Why have a Quality Assurance Program for the Goat Industry?

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Quality Assurance and Food Safety

Today’s U.S. meat supply is the safest it has been in history, yet consumers still have concerns about the quality and safety of the products they purchase. News of food recalls due to the presence of potentially harmful bacteria, other contaminants, or other disease-causing agents, such as BSE, raise fear in consumers leading to lowered confidence in the nation’s food supply. While food safety may be at an all time high, the perception of many consumers is that there is genuine risk in consuming many of the products purchased at grocery stores. The rise in consumption of organically produced foods, foods purchased directly from the farm, or from a farmer’s market are indicators of this perception and of a “back to nature” mentality among consumers.

The Food Safety Inspection Service (FSIS) of the USDA is the government organization that has as one of its responsibilities the testing of our food supply to ensure its safety. According to the FSIS, food safety refers to the conditions and practices that preserve the quality of food to prevent contamination and food-borne illnesses. Detecting the presence of disease organisms, chemical residues, or foreign material in foods and recalling those foods are examples of some of the work conducted by the FSIS to safeguard the nation’s food supply. These quality control measures evaluate the final product prior to sale and prevent potentially harmful food from being distributed or consumed by the public. However, while quality control detects harmful substances, it cannot correct or refine the production practice that was at fault leading to the presence of those substances. That is the role of quality assurance.

The presence of drug residues in meat can serve as an illustration of the difference between quality control and quality assurance. Tests can be performed to detect the presence of unacceptable levels of drug residues in meat necessitating it be condemned and destroyed. This quality control process identifies the problem, high levels of drug residues, but cannot pinpoint where in the production process the problem occurred. Quality assurance programs, on the other hand, set forth guidelines to prevent failures in quality from occurring and, when problems are detected, provide the framework to identify and correct the production practices that led to compromised product quality. Thus, a producer following a quality assurance program can trace back in his or her production system and identify where the failure occurred to allow the sale of an animal prior to completing the recommended withdrawal period for the drug in question. Protocols and procedures can be evaluated, corrective actions taken, and records kept to prevent future occurrence.

The goal of quality assurance programs is to consistently produce a high quality product. This is done by establishing production practices to prevent problems from happening. In the drug residue example, that production practice is proper administration of all drugs and adherence to withdrawal times. Supporting each production practice are standard procedures that must be followed. For drug usage, the standard procedure is to record the date of all injections and then calculate and record the
date when the withdrawal time has been fulfilled. When failures in following standard procedures occur, product quality can suffer. Failures should be examined and corrected to prevent future problems and maintain product quality. In the drug example, this could be through training and better record-keeping.

**Pre-harvest vs Post-harvest Quality Assurance**

The drug residue scenario provided an example of how livestock production practices pre-harvest, or from birth to abattoir door, could affect “post-harvest” processing and sale of meat. Obviously, there are many aspects of livestock slaughter and subsequent post-harvest processing that affect final meat quality and safety over which a producer has no control. Conversely, the abattoir and meat processors have no control, except that exerted through market channels, on the product they receive for processing. The responsibility of delivering an animal that can yield high quality, and high value, edible product belongs to the producer. The role of a quality assurance program for production, therefore, is to devise and implement pre-harvest production practices that ensure quality standards for marketed animals.

Increasingly, consumers are becoming concerned not only with the immediate safety of food, but with all aspects of food production and consumption. The public is becoming better educated and more aware of nutritional implications of food consumption on long-term health and disease incidence. The trend to consume cuts of meat lower in fat and cholesterol to combat potential atherosclerosis and heart disease is a prime example. Consumers are also concerned with the presence of other contaminants or diseases, such as BSE, that can arise during the production, or pre-harvest, phase. Further, consumers are becoming increasingly concerned with the conditions in which animals are raised and their welfare. Are animals raised in total confinement? Do animals graze or do they consume an all-grain diet that puts them in direct competition with man for food? Are the animals treated humanely? Do they receive antibiotics whose use could result in drug-resistant strains of microbes that could have potentially lethal effects in humans? These issues have put pressure on the livestock industry to respond and formulate production practices and protocols to assuage consumer concern about its product and the pre-harvest conditions under which animals are raised.

