

Sheep & Goat HEALTH REPORT

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Special Issue 2004

Biosecurity for Sheep and Goat Production

Biosecurity refers to management measures taken to prevent disease agents from being introduced and spreading to and/or from animal populations or their proximity.

Biosecurity has three main components. These are:

1. Isolation – the confinement of animals away from other animals.
2. Traffic control – movement of people, animals, vehicles and equipment.
3. Sanitation/Husbandry – cleanliness and care of animals and their environment.

Study results released in April 2003 by the USDA's Center for Animal Health Monitoring (CAHM) in Fort Collins, Colo., provide a baseline describing vari-

ous producer participation rates in several biosecurity practices across the United States.

The USDA's National Animal Health Monitoring System (NAHMS) collected data on sheep health and management practices from a stratified random sample of sheep production sites in 22 states as part of the Sheep 2001 study.

These states represented 87.4 percent of the January 1, 2001, U.S. sheep inventory and 72.3 percent of U.S. sheep producers.

Katherine L. Marshall, Veterinary Medical Officer and Sheep Specialist at CAHM, highlighted a few of the major findings of the research.

"The survey results indicated that overall, 84.3 percent of operations allowed visitors access to sheep raising areas, and only 22.6 percent of those had any biosecurity requirements for visitors. This statistic provides us with a snapshot of where producers can strengthen biosecurity efforts," she said. "Very few operations (those with 20 or more ewes) used antibi-

otics in either feed (19.6 percent) or water (4.0 percent) for disease treatment in 2000. This is good news especially in light of increasing public concerns about antibiotic usage in animals."

Timing had an effect on the research as well, Marshall said.

"Our NAHMS Sheep 2001 study was conducted at the same time the FMD outbreak in England was making news in the United States. It takes time to implement biosecurity measures and probably, if these questions were to be asked now, there would be a higher percent-

age of operations practicing biosecurity."

The results of the study mean different things to different people, Marshall said.

Producers have several options to enhance biosecurity on their operations, depending on the goals of each individual operation.

"Since most producers do eventually purchase new animals for their flock, to reduce the risk of disease, sheep producers should purchase new additions from

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Isolation

The Confinement of Animals Away From Other Animals

The most common way that new diseases are introduced into a flock is through new animal additions. New animals and animals returning from exhibitions should be quarantined from resident animals for four weeks to allow for incubation periods of certain diseases.

Isolation areas (buildings and pens) should not share the same airspace as resident animals. A distance of 100 feet, if feasible, should separate buildings and pens. The farther away new animals are kept away from resident animals the bet-

ter the isolation will be.

During the isolation period:

- Animals should be observed closely. A veterinarian should promptly examine those showing any sign of illness.
- Animals can be tested for specific diseases of concern.
- It is the appropriate time to vaccinate and treat for internal and external parasites.
- Other preventative health measures should also be performed during this period.

Also:

- All feet should be trimmed, inspected for foot rot and foot bathed in a 10% zinc sulfate solution.
- New purchases should not be allowed to join the resident sheep until they have been tested and proven to be free of drug-resistant (anthelmintic) internal parasites or worms. (Your veterinarian can assist you with this test, also known as the fecal egg count reduction test.) Strict precautions should be taken to avoid spreading contaminants:

- Equipment should not be shared between isolated animal areas and resident animal areas.
- People tending these animals should take precautions to avoid spreading disease agents from the isolated animals to other animals and equipment. Precautions include hand washing, wearing different clothing and footwear, disinfecting feeding and watering equipment and other fomites.

Before adding animals to your flock remember these principles:

- The health status of the source flock(s) should be evaluated. Ask specific questions about the diseases that concern you. Find out specifics about management practices that might affect the flock's health.
- Number of source flocks should be minimized.
- It is best to use a "closed" flock of verifiable good health status as the source for flock additions. A "closed" flock is defined as one where new animals have not been brought in for three or more years. ●



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Acknowledgement

This special issue of the *Sheep & Goat Health Report* has been devoted to providing producers and ranchers with practical applications for implementing sound biosecurity measures in sheep flocks and goat herds.

The National Institute for Animal Agriculture would like to express appreciation to the American Sheep Industry Association (ASI) for significant contributions of the material uti-

lized in this special issue. A fact sheet, *Biosecurity for Sheep Production*, is available from ASI on the Internet at www.sheepusa.org (Look for *Research and Information* under the *Producer* section).



Editor's Note: While much of the information contained in this special issue specifically addresses biosecurity in sheep production, it is also applicable to goat production, as well.

