractions outside the working area. Seeing moving objects and people through the sides of a chute can cause cattle to balk or become frightened. Solid walls are especially important if animals are not completely tame, or if they are unaccustomed to the facility.

Handling facilities should also be designed to eliminate shadows that may prevent cattle from entering the chutes or working alleys. Cattle have a tendency to move from dark areas to lighter areas, provided the light is not glaring. A spotlight directed onto a ramp or other apparatus will often facilitate entry. Handling facilities should be painted a uniform color because cattle are more likely to balk at a sudden change in color.

►**HEARING:** Loud noises should be avoided in cattle handling facilities. However, small amounts of noise can be used to assist in moving livestock. Placing rubber stops on gates and squeeze chutes, and positioning the hydraulic pump and motor away from the squeeze chute, will help reduce noise. It is also beneficial to pipe exhausts from pneumatic powered equipment away from the handling area.

►**CURVED CHUTES AND SOLID FENCES:** Curved single file chutes or working alleys are especially recommended for moving cattle into a truck or squeeze chute. A curved working system is more efficient for two reasons. First, it prevents the animal from seeing to the end of the chute until it is almost there. Second, it takes advantage of the natural tendency to circle around a handler moving along the inner radius. A curved chute provides the greatest benefit when animals have to wait in line for vaccination or other procedures. A curved chute with an inside radius of 15-16 ft. will work well for handling cattle.

►**PATIENCE AND EXPERIENCE:** Experienced and trained personnel should operate restraining equipment in the processing of cattle. Processing should never be treated as a race. Avoid overcrowding the crowd pen, and refrain from pushing the crowd gate up on the cattle. Instead, allow them to move forward naturally.

Working cattle too quickly can lead to bruises, injection site damage, human injuries, and incorrect records. Stress caused by improper handling also lowers conception rates, reduces vaccination effectiveness, and reduces immune and rumen functions.

An understanding of cattle behavior will facilitate handling, reduce stress, reduce bruise defects, and improve both handler safety and animal welfare.

Handling is safer when animals are moved quietly. Handlers should not yell or flap their arms, because this may agitate the animals. Excessive use of electric prods increases animal agitation, as well as hazards to handlers. When cattle become agitated and fearful, up to 20 minutes is required for their heart rate to return to normal. (Grandin.com) Agitated large animals are easier and safer to move if they are given an opportunity to calm down, perhaps while handlers are on a lunch or coffee break.

Cattle have poor depth perception, particularly in enclosed, narrow areas such as chutes and alleys. Remove some of the stress by avoiding sharp contrasts in lighting, and shadows that startle them, causing them to balk and bunch up. Uniform lighting, color, texture and curved pathways are safer and have a calming effect that keeps the animals in the group moving more confidently. Curved designs also limit the potential for injury from protruding corners.

Calves should be walked or lifted properly, never thrown, pulled, dragged or caught by the neck, tail, or legs. Moving calves from one area to another on the farm, in transit, or at the sale, can be frustrating at times, but patience pays. Use of force should be calm and firm.

►**FLIGHT ZONE:** An important concept of livestock handling is the animal's flight zone or personal space. When a person enters the flight zone, the animal moves away. Understanding of the flight zone can reduce stress and help prevent accidents.

The size of the flight zone varies depending on how accustomed the cattle are to their current surroundings, people, etc. The edge of the flight zone can be determined by slowly walking up to the animals. If the handler penetrates the flight zone too deeply, the animal will either bolt and run away or turn back and run past the person.

The animal will most likely stop moving when the handler retreats from the flight zone. The best place for the person to work is on the edge of the flight zone. Cattle sometimes rear up and become agitated while waiting in a single file chute. A common cause of this problem is a person leaning over the chute.

Both veterinarians and handlers also need to understand the point of balance. The point of balance is an imaginary line at the animal's shoulders. To induce the animal to move forward, the handler must be behind the point of balance. To make the animal move backward, the handler must be in front of the point of balance. Animals move forward when a handler walks past the point of balance in the opposite direction of desired movement (Figs. 2 and 3).

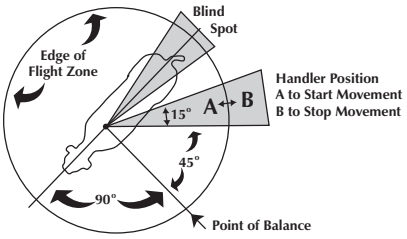


FIGURE 1. A handler must be behind the point of balance (line at animal's shoulder) to make an animal go forward.

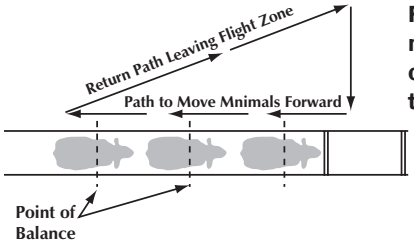


FIGURE 2. This movement pattern can be used to induce an animal to move into a squeeze chute. The handler walks inside the flight zone in the opposite direction of desired movement. The animal moves forward when the handler crosses the point of balance.

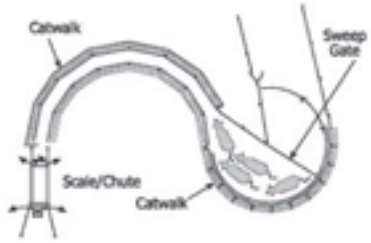


FIGURE 3. Handler movement pattern for use in a curved chute system. The techniques here and in Figure 2 make it possible to greatly reduce or eliminate electric prods. http://www.grandin.com/references

Cattle Handling Facilities

Keep facilities and equipment in good condition to provide efficient movement and reduce stress when working cattle. Watch for nails, loose boards and other hazards that could tear the hide or cause bruises or infections.

Equipment to restrain cattle is needed on most beef and dairy operations. The equipment should quickly and securely restrain the animal and should allow for the quick release of the animal upon completion of the procedures. Pens, chutes and headlocks should be the properly sized for number of animals and the type of processing to be done. Keep equipment clean and in good repair.

Cow Traffic

Proper design and quick recognition of problems that impede cattle flow are essential for safe, efficient cattle handling.

- Design and operate alleys and gates to avoid impeding cattle movement. When operating gates and catches, reduce excessive noise, which may cause distress to the animals.
- Hydraulic or manual restraining chutes should be adjusted to the appropriate size of cattle to be handled.
- Regular cleaning and maintenance of working parts is imperative to ensure the system functions properly and is safe for the cattle and handlers.
- Avoid slippery surfaces, particularly in holding areas, and in parlor exit and return lanes, especially where cattle enter a single file alley leading to a chute, or where they exit a chute. Grooved concrete, metal grating (not sharp), rubber mats or deep sand can be used to reduce slipping and falling.
- Quiet handling is essential to minimize slipping. Under most conditions, no more than 2% of the animals should fall outside the chute. A level of more than 2% indicates a review is needed, asking questions such as: is this a cattle temperament issue, has something in the handling area changed that is affecting cattle behavior, etc.
- Some cattle are naturally more prone to vocalize, but if more than 5% of cattle vocalize (after being squeezed but prior to procedures being performed) it may be an indication that chute operation should be evaluated.
- If more than 25% of cattle jump or run out of the chute, a review of the situation should address questions such as: Is this a result from cattle temperament or prior handling, or is the chute operating properly, etc.
- Properly trained dogs can be effective for cattle handling. During chute-side cattle processing procedures, dogs that continually bark, impede cattle flow, or are unnecessarily rough with cattle should not be used.
- Provide a sound working knowledge of proper cattle handling techniques to all individuals who handle tasks with cattle on the farm. Observe employees to ensure they are properly trained and are using recommended techniques for the tasks at hand. Ongoing education should be part of the farm management plan, including the animal behavior concepts explained in this manual.

On dairy farms, cattle are sorted and handled frequently for tasks, which include: breeding, pregnancy checks, health checks, and routine or special treatments. Some dairies utilize computerized ID systems to make this process more routine and reduce the stress involved for the cattle and the handlers. For example, some systems sort cattle as they exit the milking parlor. An overhead electronic reader (above right) identifies specific cows from a computerized list, and then sorts them to where they need to go as they move down the return lane to the freestall barn. Using a 2- or 3-gated system, the appropriate gate opens automatically (or by manual key-in) for the identified animals. In this manner, the cattle are guided to where a task will be performed (palpation rail or observation/treatment area). Stress to the animal is reduced because the sorting process is quiet, methodical and far less frustrating than chasing cows away from the group or out of the freestalls, for handling. The treatment sort area (above left) is equipped with head gates, which provide necessary restraint for administering injections properly in the neck region.

Cattle Care Training & Education

Training for those who have supervisory roles should be prioritized because they become trainers of new employees. All employees who work with livestock should have a basic understanding of livestock handling techniques.

Training for those who care for and handle cattle should include:

- Basic feeding and nutritional management of dairy cattle.
- Knowledge and understanding of the farm's herd health plan and emergency animal care plan.
- Proper handling and movement of injured or down animals, including the proper use of appropriate equipment large enough to accommodate the animal.
- How to properly diagnose common illnesses and provide proper care.
- How to recognize early signs of distress and disease and when to notify a supervisor.
- How to properly administer animal health products and perform routine animal health procedures.
- How to recognize signs associated with extreme weather stress and how to respond with appropriate actions.
- An understanding of the animal's flight-zone and point of balance.
- Proper use of handling and restraining devices.
- Proper handling and preparation of cows in the milking parlor.
- Clear directives on avoiding sudden movement, loud noises, or other actions that may frighten cattle.
- Proper handling of aggressive/easily excited cattle to ensure the welfare of the cattle and people.
- Employees should also be trained in the record keeping and documentation essentials, such as recording animal treatments they have administered.
- Zero tolerance for mistreatment.

It is important to have written protocols, demonstrate procedures and set a good example for employees. Evaluate employees with periodic reviews to assess performance in these critical areas. Post a list of highlighted animal care reminders in the lunchroom, herdsmen's office or other visible area. For Spanish-speaking workers, duplicate the list in Spanish. (Check with your DACQA coordinator for availability of training materials and resources.)

