

Agent Guidelines: Sudden or Unexplained Death in a Livestock Herd

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Local extension agents are often called when a livestock producer has a sudden die off or unexplained death in the herd. The purpose of these guidelines is to provide agents with the tools and resources for these situations. In Colorado the large number and wide distribution of livestock far exceed the ability of the veterinary community to monitor all emerging health issues. Such issues have the potential to cripple livestock markets or threaten human health. The State Veterinarian's Office within the Colorado Department of Agriculture recognizes the value of Extension agents and other agricultural professionals in the local emergency disease response network. The inclusion of agents in this process enables a more efficient and effective response to emerging and endemic animal diseases or emergency livestock incidents.

CSU Extension wants local agents to assist in livestock emergencies. Agents offer both professional expertise, plus an invaluable familiarity with local people and situations in the community. When something is beyond the agent's knowledge base or expertise, it's important to inform a client about the limits of that expertise but also offer to link the clients to other experts. If the actions you take are "within your scope of work" the University protects you against any possible liability. Your scope of work is not limited to your job description. If livestock is not your area of expertise, you will still be covered for liability when you use these guidelines and checklist, recommend appropriate professionals, do not claim expertise in areas in which you are not trained, perform appropriate sampling, identify plants, etc. Remember, when you offer services or make recommendations, it is the client/producer's decision to proceed and, thus, their financial responsibility.

The Team Approach

The local extension agent(s) (www.ext.colostate.edu/cedirectory) and the producer's veterinarian make a great initial investigation team. Between these two people there is a thorough understanding of health issues, management challenges, range/pasture related issues and local situations that could be related to the deaths. This local knowledge along with the results of thorough necropsy examinations will help narrow the range of infectious animal diseases, toxic environmental (air, water, soil, forage, feed) substances or criminal opportunities to consider. Both types of professionals have a network of specialists that they can rely upon to further the investigation. Recently, the CSU Veterinary Diagnostic Laboratory has formed a Field Investigative Unit that may be reached by contacting Dr. Charlie Davis, (970) 297-0370, (970) 689-1632, charlie.davis@colostate.edu.

If the veterinarian (extension agent or producer) observes any disease of unusual morbidity or mortality that does not fit a normally expected clinical picture, the Colorado State Veterinarian's Office (303) 239-4161 must be called immediately. A specific list of reportable diseases is found at http://www.colorado.gov/cs/Satellite/ag_Animals/CBON/1251621053527. Depending on the scenario

and presumptive diagnosis, the premises may be quarantined until a state or federal veterinarian can further investigate.

The local Sheriff, police or animal control officers should be contacted if criminal mischief is suspected. Disturbing a potential crime scene may invalidate evidence, so it is best to stay at the scene until law enforcement arrives.

Initial Advice to the Producer

The producer will be looking for practical initial advice. The agent might feel pressure to answer the question, "What do I do?" Advice should only be given based on a clear picture of the whole scenario not just bits and pieces. How rapidly and severely have the animals been affected? Have there been feed changes? Have new animals been added to the herd? Have there been foreign visitors? Are there suspicious circumstances? Angry employees? Recommendations such as waiting and observing, providing fresh feed and water, moving the herd, or isolating the herd will vary based on these answers. It never hurts to suggest providing good quality feed and fresh water. In contrast, moving the herd may be contraindicated if the suspected cause is an infectious disease. Animals with infectious disease should be kept away from herd mates as much as possible.

When one or two animals die in a herd of livestock, the deaths are often attributed to normal attrition, particularly if the animals in question are very young, very old, or were known to have a pre-existing debility. When more than a couple of animals in a herd die suddenly, the importance of determining the cause of death increases. The sooner a cause can be determined, the sooner appropriate management changes can be made or herd treatment started to prevent more deaths. Each situation has its "tipping point" at which the cost for investigation to determine the cause of deaths is appreciated as a better investment than the risk of more deaths.