Traffic Control

The Movement of People, Animals, Vehicles and Equipment

Flock owners and employees should avoid taking biosecurity risks with their own livestock. These include:

1. Exposure of the owner or employees to other flocks or other livestock. Be a good neighbor!

Don't carry diseases from your place to someone else's place. Avoid unnecessary animal contact when visiting other livestock facilities. Take precautions so you don't carry diseases back to your own place. Change overalls or clothes in between farms. Also either clean and disinfect your boots before entering and when leaving another livestock premises or wear disposable plastic boot covers. Dispose of plastic boots at the farm when your visit is finished.

Require all visitors to maintain strict sanitation standards. Assess risk factors posed by visitors and take steps to limit their contact with your animals and premises.

Do not allow visitors to enter pens or feed alleys, or touch animals unless necessary. Disposable boots or boot washing stations should be available for visitors and required to be used. Provide visitors with protective coveralls and disposable boots or make thorough boot washing and disinfection required before and after the visit.

2. Poor traffic control (vehicle and personnel) and poor sanitation of vehicles, equipment and clothing may lead to the introduction of disease and is a breach of biosecurity.

Livestock haulers, feed delivery trucks, dead-stock haulers, etc., should be allowed limited access, and should be held to strict sanitation standards. Standards vary between operations and their physical set-up; however the principles include:

- Keep visiting vehicles at a distance (and down-wind) from

livestock concentration areas.

- Make separate routes for visiting vehicles versus that farm/ranch's routine livestock and operation traffic, if at all possible and practical.
- Commercial livestock hauling vehicles should be cleaned and disinfected prior to entering your facility to load livestock.

Shearing crews should sanitize their equipment between flocks and wear freshly laundered clothing and clean, disinfected footwear.

Veterinarians, brand inspectors and others who may have close contact with your animals should be very aware of the need for sanitation and take appropriate sanitary measures for their footwear, outerwear and equipment. They should arrive in clean vehicles and wear protective clothing or boots that can be changed or disinfected before leaving. ●

New Zealand Takes Biosecurity to a New Level



A new agency called Biosecurity New Zealand is about to start making life tougher for pests and bugs.

Based within the Ministry of Agriculture and Forestry (MAF), Biosecurity New Zealand started operation on Nov. 1.

It replaces the MAF Biosecurity Authority and is responsible for preventing the importation of unwanted pests and diseases, and for controlling, managing or eradicating them should they get past the border.

"The new agency reflects MAF's

expanded mandate and responsibilities in the biosecurity area," said agency spokesman Barry O'Neil. "It will help provide a fresh start to biosecurity in New Zealand, as envisaged by the Biosecurity Strategy."

Under the Biosecurity Strategy, which the government accepted in 2003, MAF will assume overall accountability for New Zealand's biosecurity efforts, including responsibility for marine biosecurity, six national pest management programs, and environmental and human health biosecurity. The program will also be more closely linked to the country's border pro-

tection agency.

O'Neil says a new name and branding design for the agency "sends a strong message to domestic and international stakeholders about the wide-reaching changes in the way New Zealand manages biosecurity." He said the branding is intended to have linkage with MAF but suggest that responsibility for biosecurity extends much wider.

"The new logo and other visual identity elements are intended to get people's attention and highlight the fact that all New Zealanders – not just MAF – need to be vigilant in their efforts to protect New Zealand's biosecurity," he says.



Sanitation

The Practice of Maintaining a Clean, Healthy Environment for Animals

Keep things clean and picked up! Good sanitation is a necessity in biosecurity.

- Regularly cleaning and disinfecting equipment with appropriate disinfectants;
- Providing proper and timely removal and disposal of manure;
- Providing for the prompt removal and appropriate disposal of dead animals supports the other aspects of biosecurity; and
- Rodent, pest and insect control assists in preventing the spread of disease.

Disinfectants are commonly used on vehicles and boots as well as feeding, manure handling and shearing equipment.

- Disinfectants should be used AFTER cleaning the item.
- Disinfectant(s) used should be active in hard water and in the presence of organic material.
- They should also be relatively non-toxic and inexpensive and still be effective against a broad spectrum of pathogens.
- The ortho- and chlorophenyl phenols, such as Amphyll, Wexcide, One Stroke Environ and others meet these criteria. ●

Always follow the label when using disinfectants. Many of them will need to be rinsed off the surface if animals, or their food, will have intimate contact.

More on Disinfectants

One Stroke Environ is available in many farm stores and veterinary supply houses.

