

A Meat Goat Quality Assurance Program

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A Meat Goat Quality Assurance program (MGQA) provides guidelines for goat producers on how best to ensure the quality of animals they produce. It does this by recommending production practices that assist producers in raising healthy, productive animals. The use of MGQA is an assurance that the U.S. meat goat industry is doing all it can to provide a high quality product to consumers.

Practices recommended for use in MGQA are called “Preferred Production Practices” and provide guidelines on many aspects of goat production and care. Following these PPP helps assure the safety of goat meat products and promotes a safe, wholesome production environment that has concern for the welfare of animals. MGQA does not contain the detail found in a production handbook. For example, MGQA defines guidelines for drug usage, such as injection site, needle selection, and storage. MGQA does not provide a list of drugs nor dosages to use. MGQA also recommends that all animals have some sort of identification, but it does not explain the method of ear tagging or tattooing. That type of detailed information can be found in a production handbook.

The American Institute for Goat Research of Langston University is currently working on two projects funded by the USDA Food Safety and Inspection Service to provide more detailed information to goat producers. In the first project, Langston University is leading a group of institutions in developing a web-based certification program for goat producers. Information on different production aspects will be provided in module format and individuals who wish for certification can take tests to ascertain knowledge gained. This project is scheduled for completion in the fall of 2005. The second project is to develop and publish a meat goat production handbook. Both of these projects involve many other U.S. universities with established small ruminant programs. Producer groups are also involved in developing the information needed to devise the web-based modules and handbook information.

Preferred Production Practices - The HACCP Approach

Preferred Production Practices represent critical points in goat raising where problems or issues may arise that could lead to reduced product quality and safety or compromised welfare of the animal. One example would be proper injection techniques and the issue of broken needles. A needle that breaks off inside an animal represents more than a foreign object that could be found in the meat. It also affects the welfare of that animal. Unless immediate action is taken to locate and remove the needle, the broken point could migrate inside the animal causing pain, infection, and death. Thus, a critical point in herd health is proper injection technique.

Practical use of PPP involves utilizing Hazard Analysis Critical Control Points (HACCP) or HACCP-like procedures. HACCP is a tool that evaluates a production system looking for points where mistakes can occur or where interventions should take place to prevent problems in the production

process. While it may sound complex, use of HACCP-like procedures is commonplace on farms. In their simplest form, HACCP-like procedures mean having a plan to deal with problems and prevent future occurrences.

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

HACCP Principles

- 1. Conduct a hazard analysis.*** Review your production system for procedures or places that could allow for harm to animals, compromise production, or introduce biological (microbial), chemical (toxins or drug residues) or physical contamination.
- 2. Determine critical control points.*** Critical control points are those areas in production where problems could happen resulting in lower quality products and where production changes or interventions should occur to prevent problems.
- 3. Establish critical limits for control points.*** Set desired limits on identified hazards.
- 4. Establish monitoring procedures for control points.*** Decide how to monitor and determine if critical limits have been met.
- 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.

Many portions of the HACCP system or using HACCP-like principles are done intuitively. As an example, exposed nails or sharp wire can cut a goat's skin. Injuries can occur that lead to increased use of antibiotics, potential production loss from slower growth rates, damage to hides, etc. Thus, exposed nails and wire are a hazard and when noticed these are repaired or removed. Using HACCP-like principles does not change the basics of what is performed, that is the prevention of cuts. What using HACCP-like principles does, is to assist in structuring a method of checking on the hazard and deciding what to do in the future to prevent another occurrence. To illustrate, the hazard is exposed nails or sharp wires. The control points are those portions of your pens and buildings where nail points could be exposed or where goats can damage facilities resulting in exposure. A desired critical limit is zero nails or wire exposed that could cause harm. Looking at facilities when feeding is one method of monitoring those control points. Corrective actions would be repairing fences or buildings to prevent nails from protruding or perhaps installing a shield in prone areas. Repairs or shield installation should be recorded in your farm records, particularly if any expense was involved. Finally, a regularly scheduled, periodic walkthrough of your facilities to inspect repairs and current condition would be a method of verifying that monitoring and corrective actions have worked. Thus, using HACCP-like principles can assist establish not only immediate corrective steps, but also monitoring and verification steps to prevent future occurrences.

