

## **Biosecurity Guidelines for the Farmer or Producer**

All of the following could be considered possible targets of agroterrorism: animals and plants, animal feed, animal pharmaceutical drugs, the trucks and railroads that transport them to market; water supplies, farm workers, producers, grain elevators, ships, food processors, food handlers, restaurants, food warehouses, and grocery stores. Each potential target must take precautions within their realm to practice good biosecurity measures and to protect themselves from possible attack.

Biosecurity is what each individual producer or farmer can do to reduce the chances of an infectious disease, whether a plant disease or animal disease, from being carried onto the farm or facility by people, animals, equipment, or vehicles, either accidentally or intentionally.

The threats of Foot-and-mouth Disease, and the presence of Avian Influenza and Exotic Newcastle Disease in some poultry flocks in other areas of the country and the world, make us all aware of the need for enhanced biosecurity on the farm. Indeed, the safety of the food supply has to start at its source, the farm. Intentional destruction or poisoning of livestock or crops in an act of agroterrorism is a possibility producers must guard against. All producers must establish good farm security and biosecurity protocols to protect their animals, crops, and property from acts of agroterrorism.

Threats to animals, their feed, and agricultural plants may occur by four basic means (Stallings et. al. 2002):

1. Biological, including bacteria, toxins, viruses, parasites, and fungi
2. Chemical including classical chemical warfare agents, pesticides, rodenticides, heavy metals
3. Radiological (agents that can be delivered as solids or liquids)
4. Physical (glass, metal, and plastic)

**Security of the Buildings and Grounds:** The physical security of the building and grounds is a vital step in ensuring farm biosecurity. Security risks should be assessed and

steps taken to control those risks. Security issues should be recognized and dealt with before they become a problem.

- It is best to have only one entry/exit road from the farm. That entrance should be clearly marked with signs and for added security should have a lockable gate with controlled gate access.
- Security lighting and perimeter fencing are important. An extra fence between a farm and the neighboring farm may help prevent nose-to-nose contact between animals and reduce disease transmission.
- The use of electronic security devices such as motion detectors around fertilizer and fuel tanks, door alarms on buildings, video cameras, and alarms linked to an off-site security monitoring system should be considered.
- Critical storage areas such as the milk room and feed storage areas should be locked with a padlock when not in use and should have limited entry.
- Entry prevention devices should be installed on exterior ladders to prevent unauthorized use and to prevent access to the top of bulk storage tanks.
- The entry and discharge points of exterior liquid tanks (whether above or below ground) should be padlocked when not in use.
- All vehicles should be locked at night and whenever there is no one on the farm. Crop dusting planes should be locked in a hangar when not in use, the keys removed, and the engine disabled if not in use for a period of time.
- All pesticide containers should be secured inside a locked building whether they are empty or full.
- All unused buildings should be locked.
- Local law enforcement should be asked to patrol the farm perimeter at irregular times if there are perceived threats.
- Establish a neighborhood watch program with your neighbors. Mutually watch for trespassers, thefts, or any suspicious activities.
- Get to know your local emergency personnel. Inviting police and fire authorities to evaluate your property can save precious time in case of a real emergency.
- Employees should be encouraged to report any suspicious activity or persons.
- Computer files or data systems should have restricted access. Electronic communications should be secured, and virus protection installed. Back-up files should be stored off-site.

- Maintain good inventory records of equipment and chemicals such as fertilizers and pesticides in case of theft, fire, flood, or agroterrorism. Good records may be indispensable to emergency personnel.
- Restrict key use to locked buildings and equipment. Maintain records of who has keys.
- If new construction is contemplated, security should be considered in the design of the new facilities.
- Create a good emergency plan in writing, including evacuation plans for all buildings, chemical inventory and where the chemicals are located, utility locations and procedures for shutting them off, employee procedures during an emergency.

**2. Create and implement a visitor policy.** Visitors, salespeople, tourists, service personnel, and veterinarians can all serve as fomites to transmit disease. A plan should be instituted where all visitors to the farm must check in with a designated farm representative. This will help account for all people on the farm and protect against unwanted visitors. The plan should include the following policies:

- Post signs indicating where visitors are to report and rules to be followed while on the farm.
- Limit access to areas of the property by designating a specific area for visitor parking, preferably on a concrete area with no access to livestock.
- Maintain a record of individual's names and companies, arrival and departure times, and the purposes of the visit.
- Do not allow visitors to bring pets of any kind onto your property as they may carry diseases.
- Use visitor badges or identification cards if needed and explain disease prevention and policies to visitors.
- Do not allow visitors, delivery personnel, or service support into the livestock areas or barns unless absolutely necessary.
- Restrict access to important area such as the milk room, fuel, pesticide, and fertilizer storage.
- Do not allow anyone onto the farm that has visited a farm in a foreign country for 7 days after returning to the United States.
- Do not allow visitors to bring food onto the farm.