Transportation

The movement of cattle to and from farms and marketing facilities is an important aspect of dairy and beef production. In addition to promoting safety and animal well-being, proper handling while sorting, loading, and transporting cattle also contributes to beef quality and producer profitability by reducing defects from bruising, injury, or stress.

Transportation Quality Assurance Guidelines:

Driver Attitude and Professionalism

- Act responsibly, showing concern for animal welfare.
- Use proper tone of voice and control emotions.
- Follow Humane Slaughter of Livestock Act and Code of Federal Regulations for Animal Welfare.

Animal Handling Procedures

- Make safety a primary concern.
- Move animals in small groups, and separate by size or gender prior to shipping. If possible, load different groups into separate compartments.
- Use proper sorting tools to move animals, such as brooms or paddles. Use electric shockers only under extreme conditions.
- Eliminate aggressive handling. Move cattle as quietly and patiently as possible to prevent stress or injury during loading and unloading.
- Work with the natural instincts of cattle—understanding of flight zone and point of balance (described on page 53).

Transit Precautions and Animal Evaluation

- Take precautions for extreme weather conditions—providing appropriate ventilation and/or protection.
- Schedule loading and unloading times to minimize the amount of time animals spend in the trailer.
- During long-haul transit, stop occasionally to ensure cattle are well dispersed and still standing, and observe appropriate guidelines and regulations for long-haul transit.
- Evaluate animals for illness prior to loading and during long-haul transit.
- Do not load animals that are unfit for transport (i.e. borderline non-ambulatory/downer animals).
- Check for signs of stress and adjust stocking density to accommodate tired or stressed animals.
- Plan delivery schedules to minimize the number of stops made, and follow the schedule closely.
- To prevent livestock from falling, avoid sudden starts/stops and sharp turns.
- Have an emergency response plan of action for events (i.e. truck/trailer rollover, plant shutdowns).

Equipment Condition

- Be sure equipment is in good running order and use properly designed ramps/chutes.
- Consider stocking density and space requirements to avoid overcrowding, and use trailer dividers to limit animals to each section.
- Avoid slippery conditions by keeping floors clean and slip resistant. Ensure no sharp edges on loading chutes or trailer. Avoid shiny objects in the chute path/trailer, which may scare cattle from moving onto the trailer.
- Adhere to both federal and state weight limits and guidelines.
- Make sure drop gate is latched after trailer is loaded.

Biosecurity Practices

- Thoroughly clean and wash truck/trailer after unloading, prior to loading again, and disinfect regularly.
- Use clean bedding on trailer and chute area.
- Utilize disposable coveralls, boots and gloves to prevent possible disease cross contamination.
- Deny entrance of animals exhibiting symptoms of disease onto trailer.

Questions to Ask

With the preceding Transportation Quality Assurance Guidelines in mind, when was the last time you asked your cattle hauler about cattle care and handling qualifications, practices, and sanitation protocols? If you don't ask, you won't know.

Cattle transporters have many factors to think about before making a haul—in addition to sanitation protocols. Preparation of the vehicle, and the cattle being transported, are very important considerations. Pre-transit planning will help drivers provide quality service that benefits both consumers and the cattle being hauled. Planning on the behalf of producers, will help them have healthier cattle delivered to the destination point.

KSU and KMCA have developed useful transit and pre-transit guidelines for the Kansas Transport Initiative—a project supported by the USDA FSIS Program for Animal and Egg Production Food Safety Initiatives and the Kansas Animal Health Dept. This is a great resource for cattle transportation guidelines, available at: http://www.beefstockerusa.org/transportationfact.htm .

Additional information about truck and trailer sanitation and other practices is also available from the following organizations:

The Master Cattle Transporter program (a BQA initiative): http://www.tbqa.org

Beef Stocker USA: http://www.beefstockerusa.org

Kansas Department of Agriculture: http://www.accesskansas.org/kda

Kansas Department of Health and Environment: http://www.kdhe.state.ks.us

National Cattlemen's Beef Association (NCBA): http://www.beef.org

National Institute of Animal Agriculture: http://www.animalagriculture.com

Temple Grandin: http://www.grandin.com

U.S. Department of Agriculture (USDA), Agricultural Marketing Service (AMS):

http://www.ams.usda.gov/tmd/livestock/Truck Guide

U.S. Department of Agriculture (USDA), Food Safety and Inspection Service (FSIS): http://www.fsis.usda.gov

National Pork Board-Trucker Quality Assurance: http://www.porkboard.org

ANIMAL IDENTIFICATION

Permanent identification is an important management tool.

Use of emerging cattle identification technology, such as electronic ear tags and retinal scans, is encouraged when practical. The cost is declining for electronic identification (EID), also known as radio frequency identification (RFID). As speed, performance, and cost improve — more segments of the industry will use this technology for birth-to-harvest animal identification. Restaurant and retail giants McDonald's and Walmart are already initiating RFID tracking systems for their products.

Record keeping for food safety

To ensure consumer confidence and maintain demand for milk and beef products, dairy producers must be able to document the safety of their product. Through effective documentation of products and processes used in raising, managing and caring for dairy cattle, producers demonstrate tight control over potential risk factors. As a result, consumer confidence is strengthened, regulatory pressures are eased and producers are protected.

Regulatory inspections by FDA, USDA, EPA, or OSHA prove the necessity of keeping good records. Effective documentation that shows appropriate compliance with training, inventory control, use orders, animal identification, meat and milk withdrawal, and other aspects of animal health management will help avoid liability from a potential residue contamination or other food safety concern.

Record keeping for quality and success

Whether the information is computerized or hand-generated, keeping good records is a critically important management tool for Dairy Animal Care and Quality Assurance as well as the success and performance of the dairy. Keeping good records helps dairy producers manage variables—from genetics and health to performance and profitability. For example:

- With today's narrow profit margins, correct **inventory management** is essential. Inventory and usage records can point out inefficiencies, theft and negligence.
- Animal health products are costly items. Accurate records can **highlight inefficiencies** on an animal-by-animal basis and **prevent ineffective treatments**. It also tells the veterinarian the treatments administered, so he or she can validate treatment recommendations and adjust treatment regimens, as animals and environmental conditions change.
- **Performance, value, quality, and profitability improve** when health, production, reproduction and other important data are monitored and recorded for dairy animals through each stage of growth and lactation.
- **Records and identification are essential for value-added milk and beef markets.**

  Sample record keeping forms may be found in the DACQA Manual Section VI – Supplemental Forms. Other forms may also be available from your DACQA program coordinator. DHIA services also provide an array of monitoring and record keeping options for hand-kept and computerized record keeping systems.

  Computerized systems make extensive evaluation easy and efficient; however, hand-kept record systems are still very effective. Each system has its own merits. The important thing is to be consistent in keeping records that are: legible, easily retrieved, and maintained for a period of at least 24 months after shipment of an animal to a new location, new owner, or for beef harvest.

DACQA Record Forms To Use and Keep

- The Dairy Animal Care and Quality Assurance program coordinators agree that all dairy producers need to keep an abundance of records on everything they do with their cattle.
- There is no 'silver bullet' system of record keeping for all production units. The key is to have a system and be consistent in using it.
- In Section VI – Supplemental Forms, there are several examples of record forms that program coordinators think might be helpful to you as you keep your dairy cattle records.
- If you have forms other than these that you have been using, we suggest that you continue to use those that work best for you. However make sure that they are comprehensive.
- It is important that you record everything that is necessary for the program. The Critical Management Point checklists will help you conduct an Internal Assessment of your dairy and be prepared with the proper records.
- If you have ideas or suggestions on other forms that should be included, please contact your state DACQA coordinator.
- **Remember to keep all records for at least 24 months.**

UNDERSTANDING THE CONCEPT OF CERTIFICATION

What is DACQA Producer Certification?

Dairy Animal Care and Quality Assurance (DACQA) is a voluntary program that begins with training and self-evaluation and can include Certification. DACQA Certification is a process by which dairy producers complete the program training and then sign a Personal Contract for Certification to accept responsibility for the actions under which the cattle on their dairy are produced and maintained. **(See Section VI—Sample Forms—to review a sample Personal Contract for Certification.)**

The DACQA program and manual provide the Certified Producer with the guidelines and tools for conducting a self-evaluation to identify risk areas in his/her operation and implement Best Management Practices to improve them.

After participating in a DACQA Training, a Certified Producer will conduct an Internal Assessment (self-evaluation)—preferably with the help of a trusted farm advisor—using the Critical Management Points Checklists in Section II (Guidelines). Then, using the training materials, the DACQA Manual, and other available resources, a Certified Producer implements Best Management Practices to improve the identified risk area(s) of animal care and management according to his/her Internal Assessment. If a Personal Contract for Certification is signed, the producer will maintain his/her Certification status by participating in Re-Certification Training every two years and agreeing to be subject to random Third-Party Verification.

The DACQA program is a process of continuous improvement, which can be achieved by incorporating the following elements:

1. Guidelines for Dairy Animal Care and Quality Assurance,
2. Training in Best Management Practices that fulfill program guidelines,
3. Internal Assessment (self evaluation) using Critical Management Point Checklists,
4. Signed Personal Contracts for Certification, and

Quality Assurance Certification programs offer a way for the dairy industry to self-regulate with a high level of integrity and confidence, and to do so in a way that benefits both producers and consumers. At the same time, Quality Assurance Certification programs help the dairy industry avoid unnecessary and burdensome government regulation that would become costly to both producers and consumers.

Who Gets Certified?

It is important to understand that people (owners and/or managers) become Certified rather than operations or production units. It is the people who practice the guidelines and implement the requirements and recommendations that impact dairy animal well-being as well as food safety, quality and the end value of the cattle. Therefore, Certification is done on an individual basis, while the operation that is owned and/or managed by the Certified Producer is evaluated for compliance through Internal Assessment (self-evaluation).