Preferred Production Practices of MGQA

Five areas have been targeted by MGQA as critical points in the production of quality goat meat. These five critical areas are: 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 USDA Food Safety and Inspection Service. A brief description of the major points in each PPP is given.

Preferred Production Practices in Herd Health

Herd Health PPP #1 - Establish and follow a herd health program

A herd health calendar specific to your production system should be formulated upon consultation with a veterinarian. All vaccinations should be given at proper times to appropriate groups of animals. Management techniques that can impose stress on an animal, such as castration, should be done properly to prevent health complications. All kids should receive colostrum and receive proper care to prevent disease problems. The environment surrounding the animals should be taken care of to minimize exposure to pathogens, for example, through regular manure removal.

Herd Health PPP #2 - Establish a valid veterinarian - client - patient relationship and use any off-label drugs in accordance with guidelines for their use within such a relationship

Having a good relationship with your veterinarian will assist in forming and following a comprehensive herd health program. Furthermore, only a veterinarian can authorize the use of any drugs not specifically cleared for use in goats. There are few drugs cleared by the Food and Drug Administration for use in goats. Many drugs used to treat diseases in goats are used in an “off-label” manner, meaning that they are administered in a manner not according to their labeled use. This is referred to as ELDU (extra-label drug use) and can only be authorized by a veterinarian in the context of a valid veterinarian - client - patient relationship. In general this means that 1) the veterinarian has been to the farm, examined the animal(s) in question and determined that no approved drug exists to treat their condition or that the dosage prescribed for an approved drug is ineffective; 2) the veterinarian instructs the producer on proper use and administration of the drug and determines an appropriate withdrawal period; and 3) the veterinarian is available in the case of adverse reaction to the drug and for follow-up examination and treatment. All three conditions must be met for ELDU. Further, complete records of animal number, drug given, dosage, route of administration, date, and specified withdrawal period must be maintained for all ELDU.

Herd Health PPP #3 - Store and administer drugs according to labeled use or veterinarian authorized off-label use and follow all withdrawal periods

Drugs should be stored securely away from curious animals and unauthorized persons. Some drugs require refrigeration. When administering drugs, follow recommended dosages and administration guidelines or follow veterinarian instructions regarding ELDU. Protect drugs from sunlight and heat during use to prevent reducing their effectiveness. Do not use drugs past their expiration date. Record the date and amount of drug administered and the date when the prescribed withdrawal period has been fulfilled. As an example, the dewormer Safe-Guard® states that “Goats must not be slaughtered for food within 6 days following treatment. Because a withdrawal time in milk has not been established,

do not use in lactating goats.” Instructions such as these should be followed for all drugs administered on-farm.

Herd Health PPP #4 - Use proper injection technique including proper injection site (in front of the point of the shoulder)

Use the correct injection method when administering injectables. Subcutaneous (SC) administration is preferred to intramuscular (IM) or intravenous (IV) injections. When administering drugs SC, use proper “tenting” technique to avoid entering the muscle. If IM injections must be given, ensure that all injections are given in front of the point of the shoulder. Lesions can form from injection sites and injecting in the neck prevents damaging the more valuable cuts of meat. Also, when giving IM injections, proper technique calls for pulling back slightly on the plunger after entering the muscle to make sure a vein or artery has not been penetrated. Injections given in muscle allow for slower absorption of the active drug than IV injections. If, in an IM injection, a vein has mistakenly been penetrated, the rate of drug absorption will be dramatically increased. This can cause shock, seizures, or worse to an animal. Intravenous injections should only be given by experienced individuals.

Proper injection technique also includes proper needle selection, depending upon the viscosity or thickness of the drug given, injection method, and age of the animal. Generally, 18 to 20 gauge needles are sufficient for most injections. Lengths of 1 to 1½ inches should be used for IM or IV injections, while shorter lengths of ½ to ¾ inch are suitable for SC injections. To prevent hurting animals through using dull needles, change needles at a maximum of every 10 animals. If a blood-borne disease is suspected to be present in the herd, needles should be changed after every animal. If a needle becomes bent, replace it immediately. Have an appropriate “sharps” container where you perform injections to dispose of used needles.