Vikron S is a relatively new compound now available in many farm supply outlets. It is active against many viruses and bacteria, and the manufacturer indicates that it can be used on a variety of types of equipment. It comes as a powder that must be mixed with water before use, and the powder must be kept in a sealed container.

Common bleach can be a good disinfectant for clean, relatively non-porous surfaces where there is little organic matter contamination. It is usually mixed at about 4 ounces of bleach per gallon of water. Bleach can cause rusting; it should not be used on galvanized surfaces, and should not be used with ammonia-containing compounds because this may generate toxic fumes.

This is not an all-inclusive list and there are other products that you can learn about by viewing Web sites.

Extension staff, state veterinarian and state veterinary labs can also be a source of information.

Contact your local practitioner for detailed disinfectant recommendations for your operation.

Husbandry

The Care of Animals and Their Environment

Husbandry is associated with care of animals, but is defined as the management of resources. Poor husbandry practices facilitate disease transmission within and between flocks.

Animals in good physical condition will have a better chance recovering from disease and may be more resistant to challenges from minor disease. Remember:

- Always provide good nutrition. Work with your veterinarian and extension specialist/feed-mill nutritionist to ensure that your sheep have all their nutritional needs met.
- Always provide a clean source of feed and water. Routinely clean and disinfect common equipment used for feeding and cleaning.
- Exercise good insect control. Check with your local veterinarian for effective products.
- Know the source and quality of your feed and feed ingredients and assess the risk that feed might introduce disease to your flock.
- Immediately isolate sick animals away from the rest of the flock. Animals with infectious diseases may be shedding millions of doses of infectious agents daily that will contaminate the environment. ●



USDA Photo

Performing Your Own Risk Assessment

One way of managing resources is by performing your own risk assessment. When conducting your risk assessment regarding biosecurity realize that if it is not practical it will not be a success. Take into account when conducting your risk assessment for the following practicalities:

- How much biosecurity you need.
- Use common sense.
- Measure the economics of a plan.
- Consider your ability to enforce your biosecurity plan.
- Be committed.
- Don't over-react to news headlines; seek the facts on reported issues. However, be aware of specific risks, specific to your farm, and educate yourself about those diseases that might pose a threat to you or your flock. Learn to recognize their signs and

what you could do to prevent them from occurring.

- Be alert to anything suspicious, including requests for information about your farm from people you don't know and unusual vehicle traffic.
- Watch for new or unrecognized illnesses.
- Increased or unexplained death loss is a "red flag" and warrants immediate investigation (Frequent observation of your livestock is important in reducing risks),
- Don't be complacent... we do live in a changed and volatile world; we are food and fiber producers and we can't take security for granted. Find out who to contact in the event of an animal health emergency; your veterinarian, the state veterinarian's office, the APHIS/AVIC in your state and/or your local emergency management agency.

Conducting your own risk assessment can be done with or without your veterinarian. Your veterinarian can be very helpful in assessing your farm situation.

Questions to ask when conducting your own risk assessment:

- Do you add new animals to your flock?
- How near are other sheep or goat flocks, and, are they upwind and above you in a watershed?
- What other kinds of livestock are nearby?
- What kinds of wildlife are nearby?



USDA Photo

- What diseases are endemic in your flock that you are already "living with?"
- Presence of pets, predators and scavengers? Animals may act as the vectors of disease agents and carry contaminated materials to/from your place.
- Do you sanitize your footwear and outerwear after your visit other operations or livestock concentration areas?
- Does your vehicle(s) likely carry disease agents from other locations back to your operation?

Use your veterinarian to assist you in developing a biosecurity plan. Routine consultation by an impartial eye can spot areas that might become a problem. Plan a routine flock health program with your veterinarian that includes vaccination and other disease prevention measures; it is less costly and more economical than cleaning up problems. Have your veterinarian perform necropsies on a regular basis to alert you to developing problems – it provides answers and eliminates guesswork. Follow import/export requirements for your flock that you and your veterinarian establish together.

Biosecurity is important in maintaining good flock health. If you have questions regarding biosecurity, contact your local veterinarian, agricultural extension agent or state veterinarian.

Livestock Site Security and Bioterrorism

Risk

The possibility of bioterrorist attacks on the U.S. livestock industry, including introduction of highly contagious foreign animal diseases, is real. Anthrax, a primary animal pathogen, has already been used against our citizens. Our livestock industry is vulnerable, especially to several highly contagious foreign animal diseases that could be introduced into herds and flocks. Examples include foot and mouth disease, hog cholera, African swine fever, Rinderpest, and several others. Introduction at key locations and natural spread through the U.S. livestock industry would have a major impact on the livestock economy of the nation. The vast amount of movement of livestock in the United States greatly enhances this risk. Livestock producers and all others associated with the livestock industry should be alert to unusual activities and take all possible precautions, including physical security of their operations whenever possible.