Third-Party Verification

Certification is done on an individual basis, while the operation that is owned and/or managed by the Certified Producer is evaluated for compliance through Internal Assessment (self-evaluation), in addition a random Third-Party Verification can be completed to enhance the credibility of the process. Currently the Dairy Animal Care & Quality Assurance does not require Third Party Auditing; it is, though, a great design for a Third Party Audit. Many beef and dairy marketing programs are requiring Third Part Audits as part of their branded programs and this program encourages Certified Producers to go through this process.

DACQA QUALITY ASSURANCE
Our Business, Our Future

UNDERSTANDING THE CONCEPT OF THIRD-PARTY VERIFICATION

What is Third-Party Verification?

Third-Party Verification is a process that sustains the credibility and integrity of a Quality Assurance program by assessing its effectiveness in achieving continuous improvement.

Third-Party Verifications are conducted by independent, trained Verifiers using statistical sampling techniques to select Certified Producers for random on-site Verification. This process of statistical sampling and evaluation is similar to the quality control principles that were first developed by Pillsbury for supplying food to the NASA space program. Pillsbury's Hazard Analysis Critical Control Point (HACCP) program is the model for federally inspected beef processing, and it is the model for voluntary producer Quality Assurance programs.

Third-Party Verifications can be performed on-site at the Certified Producer's dairy. The independent, trained Verifier will review the dairy's animal health and treatment records as well as the dairy's marketing, euthanasia and mortality records for cows and calves that have been removed from the herd. The Verifier will also evaluate animal housing environments, animal handling practices, and other indicators of Dairy Animal Care and Quality Assurance. Third-Party Verifications may also include Body Condition and Locomotion Scoring of representative groups of animals within the herd and compare them to minimum benchmarks. **(See Section VII—Appendix—to review a sample outline of Third-Party Verification.)**

The goal of Third-Party Verification is not to punish or exclude, but rather to provide a certain level of assurance for the program's effectiveness in its purpose of continuous improvement. At the same time, Third-Party Verification is a process that helps the Certified Producer take corrective action and move forward with continuous improvement.

A WORD ABOUT "YOUTH" ANIMAL CARE & QUALITY ASSURANCE

4-H and FFA are youth development programs that focus on teaching youth responsibility, community service, decision making, and leadership skills through a variety of projects that meet their interests. The subject matter skills taught in these programs are the foundation for youth development and can be of economic, social, and/or personal value to youth in their future.

Today's youth dairy producers are in a unique position. While they are a small part of the food animal industry, as a whole, they are often the "window" through which the public sees animal agriculture. It is essential that the view seen by the consumer is a positive one (K-State Research & Extension).

The National Institute for Animal Agriculture (NIAA, 2003) reported that, "nearly one percent of the animals produced in the United States entering the food chain are marketed through youth livestock program auction sales." This may appear to be a small percentage of food products entering the market; however, NIAA stated that it was enough to cause public concern if wholesomeness was compromised and could ultimately jeopardize consumer confidence.

Quality Assurance has become a buzz word, as has Animal Well-Being. It is important that youth producers understand and adhere to the same Dairy Animal Care and Quality Assurance standards implemented by the dairy industry. In an effort to address quality assurance and ethical issues, many state 4-H and FFA programs have implemented educational efforts for youth (Goodwin, Murphy, & Briers, 2002). These efforts range from developing and making resources readily available to mandatory training.

The mission of any Youth Animal Care and Quality Assurance program should be to maximize consumer confidence and acceptance of the food products produced via youth dairy and livestock projects. If youth projects produce a food product, directly or indirectly, then youth should also participate in these quality assured programs (Colorado, 2005).

Youth Animal Care & Quality Assurance programs are proactive and educational programs for 4-H and FFA members, focusing on the youth:

- Understanding their responsibilities as a dairy or livestock producer.
- Understanding the Best Management Practices for the responsible care of their animals.
- Understanding their responsibilities to provide a safe, wholesome food product to consumers.
- Understanding how to follow labels carefully for every feed additive, medicine, or product used in their dairy or livestock production system.
- Practicing honest, ethical behavior in the production of dairy and livestock.

THE CATTLE INDUSTRY'S GUIDELINES FOR THE CARE AND HANDLING OF DAIRY CATTLE AND REPLACEMENTS

Introduction

Dairy producers have long recognized the need to properly care for livestock. Sound animal husbandry practices, based on decades of practical experience and research, are known to impact the well-being of cattle, individual animal health and herd productivity. Dairy cattle are produced in very diverse environments and geographic locations in the United States. There is not one specific set of production practices that can be recommended for all cattle producers. Personal experience, training and professional judgment can serve as valuable resources for providing proper animal care.

Dairy animals are an important source of beef in the U.S. Approximately 20 percent of the nation's total beef production on an annual basis comes from the dairy sector, including fed dairy cattle and marketed cows and bulls. With that in mind, this document will specifically focus on the largest portion of this market, marketed dairy cows (MDC, or culled cows), bull calves and freemartin heifers. Additionally, dairy employees and others who work directly with animals and animal movement will be referred to as handlers or animal handlers.

Producer Code of Cattle Care

Dairy producers take pride in their responsibility to provide proper care to cattle. The Code of Cattle Care below lists general recommendations for care and handling of cattle:

Provide necessary feed, 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 ill or injured livestock, and dispose of them properly.
- Provide personnel with training/experience/equipment/materials to properly handle and care for cattle.
- Make timely observations of cattle to ensure basic needs are being met.
- Minimize stress when transporting cattle.
- Keep updated on advancements and changes in the industry to make decisions based upon sound production practices and consideration for animal well-being.
- Willful mistreatment of any animal cannot be tolerated.

Feeding and Nutrition

Diets for all classes of dairy cattle should meet the recommendations of the National Research Council (NRC) and/or recommendations of a qualified nutritionist, veterinarian, university or feed consultant.

Cattle must have non-competitive access to an adequate water supply**.** Estimated water requirements for all classes of dairy cattle in various production settings are described in the NRC Nutrient Requirements of Dairy Cattle.

- Provide adequate feed. Avoid feed and water interruption longer than 24 hours.
- Feedstuffs and feed ingredients should be of satisfactory quality to meet nutritional needs for their level of production, gestation and growth.
- Working with a qualified nutritionist or veterinarian can help ensure that nutrient needs are being met, as well as to address potential deficiencies or toxicities.
- Under certain circumstances (e.g., drought, frost, flood), test feedstuffs or other dietary components for substances that can be detrimental to cattle well-being, such as nitrates, prussic acid and mycotoxins.
- Dairy producers should become familiar with potential micronutrient deficiencies or excesses in their respective geographical areas and use appropriately formulated supplements or toxicity avoidance procedures.

- Use only USDA, FDA and EPA approved products for cattle. These products must be used in strict accordance with the approved product usage guidelines.

Feeding Guidelines for Culled Dairy Cows (Marketed Dairy Cows, MDCs)

Adult cows should be fed in accordance to herd guidelines and be fed in a way that promotes health and minimizes the risk of disease until marketed.

Feeding Guidelines for Dairy Steers

Dairy steers can eat diverse diets, but the typical ration contains a high proportion of grain(s) (corn, milo, barley, grain co-products—formerly called by-products) and a smaller proportion of roughages (hay, straw, silage, hulls, etc.). The NRC lists the dietary requirements of dairy animals (based on breed, weight, age, environment, etc.) and the feeding value of various commodities that may be formulated in a diet.

- Consult a qualified nutritionist, veterinarian, university or feed consultant for advice on ration formulation and feeding programs.
- Avoid sudden changes in ration composition or amount of ration offered.
- Monitor changes in manure, feed intake, incidence of digestive upsets, foot health or other medical conditions that may indicate problem areas to aid in the evaluation of the feeding program.

Feeding Guidelines for Dairy Bull Calves and Freemartin Heifers

- Timely and adequate delivery of colostrum is critically important to ensure the health of all newborn calves.
- Whole milk or a nutritionally adequate milk replacer should form the foundation of their diet.
- As the calf grows, proper amounts of supplemental feed including starter and grower diets should be fed.
- Timing of weaning should be based on dry feed consumption.
- Water should be provided free choice at all times, and as climatic conditions allow.

Disease Prevention Practices and Health Care

Like other species, cattle are susceptible to infectious diseases, metabolic disorders, toxins, parasites, injury and neoplasia. Control programs should be based on risk assessment and efficacy of available products for mitigation of these conditions. Economic losses are reduced by early intervention through health management programs. Healthy herds are more productive.

The producer should work with a veterinarian or other qualified professional when designing a preventative herd health plan to determine the incidence of infectious, metabolic and toxic diseases and to develop effective management programs.

- Dairy producers and their employees should have the ability to recognize common health problems and know how to properly utilize animal health products for treatment as well as appropriate control measures.
- When prevention or control measures are ineffective, the producer should promptly contact a veterinarian for a diagnosis and treatment program to protect animal well-being and prevent losses.

Marketed Dairy Cows (Culled Cows)

- Special attention should be given to evaluate potential culled cows with previous health treatments or injury. Appropriate withdrawal times, to avoid violative drug residues, must be adhered to. Animals that have not responded to medical therapy should not be sent to market if there is any doubt their condition will result in failure to pass ante-mortem or post-mortem inspection.
- Lame animals should be evaluated. Mild lameness should be treated allowing animal response prior to marketing. Severely lame animals should be evaluated for their ability to withstand transportation and movement stresses. Severely lame animals judged not to be able to withstand these stresses should be humanely euthanized.
- Animals with severe ocular neoplasia or other tumors are at risk to fail ante-mortem or post-mortem inspection. Evaluate animals with ocular neoplasia or other tumors prior to marketing.