Herd Health PPP #5 - Provide training to all persons treating animals on proper drug usage and administration techniques

All persons who work on the farm should be trained in proper herd health care including drug use and storage, injection techniques, and in completing the record keeping system used. Training should be kept up to date and reviewed when new drugs are introduced.

Preferred Production Practices in Nutrition/Feedstuffs

Nutrition/Feedstuffs PPP #1 - Provide proper nutrition to all animals according to age and stage of production

Proper nutrition is essential in the well-being and productivity of all farm animals. Properly fed animals are healthier and will exhibit greater production efficiency than underfed or overfed animals. Good nutrition and health begin with ensuring that all kids consume colostrum to receive needed nutrients and antibodies. Body condition scoring provides producers with information on the nutritional status of their herd and the need for feeding adjustments. Using a nutrient calculator, such as the web-based calculator developed by the American Institute for Goat Research found at www2.luresext.edu, can help producers determine the amount of energy and protein needed for animals at different ages and production stages.

Nutrition/Feedstuffs PPP #2 - Ensure that feed and water are free of contaminants

Feed should be stored in areas that are free of the risk of contamination from foreign substances, such as motor oil, chemicals, baling twine, etc. Storage conditions should also ensure that no fermentation or mold growth occurs that could lead to the presence of mycotoxins. Purchased feed should be free of aflatoxins and other harmful substances. Water should not contain high levels of dissolved salts, chemical residues, feces, or urine. Feeders and waterers should ensure that animals cannot defecate or urinate in feed and water. Control rodents from entering your feed supplies. Purchased feed and hay should be free of chemical, biological, and foreign material hazards.

Nutrition/Feedstuffs PPP #3 - Comply with FDA regulations on the ban of feeding ruminant-derived protein supplements to other ruminants

The Food and Drug Administration has published regulations prohibiting the feeding of goats feed or feedstuffs containing proteins derived from other ruminant species. This has been mandated to prevent potential cases of Bovine Spongiform Encephalopathy (BSE), commonly called mad cow disease, from occurring in ruminants in the U.S. Banned feeds include all protein supplements of ruminant origin including ruminant-derived meat meal, meat and bone meal, bone meal, blood and blood by-products, glandular meal, etc. Also prohibited is the feeding of broiler litter to ruminants as poultry feed may contain ruminant-derived protein supplements and spilled feed may be present in the litter. Pet food may contain substances banned from ruminants, thus, food for guard dogs should not be available for goats to eat. Other prohibited substances include human plate waste processed for livestock feed.

Nutrition/Feedstuffs PPP #4 - Take proper care in the use of medications and other feed additives

Few medications and feed additives are approved for use in goats. To find the current status of drugs, additives, and medications approved for goats, consult a veterinarian or go to the Food and Drug Administration “Green Book” that lists approved drugs for livestock. This searchable on-line database can be found at <http://www.fda.gov/cvm/greenbook/greenbook.html>. As of this writing, April 2005, only 23 drug products have been approved for use in goats. Consult a veterinarian concerning any possible use of medicated feeds in an off-label manner.

Nutrition/Feedstuffs PPP #5 - Record use of chemicals on pastures to prevent harvest and feeding of feed containing chemical residues

A major issue in food safety is chemical residue avoidance. Chemical residues (drug residues or chemical toxins) are one of the three contaminants that affect meat safety, the others being biological (microbial) and foreign substances (such as broken needles, glass, plastic, etc.). Anytime a pesticide or herbicide is applied there is potential for that chemical to enter the food chain. Appropriate sprayer cleaning procedures and proper disposal of used containers is essential. Care should be taken during application to prevent chemical runoff that will contaminate water supplies. Drift from a sprayer could mean that unwanted chemicals contaminate hay or grazing areas. Cutting and baling hay, or allowing animals to graze too soon after application, could result in animals consuming chemicals whose residues could potentially be found in meat. Appropriate care needs to be taken when applying chemicals on farmland and training should be provided to persons doing the work. Records need to be kept on the application date and type of pesticide, herbicide, or fertilizer used. Labels should be read

or professionals consulted to determine time limits prior to harvest. When purchasing hay or leasing grazing areas, the seller should be asked about chemical usage.