Implement Physical Security

Mathematically, the risk to individual producers is much higher from spread of infectious diseases than it is from direct physical attack, use of a toxic agent, or chemical contamination of a herd or flock. Nonetheless, producers should limit access to their operations to responsible individuals they know well.

- Make sure all people entering any livestock operation or agribusinesses that serve livestock operations are identified.
- Post a sign forbidding entrance without permission.
- Have a sign-in sheet for all individuals entering a livestock

operation or agribusiness firm if visitors must be allowed.

- Secure all feed and other supplies used in livestock production as much as possible.
- Keep a record of all livestock, feed, and supply purchases.
- Call local law enforcement if unusual activity is encountered or suspected.

Implement Fundamental Biosecurity to Prevent Disease Spread

- Purchase feed and all other supplies from known, reputable firms and individuals.
- Maintain a closed herd if possible or practical.
- When purchasing any livestock, insist that health papers signed by the veterinarian that serves the herd of origin be provided.
- Quarantine (isolate) all herd additions for 30 days, 45 days if possible.
- Beef feedlot operators and purchasers of feeder pigs should observe replacements closely for at least 30 days.
- Observe all livestock at least once daily for signs of disease, including lameness, loss of appetite, salivation, lethargy, or sudden death.
- Have individual animals and the entire herd examined carefully by a veterinarian if signs of disease are noted.
- It is especially important that a post mortem examination be performed if unexplained livestock death occurs.
- Biological specimens should be submitted to a diagnostic laboratory if the cause of disease problems is not obvious.
- Imitate, as much as possible, the biosecurity procedures that are

routinely practiced by confinement poultry operations.

- People entering livestock operations should wear clean clothing, ideally provided by the operator. They should wear rubber footwear and walk through a disinfectant before and after visiting the operation.
- All vehicles coming on the farm should be clean, as should all equipment and utensils that are used in or near the operation.
- Special attention should be paid to equipment such as livestock trucks and trailers, manure loaders and spreaders, tractors, portable livestock chutes, and other fomites that could easily spread disease from one operation to another.
- Rodents and birds should be controlled.
- Immediately dispose of all dead livestock after examination. Provide a secure place where pick-up vehicles do not have to enter or come near livestock units.
- Livestock exhibitions, other than terminal shows, should be avoided if possible.
- Don't allow anyone who has been on a farm in a foreign country to enter livestock units for seven days after return to the United States.
- Biological materials, including animal health products, should only be used if approved by the herd veterinarian.
- Don't allow any human food products to be brought onto the livestock, dairy, or poultry production premises. ●

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Suspect an FAD in Your Flock?

An outbreak of a foreign animal disease in the United States could seriously damage the domestic livestock and poultry industries.

In order to effectively protect against such outbreaks, IMMEDIATELY contact your veterinarian, Area Veterinarian in Charge or your State Veterinarian if you notice any of the following symptoms:

- Rising temperatures (multiple animals with high fever);
- One animal with ruptured vesicles (either clear or cloudy fluid discharge);
- Sticky, foamy, stringy saliva;
- Reduced feed consumption (perhaps because of painful tongue and mouth lesions);
- Lameness with reluctance to move;
- Abortions;
- Abrupt drop in milk flow;
- Low conception rates.

Sheep, Goat Health and Biosecurity Resources

American Association of Small Ruminant Practitioners
www.aasrp.org

American Sheep Industry Assn.
www.sheepusa.org

National Biosecurity Resource Center for Animal Health Emergencies, Purdue University
www.biosecuritycenter.org

USDA Animal and Plant Health Inspection Service
www.aphis.usda.gov/oa/fmd/fmdbiose.html

USDA, American Trucking Association Release Biosecurity Guidelines for Agricultural and Food Transporters

The U.S. Department of Agriculture has announced the release of voluntary security guidance for over-the-road transporters of agricultural and food commodities to bolster national security and safeguard public health. The guidance was developed in partnership with the Agricultural and Food Transporters Conference (AFTC) of the American Trucking Association (ATA).

The *Guide for Security Practices in Transporting Agricultural and Food Commodities* is designed to enhance security measures practiced by the nation's approximately 27,000 commercial transporters of agricultural and food-related products across the nation each year. Although issued by USDA, the recommendations are relevant to agricultural commodities and food products of all types, whether regulated by USDA or the

Food and Drug Administration (FDA).