Site Visit

Visit the farm or ranch with at least one other person or a team of colleagues. As mentioned before the producer's veterinarian and other local extension professionals will make a good team for an initial site visit. You can hear more, see more and understand more with multiple eyes. The team that is drafted is based on the specifics of the situation. Explain clearly to the producer who is coming and why. Ask permission to take photographs and explain that they will only be used with the owner's permission. Photographs can be very helpful when experts who cannot travel to the premises are consulted, as photos help to illustrate the circumstances and environment in which the problem is occurring. Ask if any people that live or work on the property are ill – if so, then those individuals should seek medical care, and they should tell their health care providers about the circumstances involving the animal illnesses.

Communication is very important. At all times the client must be kept informed and provided the opportunity to approve involvement of more people. If a situation worsens, the number of people involved increases and so must your attention to communicating clearly and consistently. Beyond the producer, those involved can quickly include your colleagues on the site visit team, the laboratory personnel, concerned community members, and even the media if the problem escalates. Don't hesitate to consult your supervisor or more experienced colleagues if you are unsure of how to handle these conversations. If the media becomes involved, it is best to have well-organized speaking points on the situation and often times it is beneficial to have one spokesperson to communicate with the media outlet. Whether Extension is or is not the main media contact, please notify Joanne Littlefield (Extension PR office (970) 491-4640) to make her aware of Extension's involvement in an issue that might generate media coverage.

Accurate background information about the operation and the events leading up to the death(s) are absolutely necessary to collect. Don't be reluctant to use a checklist form to organize your questions and observations. There are two forms in the Resource List that you may find helpful. Review them before the visit and add relevant local questions. Take notes. Drawing a map of the premises and marking sites

of ill and dead stock, feed sources, watering sites, and areas of forests, swamps, or other notable geographic features can be extremely informative when experts are consulted.

As a general rule when unexpected livestock deaths occur, producers should be encouraged to have the animal(s) examined by necropsy (animal autopsy) because valuable information about herd management and health can be gained. A necropsy should be performed as soon as possible after the animal has died and before the carcass begins to decompose especially in the warm seasons. The exception to this rule about opening the animal up is if anthrax is suspected (<http://www.ext.colostate.edu/pubs/ag/anthrax-guide.pdf>). Cattle that die rapidly and unexpectedly, appear bloated and/or have hemorrhages or blood from their noses or other orifices should NOT be necropsied because anthrax spores can be released and endanger both humans and animals.

The necropsy can be performed at different levels of complexity. Identification of the circumstances surrounding the death of a single animal will be the best guide for determining the appropriate level of investigation. For instance, a field necropsy of an animal killed by a predator may seem unnecessary, but it can provide information on the general health of the animal that directs future management decisions. In contrast, a totally unexplained, unusual animal death or losses from illness or death that are far in excess of what has been previously experienced would warrant a more thorough necropsy.

Information on field necropsy technique can be found at the CSU Integrated Livestock Management website: <http://www.cvmbs.colostate.edu/ilm/proinfo/necropsy/notes/INDEX.HTML>. This site was developed with dairy animals but is applicable across all species. The producer's veterinarian is trained in these techniques or, of course, pathologists at the CSU Diagnostic Laboratory in Fort Collins or Grand Junction can perform the necropsy. Microscopic evaluation and chemical tests of tissues will incur further charges, but likely produce more detailed information.

If the gravity of the situation escalates, stress the importance of performing thorough necropsies of recently deceased animals or ill animals that can be euthanized for a fresh necropsy. The usefulness of necropsy, like all diagnostic tests, is affected by the quality of the sample used. In other words, a decomposed animal often yields little diagnostic information, while a recently ill animal, once euthanized, often demonstrates the disease process with greater clarity. In the case of multiple deaths, multiple necropsy examinations provide more information because it is hard to predict which animals are most representative of the problem. More observations and information is always better than less. Use the services of a veterinarian and consult the diagnostic laboratories ahead of time to be sure samples are taken and handled appropriately. Consider sending recently ill animals to one of the CSU Diagnostic Laboratories so a specialist can perform the necropsies. The likelihood of an accurate diagnose is greater with a more thorough necropsy.