Preferred Production Practices in Management and Proper Care

Management PPP #1 - Provide proper care to all animals

Goats should have daily observation and care to lead healthy, productive lives. Observing animals during feeding and learning their normal behavior allows a producer to immediately sense when something is “wrong” and extra attention is needed. Proper care of goats begins with care of pregnant does, including nutrition, housing, vaccination, and avoiding stress. Properly cared for does will have healthier kids with fewer future health problems. Care should be matched to animal age and expected production level. Trim hooves regularly to prevent foot and leg problems. At all times, the welfare of the goats should be considered and efforts made to not inflict undue pain or stress on the animals. This promotes a healthy production environment and reduces the need for medicines and veterinary costs.

Management PPP #2 - Use proper gathering and handling techniques to reduce animal stress

The herding behavior and flight zone of goats should be learned to make gathering and catching them easier. In a pasture setting, a small catch pen should be made and goats fed a small supplement in that area to accustom them to entering it, making catching them easier. The use of a catch pen or similar arrangement is much less stressful, and tiring, to both goat and owner than trying to catch untrained animals on pasture. When herding goats, move calmly and let goats go at their own pace. Goats should not be caught or held by grasping the hair or skin, or by catching a leg or tail. The preferred method of holding is to place one hand under the chin and the other on the back of the head. Animals should not be subjected to undue stress.

Management PPP #3 - Provide training in proper goat care and handling techniques to all people working on the farm

All persons who care for or manage animals on your farm should receive training in goat care and handling. This will pay dividends in better animal productivity and reduced injuries and disease incidence. If many people are employed or the production system is complex, a training manual providing information on the management and care practices used on-farm could be devised and available for employee use.

Management PPP #4 - Inspect facilities periodically to maintain them in good working condition

Buildings and fencing should be inspected periodically and repairs made. The condition of buildings and facilities can affect the welfare and productivity of goats. Injuries due to poorly maintained facilities can leave an animal open to infection, necessitating additional expenditures for veterinary care and(or) long-term problems. In extreme cases, death can result from inadequately cared for buildings or fencing. As an example, predators can enter animal pens or pastures through holes in fencing or walls and kill animals. In general, any money spent in maintaining facilities will be recouped in reduced veterinary costs and death losses.

Preferred Production Practices in Record Keeping

Record Keeping PPP #1 - Properly identify each animal

Proper identification of animals is essential for good record keeping and all animals should have a unique identifying number. Some breed registries may require a tattoo be applied and have their own policies concerning placement and numbering. Ear tags or neck ropes may be used as identification. Ear tags are preferable to neck chains for goats in grazing situations. If used, neck chains should be moderately strong allowing them to break if the chain gets caught in brush or on fencing where it could be a choking hazard. Ear tags should be applied properly between the cartilage ribs on the ears. If clip type ear tags are used on young animals, the tag should be placed allowing for future growth of the ear. Ear notching is an acceptable form of identification if performed on animals less than two weeks of age. However, breed organizations may not allow ear notching. Ear notching pliers should be disinfected between animals to prevent transmitting blood-borne diseases. Goats should never be hot or freeze branded.

Record Keeping PPP #2 - Keep and maintain records on all animals on pertinent production parameters, vaccinations given, and other drug treatments

Complete, accurate records of animals on your farm will assist in making management decisions regarding breeding, culling, and sale. Records of health treatments given to animals are necessary to prevent the sale of animals prior to completion of withdrawal periods, to prevent multiple doses of a drug being given to a particular animal, and to check on treatment progress. Records on chemical use, feed and drug purchase, etc. can also help safeguard your operation should questions arise concerning animals you may have sold. Breeding records are necessary for registration purposes. Keep written records in a safe place and ensure backup copies are made of any electronic files kept on a computer.

Record Keeping PPP #3 - Periodically review records for completeness and accuracy

Records are most useful when complete and accurate. A periodic review of records and record keeping methods will help catch mistakes and oversights while they can still be easily corrected. This review should happen at least annually. Ensure that all new employees are trained in record keeping to prevent mistakes from occurring.

Preferred Production Practices in Biosecurity

Biosecurity PPP #1 - Establish a biosecurity plan for your farm

Consider your production operation and devise a plan to ensure your animals are protected from diseases entering your herd. Potential ways in which diseases could enter your farm include: visitors, feed deliveries, new animal acquisition, show animals returning to the herd, stray animals, rodents, birds, and others. The potential risk from these various areas should be examined in the context of your production situation. Plans should be made to protect animals from identified risks and to deal with animals who become ill so that diseases occurring on your farm are not transmitted beyond your farm gate.