**3. Protect animals from contamination or infection.** Animal infection or contamination can be either accidental or deliberate. An animal can be incubating a transmissible disease but may not show any symptoms during the incubation period. The following guidelines should be followed to help maintain animal health:

- Learn the health history of purchased animals. Separate any new animals from the herd for 3 to 4 weeks after arrival on the farm to monitor their health before introducing them to the herd. Feed and handle these animals last. Test if necessary for diseases.
- Maintain a vaccination program and parasite control program for all animals.
- Maintain a closed herd if possible.
- Practice “all-in, all-out” farming. This means a group of animals is grown up together and sent to slaughter at the same time, the premises cleaned and disinfected, and then the next group of animals is brought in. This prevents mixing of various age groups and prevents the spread of disease producing pathogens.
- If animals are returning from a show, auction, or live bird show, they should be placed in quarantine for at least two weeks to one month before returning to the herd or the flock. A disease, such as foot and mouth disease, may not produce any signs in cattle for five days or in pigs for 10 days.
- Test animals as necessary for diseases.
- Know the signs of reportable and foreign animal diseases and report any unusual symptoms immediately to your veterinarian.
- Provide disposable boots or disinfectant footbaths for any visitors and make sure they use them. If disposable boots are used, provide a means of disposal on the farm.
- Provide accessible and functioning hand washing stations.
- Do not let any visitor into the operation if they have been outside the continental U.S. during the past 14 days, unless they can assure you that they have not been in close proximity to hooved animals within the past 7 days.
- Restrict visitors from access to feed storage areas and areas where animals are housed.
- Make sure the perimeter fencing is secure to prevent contact with livestock from neighboring farms.
- Limit direct contact of your animals with wildlife, including deer, birds, raccoons, coyotes, and rodents. Try to prevent your animals from sharing a common feed or water source with wildlife. Keep wildlife out of animal facilities and living spaces of the herd.

- Separate any obviously ill animals from the rest of the herd and handle these animals last. Call your veterinarian for appropriate testing and treatment.
- Remember dogs and cats can also carry diseases to livestock.
- Prevent organic matter from entering the animal facilities from sources such as vehicles, equipment, and runoff from other farms.
- Know the source and quality of purchased feeds and ensure that no protein supplement derived from ruminant tissues is fed to cattle, sheep, or goats.
- Do not feed table scraps, human food products, or garbage to farm animals.

**4. Employee Security and Awareness.** All employees should practice biosecurity. Everyone must carefully supervise the activities of visitors, service providers, and other employees.

- Ask applicants for a resume of their qualifications and to complete a job application.
- Perform background checks to establish a potential employee's qualifications and any criminal record.
- Institute a probationary period for new employees to properly evaluate a new employee's work habits.
- Train employees to recognize and report suspicious individuals or unusual activities, security breeches, suspicious materials or devices, and missing equipment.
- Train new employees to recognize disease signs in animals so they can recognize and report any signs of illness in the animals.
- Implement policies on appropriate personal protection equipment as dictated by management and required by law.
- Train employees properly in their jobs and procedures.
- Train employees about the emergency plan, their responsibilities under the plan, and review it periodically with them.

**5. Equipment cleaning and disinfection.** Cleaning and disinfecting equipment and the facility will go a long way in keeping animals healthy. Remember all manure and organic material must be removed before disinfectants will work. Do not lend or borrow equipment. If equipment must be loaned it must be cleaned and disinfected before it is returned.

- Clean and disinfect any equipment used on ill animals before use on healthy herd mates.
- Clean and disinfect dehorner, hoof knives, and clippers between animals.
- Use your own halters and clippers rather than borrowing them.
- Clean and disinfect nursing bottles and buckets after each feeding.

#### **6. Personal sanitation:**

- Wash clothing worn on the farm with detergents and bleach or washing soda. Provide on-farm laundry facilities for employees.
- Insist workers wash their hands before milking dairy animals and after working with sick animals. Disposable gloves are recommended when frequent cleaning between animals is necessary.
- Insist workers wear protective plastic or rubber gloves when assisting with births.