If it is not possible to get the animal to a Diagnostic Lab or a veterinarian is not available to do a fresh necropsy, an Extension agent can collect tissue samples that can be invaluable in arriving at a diagnosis. Directions for sampling can be found from Arizona ALIRT: First Responders Field Guide <http://cals.arizona.edu/ans/alert/PDF/ALIRTfieldmanual.pdf>.

Environmental and feed samples are also important to collect and analyze. In the initial stages of a die off, many samples should be gathered. The necropsy results may reveal a cause of death or guide the choice of which samples are submitted for what analysis. For instance, samples tested and the analyses performed would differ if the animals died of acute liver disease versus neurologic disease. It is far better to collect and discard unnecessary samples than it is to have neglected to obtain samples. Samples should be labeled clearly.

Waiting for Results

This is an uncomfortable time for those involved in any investigation. During this time the local Extension agent can be extremely helpful to the producer regarding issues that accompany the livestock

loss - from practical assistance with disposing of dead animals to providing support with insurance claims, finances, emotional loss and managing community concern.

Confidentiality

If you're part of a larger team that's investigating a livestock death, always keep information within that team. Do not share information outside that team until the client and their veterinarian have both agreed. If you think there are others who should also be involved (for example, county emergency managers) get the clients' permission first before involving them. Trust within the investigating team must be maintained for the team to be effective.

The Curious Community

While it is unlikely agents can stop rumors, make sure you're not guilty of perpetuating them. If someone asks you about the incident, offer only what the client and their veterinarian have agreed to make public. Encourage curious community members to be patient and await the facts rather than speculate on the unknown.

After the cause of the problem has been determined and the clients and their veterinarians agree to release information to the public, it is helpful to craft a clear and concise press release. The team should appoint a single person to write the release and then the team should have the opportunity to review it prior to being released to the media. If the situation extends for a long time unresolved, the team may decide to release information as the case is progressing to stop rumors and fears. However, this cannot be done without obtaining the appropriate permissions from the clients and their veterinarians.

Resources

People

CSU Extension: www.ext.colostate.edu/cedirectory

Colorado State Veterinarian's Office (303) 869-9130.

CSU Diagnostic Laboratory: This system of labs has an array of testing services available. Further information is available at <http://csu-cvmb.colostate.edu/vdl/Pages/default.aspx>

CSU Field Investigation Unit: Recently, the CSU Diagnostic Laboratory began a free consulting service for Colorado producers regarding livestock production problems.

Contact Dr. Charlie Davis with CSU Veterinary Diagnostic Laboratories, (970) 297-0370 or (970) 689-1632 or email charlie.davis@colostate.edu.

Site Visit Questions

Background Information Checklist by Todd Hagenbuch (included at end of document)

Arizona ALIRT team's Incident report sheet: <http://cals.arizona.edu/ans/alert/PDF/ALIRTDatasheet.pdf>

Producer response: <http://cals.arizona.edu/ans/alert/PDF/ALIRTenglish.pdf>
(Contains some good questions on background info for producer)

Sampling Information

It is always wise to contact the laboratory to which you expect to send the samples for instructions about collection and storage. When you take pictures, it is a good idea to use words on a sheet of paper or signs to help orient the viewer as to what is being photographed, and where this is on the property.