Dairy Bull Calves and Freemartin Heifers

- Castration and dehorning are done for the protection of the animal, other cattle in the herd and people who handle the cattle. Castration prior to 120 days (four months) of age or when calves weigh less than 500 pounds is strongly recommended.
- When horns are present, it is strongly recommended that calves be dehorned prior to 120 days of age.
- Weaning stress can be reduced by:
    - Castrating and dehorning calves early in life
    - Vaccinating against respiratory diseases prior to weaning
    - Providing proper pre-weaning nutrition
    - Individually identifying calves through approved methods

Identification

- Permanent identification of all animals should be accomplished as soon after birth as possible.
- Acceptable means of identification for dairy animals includes ear tags, RFID tags, tattoos, freeze branding or any combination of these methods.
- Proper identification allows for ownership records, treatment and vaccination recording, as well as rapid tracing in instances of food safety concerns or disease outbreaks.

Shelter and Housing

- Pens or corrals should be of sufficient size and design and provide good air quality to allow for proper rest, feeding and cleaning. The size and design will vary depending on the area's climate.
- Housing conditions should be sufficient to allow for the animal to express normal behavior and postural attitudes. Proper housing should always have an adequate water supply and ventilation to meet the needs of the maximum number of animals housed therein.
- Floors in housing facilities should be properly drained and regularly cleaned, and barns and handling alleys should provide traction to prevent injury to animals and handlers.
- Handling alleys and pens should be of adequate design and maintenance to ensure the safety and well-being of animals and handlers, including being free of sharp edges and protrusions.
- Design and operate alleys, gates and other equipment to avoid impeding cattle movement. When operating lockups, stanchions and chutes, minimize noise and activity, which may cause distress to the animals.
- Mechanical and electrical devices used in housing facilities must be adequately designed and maintained to ensure the safety of animals and handlers.

Cattle Handling

- Abuse of cattle cannot be accepted under any circumstances.
- Handlers should be trained in proper cattle handling techniques before moving dairy animals. Use of driving aids should not be necessary with properly designed and constructed facilities and properly trained employees.
- Dairy producers should train handlers to take advantage of cattle's flight zone and point of balance to move them. For safety and well-being reasons, avoid the use of electric prods. Non-electric driving aides, such as plastic paddles, sorting sticks, flags or streamers affixed to long handles should be used to quietly guide and turn animals. If cattle continuously balk, handlers should investigate and correct the reason for the balking behavior rather than resort to use of electric prods.
- Electric prod use should be avoided. There are occasional circumstances where their judicious use is acceptable, but only after proper footing has been provided and the situation has been examined to evaluate the animal's further disposition and prognosis.
- Cows should move in a calm, orderly manner in their normal farm environment. An assessment of dairy facilities and handling procedures should be conducted on a routine basis in order to ensure consistency.

- Calves that have been raised in hutches, crates or small pens must receive special attention and care when moving to group pens or transition housing and when transporting. Their footing is easily lost when they are first introduced to walking on concrete, and steps should be taken to reduce the chance of slipping, falling and subsequent injury.

Good Culling Management Practices

The overwhelming majority of cattle are marketed in good health and physical condition. New enforcement of rules prohibits the slaughter of any animal that cannot walk (non-ambulatory). Some compromised cattle should not enter intermediate marketing channels because of concerns about animal well-being. Instead, these cattle should be sold directly to a processing plant or humanely euthanized, depending upon the severity of the condition, processing plant policy and state and/or USDA regulations. Any animal at risk of becoming non-ambulatory ("going down") because of condition or injury should be evaluated and a decision made to provide for individual transport, slaughter, rehabilitative care on the farm or humane euthanasia.

Cows should be voluntarily culled, allowing time for good decision making, and marketed in a timely manner. When removing dairy animals from the herd, a decision about whether the animal should be marketed or humanely euthanized would include considerations about the animal's well-being, future marketability and economics. These decisions are particularly important in an involuntary culling situation where limited time is available to wait for a decision to be mulled over.

Transportation

- Cattle holding pens should allow handling without undue stress, be located near the loading/unloading facility and be suitable for herd size.
- Provide properly designed and maintained loading facilities for easy and safe animal movement. Proper design of loading chutes as well as personnel that are knowledgeable of their proper use can assure the safety of both cattle and handlers. Ramps and chutes should be strong and solid, provide non-slip footing and have sides high enough to keep cattle from falling or jumping off. A ramp angle of 25 degrees or less should help facilitate cattle movement.
- All vehicles used to transport cattle should provide for the safety of handlers and animals during loading, transporting and unloading.
- Strictly adhere to safe load levels (loading density) with regard to animal weight and space requirements, as well as climatic conditions.
- Producers hauling cattle in farm trailers must ensure that adequate space is provided so that cattle have sufficient room to stand with little risk of being forced down due overcrowding.
- Cattle that are unable to withstand the rigors of transportation should not be transported.
- When the vehicle is not full, safely partition cattle into smaller areas to provide stability for the cattle and the vehicle. Footing/traction materials should be provided for all foot contact surfaces.
- Knowingly inflicting physical injury or unnecessary pain on cattle when loading, unloading or transporting animals is not acceptable.
- No gap that would allow injury to an animal should exist between the ramp, its floor/sides and the vehicle.
- Vehicle doors and internal gates should be sufficiently wide to permit cattle to pass through easily without bruising or injury.
- Cattle should be loaded, unloaded and moved through facilities with patience and as quietly as possible to reduce potential stress and injury.

Non-Ambulatory (Downer) Cattle

- A prompt diagnosis should be made to determine whether the animal should be humanely euthanized or receive (or continue to receive) rehabilitative care.
- Provide feed and water to non-ambulatory cattle at least once daily.

- Move non-ambulatory animals very carefully to avoid compromising animal well-being. Dragging non-ambulatory animals is unacceptable. Likewise, animals should not be lifted with chains onto transportation conveyances. Acceptable methods of transporting non-ambulatory animals include a sled, low-boy trailer, slings, float tanks or in the bucket of a front-end loader. The loader bucket should be of sufficient size to properly contain the animal. Animals should not be "scooped" into the bucket, but rather should be humanely rolled into the bucket by handlers.
- When treatment of recumbent animals is attempted, cattle unable to sit up unaided or by other means and refuse to eat or drink should be humanely euthanized within 24 hours of initial onset.
- **Cattle that are non-ambulatory must not be sent to a livestock market or a slaughter facility.** Marketing cattle promptly before they become non-ambulatory will promote better quality of life for the animal and economic benefit for the operation, as well as maintain a positive image of the dairy industry.

Euthanasia

Euthanasia is humane death occurring without pain and suffering. The decision to euthanize an animal should consider the animal's well-being and probability of recovery. The producer may elect to perform on-farm euthanasia if a veterinarian is not immediately available to perform the service. When euthanasia is necessary, an excellent reference is the Practical Euthanasia of Cattle guidelines developed and published by the American Association of Bovine Practitioners (AABP) (found online at *http://www.aabp.org/resources/euth.pdf)*.

Reasons for euthanasia include:

- Severe emaciation or weak cattle that are non-ambulatory or at risk of becoming non-ambulatory
- Inability to sit up (recumbent, non-ambulatory), refuse to eat or drink and have not responded to therapy
- Rapid deterioration or continued worsening of a medical condition for which therapies have been unsuccessful
- Severe, debilitating pain
- Compound (open) fracture
- Spinal injury
- Central nervous system disease
- Multiple joint infections with chronic weight loss
- Zoonotic disease with a potential for epidemic spread

Heat Stress Procedures

- During periods of high heat and humidity, along with low wind speed, actions should be taken to minimize the effects of heat stress.
- Provide adequate water with sufficient access to it. Water requirements increase during periods of heat stress.
- If possible, avoid handling cattle when the risk of heat stress is high. The final decision must consider temperature, humidity and wind speed, as well as the animal's phenotype and acclimation. If cattle must be handled in hot weather conditions, a general rule is to handle them before the Temperature Humidity Index (THI) reaches 84, if possible. As an example, when the temperature is 98o F and the humidity is 30%, the THI is 83. At a constant temperature, the THI increases as the relative humidity increases. Each one mile per hour increase in wind speed decreases the THI by approximately one. More information can be found in NebGuide G00-1409-A (http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=15). [*Insert image of THI chart here*]
- Handle cattle more prone to heat stress first, earlier in the day or later as conditions moderate. For example, fresh cows or sick cattle should be handled during lower stress times of the day.
- Limit the time cattle spend in milking and holding facilities where the heat stress potential may be more significant.
- Heat management tools, such as shades, fans and sprinklers, should be considered if sufficient natural shade or cooling is not available.

Training and Education for Maintaining and Improving Dairy Cattle Care and Handling: Implementation and Review Programs

Management practices should be informally assessed every day to ensure that animal well-being is not compromised. Regardless, dairy producers are encouraged to implement a system to verify efforts directed towards animal care and handling. This can be accomplished by:

- Establishing a network of resources on cattle care
- Following the Dairy Cattle Care and Handling Guidelines
- Keeping track of training and educational activities
- Conducting self-assessments of animal care and handling procedures

Informal self-assessments should be periodically conducted by those involved with dairy cattle care and handling.

Training of those who handle cattle should result in:

- Knowledge and understanding of an animal's point of balance and flight-zone
- Avoidance of sudden movement, loud noises or other actions that may startle cattle
- An appreciation for proper cattle holding and handling facilities
- Proper handling of aggressive and easily excited cattle to ensure the well-being and safety of cattle and people
- Proper use of handling and restraining devices
- Recognizing early signs of distress and disease
- Proper diagnosis of common illnesses and providing proper care
- Administration of animal health products and performance of routine animal health procedures
- Recognizing signs associated with extreme weather stress and how to respond with appropriate actions
- Basic feeding/nutritional management of dairy cattle
- Accurate assessment of a dairy animal's condition for voluntary marketing

Management programs should be science based and common-sense driven.

SAMPLE FORMS

This section of the DACQA Manual provides "sample" forms, which are intended to help the producer implement DACQA Guidelines and Best Management Practices described in the various sections of this Manual. These sample forms show what types of information to record and how the information can be organized. These sample forms may be copied and used for farm record keeping or simply serve as a guideline for evaluating the record keeping systems already in place on the farm.