#### **7. Farm traffic, animal movement, and sanitation:**

- Keep visitor and service vehicles from driving over feed delivery or manure handling routes if at all possible.
- Park all vehicles away from livestock areas, preferably on concrete.
- Avoid the transfer of manure, dirt, mud, or other organic material via vehicles.
- Locate holding pens for animal pickups near the road and away from the barns or livestock areas.
- Use only clean well-bedded trucks to move livestock to avoid introducing diseases and to avoid injuries during transport.
- Clean and disinfect all vehicles carrying livestock between shipments.
- Thoroughly wash and disinfect the inside, outside, and tires of livestock-hauling trucks, trailers, manure loaders and spreaders, tractors, portable livestock chutes or other implements of husbandry shared with neighbors which could spread disease from one farm to another (Bishop 2003, CFIA 2004, Huston 2004, Sellers undated, Snively undated, Stallings 2002, UMN CVM 2001).

Biosecurity protocols for veterinarians and extension agents for on-farm visits are provided in another Appendix. These protocols should be followed in addition to any

biosecurity measures already required and practiced on the farm. These should be used by anyone visiting or working on the farm and visiting more than one farm a day.

## **Crop Biosecurity Plans**

Protection of our agricultural crops is just as important as protecting our livestock. The introduction of foreign plant diseases, such as karnal bunt of wheat (*Tilletia indica*) disease into the United States, can cause severe economic losses to agriculture. Over the past several years there has been an increase in new and emerging crop diseases such as watermelon fruit blotch (*Acidovorax avenae* sp *citrulli*), sorghum ergot (*Claviceps africana*), and scab of wheat (*Fusarium graminearum*). The effects of the introduction into Georgia of Asiatic soybean rust with the hurricanes of 2004 probably will not be felt until the next growing season. Although the reason for the emergence of these plant pathogens is unknown it is speculated that climatic changes, man-made alterations in some ecosystems, release of new germplasm, introduction of contaminated seed, an increase in international air travel and trade as well as deliberate introduction of the diseases could all play a part (Schaad et. al. 1999).

A basic need of Georgia is to provide its citizens with a stable, safe, and inexpensive food supply. That food supply, as we have already seen consists of several components, including commercial grains, fiber crops, commercial fruits, vegetables, and nuts. Crop biosecurity is just as important as animal biosecurity in maintaining a safe food supply.

Georgia's farmers and farm workers must be aware of the damage foreign plant diseases and pests can do to their crops. Diseases can be introduced either by accidental introduction of new pests or diseases or by intentional introduction. Many countries, including our own, have conducted research on the development of plant diseases as biological weapons for the purpose of damaging another country's crops.

A deliberate introduction of a plant pathogen may involve non-traditional agents or modified agents. An "effective pathogen index" (EPI) might be used to assess the risk

and probability of harm from plant pathogens. An effective plant pathogen used in agroterrorism might have the following characteristics (Schaad 1999):

- Produces toxin
- Easy to obtain, handle, and deliver
- Easy to grow in large amounts
- Highly infectious under many conditions
- Results in the establishment of a quarantine
- No chemical control or host resistance available
- No method of rapid or reliable detection
- Infects systemically by natural means
- Spreads quickly by natural means
- Causes severe crop losses
- Survives long periods and is persistent
- Ease of genetic manipulation

The psychological, economic, and cultural consequences of crop bioterrorism, especially attacks on such soft targets as crop seeds, could have a profoundly adverse effect on Georgia's agriculture and society. Both accidental and intentional plant threats are monitored, not only by APHIS, but also by the Georgia Cooperative Extension Service, the Georgia agriculture field inspectors, and by growers themselves. Anything new attacking a crop is rapidly brought to the attention of County Extension agents, extension specialists, and university researchers. These professionals know whom to notify to quickly address any plant problems.

There are biosecurity precautions farmers and producers can take to ensure the safety of their food crops (Wilson, et. al. 2004).

- Exercise increased vigilance.
- Visitors should wear clean boots and clothing if they have visited other farm facilities or foreign countries.
- Report unusual crop problems or signs of foreign plant diseases to the local County Agent immediately.



- Buy only the amount of pesticides needed for the season and avoid carryover.
- Keep pesticides locked up and control access to them.
- Keep a pesticide inventory.
- Don't create problems by importing seed or plants from other countries illegally.
- Go through the proper channels to import seeds and crop products.
- Read and follow pesticide labels and make sure the person who applies them to the crops does so as well.
- Lock and control access to pesticide application equipment, including airplanes.
- Regularly inspect all crops and facilities.

A safe, secure, and inexpensive food supply is the foundation of any society and should be protected from both accidental and intentional harm. An increased awareness of crop biosecurity could help in the short and long term in maintaining Georgia's food security.

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