Bill Ekstrom, CSU Agricultural Agent, Rio Blanco County makes these recommendations on sampling water and feed:

1. Collect water sample from the drinking water. If it is a stream, test where animals are drinking. Take pictures of the watering sites.
2. Collect samples and inventory (pictures) of any dry forage from the site that animals are currently grazing.
 - Examples: Water hemlock near streams, poisonous plants (halogeton, hounds tongue), dry forage in feeding area.
3. Collect a sample from all feed additives (minerals, supplements). Collect product nutrient content labels or tags. Take pictures.
4. Collect a sample from all forage from the feed site, manger, etc. which had recently been fed. Take pictures.
5. Collect a sample to reflect the average of feedstuffs and if a bale is found to be odd in nature (specie content, visually damaged, just doesn't look right) take a separate sample from that bale. Take pictures (close up to allow identification of species or reflect physical bale damage).
6. Collect a sample from all feed stuffs (the good, the bad and the ugly).
 - When collecting from large bales the sample needs to be collected from center of bales for a separate test using just those samples. Take pictures.
 - i. Collect for a composite sample.
7. Generally, clean glass jars are used for liquid samples, while gallon zip lock bags are handy for solid samples (feed, plants).

General sampling directions from Arizona ALIRT: First Responders Field Guide
<http://cals.arizona.edu/ans/alert/PDF/ALIRTfieldmanual.pdf>

Laboratories for Environmental Samples

Selecting an Analytic Lab: <http://www.ext.colostate.edu/pubs/crops/00520.html>

Soil, water and plant testing laboratory at CSU: (minerals, forages, elements such as arsenic)
Lab Manager, Jim Self: James.Self@ColoState.edu (970) 491-5061
<http://www.soiltestinglab.colostate.edu>

CSU Environmental Quality Lab: (bacteria, molds in air and water)
Lab Director, Douglas Rice: Douglas.Rice@ColoState.edu (970) 491-6503
<http://www.ehs.colostate.edu/WEnviroQual/Home.aspx>

Information on General Diseases

Blue Green Algae Poisoning in cattle: <https://www.msu.edu/~mdr/vol15no2/algae.html>

Botulism in horses: <http://www2.ca.uky.edu/agc/pubs/asc/asc173/asc173.pdf>

Nitrate Poisoning: <http://www.ext.colostate.edu/pubs/livestk/01610.html>

Poisonous Plants: http://southcampus.colostate.edu/poisonous_plants/index.cfm?countno=NO

Rumen or stomach contents can be evaluated microscopically for evidence of ingestion of toxic plants. This is conducted at the Texas Veterinary Diagnostic Laboratory. The test is called "microscopic analysis. For more information on this test:
http://tvmdl.tamu.edu/tests_services/test_info.php?test=Microscopic-analysis&unit_id=764&unit_effdt=2010-06-02

For guidance on sampling, you can contact the Texas Veterinary Diagnostic Laboratory directly toll-free at (888) 646-5623.

General Information on Agricultural Security:

Online Animal Agro security Course:

<http://eden.lsu.edu/EDENCourses/AnimalAgrosecurity/Pages/default.aspx>

EDEN 1 hour webinar: <http://eden.lsu.edu/News/Pages/WhereDoesExtensionFitInICS.aspx>

Agro terrorism Event:

<http://eden.lsu.edu/Topics/AgDisasters/Agrosecurity/Pages/PreparingforanAgroterrorismEvent.aspx>

Arizona ALIRT System: <http://cals.arizona.edu/ans/alert/>

This provides some great direction on investigations and sampling under manuals section. Please note this system is operational in Arizona and the phone numbers and contact information is specific for Arizona. However, the organization chart, techniques, sampling information is helpful and provides general guidelines for unexplained animal death scenario.

Checklist for Information to Obtain for Investigation

(Todd Hagenbuch, CSU Extension Agent Agriculture, Routt County)

Livestock (record following for each type of Livestock):

1. Type:
2. Age:
3. Sex:
4. Production history if female:
5. If female, was it bred at time of death? Fetus age? How is fetus affected?

Type of management

1. Pasture (describe parameters in detail, consider photos)
2. Dry lot
3. Covered sheds or barns

Weather conditions at time of incident:

1. Temperature range:
2. Moisture in past 48 hours and type:
3. Ground condition (dry, muddy, snow-covered, etc.):

Elevation where the event occurred:

Feed:

1. Type of feed
 - a. Pasture
 - b. Grass Hay
 - c. Alfalfa Hay
 - d. Grain
 - e. Manufactured Feed (supplement, feed tubs, cake, etc.)