This section also includes a sample Personal Contract for Certification.

These forms are by no means the only types of forms or record keeping that a producer may use. They are simply examples, which may be modified as needed, according to the development of the DACQA program and/or the record keeping systems of the individual producer.

SAMPLE FORMS provided in this Section include:

1. A 2-page sample of a Personal Contract for Certification
2. Sample outline of Third-Party Verification
3. A standard Veterinary Client/Patient Relationship Form
4. A sample Record of Dairy Livestock Medication
5. A sample Dairy Market Cow Checklist/Log
6. A sample Dairy Market Calf Checklist/Log
7. A sample Employee Training Checklist and Record for documenting the training of employees in animal care and handling.
8. A sample Discussion Checklist and Record for communicating animal care and handling guidelines to the farm's service providers (i.e. livestock haulers).
9. A sample record for documenting the farm's Euthanasia Protocol
10. A sample Euthanasia Record

SAMPLE

DAIRY ANIMAL CARE & QUALITY ASSURANCE

Personal Contract for Certification

Please read and initial each of the following statements for implementing DACQA Certification practices on your dairy farm. Then provide your contact information and sign/date this Personal Contract for Certification. The items in this Contract are subdivided into two sections: "Immediate" and "In-Process." Certified Producers are responsible for having in place or immediately implementing items 1 through 12 in the first section of the Contract ("Immediate") and are responsible for implementing items 13 through 21 in the second section ("In Process") within six months of signing this Contract. Certified Producers are also responsible for conducting an Internal Assessment (self-evaluation) using the Critical Management Points Checklists provided in Section II of the DACQA Manual.

I. IMMEDIATE:

I agree to have in place or immediately implement the following practices on my dairy farm:

1. ____ Feed fed to cattle does not contain prohibited substances derived from mammalian tissue, as mandated by FDA Ruminant Feed Ban regulations. Feed labels or invoices are kept for 2 years after use. Feed fed to other livestock on the farm—that is labeled "Do Not Feed to Cattle or Other Ruminants"—is stored and handled separately in accordance with FDA guidance.

2. ____ FDA regulations are strictly followed in regard to medicated feed additives. For example, only FDA-approved medicated feed additives are used in rations in accordance with the label. FDA prohibits extra-label use of medicated feed additives. Records of feed medications and additives are maintained for at least 2 years after use.

3. ____ Intramuscular (IM) or subcutaneous (SQ) antibiotic and vaccine injections are given in the neck region. Products are administered at the recommended dosage in accordance with the label so that not more than 10 cc of a product is administered per any one injection site. Products that cause tissue damage are avoided whenever possible.

4. ____ Pharmaceuticals are used judiciously and only as necessary. Use of all pharmaceuticals complies with label directions (including label, prescription, and extra-label uses), and pertinent FDA/USDA/EPA guidelines. Any extra-label use of pharmaceuticals occurs under the advice and direction of a veterinarian in a Valid Veterinary Client/Patient Relationship with the farm.

5. ____ Applicable milk withhold and meat withdrawal times are recorded and strictly followed for all pharmaceuticals given to all classes of dairy livestock on the farm. Records are checked to verify meat withdrawal times have been met prior to shipping any cattle. Should there be any question about the withdrawal periods being met, the herd veterinarian will be consulted.

6. ____ Cattle that cannot stand and walk unassisted, including those that resist rising, will not be marketed or transported. Frail (below BCS 2.0) or weak animals are also not shipped.

7. ____ Calves are not marketed until they can stand and walk unassisted and are at least three days of age.

8. ____ Every effort is made to promptly provide both heifer and bull calves (whether they are to be kept on the farm or sold) with sufficient colostrum to develop an effective immune system.

9. ____ Mature cows, bulls, heifers, and calves are provided with appropriate nutrition, water, and feedstuff management to achieve appropriate BodyCondition Score, promote health, and reduce risk of disease.

10. ____ A system is used for routine Locomotion Scoring to promote early intervention. Every effort is made to minimize the occurrence of Score 4 and 5 lameness levels within the herd and to achieve the minimum standard of not less than 80% Score 1 and 2. All visibly/obviously lame animals (i.e. Locomotion Score 4 and 5) will be evaluated and managed appropriately by a qualified person within 48 hours of first observation.

11. ____ The dairy has a written plan for appropriate care and handling of special needs and non-ambulatory cattle.

12. ____ The dairy has a euthanasia decision/action plan for cattle of all ages and keeps a record that includes animal identification as well as date, reason and method of euthanasia..

II. IN-PROCESS:

I agree to implement the following Continuous Improvement practices on my dairy farm within 6 months:

13. ____ The farm maintains a quality feed control program for all incoming ingredients, including appropriate testing of homegrown and purchased feedstuffs, as necessary, to reduce the potential for substandard feed ingredients and food-borne illness.

14. ____ Treatments are recorded on an individual animal basis, and appropriate information is recorded, including the animal's individual identification, date of administration, product used, route and location of administration, amount given, milk withhold time and meat withdrawal time, and, whenever possible, the tentative diagnosis and outcome of treatment. (Or, these items may be referenced by protocol).

15. ____ Treatment records are kept for a minimum of 2 years and are transferred with cattle that are sold or moved from one location to another (i.e. from heifer grower to dairy, etc.).

16. ____ A system is implemented for routine Body Condition Scoring, and every effort is made to manage the herd for BCS appropriate to age and stage of lactation.

17. ____ All animal handlers and caretakers are trained in proper cattle care and handling methods, including the handling, care, and movement of special needs and non-ambulatory cattle of all ages. Handling guidelines are also clearly communicated to service providers.

18. ____ Animal housing and environment are maintained in a way that strives to promote animal health and well-being, reduce the potential for injury, and provide adequate space for access to food, water and resting areas.

19. ____ **I have reviewed the Dairy Animal Care and Quality Assurance handbook. I agree to abide by this Personal Contract for Certification, and will do my best to provide quality animal care that results in safe, wholesome dairy and beef products that meet or exceed consumer expectations. Furthermore, if I am involved in an alternative production system, I agree to maintain the standards in this contract in addition to whatever standards I maintain for other programs.**

Signature: _____ **Print Name:** _____

Date: _____ **Address:** _____

DACQA Trainer: _____ **City, State, Zip:** _____

Veterinarian: _____ **Phone #:** _____

Please make two additional copies of this document. Keep one for your records and provide a copy to your veterinarian and your state Dairy Animal Care and Quality Assurance Coordinator.

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SAMPLE

THIRD-PARTY VERIFICATION—PART I

Below is an example outline of Third-Party Verification — Part One Items in this section are example Verifications of practices that are expected to be in place or immediately implemented after signing a Personal Contract for Certification.

ITEM

1) FEED: Only feed approved for ruminants is fed to all classes of cattle on the dairy. Non-approved feeds fed to other livestock are kept separated. All feed labels, blend descriptions, or invoices are kept on file for two years.

VERIFICATION CRITERIA

- ❑ Verifier examines farm records for feed labels, blend descriptions or invoices on file.
- ❑ Verifier evaluates provisions for keeping prohibited non-ruminant feeds separate from feeds fed to cattle.

ITEM

2) TREATMENTS: Label directions on medication, vaccines and medicated feeds are followed for dosage, route, frequency, length of treatment, milk withhold times, meat withdrawal times, proper storage conditions, and expiration dates. Extra-label usage of medication is only on the order of a veterinarian with a valid Veterinary Client/Patient Relationship (VCPR). Treatment records are kept by individual (or group) identification.

VERIFICATION CRITERIA

- ❑ Verifier examines 10% of treatment records for all classes of cattle, for compliance.
- ❑ Verifier evaluates storage areas for compliance with proper storage of animal health products.
- ❑ Traceback information is maintained and receipts for animals sold for harvest are available to Verifier for evaluation of residue avoidance. Follow-up with action plan if needed.

ITEM

3) MARKETING: Animals (including calves) that cannot stand and walk unassisted and frail, weak animals are not marketed.

VERIFICATION CRITERIA

- ❑ Sales receipts for animals sold for harvest are available to Verifier for evaluation of condemnation rate and/or notes about condition. Follow up with action plan if needed.

ITEM

4) NUTRITION: Animals are provided with appropriate nutrition, water, and feedstuff management to achieve a proper Body Condition Score (BCS), promote health, and reduce risk of disease.

VERIFICATION CRITERIA

- ❑ Verifier evaluates Body Condition Score (BCS) of various sample groups of animals.
- ❑ Follow up with plan for animals with BCS less than 2.0 or greater than 4.0.

ITEM

5) LAMENESS: Farm has protocols for foot health and promptly provides treatment for cattle exhibiting diminished Locomotion Scores.

VERIFICATION CRITERIA

- ❑ Verifier evaluates Locomotion Scores for representative sample among various groups of cattle (i.e. dry, transition, lactation).
- ❑ Are less than 80% Locomotion Score 1 and 2? If Yes: Follow up with action plan.
- ❑ Are there any Locomotion Score 4 and 5 cattle? If Yes: Are they identified and treated either by trained farm personnel, veterinarian, or hoof trimmer within one or two days? Follow up with action plan if needed.

ITEM

6) NON-AMBULATORY CATTLE: Farm has appropriate equipment for movement of non-ambulatory animals and a decision/action plan for humane euthanasia when necessary.

VERIFICATION CRITERIA

- ❑ Verifier reviews euthanasia plan and mortality documentation and observes equipment used for movement of non-ambulatory animals to see that it meets the standard for humane treatment.

ITEM

7) CALF CARE: Farm has colostrum feeding protocol, which includes ensuring bull calves receive colostrum and are fed appropriately prior to marketing.

