

PREVENTION PRACTICES FOR RIFT VALLEY FEVER (RVF)

If a case of Rift Valley Fever (RVF) is confirmed anywhere in the United States, mosquitoes could spread it across the nation. If any animal on your farm is confirmed to have RVF, all animals on the farm that could get sick (cattle, sheep and goats) may be euthanized and disposed of to control the further spread of disease.

There are steps you can take to help reduce the risk of RVF from entering your herd. **Strict biosecurity practices** can help you and your neighbors **minimize the chances** that your animals will have to be destroyed.

A General Precautions handout (found on the CFSPH website) provides prevention steps that should always be used on a farm.

The biosecurity practices outlined here should be put into place **immediately** if RVF is confirmed anywhere in the U.S. and maintained until the U.S. is once again declared RVF free.

General Precautionary Measures

Rift Valley Fever is a fever-causing viral disease that severely affects cattle, sheep, goats and humans. There is a very high rate of abortion and death in newborn animals. RVF is spread between animals and humans by mosquitoes. A mosquito will feed on blood from an animal/person with RVF and spread RVF to a new animal when it feeds again. Prevention measures to minimize the introduction and spread of RVF onto your farm fall into four general categories:

1. Restrict or stop all animal movement to prevent entry or spread of the disease.
2. Observe, detect and report any disease or unusual signs to your herd veterinarian as quickly as possible.
3. Mosquitoes are the most important way that RVF is spread. Control of mosquito breeding sites (stock tanks, ponds, old tires etc.) is the key to prevent spread of the disease.
4. Humans can get Rift Valley Fever. Protect yourself against mosquito bites and use personal protective equipment (respirator, gloves, eye protection etc.) when handling tissues from animals that have aborted (placenta, fetus etc.).

Specific steps you can take upon RVF being confirmed in the United States are listed below. Many should already be in place on your farm but should be enhanced and more strictly enforced in the event that RVF is confirmed in the U.S. This will minimize the chance of the disease being introduced onto your farm.

Farm Entrance

- **Limit access to your farm.**
 - The entrance to your farm is a major control point.
 - Have only one gated entrance to the animal areas on your farm to better monitor and control all visitors arriving on your farm.
 - Keep the gate locked when not in use.
- **Stop all movement of animals on and off your farm.**
 - If RVF is confirmed in the U.S., movement restrictions will most likely be implemented locally, regionally and possibly nationally.
 - Restrictions will depend on the scope of the outbreak.
 - These measures will minimize the spread of RVF to other areas, including your farm.
- **Post signs at the farm entrance to inform visitors. (See Appendix A)**
 - Stay off this farm unless given permission to enter.
 - Honk before getting out of vehicle (to announce your arrival).
 - Check-in with farm personnel upon arrival. (Direct visitors to "where" they should check-in).
 - Follow farm biosecurity procedures.
 - Visitors should avoid contact with animals unless absolutely necessary.
- **Traffic on or off your farm should be closely monitored and recorded. (See Appendix B)**
 - Maintain a log sheet to record all visitors and vehicles that enter your farm.
 - All visitors should be accompanied by someone from your farm at all times.
 - Accurate record keeping of traffic on your farm will help with disease surveillance and tracking should it become necessary. Do not rely on your ability to "recall" visitors and vehicles.

PREVENTION PRACTICES FOR RVF (CONT'D)



Mosquito Life Cycle and Control

Mosquitoes are the most important way that RVF is spread. It is only the female mosquito that feeds on blood as she needs the protein to produce eggs. Mosquitoes will lay their eggs on or near the edge of water. The mosquito eggs will hatch into larvae (also known as “wigglers”) which turn into pupae (also known as “tumblers”). The larvae and the pupae need to live in water to survive. The pupae will change into adult mosquitoes. (See Appendix C)

Control of Mosquito Egg Laying Sites (See Appendix D)

- **This is the best way to control mosquitoes since they lay eggs in specific areas and these areas can be managed.**
- **Mosquitoes can lay their eggs any place that can hold water. This includes: ponds, old tires, tarps, tree holes, bird baths and flower pots.**

Control of Mosquito Larvae (“wigglers”)

- **Mosquito larvae need to live in water to survive. They can be found in any amount of standing water including ponds, old tires, tarps and bird baths.**
- **Since mosquito larvae remain in the same water where they hatched from eggs, control of this stage focuses on continued management of mosquito egg laying areas.**
- **The use of pesticides should only be used as a supplement to controlling mosquitoes through the reduction and management of mosquito egg laying sites.**
- **Check with your local extension office or department of pest management to determine which pesticides are approved for use in your area.**