"These guidelines are practical, flexible and proactive," said Agriculture Deputy Secretary Jim Moseley.

Fletcher Hall, executive director of ATA's Agricultural and Food Conference, said the fact that the voluntary guidelines were a partnership between the private sector and government is significant.

In February 2003, the White House Office of Homeland Security identified food and agriculture as one of 11 critical infrastructures in the U.S. that terrorists may seek to target. Agricultural and food commodities in transport are thought to provide a significant opportunity for terrorist attack.

The guidelines provide a basic blueprint for planning for and implementing risk-based security

management practices to ensure the continued safety and security of these products, the people who transport them, and the communications systems that enable their movement.

The guidelines emphasize a four-part approach of **awareness** of potential terrorist behavior and emergency response plans, **recognition** of terrorist activity in progress, **communication** of potential threats within companies and to proper authorities, and **action** to be taken if and when these situations occur.

The document is available on the Internet at www.usda.gov/homelandsecurity/aftcsecurguidfinal19.pdf. Additionally, the ATA/AFTC website offers information for acquiring the guide in print or on CD-Rom at www.truckline.com/cc/conferences/atc.

Biosecurity for Sheep and Goat Production

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known disease free flocks (when possible), focus on operations with good management practices such as flock certification (in the case of scrapie) and hygienic lambing management," she said. "At the very least, producers should ask about the health history of the flock prior to purchasing new additions."

According to Marshall, good biosecurity, at its most basic level, can be effective and reasonable.

"There are several ways a producer can implement good biosecurity: requiring visitors to either change or disinfect their shoes prior to entering the operation or

don't enter; requiring commercial sheep trucks to be cleaned prior to loading sheep; and learning the flock history for a ewe one is interested in acquiring."

Good biosecurity, at its most basic level, can be effective and reasonable.

Additional measures that will take time and resources but can insure further effectiveness of livestock biosecurity measures: separating sheep by age groups prior to

shearing, and shearing from youngest to oldest to decrease the risk of spreading *caseous lymphadenitis* within a flock may be time well spent, she said, as well as using separate pens when isolating new sheep from resident animals for a minimum quarantine period, or specific food storage areas when storing feed in areas that will not contact drainage from sheep areas and manure piles.

For a full summary of the study findings, visit the CAHM web site at <http://www.aphis.usda.gov/vs/ceah/cahm/index.htm> or call (970) 494-7000. ●

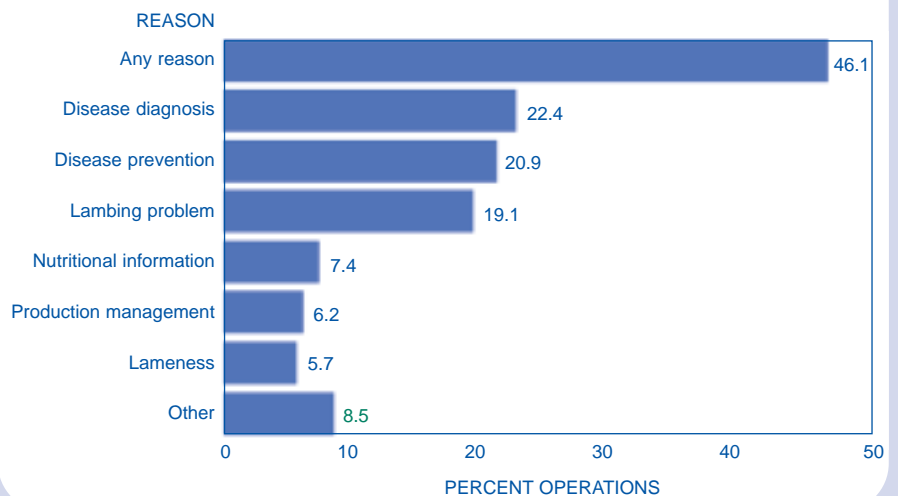
Use of a Veterinarian

A veterinarian can help identify and manage biosecurity problems, recommend and administer vaccinations and other preventive measures, and develop a routine flock health program designed to reduce biosecurity risks. Nearly half (46.1 percent) of all operations consulted a veterinarian

during 2000. Disease diagnosis, disease prevention, and lambing problems were the top reasons given for veterinary consultation (See graph). On average, operations with less than 25 sheep and lambs consulted a veterinarian less often than larger operations.

Percent of Operations that Consulted a Veterinarian During 2000, by Reason.

Source: USDA Centers for Epidemiology and Animal Health



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