**Importance of Quality Assurance to the Meat Goat Industry**

The demand for goat meat in the U.S. is increasing. In 1990, 1,361 metric tons of goat meat were imported into the U.S. and 1,581 metric tons of goat meat were exported. In 2000, 5,642 metric tons of goat meat were imported and exports fell to 104 metric tons. In 2004, imports grew to 9,551 metric tons with a value of more than $28 million while exports dropped further to only 84 metric tons (USDA Foreign Agricultural Service database). In response to increased demand, U.S. producers are raising more goats for slaughter. In 1990, only 229,600 goats passed through USDA inspected slaughter facilities. This number increased to more than 548,700 in 2000 and to 634,500 in 2003 (USDA National Agricultural Statistical Service database). With this increase in production comes the need for implementation of a standardized, formal framework of practices and procedures to assure the public of the safety and wholesomeness of all goat products produced in the U.S. These types of frameworks are already used in other livestock industries such as beef - Beef Quality Assurance, pork - Pork Quality Assurance, and sheep - The Sheep Safety and Quality Assurance Program.

The need for a Meat Goat Quality Assurance Program (MGQA) is not only to show the public that
the goat industry is working to produce safe, wholesome products, although that is one objective, it is also needed to assist producers in making production decisions and guiding them through the production process. The dramatic increase in goat slaughter in the U.S. indicates that production is rapidly expanding. This expansion has come about through both herd growth or a shift in focus from fiber to meat production, and through new producers entering the goat industry. Many producers new to raising goats have extensive experience with raising other livestock species such as cattle or sheep; however, some new producers have little to no livestock experience. Further, as goats are considered a “minor species,” few drugs are approved for the treatment of diseases and parasites and education is needed in this area. Many inexperienced producers, as well as some established producers, have a need for current, correct information on how to raise goats and produce safe, wholesome products in demand by the public. An MGQA program, with recommended production practices and procedures, can assist both experienced and inexperienced producers in making sound production decisions that result in animals that meet or exceed industry and federal standards for meat quality. Thus, MGQA is a valuable production tool.

A second benefit of MGQA is its usefulness in a long-term approach to industry development. All meat goat producers should understand that they are part of a growing meat goat industry whose goal is to have goat meat considered alongside other red meats such as beef, pork, and lamb in the marketplace. Production of poor quality animals affects the image of the industry as a whole. A standard MGQA adopted by the main meat goat associations in the U.S. will unify producers in working toward an industry standard, i.e., wholesome goat meat products. A standard MGQA will still allow for differences in approach or strategies for different production groups, breed organizations, or regions. This would be in much the same way that individual state beef quality assurance programs utilize and tailor the main quality assurance guidelines given from their national organization to their local conditions and production systems.

Another aspect of an MGQA program is its use as a marketing tool. The overwhelming majority of goat meat sold in the U.S. is imported. With many meat safety issues in the minds of the public, such as BSE, growth hormone use, etc., many consumers wish to know where their meat was produced. There likely exists a segment of the U.S. population that would purchase and consume more goat meat if they were assured that the product was U.S.-grown and conforms to all laws governing domestic meat production. Adoption of an industry-wide MGQA program would be a large step in the promotion of U.S.-grown goat meat to the consuming public. A quality assurance statement, coupled with the natural benefits of goat meat compared to other red meats in terms of fat and cholesterol content, could be the basis for a very effective marketing campaign.

A final benefit of MGQA is to safeguard the industry. As the industry grows and additional producers enter the marketplace a wider variety of production systems, and potential problems, will emerge. Further, future developments in the livestock industry, such as animal identification allowing the tracing of diseased animals back to their farm of origin, will affect all meat animal producers. Having an industry approach to quality assurance can assist producers in complying with federal regulations and avoid problems that could drastically, negatively affect the entire industry.