VERIFICATION CRITERIA

- ❑ Verifier reviews calf mortality records and sales receipts on last 10 bull calves sold (price/condition). Follow up with action plan if needed.
- ❑ Verifier evaluates calf housing for clean/dry environment; shelter from weather extremes.
- ❑ Calf care protocols and colostrum management are discussed as necessary.

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SAMPLE

THIRD PARTY VERIFICATION — PART II

Below is an example outline of Third-Party Verification — Part Two Items in this section are example Verifications of practices that are expectedto be implemented within six months after signing a Personal Contract

ITEM

1) CULLING: Farm keeps track of culling rate, reasons for removal from herd, as well as recording BCS and Locomotion Score at time of shipment for beef harvest.

VERIFICATION CRITERIA

- ❑ Verifier reviews culling and cattle shipping records and discusses findings with producer as necessary.

ITEM

2) HANDLING EQUIPMENT: Farm has appropriate equipment for handling/restraint during management procedures.

VERIFICATION CRITERIA

- ❑ Verifier observes equipment used for handling/restraint during management procedures.

ITEM

3) HOUSING: Animal housing and environment strive to promote animal health and well-being, reduce potential for injury, and provide adequate space for access to food and water. Calving areas and hospital pens are clean and uncrowded.

VERIFICATION CRITERIA

- ❑ Verifier walks through facilities, identifies any issues that could contribute to slips, falls and diminished cow comfort and hygiene.
- ❑ Verifier evaluates cattle movement for slipping/falling with a benchmark of less than 5% slipping.
- ❑ Verifier will hygiene score various groups of animals and review protocols for stall and bedding maintenance.
- ❑ Action plans for continuous improvement are recommended as necessary.

ITEM

4) TRAINING: Farm has written guidelines for appropriate cattle care and handling including proper use of appropriate devices when necessary for safety. These guidelines are communicated to employees and service providers (i.e. haulers, hoof trimmers, etc.). Animal handler checklists are signed and dated by owner/manager, employees, and service providers.

VERIFICATION CRITERIA

- ❑ Verifier evaluates farm records for signed checklists.
- ❑ During walk-through, Verifier observes cattle handling activities. Follow up with action plan if needed.

Veterinary Client/Patient Relationship Validation Form

I. Producer

Producer Name: _____

Address: _____

City: _____ State: _____ Zip:_____

Farm Name and Location:_____

Section: _____ Township: _____ County:_____

Certified Stutus:

Verified: Review Date: _____

Expiration Date: _____

Type of Operation Certified: (circle all that apply)

1. Cow-Calf
2. Dairy Production (cull cows)
3. Beef and/or Dairy Beef Grower
4. Beef and/or Dairy Beef Grower-Finisher

II. Veterinarian

Name: _____ , DVM

Address: _____

City: _____ State: _____ Zip:_____

Farm Name and Location:_____

SD License No. _____ USDA Accreditaion No. _____

I hereby certify that a valid Veterinarian/Client/Patient/Relationship (VCPR) is established for the above listed owner and will remain in force until canceled by either party or the verification expiration date is reached.

Veterinarian's Signature: _____

Date: _____

Please make two additional copies of this document. Keep one for your records and provide a copy to your veterinarian and your state Dairy Animal Care and Quality Assurance Coordinator.

Record of Dairy Livestock Medication

EARTAG NAME ID	DRUG NAME	AMT. GIVEN	ROUTE GIVEN	DATE(S) GIVEN	WHO GAVE DRUG (INITIALS)	REQUIRED WD? YES/NO	HOLD MILK __HOURS ___DAYS	HOLD MEAT ___DAYS __MONTHS	DATE MILK CAN BE SHIPPED	DATE CAN SHIP FOR MEAT	REASON/ OUTCOME	DATE CULLED	HAULER	DESTINATION

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Dairy Market Cow Checklist/Log

ID	BCS	LOCOMOTION SCORE	RECENT TREATMENT(S)	MEAT WITHDRAWAL DATE	REASON FOR REMOVAL	DATE OF SALE

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Dairy Market Calf Checklist/Log

ID	# OF COLOSTRUM FEEDINGS	DRY NAVAL YES/NO	RECENT TREATMENT(S)	MEAT WITHDRAWAL DATE	AGE ON DAY OF SALE	DATE OF SALE

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SAMPLE EMPLOYEE TRAINING SHEET

Each employee & trainer should initial all areas of training received/provided as applicable to the employee's cattle care and handling duties on the dairy.

Skills Cattle Care & Handling	**Date**	**Trained By**	**Signed By**	
			Trainer	Employee
CALVES & YOUNG STOCK *(Resources: VQA checklist, DACQA Manual)*				
Proper Attitude				
Basic Calf Care & Observation				
How to recognize early signs of disease / distress				
Proper lifting, carrying, guiding				
Importance of quiet, calm handling / movement of calves				
How to avoid over-exertion				
Understanding calf behavior vs. mature cattle				
ROUTINE CATTLE HANDLING *(Resources: DACQA Manual)*				
Proper Attitude				
Basic Care & Observation				
Body Condition Score Basics: what to look for and when to notify supervisor				
Locomotion Score Basics: what to look for and when to notify supervisor				
How to recognize early signs of disease or distress				
Proper movement, handling and preparation of cattle during routine activities on the dairy				
Understanding cattle behavior, flight zone and point of balance				
Quiet, calm cattle handling: Importance of avoiding sudden movements, loud noises and other ways to reduce stress				
Review of farm's herd health, bio-security and emergency plans				
SPECIAL NEEDS CATTLE *(Resources: DACQA Manual)*				
Proper Attitude				
Specialized Care & Observation				
How to recognize signs of distress				
Proper administration of animal health products and how to perform routine procedures				
Proper methods for moving, handling and transporting weak, frail, injured or lame animals				
Proper care and handling of non-ambulatory or "down" cattle				

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SAMPLE HAULER/SERVICE PROVIDER DISCUSSION SHEET

Dairy owner or a representative can use this sheet for proof of discussion with livestock haulers and service providers who handle cattle from the dairy. Sign/Initial items that apply.

Discussion w/ Service Provider	**Date**	**Discussion**	**By Signed By**	
Cattle Handling & Transport			Owner/Manager	Service Provider
CATTLE HANDLING DISCUSSION *(Resources: VQA checklist, DACQA Manual)*				
Proper Attitude is expected when working with cattle and the proper use of appropriate sorting tools and restraint devices.				
Calves are to be lifted, carried, and guided carefully and properly.				
We value the importance of quiet, calm handling in the movement and handling of all cattle.				
Take steps to avoid over-exertion when transporting and handling young calves.				
Work with the natural instincts of cattle and have an understanding of calf behavior vs. mature cattle				
OVERALL ANIMAL SAFETY DISCUSSION *(Resources: DACQA Manual)*				
Move animals in small groups and avoid overcrowding on trucks / trailers				
Take precautions for extreme weather during transport				
Observe for signs of distress and adjust stocking density accordingly				
If discussion is with a hauler, encourage an emergency response plan of action for unexpected events				
Adhere to federal and state weight limits and guidelines for transport				
Thoroughly clean and wash truck/trailer between loads and observe standard biosecurity practices when entering the premises				
STATEMENTS & QUESTIONS *(Resources: DACQA Manual)*				
Willfull mistreatment of animals will not be tolerated in handling or transportation of cattle from this dairy.				
Is the Hauler or Service Provider aware of cattle behavior, flight zone and point of balance?				
Does the Hauler check for signs of distress during transport and have a protocol for “downers”?				
Does Hauler or Service Provider agree to properly use appropriate sorting tools?				
Are biosecurity practices followed?				
Does the Hauler have an emergency response plan?				

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EUTHANASIA PROTOCOL

Develop an effective euthanasia plan together with your veterinarian, that will work for your specific situation. Consider such things as the number of employees, their capabilities, and what you feel comfortable doing.

Make sure that you educate your employees regarding the importance of humane euthanasia for animals that are in intractable pain or animals that cannot reasonably be expected to be cured. Make sure that they are capable of performing euthanasia if they are responsible for this part of your animal care program. Review and update yourself and your employees on specifics as needed.

Place this protocol and other information about how to humanely euthanize animals in an obvious location in the barn or office. Do not forget to review this plan on a regular basis in case situations change.

Farm Owner: _____

Veterinarian: _____

Date of Original Protocol: _____

Last reviewed: _____

Phone numbers if questions or problems arise:

Veterinarian: _____

Other: _____

Owner: _____

********** In case of human emergency, call 911 **********

People appropriately trained and authorized to perform euthanasia on this farm

Name	Date Trained	Trained by	Comments/Notes

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Euthanasia Record

Date	Animal ID	Reason	Person performing euthanasia	Method used *	Notes

*** Can be recorded by number if specified below**

Method 1: _____

Method 2: _____

PRACTICAL EUTHANASIA

Euthanasia is defined as "the intentional causing of a painless and easy death to a patient suffering from an incurable or painful disease."

Webster's II University Dictionary, 1996

Most individuals who work with large domesticated livestock will encounter situations where an animal is unlikely to respond favorably to treatment. The likelihood of treatment failure, the potential for animal suffering and the presence of drug residues are considerations that can make euthanasia of an animal the best available option. This pamphlet is designed to aid producers, livestock market operators, animal transporters and veterinarians in making the appropriate decisions regarding euthanasia of cattle.

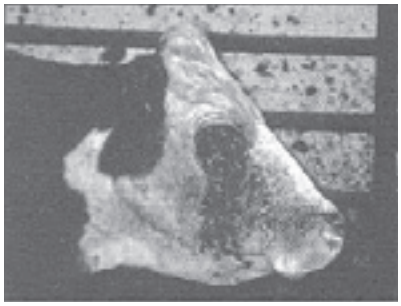
Individuals who work with livestock should read this pamphlet, discuss euthanasia options with a veterinarian and determine an action plan for livestock encountered in these situations. This action plan should be reviewed annually.

