GRADE A DAIRY GOAT FARM REQUIREMENTS

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Introduction Goat milk, as stated in the U.S. Grade A Pasteurized Milk Ordinance (PMO), is the normal lacteal secretion, practically free of colostrum, obtained by the complete milking of one or more healthy goats (USDHHS/FDA, 1993). Although the National Conference on Interstate Milk Shipments (NCIMS) recognizes the differences in composition and somatic cell count (SCC) between cow milk and goat milk, sanitary requirements for Grade A cow milk in the PMO apply to goat milk.

The PMO is governed by the Food and Drug Administration and enforced by the State Department of Health or the State Department of Agriculture, specifically by the Milk Sanitation Division. To produce Grade A goat milk, a dairy goat farmer must obtain a permit from the regulatory agency and use an approved facility for milk production and handling. The United States dairy goat industry has come into its infancy in the last two decades (Anon., 1989 and Hinckley at al., 1994), while the European counterpart has long been established in many countries. World production of goat milk is estimated at eight million tons annually (Jeouen et al., 1991). Most dairy goat farms in the U.S. are not certified for Grade A raw milk production. To assist the dairy goat farmer who plans to start a Grade A farm or wants to up-grade an existing non-Grade A facility, the basic requirements of the PMO are outlined below, including initial construction, sanitation practice, water supply, waste treatment, and regulatory inspection.

Construction

Milking barn

Suitable housing should be provided for milking does during the milking process to minimize contamination of milk and to provide comfort for the animals. The structure is commonly referred to as a milking barn, stable, or parlor. Due to the high humidity environment, a milking barn shall have concrete or equally impervious material flooring for easy cleaning and maintenance. Wood is not acceptable as a floor material. Walls and dust-tight ceilings must be smooth, painted or finished as recommended by the regulatory agency. They shall be kept in good repair. The barn floor must slope away from the milkroom. Sufficient ventilation is needed to eliminate condensation upon ceilings and walls, minimize odor build-up and provide comfort for the milker. At least one 12 inch vent is required in the milking barn. Adequate light through artificial lighting is necessary to ensure safe work conditions for workers and animals. It also allows the milker to perform milking and milk handling in a sanitary manner. Usually no less than 20 foot-candles of illumination at working areas (at least one watt of

artificial lighting per square foot of floor area) is required. A storage cabinet for medications and pesticides is recommended in the milking barn.

Milkroom

A separate room, i.e., milkroom or milkhouse, is required to provide sufficient space for cooling and storing goat milk and to minimize contamination from the milking barn. Milk containers and utensils are washed, sanitized and stored in the milkroom. The milkroom floor should be constructed of smooth concrete or equally impervious materials with accessible drains to promote cleanliness. It shall slope evenly to the drain to avoid pooling of waste water. The walls and ceilings must be light-colored, smooth and in good repair with painted or equivalent finish. Smooth and seamless surfaces and joints are required for ease of clean up and sanitation.

A tight-fitting, self-closing solid door between milkroom and milking barn is required. Entrance and exit door(s) must open out of the milkroom unless a self-closing, outward opening screen door is also installed. A hose port must be built through the milkroom wall to transfer milk from the storage tank (bulk tank) to the transport tank. It shall be kept closed when not in use.

A minimum of three foot clearance above the milk storage tank is required. Clearance around the tank should be at least 30" and extended to 36" on the valve end. The milkroom shall have adequate light for operation. A minimum of 20 foot-candles of illumination is required. Artificial lighting must be located away from the milk tank opening. The milkroom must be well ventilated to reduce the likelihood of odors that may be transmitted to the milk and to prevent condensation upon ceilings and walls. One 12 inch vent provides enough ventilation for a milkroom up to 200 square feet. A two-compartment wash sink is required and water under pressure shall be piped into the milkroom. A water heater with a minimum capacity of 20 gallons must be provided for bulk tank up to 200 gallons. An additional 10 gallons of water heater capacity is recommended for each additional 100 gallons of milk tank capacity. Hot water washing in the wash sink is always done at 160øF or higher.

Toilet

Every dairy farm shall have at least one on-site toilet. The flush-toilet is connected to a public sewage system or to a private sewage -disposal system, i.e., a septic tank. Alternatives to a flush toilet can be a chemical toilet or an earth pit privy. All the toilets must be constructed and maintained in accordance with local or state plumbing regulations. No direct openings are allowed towards to the milkroom. Doors to toilet rooms should be tight-fitting and self-closing. The room must be well lighted and ventilated.

Equipment

All the milking lines and any equipments that contact milk shall meet the 3-A manufacturing standards. Milking machines (heads, milk claws), milking lines (pipes), milking buckets, storage tanks, multi-use containers, and utensils shall be made of smooth, non- absorbent, corrosion resistant, non-toxic materials. Stainless steel, heat-resistant glass, inert, non-odor, fat resistant plastic or rubber is recommended in the PMO. PVC is not acceptable for milking lines. All hand-milking and stripping pails must not have seams or joints. These pails shall be designed with small mouth openings to minimize contamination by foreign matter. Milk cans must have umbrella-type lids. The milk storage tank shall have an efficient cooling system. Fresh and warm milk coming out of pipelines or milking buckets must be cooled to 45øF (7.2øC), preferably to 40øF (4.4øC) within two hours. The milk tank must be equipped with a temperature gauge for easy and convenient reading. Clean-in-place (CIP) milk pipelines and return-solution lines must be self-draining. Approval by the regulatory agency is required before installation of CIP systems. Any gaskets used in the operation line shall be self- positioning and meet the regulatory requirements.