An added safeguard benefit of adopting MGQA is to demonstrate to the public that producers in the meat goat industry do all they can to protect the welfare of their stock. While goat producers are very caring toward their animals, misunderstandings can arise with the general public. As fewer and fewer people are involved in direct animal production, there is a growing lack of understanding of
animals, production systems, and the management actions involved in producing this nation’s food. It is true that there are poor animal managers whose harmful actions are often publicized. Many people hearing these accounts wish to take action to protect the well-being of animals. In some countries of the world, this has led to establishment of government regulations to protect the welfare of farm animals. These acts outline required management actions, facility type, and procedures that can be conducted by producers. Some of these acts can be very restrictive. For example, the Codes of Recommendations for the Welfare of Livestock: Goats established by the Department of Environment, Food and Rural Affairs in the United Kingdom states that all disbudding and dehorning must be carried out by a veterinary surgeon. It further states that it is an offence to castrate a goat over two months of age without using an anaesthetic. Adoption of MGQA and adherence to its standards are one way that meat goat producers can send a message to the public about the ways they care for and uphold the welfare of their stock.

Preferred Production Practices and HACCP

A pre-harvest quality assurance program should include recommendations on any production aspect that can affect the quality of the animal produced. This would include practices from basic herd management to herd health to nutrition and feeding. Recommendations take the form of production or management practices that are considered optimum for both production and quality maintenance. In MGQA these are referred to as “Preferred Production Practices” or PPP. On-farm evaluation and use of PPP are based upon the Hazard Analysis Critical Control Points (HACCP) principles.

Hazard Analysis Critical Control Points was developed by the Pillsbury Company in the late 1950's to ensure the safety of food produced for NASA and the U.S. space program. The key to the HACCP system is the analysis of potential production hazards and the pinpointing of places in production, called critical control points, where preventive measures can be taken. The HACCP system, therefore, has the ability to assure quality throughout the entire production process.

HACCP systems are extensively used in the food processing and preparation industry, i.e., post-harvest processes, as a major means of assuring food safety. The three main hazards in food processing are biological (microbial contamination), chemical (toxins or drug residues), and physical (foreign material in food, e.g., glass or plastic). As an example of HACCP’s impact on the food industry, the U.S. Department of Agriculture mandated that meat and poultry processing establishments begin using HACCP by January 1999 to improve product safety. Many other industries use HACCP or HACCP-like principles to increase production efficiency and product quality. Quality assurance programs such as those mentioned for the beef, sheep, and pork industries are pre-harvest programs that use HACCP-like procedures to assist in the production of animals giving safe, wholesome products.

There are seven HACCP principles that assist producers and industry to identify, evaluate, control, and, finally, prevent food safety hazards and assure quality.
**HACCP Principles**

1. **Conduct a hazard analysis.** Review management procedures in your production system that could allow for damage resulting in a lesser quality product or a means of introducing biological, chemical or physical contamination.

2. **Determine critical control points.** Critical control points are production areas where problems could happen resulting in lower quality products and where changes or interventions should occur to prevent problems.

3. **Establish critical limits for control points.** Set limits to prevent problems from occurring, e.g., follow recommended drug withdrawal times.

4. **Establish monitoring procedures for control points.** These procedures assist in adherence to established critical limits.

5. **Establish corrective actions.** Actions to be taken when monitoring procedures indicate a problem.

6. **Establish record keeping and documentation procedures.** Records should be kept on identified problems, corrective steps taken, effectiveness, and methods to prevent future occurrences.

7. **Establish verification procedures.** These procedures verify that proper corrective measures were taken and have been effective.

These seven principles, or procedures similar to them, can be used in virtually all aspects of production. For instance, in the drug residue example the seven HACCP principles would be as follows:

1. **Hazard analysis** - potential presence of drug residues
2. **Control point** - withdrawal time prior to sale
3. **Critical limit** - zero drug residues in meat
4. **Monitoring procedures** - records kept on all animals treated on-farm, including animal number, drugs used, treatment dates, and withdrawal periods
5. **Corrective action** - improved record keeping, employee training in drug use and record keeping
6. **Effective record keeping** - check treatment documents to ensure proper, correct, and current information
7. **Verification procedures** - periodic review of all records, no further reports of residues in meat

While it may appear difficult to follow the seven steps of HACCP, in reality most producers are already using HACCP-like procedures to solve and prevent problems. Diagnosing problems and taking corrective action are common occurrences on farms. The advantage of HACCP is that it provides a formal, proven framework of procedures whereby a producer can objectively evaluate current production systems, identify flaws, and put into place evaluation and corrective action plans prior to the occurrence of a problem. Using HACCP-like principles represents a shift from being **reactive** to events that cause production or quality loss, to being **proactive** by working to prevent those occurrences from happening. Further, by using HACCP-like procedures, if a problem does occur the necessary planning for corrective actions are already in place saving time and eliminating other potential
mistakes. Ultimately, preventing problems and production loss will result in an enhanced production environment with fewer problems that will lead to increased profit. That is the goal of all quality assurance programs.