Euthanasia requires that the animal be rendered unconscious without distress or suffering prior to cessation of vital life functions. There are three physiological mechanisms for inducing euthanasia in cattle. Although several techniques exist for inducing euthanasia, all techniques will fall into one of the following categories:

- Physical disruption of brain activity caused by direct destruction of brain tissue (gunshot, penetrating captive bolt).
- Drugs that directly depress the central nervous system (anesthetics, barbiturates) and induce death by hypoxia.
- Agents that induce unconsciousness followed by mechanisms that induce hypoxia (narcotics followed by exsanguination).

Some Indications for Euthanasia

- Fractured leg (irreparable); severe trauma
- Loss of production and quality of life (severe mastitis, etc.)
- Inability to stand or walk (disabled livestock)
- Diagnostic (e.g., potential for human disease, such as rabies)
- Advanced ocular neoplasia (cancer eye)
- Debilitating or toxic condition
- Cost of treatment prohibitive and poor prognosis
- Extended withdrawal time for sale of meat and poor prognosis



Advanced ocular neoplasia

Decision Making

Actions involving debilitated, disabled, or injured cattle may fall into the following categories: treatment, slaughter, and euthanasia. Criteria to be considered in decision making should include:

1. Pain and distress of the animal
2. Likelihood of recovery
3. Ability to get to feed and water
4. Medications used on the animal
5. Drug withdrawal time
6. Economics
7. Condemnation potential
8. confirm information

Considerations

When euthanasia is the most appropriate option, the following considerations must be made when choosing a method:

1. **Human Safety:** The first consideration in the choice of euthanasia method is human safety. Obviously, the use of a firearm carries some danger. Some methods, such as a barbiturate overdose, usually result in a calm animal being euthanized quietly and easily.
2. **Animal Welfare:** Any euthanasia method utilized should produce a quick and painless death. However, certain environments and animal behaviors may prevent the use of a more desired technique. Use the technique that is safest for humans and animals alike.
3. **Restraint:** Availability of cattle chutes or other forms of restraint may make certain forms of euthanasia more practical than others. For example, it may not be possible to euthanize an adult cow using barbiturates without proper head restraint. Several methods, such as use of the captive bolt or gunshot, necessitate appropriate restraint capabilities and training. In all cases, firm but gentle restraint should be exercised.
4. **Practicality:** An appropriate euthanasia technique must also be practical to use. Not all individuals working with cattle have legal access to drugs, such as barbiturates.

Barbiturates require a federal license to store and use.

5. **Skill:** Some techniques, such as use of the captive bolt, require some skill and training to accomplish correctly. Designated individuals should be appropriately trained in proper euthanasia techniques wherever cattle are kept.
6. **Cost:** Some euthanasia techniques are more costly than others. However, other techniques (such as gunshot or captive bolt) require a larger initial investment, but continued use is very inexpensive.
7. **Aesthetics:** Certain euthanasia techniques, such as use of a barbiturate overdose, may "appear" more pleasing to the untrained eye than other techniques. Many techniques result in significant involuntary movements of the animal which may be misinterpreted as a voluntary painful response to those inexperienced in bovine euthanasia. Trained individuals should know how the animal responds to different euthanasia techniques.

Diagnostics: When tissues from a euthanized animal are to be sent to a laboratory for testing, the euthanasia method may be critical (such as avoiding damage to the brain tissue in cases with rabies potential).

Table of Bovine Methods

Method	Human Safety Risk	Skill Required	Cost	Aesthetic Concerns
Gunshot	High	Moderate*	Low	Moderate: some blood and motion
Captive Bolt	Moderate	Moderate*	Low	Moderate: some blood and motion
Barbiturate Overdose	Low	Moderate*	Moderate	Low
Exsanguination	Moderate	Moderate*	Low	High
Electrocution	High	Moderate*	High: Equipment	High

** Moderate-Operator training required.*

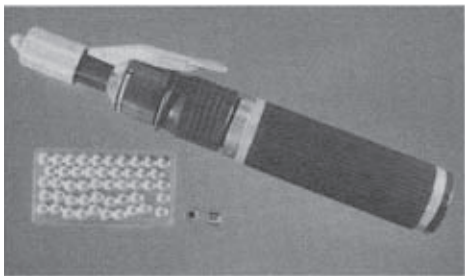
Details of Table

1. Gunshot: The firearm should be held 2-10 inches from the intended point of impact, and the bullet should be directed perpendicular to the front of the skull to prevent ricochet. The point of entry should be at the intersection of two imaginary lines, each drawn from the inside corner of the eye to the base of the opposite horn (slightly above the ear in polled animals).

   A .22 caliber long rifle bullet is sufficient for most animals, but a .22 magnum or 9mm round should be used on bulls. Use of a hollow-point or soft-nose bullet increases tissue destruction. If performed skillfully, gunshot induces instantaneous unconsciousness, is inexpensive and does not require close contact with the animal.

   This method should only be attempted by individuals trained in the use of firearms and who understand the potential for ricochet. Care must be taken to minimize danger to the operator, to bystanders, and to other animals. In addition, since some cities have laws prohibiting the discharge of firearms in certain areas, the operator should be aware of local ordinances that may apply.

2. Captive Bolt: Captive bolt "guns" are either penetrating or non-penetrating. Penetrating captive bolt guns are meant to produce immediate brain tissue destruction. Both types (penetrating and non-penetrating) will consistently cause stunning of an animal. A stunned animal will "drop" but will still exhibit respiration and sudden quick limb movements. An additional procedure (exsanguination, chemical agents) MUST be used to insure death after the use of the non-penetrating captive bolt and is RECOMMENDED after use of the penetrating captive bolt.


Captive Bolt Device and Charges

   The captive bolt gun must be placed firmly against the skull at the same entry point previously described for a gunshot. Since use of the captive bolt gun requires close proximity to the animal, good restraint and prior sedation or tranquilization may be required. Operator safety must be considered in the use of this technique.

   Maintenance and cleaning of the captive bolt gun as described by the manufacturer must be followed exactly. In addition, selection of cartridge strength may vary among manufacturers and the appropriate strength for the size of the animal must be used.

3. Barbiturate: When properly administered by the intravenous route, barbiturate overdose (60-80 mg/kg sodium pentobarbitol IV) produces rapid unconsciousness and anesthesia followed by respiratory depression, hypoxia, and cardiac arrest. The barbiturate selected should be potent, long acting, and stable in solution. Tissue residues of the barbiturate can be high. Care should be exercised to limit access of scavengers to the carcass.

4. Exsanguination: This method can be used to ensure death subsequent to stunning, anesthesia, or unconsciousness. It must not be used as the sole method for euthanasia.

   There are several methods for exsanguination. The most common method in the bovine is to lacerate one or other carotid arteries. A long 6-inch sharp knife is fully inserted behind the point of jaw, just below the neck bones, and directed downwards until blood is freely flowing. Brachial vasculature can be lacerated by lifting a fore limb, inserting the knife deeply at the point of the elbow and cutting skin and vasculature until the limb can be laid back against the thorax of the animal. The aorta can be transected via the rectum, by a trained individual, so that blood pools within the abdominal cavity.

5. Electrocution: This method should only be attempted using specialized slaughter plant equipment that applies a minimum of 2.5 amp across the brain. A 120-volt electrical cord does not apply sufficient amperage to induce unconsciousness.

   Electrocution does involve a current as well as violent involuntary reactions by the animals. Therefore, this method does involve some danger to the operator.

Confirmation of Death

Confirmation of death is absolutely critical regardless of what method of euthanasia is chosen. Keep personal safety in mind when confirming death because animals can make sudden involuntary limb movements.

The following can be used to evaluate consciousness:

- Lack of a heartbeat.
- Lack of respiration.
- Lack of corneal reflex.

The presence of a heartbeat can be best evaluated with a stethoscope placed under the left elbow. Movement of the chest indicates respiration. (Note: breathing can be very slow and erratic in unconscious animals.) The corneal reflex can be tested by touching the eyeball and noting whether the animal blinks. A lack of heartbeat and respiration for more than five minutes should be used to confirm death.

Euthanasia of Calves and Bulls

Calves and bulls require special consideration in selecting the proper method of euthanasia. Ethical considerations do not change for the calf because it is small or more easily handled. Calves can easily be euthanized with a penetrating captive bolt gun. Barbiturate overdosing also works well, but legal restrictions must be followed.

Bulls require special considerations because of their size, attitude and physical thickness of their skull. Operator safety is of primary concern in euthanasia of bulls, and for certain techniques, proper restraint is critical. Bulls may be euthanized with specialized heavy duty captive bolt guns, firearms using a 9mm shot, or by barbiturate overdose.

Unacceptable Methods of Bovine Euthanasia

Ethical and humane standards of euthanasia DO NOT permit the following methods of euthanasia in the bovine:

1. Manually applied blunt trauma to the head.
2. Injection of chemical agents into conscious animals (e.g., disinfectants, electrolytes such as KCl and MgSO4, non-anesthetic pharmaceutical agents).
3. Air embolism (e.g., injection of large amount of air into the vasculature).
4. Electrocution with a 120-volt electrical cord.

Conclusions

Personnel at sites that routinely handle animals should at all times have the ability and facilities to carry out emergency euthanasia. Penetrating captive bolt and gunshot are the only two methods available to non-veterinarians for emergency euthanasia. Animal transporters should also be appropriately trained and should have phone numbers to contact appropriate personnel in case of an emergency.

Market and sale yards should have a written procedure to follow in case of emergency and should have personnel trained in emergency euthanasia during all shifts. When practical, choose a location where the carcass can be easily reached by removal equipment. An action plan for routine and emergency euthanasia should be developed and followed wherever animals are handled.

Location for exsanguination and correct site for captive bolt or gunshot euthanasia of cattle. The point of entry of the captive bolt or bullet should be at the intersection of two lines drawn from the inside border of the eye to the base of the opposite horn (slightly above the opposite ear in polled animals). Exsanguination should be done using a pointed, very sharp knife, with at least a 6-inch rigid blade. The knife is thrust into the neck just below the neck bones and drawn downward to sever the jugular vein, carotid artery and trachea: (1) external jugular vein; (2) common carotid artery; (3) trachea.