Control of Mosquito Adults

- **This is the least effective way to control mosquitoes. Attempting to control adult mosquitoes can be difficult and costly.**
- **Control of adult mosquitoes focuses on the use of pesticides.**
- **The use of pesticides should only be supplemental to controlling mosquitoes through the reduction and management of mosquito egg laying areas.**

- **Check with your local extension office or department of pest management to determine which pesticides are approved for use in your area.**

Animals

Livestock

- **Monitor animals closely and frequently for any developing illness or signs of disease.**
- **Educate yourself and train your employees about RVF and the signs of illness.**
 - Abortions at any stage of pregnancy, up to 100% of pregnant animals
 - Adult cattle: fever, snotty nose, yellow mucus membranes (gums) or eyes, refusal to eat, diarrhea
 - Calves: fever, depression, sudden death
 - Adult sheep and goats: snotty nose, diarrhea, yellow mucus membranes (gums) or eyes, an unsteady gait
 - Lambs and kids: high fever, depression, sudden death
- **Contact your herd veterinarian immediately to examine sick animals.**
- **Isolate sick animals in a mosquito-proof building away from the herd for 30 days to minimize disease spread.**
- **Any animals that have recently been purchased or returned to the farm should be quarantined for 30 days.**
 - New or returning animals (e.g. shows, competitions) can be infected with a disease without showing signs right away.
 - Quarantine allows time for a disease to develop in the animal, without exposing your entire herd to the disease agent. The animal can then be examined, diagnosed and treated (if it is not RVF).
 - Ideally, animals should be quarantined at a separate location (premises).

Other Animals

- **Prevent free roaming animals (dogs, cats) from coming onto your farm.**
 - Dogs and cats can get RVF, and it can be fatal in puppies and kittens.
 - Infected dogs and cats could serve as a source of the RVF virus for mosquitoes to pass the disease to your livestock.
 - Keep pets in a kennel or tied securely.
 - Ask your neighbors to do the same.

PREVENTION PRACTICES FOR RVF (CONT'D)



People

- **People can get RVF several ways: (see Appendix C)**
 - Being bit by a mosquito.
 - Handling infected animal tissues or fluids.
 - Breathing in the virus when handling infected animal fluids (blood, birthing tissues and milk).
- **Protect yourself against mosquitoes.**
 - When outside, wear long pants and long sleeves to cover skin.
 - Use insect repellants on exposed skin. Repellants with N,N-diethyl-meta-toluamide (commonly known as DEET) are the most effective. DEET is an insect repellant that is safe to use on people but not on pets. Make sure to follow all label directions.
 - Make sure screens on windows and doors are in good repair.
- **Sick animals should not be processed for meat or necropsied during a RVF outbreak.**
 - This can release the virus into the air. People who necropsy the animals or process meat may become sick by breathing in the virus or by handling the meat and organs.
- **Wear personal protective equipment, such as gloves, coveralls, boots, protective eyewear and a respirator when handling aborted fetuses, birthing tissues, or milking potentially infected animals.**
- **Do not allow ill people on your farm.**
 - People with RVF can have a fever, headache, muscle and joint pain, nausea and vomiting. These people could spread RVF to a mosquito that could then bite and infect an animal or another person.
 - RVF cannot be passed from person to person; it requires a mosquito.
- **Limit employees to only those necessary for the continued operation of the farm.**

Neighbors

- **Discuss the threat of RVF with your neighbors.**
- **Determine steps you can take together to protect your area and farms from becoming infected.**
 - Control free roaming animals, especially dogs and cats.

Visitors

- **Post warning signs asking visitors to keep out. (See Appendix A)**

- **People can get RVF. Infected humans may serve as a source of the virus for mosquitoes which could spread the disease to animals or humans.**
- **Visitors should park at the entrance to the farm, away from animal areas, or in designated parking areas.**
- **Specific rules and biosecurity measures to use on farm should be clearly posted for visitors.**
- **Record any visitors on the farm with a log sheet. (See Appendix B)**
- **All visitors should be accompanied by someone from the farm at all times.**
- **Visitors should avoid livestock areas, pens, barns unless absolutely necessary.**
- **If your livestock business depends on visitors, such as petting farms, or international and local visitors for sales promotion,**
 - Ensure that they have not been to areas where RVF has recently occurred.
 - Visitors from these areas should not be allowed access if they have flu-like illness. This would include fever, headache, muscle and joint pain, nausea and vomiting.