**Components of a Quality Assurance Program**

A quality assurance program for animal production should focus on not only production and product safety issues, but also on the total production environment. The program should set standards that address issues directly concerned with product safety and quality along with animal welfare and well-being. A quality assurance program combining these elements will be one that not only results in products that meet federal meat safety standards, but that also gives confidence to consumers that products they purchase are produced in a wholesome environment.

Using HACCP-like principles, a quality assurance program should identify those critical points in the production system that can affect the quality of the final product. The Texas Cow-Calf and Stocker Beef Safety and Quality Assurance Handbook lists three main control points where problems could arise that compromise the quality of animals and the products derived from them. These three areas are: Food Safety Control Points - to prevent presence of injection site lesions, drug residues and foreign objects; Quality Control Points - to ensure proper care, nutrition, genetic selection, use of animal health products, and culling management; and Environmental Control Points - proper use of pesticides and herbicides to prevent feed contamination, proper forage and soil management, attention to and maintenance of water quality, and proper disposal of dead animals. Other livestock quality assurance programs target similar production activities as critical points where actions can be taken to prevent problems and assure quality.

Areas targeted by MGQA as critical points in the production of quality goat meat include: Herd Health, Nutrition/Feedstuffs, Management and Proper Care, Record Keeping, and Biosecurity. Preferred Production Practices in each area have been developed by Langston University through a grant awarded by the Food Safety Inspection Service.

*Preferred Production Practices in Herd Health*
- Establish and follow a herd health program
- Establish a valid veterinarian - client - patient relationship and use any off-label drugs in accordance with guidelines for their use within such a relationship
- Store and administer drugs according to labeled use or veterinarian authorized off-label use and follow all withdrawal periods
- Use proper injection technique including proper injection site (in front of the point of the shoulder)
- Provide training to all persons treating animals on proper drug usage and administration techniques

*Preferred Production Practices in Nutrition/Feedstuffs*
- Provide proper nutrition to all animals according to age and stage of production
- Ensure that feed and water are free of contaminants
- Comply with FDA regulations on the ban of feeding ruminant-derived protein supplements to other ruminants
- Take proper care in the use of medications and other feed additives
- Record use of chemicals on pastures to prevent harvest and feeding of feed containing a chemical residue
Preferred Production Practices in Management and Proper Care
• Provide proper care to all animals
• Use proper gathering and handling techniques to reduce animal stress
• Provide training in proper goat handling techniques to all people working on the farm
• Inspect facilities periodically to maintain them in good working condition

Preferred Production Practices in Record Keeping
• Properly identify each animal
• Keep and maintain records on all animals on pertinent production parameters, vaccinations given, and other drug treatments
• Periodically review records for completeness and accuracy

Preferred Production Practices in Biosecurity
• Establish a biosecurity plan for your farm
• Minimize or avoid contact between your animals and animals not on your farm
• Establish a quarantine protocol for animals entering your herd
• Establish a protocol for visitors to your farm
• Do not allow persons who have traveled to foreign countries on your farm, or bring clothing or other items from them to your farm, for a period of five days after their arrival in the U.S.

Long-term Benefits to the Meat Goat Industry

Adoption and use of MGQA sends a signal to the livestock industry and to consumers that the production of meat goats has grown from being a “backyard project” to an economically viable nationwide industry. Sustaining and enhancing this growth takes increasing the availability of goat products in the marketplace and earning and keeping the consumer purchasing dollar by consistently providing a high quality product. This can be achieved through MGQA. MGQA provides a framework allowing for quality assurance throughout the entire pre-harvest production process. Adherence to MGQA guidelines will benefit all aspects of the meat goat industry from pre-harvest production of animals yielding high quality, edible products through post-harvest processing and sale. This embodies a total quality management approach to the meat goat industry assuring consumers of the wholesomeness and quality of U.S.-produced goat meat products.
Resources


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