LOCOMOTION SCORING FOR DAIRY CATTLE

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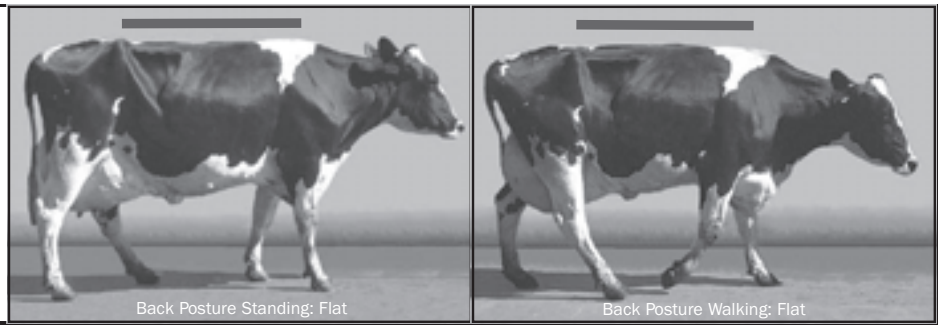
Locomotion Score 1

Clinical Description:
Normal

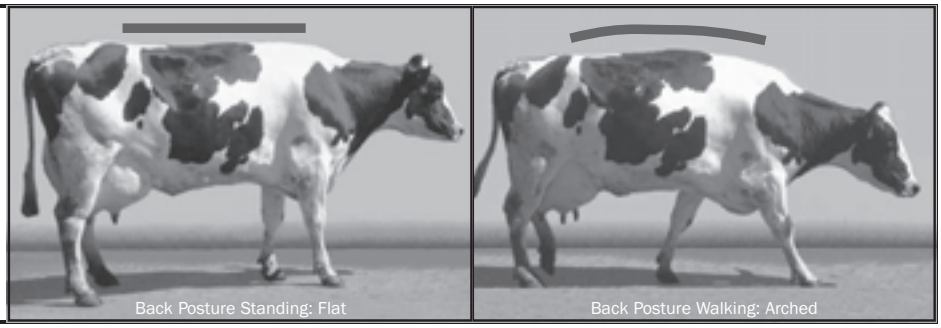
Description:
Stands and walks normally with a level back. Makes long confident strides.



Locomotion Score 2

Clinical Description:
Mildly Lame

Description:
Stands with flat back, but arches when walks. Gait is slightly abnormal.



Locomotion Score 3

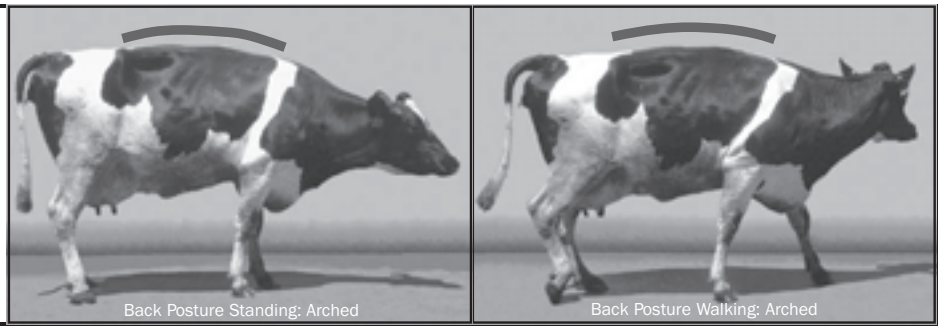
Clinical Description:
Moderately Lame

Description:
Stands and walks with an arched back and short strides with one or more legs. Slight sinking of dew-claws in limb opposite to the affected limb may be evident.

Locomotion Score 4

Clinical Description:
Lame

Description:
Arched back standing and walking. Favoring one or more limbs but can still bear some weight on them. Sinking of the dew-claws is evident in the limb opposite to the affected limb.



Locomotion Score 5

Clinical Description:
Severely Lame

Description:
Pronounced arching of back. Reluctant to move, with almost complete weight transfer off the affected limb.

* Adapted from Sprecher, D.J.; Hostetler, D.E.; Kaneene, J.B. 1997. Theriogenology 47:1178-1187 and contribution from Cook, N.B., University of Wisconsin.

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No Matter How You Look At It...

Body Condition Scoring

...Is An Important Part of Modern Dairy Management.

BCS = 1

Deep cavity around tailhead. Bones of pelvis and short ribs sharp and easily felt. No fatty tissue in pelvic or loin area. Deep depression in loin.

BCS = 2

Shallow cavity around tailhead with some fatty tissue lining it and covering pin bones. Pelvis easily felt. Ends of short ribs feel rounded and upper surfaces can be felt with slight pressure. Depression visible in loin area.

BCS = 3

No cavity around tailhead and fatty tissue easily felt over whole area. Pelvis can be felt with slight pressure. Thick layer of tissue covering top of short ribs which can still be felt with pressure. Slight depression in loin area.

BCS = 4

Folds of fatty tissue are seen around tailhead with patches of fat covering pin bones. Pelvis can be felt with firm pressure. Short ribs can no longer be felt. No depression in loin area.

BCS = 5

Tailhead is buried in thick layer of fatty tissue. Pelvic bones cannot be felt even with firm pressure. Short ribs covered with thick layer of fatty tissue.

Elanco Animal Health
A Division of Eli Lilly and Company
Lilly Corporate Center
Indianapolis, Indiana 46285, U.S.A.

ELANCO
ANIMAL HEALTH

AI 7140

Photos by Craig Johnson

Locomotion scoring; Zinpro Corporation, Adapted from Sprecher, D.J.; Hostetler, D.E.; Kaneene, J.B. 1997. Theriogenology 47:1178-1187 and contribution from Cook, N.B., University of Wisconsin.

Dair cow body condition scoring; Elanco Animal Health, 1997. Body Condition Scoring in Dairy Cattle.

Euthanasia materials; Animal Welfare Committee of the American Association of Bovine Practitioners.

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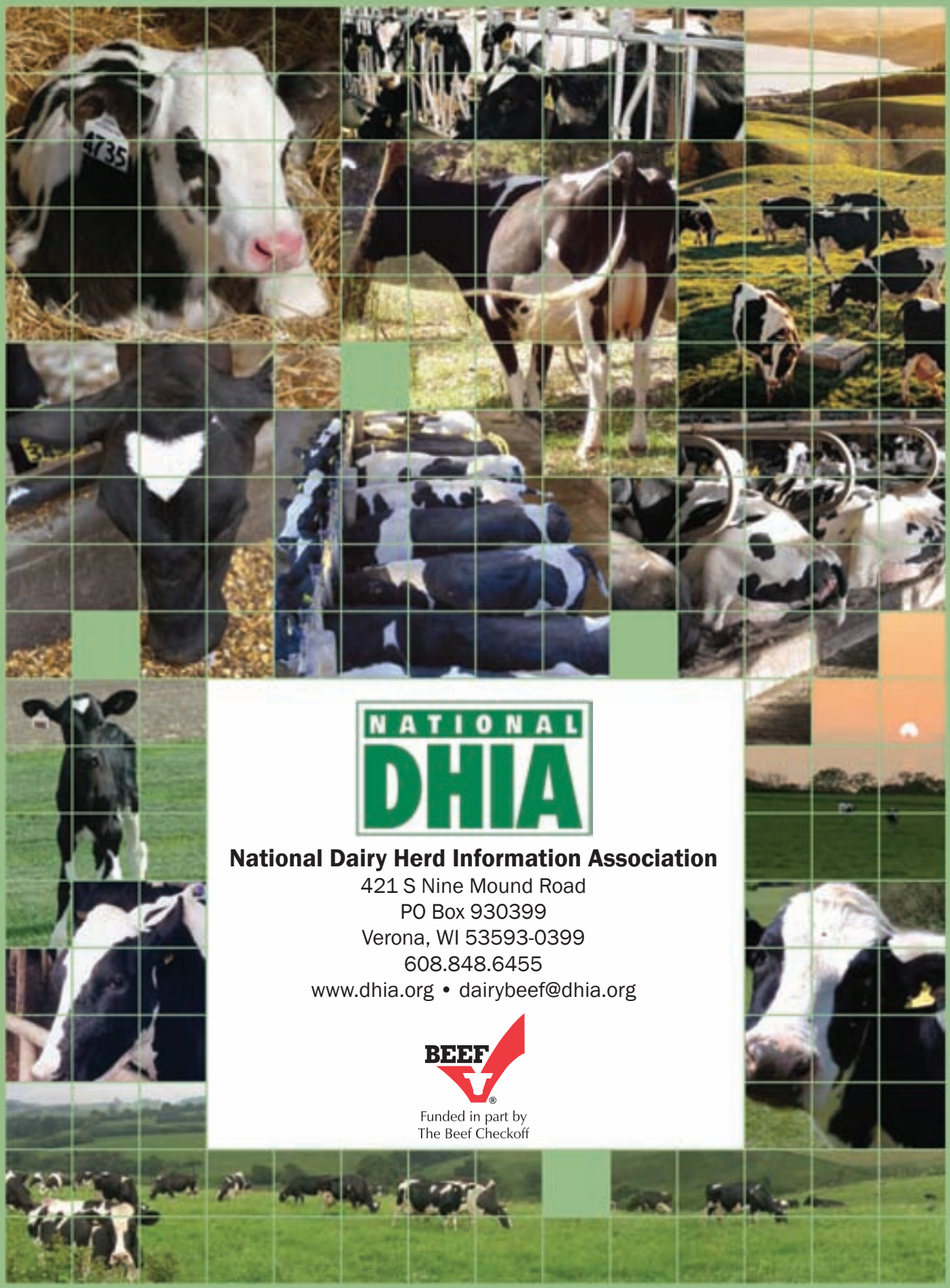
NOTES



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