Record Keeping

- **Maintain thorough and accurate records of animal movement.**
 - Document all prior animal movements, including the dates of introduction into the herd, where they came from and movements between separate units.
 - Each farm location must be treated as a separate unit or premise.
 - This information will be essential to help trace where the disease came from.
- **Know the health status and the source of any animal(s) brought onto your farm.**
 - Do not bring animals onto your farm unless they are proven to be from RVF-free areas.

Cleaning and Disinfection (See Appendix E)

- **Remove any organic material before cleaning or disinfection.**
 - Most disinfectants are ineffective when dirt, manure and other visible material is present.
- **Clean and disinfect anything that has come in contact with birthing tissues or fetuses before it is used for another purpose.**

PREVENTION PRACTICES FOR RVF (CONT'D)



- **Clean isolation areas and replace bedding regularly.**
- **Dispose of bedding and manure from isolation areas and store it in a fenced off area so that livestock or other animals do not have access to it.**

References

Food and Agriculture Organization of the United Nations (FAO). Preparation of Rift Valley Fever Contingency Plans. Published by Food and Agriculture Organization of the United Nations, Rome. 2002. Accessed on March 3, 2005 at http://www.fao.org/documents/show_cdr.asp?url_file=DOCREP/005/Y4140E/Y4140E00.htm

Food and Agriculture Organization of the United Nations (FAO). Manual on Procedures for Disease Eradication by Stamping Out, Part: 3 Decontamination procedures. Accessed on August 2, 2005 at <http://www.fao.org/DOCREP/004/Y0660E03.htm>

International Office for Epizootics (OIE). Animal diseases data: Rift Valley Fever. Accessed on January 24, 2005 at http://www.oie.int/eng/maladies/fiches/a_A080.htm

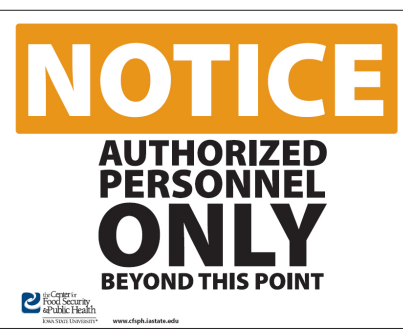
International Office for Epizootics (OIE). Health standards: Rift Valley Fever. Accessed on November 14, 2005 at http://www.oie.int/eng/normes/mcode/en_chapitre_2.2.14.htm

Zoonoses and Communicable Diseases Common to Man and Animals. Rift Valley Fever. Published by the Pan American Health Organization. 2003.

PREVENTION PRACTICES FOR RIFT VALLEY FEVER APPENDIX A



Sample signs to post at the farm entrance in the event of a RVF outbreak in the U.S.
(Available from your state livestock extension specialist or the CFSPH web site at www.cfsph.iastate.edu)



Additional signage available from private companies
(Those listed below are available from Gempler's).