Record following information for each type of feed

1. Source:
 2. Composition:
 3. Storage:
 - f. Bale type:
 - g. Indoor/outdoor storage: If outdoor, circle *covered* or *uncovered*
 - h. If stacked, how so:
 - i. Security of feed:
2. How Fed (circle as appropriate)?
 - a. Feeder/trough Number of feeders:
 - b. Spread loose Area:
 - c. Processor Area:
 3. Amount fed in pounds, total :
 4. Number of animals fed:
 5. Amount fed in pounds, per head (#4/#5):
 6. Amount fed vs. how much in stack:

Testing Procedure (test all feeds):

- a. Sample of hay fed if still available
- b. Loose sample of hay for species ID
- c. Core sample ends of bale
- d. Core sample middle of bale
- e. Sample multiple bales
- f. If manufactured feed, take sample tub/block/bags; remove suspect feed from area

Water:

1. Water source (circle as appropriate, remembering all possible sources):
 - a. Live stream
 - b. Ditch from live stream
 - c. Well Type of containment:
 - d. Spring Type of containment:
 - e. Pond Type and source:
 - f. Runoff
2. If running water, what is the flow rate? (CFS or GPM)
3. If running water, where does the water go?

Testing Procedure (test all possible water sources):

- a. Use clean, approved container
- b. Collect __ samples per source
- c. Keep cool and send to lab as soon as possible

General:

1. Take as many digital photos as possible of:
 - a. Dead livestock
 - b. Sick livestock
 - c. Healthy livestock
 - d. Feeding area
 - e. Feed storage area
 - f. Watering areas
 - g. Overall area where animals were contained
2. Question and record routines and/or procedures that may have happened in recent past:
 - a. Any new animals added to herd?
 - b. Moved to new location from another?
 - c. Method of movement:
 - d. Has livestock been worked and/or taken through a common area in recent past that is outside of area where death occurred?
 - e. Vaccinations received and when:
 - f. Medications received and when:
 - g. Suspicious or unusual behavior by persons in area:



Livestock Indemnity Payments (LIP)

Overview

The 2014 Farm Bill makes the Livestock Indemnity Payments (LIP) a permanent program and provides retroactive authority to cover eligible livestock losses back to Oct. 1, 2011. LIP provides compensation to eligible livestock producers that have suffered livestock death losses in excess of normal mortality due to adverse weather and attacks by animals reintroduced into the wild by the Federal Government or protected by Federal law, including wolves and avian predators. LIP payments are equal to 75 percent of the market value of the applicable livestock on the day before the date of death of the livestock as determined by the Secretary.

Sign-up will begin on or before April 15th, 2014, at any local FSA service center. Additional details on the types of information required for an application will be provided as part of the sign-up announcement. Some eligibility restrictions may apply. Please consult your local FSA office for details.

Eligible Livestock Owners

An eligible livestock owner must have legally owned the eligible livestock on the day the livestock death loss occurred.

Eligible livestock includes: beef cattle, dairy cattle, bison, poultry, sheep, swine, horses, and other livestock as determined by the Secretary of Agriculture.

Eligible contract growers must be in possession of the eligible livestock at the time death occurred.

Livestock Death Loss Documentation

Livestock owners should record all pertinent information of livestock death losses due to adverse weather and attacks by animals reintroduced into the wild by the Federal Government or protected by Federal law.

Documentation of the number and kind of livestock that have died, supplemented if possible by such items as:

- photographs or video records to document the loss, dated if possible
- purchase records, veterinarian records, production records, bank or other loan documents
- written contracts, records assembled for tax purposes, private insurance documents, and other similar reliable documents.

Additional information regarding LIP assistance can be found at fsa.usda.gov.

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If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

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