Cleanliness and sanitation

Interior floors, walls, ceilings of the milking barn and milkroom shall be kept clean to reduce the contamination to the milk. The milking barn shall be free of filth, litter and animals other than. The floors should be scrubbed with brush and flushed with water under pressure or brushed dry and limed after each milking. Non-milk contact surfaces of pipelines must be reasonably clean. All facilities used in the milkroom must be clean at all times. Cleaning agents (detergents) and single service paper towels must be available. Trash cans must be properly covered and emptied frequently. All fixtures and facilities in the toilet room must be kept clean and free of odor and flies. Soap and paper towels must be provided in the toilet. Milk-contact surfaces of all equipment used in the milking barn and the milkroom must be cleaned after each usage. Cleaned equipment, including milking machines, vacuum hoses, containers and utensils, shall be stored in a clean place with complete drainage on racks in the milkroom. Milk-contact surfaces of all equipments must be sanitized prior to being used. All milking does shall be brushed completely in the areas of flanks, udders, and bellies prior to milking. Clipping hair on udder will aid in cleanliness. In addition, udder halves should be cleaned and dried and teats dipped in a sanitizing solution. Milkers are always required to dry their hands before milking. Milkers shall wear clean outer garments while milking or handling milk. Hands are washed with soap and dried with single service towels after using the toilet, before milking, and before working in the milkroom.

The surroundings of milking barn and milkroom are to be kept clean, neat and free of insects and rodents. The yard must not have standing pools of water. Bedding areas must be clean and droppings removed to prevent soiling of udder halves and flanks.

Water supply

Milk quality depends to a large extent on cleanliness and safety of the farm water supply. Water for milking and milk-handling purposes shall come from a well or other sources properly located, protected, and operated. The water supply shall comply with the Clean Water Act requirements by the Environmental Protection Agency (EPA) and be accessible and adequate according to local or state regulatory standards. Ground water sources should be located to eliminate any possible contamination. The state or local health agency and cooperative extension service should be consulted prior to the construction of a well. Surface water sources, such as open ponds and lakes, can be used if additional treatment and considerations comply with all applicable requirements of state water control authority and if an advance approval of the regulatory agency is received.

Waste treatment

Because of the potential contamination of ground and surface water by animal waste, a dairy waste management system must be carefully developed and implemented to prevent adverse effects to the environment. This system can be very diverse, depending on herd size, water supply, land slope, soil type, etc. Regulatory agencies, such as EPA and the State Milk Sanitation Division, should be consulted when planning and implementing such a system. Stored manure must be inaccessible to milking goats and shall not be stacked in outside piles or in pits for more than seven days before it is removed. This practice will help eliminate flies by breaking the fly-breeding cycle. Land application is the most common and practical way of disposing animal manure. Care must be taken to prevent pooling of water on the ground surface and to minimize fly contamination and udder infections. Liquid waste from the milking barn and milkroom may be disposed in a septic tank according to the Clean Water Act requirements by EPA. Alternatively, goat farms can implement a grass filter bed system (3) in which liquid waste is dispersed over a wide grass sod area through evaporation and absorption.

Regulatory inspection

Milk is the most regulated and inspected food supply world-wide. It is illegal to operate a commercial dairy farm in the United States without a permit. A prospective dairy goat farmer can apply to the State regulatory agency for a Grade A permit. The issuance of a permit is primarily based on the requirements specified in the U. S. Grade A Pasteurized Milk Ordinance. It is the dairy farmer's responsibility, not the inspector's, to produce high quality milk. Inspections by regulatory professionals help the dairy farmer meet and maintain the requirements for Grade A milk production. Inspectors perform their duties to protect consumers by assuring the quality of milk.

All Grade A farms are inspected by the State sanitarians at least twice a year during reasonable working hours. However, in many states, quarterly inspection is a common practice. Inspection may be conducted bimonthly on certain farms if the sanitarian determines it is necessary.

Inspectors look for general cleanliness on the whole farm, but particular consideration is given to the milkroom and the milking barn. The inspector completes the Dairy Farm Inspection Report (see attachment) by checking each item on the list, including milkers, milking does, milking procedure, milking barn, milkroom, toilet, water supply, equipment, milk storage, and transportation vehicles. Any violation of the PMO will be marked on the report and a warning issued. Corrections must be made before next inspection (allowance of three days) or the permit may be suspended.

Grade A goat milk shall meet PMO quality specifications. Milk samples are collected periodically (a minimum of four samples during six consecutive months) for lab testing of drug residues, somatic cells and total bacteria. A positive antibiotic residue test automatically carries at least a one-day suspension of the permit and the milk must not be offered for sale or consumption until subsequent samples are proven to be free of antibiotics. A second positive test within the next twelve months requires a penalty equal to four days loss of milk by the producer. A third positive test within a twelve month period calls for immediate revocation of the Grade A permit. The somatic cell count of goat milk is usually performed using Fossomatic instruments but any results of more than one million cells per milliliter must be verified using official pyronin Y-methyl green microscopic procedure. If the somatic cell concentration exceeds one million per milliliter of goat milk (the limit for cow milk is currently 750,000/ml) or the total bacteria count exceeds 100,000 cfu/ml (colony forming unit per milliliter) for two of the last four consecutive tests, a warning is issued to the dairy farmer. If the fifth test within the next 21 days is still over the limit (third violation), the Grade A permit is suspended (i.e., 3-out-5 Compliance Enforcement). A suspended permit can be reinstated by the inspector if all the violations have been corrected accordingly.

References

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