Biosecurity PPP #2 - Minimize or avoid contact between your animals and animals not on your farm

Many diseases are transmitted through animal to animal contact. Avoiding contact with animals not on your farm will reduce disease outbreaks. Consider the location of pastures and grazing areas in relation to your neighbors' animals. If new facilities are planned, consider the location of neighboring livestock barns and pens. Do not build facilities in or near drainage areas from livestock facilities. If your animals are very valuable, for example breeding males whose semen is collected for sale, consider double fencing along adjoining property lines to further protect them from neighboring animals. At exhibitions, house animals using solid partitions to minimize contact. Control stray animals, both domestic and wild. Maintain quarantine procedures. Do not haul other animals with your own and clean mud and manure from livestock trailers.

Biosecurity PPP #3 - Establish a quarantine protocol for animals entering your herd

Preventing diseases entering your herd from new animals begins during purchase. Be sure to ask the seller for health and production records on animals you plan to buy. Ask about the disease or herd health program followed. Also, look at the whole herd, not just the few animals you plan to purchase. This will give an indication of the health program followed. Upon arrival at your farm, place new animals in quarantine for a minimum of 30 days. Consult a veterinarian for a quarantine vaccination protocol and any diagnostic tests that should be performed. Buckets, shovels, fencing, etc. used in the quarantine area should not be moved and used in the general herd. Feed and care for quarantined animals last and do not re-enter your herd before changing clothing and washing boots to prevent carrying diseases from new animals to your herd. As an example, if a quarantined animal has a caseous lymphadenitis abscess that bursts, a person may inadvertently step in the pus from that abscess and carry that on his or her boots. If that person then reenters the farm herd, he may contaminate the ground or other animals.

Consider quarantining animals that have returned from exhibitions or fairs and have had contact with other animals. If felt necessary, follow the same quarantine guidelines for these animals as with purchased animals. For show animals, the potential risk of diseases entering your herd must be weighed against the difficulties in establishing and maintaining quarantine. Do not haul animals other than your own to and from shows.

Biosecurity PPP #4 - Establish a protocol for visitors to your farm

Many visitors to your farm will likely be producers themselves. To ensure that diseases are kept from entering your farm area, establish a protocol for any visitors and their vehicles. Control traffic entering your farm and have a separate parking area or ensure that vehicles are clean of mud and manure. This includes livestock trailers, feed delivery trucks, and veterinary vehicles. Consider having disposable boots available for visitors who wish to tour your facilities and herd. Alternatively, have a footbath with disinfectant where visitors can clean their shoes before and after seeing your animals. Have a wash basin or facility for visitors to wash their hands before and after handling animals. Explain that your procedures protect not only your herd, but theirs as well.

Biosecurity PPP #5 - Do not allow persons who have had contact with livestock in foreign countries on your farm, or bring clothing or other items from them to your farm, for a period of 5 days after their arrival in the U.S.

Largely in response to outbreaks of Foot and Mouth Disease (FMD) in other countries, the USDA published guidelines for persons from, or who have traveled to, foreign countries where FMD is present. These persons are encouraged not to have contact with livestock for 5 days after entering the U.S. Some states or institutions, such as Langston University, recommend a 10-day waiting period. The virus causing FMD can be carried in hair and nasal passages, clothing, luggage, shoes, etc. Following this PPP helps safeguard the entire U.S. livestock industry. Outbreaks of FMD, while not a threat to humans, result in the necessary destruction of all infected and potentially infected animals with enormous industry and economic consequences. Preventing or minimizing contact between foreign travelers and your herd for the period after their arrival may also prevent the spread of other diseases as well.

Benefit of Using MGQA

Using MGQA procedures can assist livestock owners in making correct production decisions. The PPP may also bring new ideas or approaches to existing management activities. Utilizing HACCP-like principles in implementing the MGQA promotes a quality management style that anticipates and fixes problems before they occur. It also promotes the planning needed to know what to do when mistakes or problems do occur and how to prevent them in the future. The goal of MGQA is simple, assist goat owners in producing an animal in a wholesome environment that will yield safe, high quality products that consumers prefer and will continue to purchase.

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