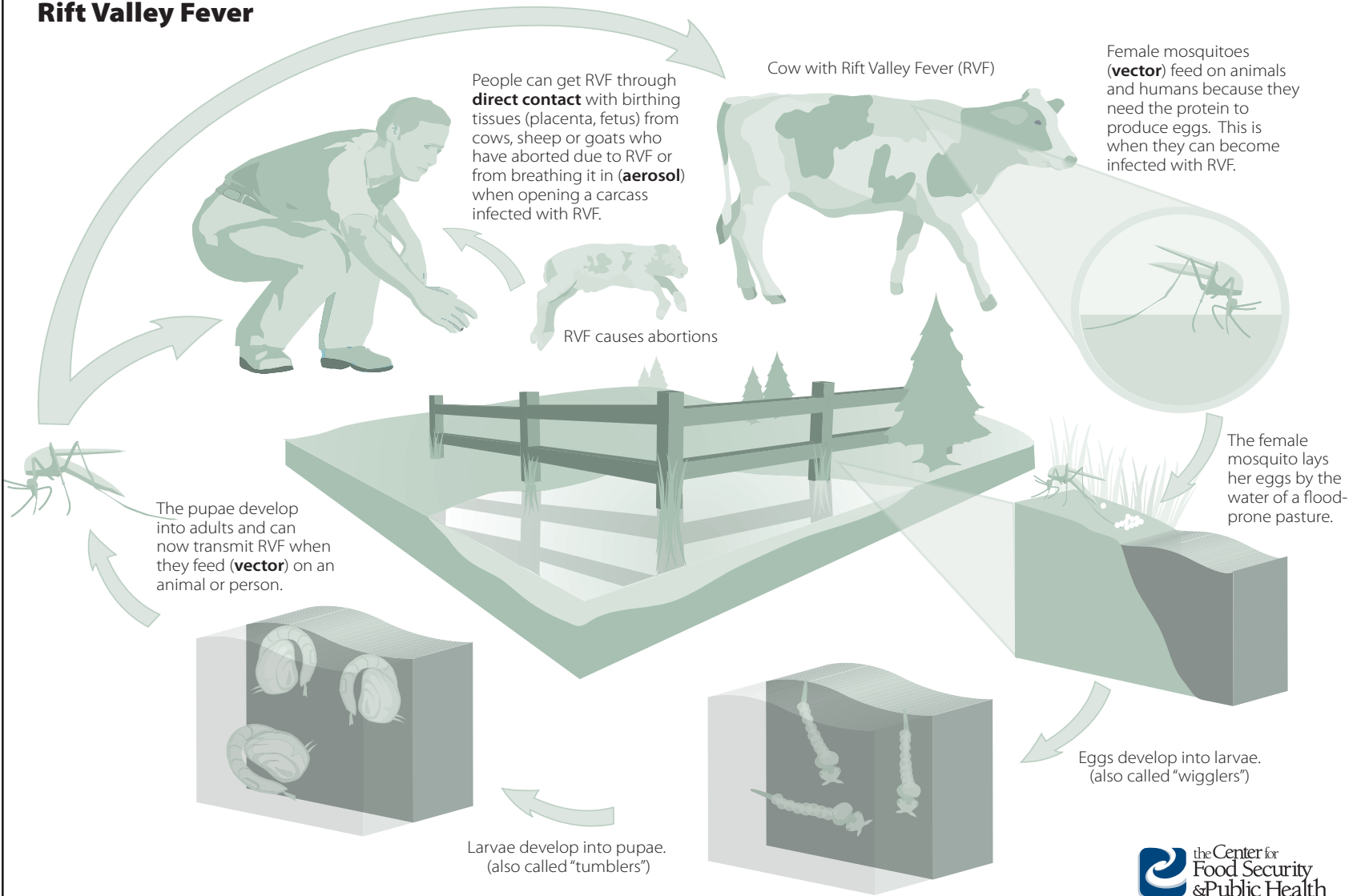


PREVENTION PRACTICES FOR RVF

APPENDIX C



TRANSMISSION ROUTES OF Rift Valley Fever



graphic created by Clint May, CFSPH

MOSQUITO CONTROL MEASURES

APPENDIX D



Rift Valley Fever virus is spread by mosquitoes. Control programs should focus on decreasing their numbers to minimize the risk of disease spread on your farm.

Control of Mosquito Egg Laying Sites

- This is the best way to control mosquitoes since they lay eggs in specific areas and these areas can be managed.
 - Add drainage holes to structures and containers that may trap water (barrels, old tires).
 - Change or circulate the water in stock tanks, pet bowls and bird-baths at least once a week.
 - Drain tarps and covers of collected rainwater after a rain (i.e. silage covers).
 - Pick up and properly dispose of all trash, especially anything that could hold water.
 - Thin out weeds and remove old leaves from ponds. This will allow natural mosquito-eating fish to easily access areas where mosquitoes lay their eggs.
 - Grade areas where road ruts, potholes and hoofprints exist (around stock tanks, ponds).
 - Grade newly developed land to prevent standing water. These areas create areas for mosquitoes to lay eggs.
 - Fill tree holes with sand, mortar or place drainage holes to prevent standing water.
 - Clean roof gutters to prevent them from becoming clogged and holding water.
- The use of pesticides should only be supplemental to controlling mosquitoes through the reduction and management of mosquito egg laying areas.
 - Do not apply pesticides to moving water (i.e. streams).
 - Products labeled only for home and garden mosquito larval control may be used. Follow all label directions.
 - Non-chemical pesticides can be used.
 - **Always follow all label directions**
 - BTI (*Bacillus thuringiensis israelensis*) pronounced ba-SILL-us THUR-in-GEN-sus IZ-real-EN-sus.
 - BTI granules can be spread over an area of pasture that is flood-prone. Use at the beginning of the mosquito season and re-apply in the middle of the season.
 - BTI dunks can be used to treat stock tanks. One dunk can treat up to 100 square feet of water surface and can last up to 30 days.
 - Methoprene products can be used to treat areas that collect water. These include bird baths, urns, old tires, flower pots, abandoned swimming pools, etc.

Control of Mosquito Larvae (“wigglers”)

- Check with your local extension office or department of pest management to determine which pesticides are approved for use in your area.

Control of Mosquito Adults

- This is the least efficient way to control mosquitoes.
- Special equipment is needed to apply pesticides to kill adult mosquitoes (adulticides). Small droplets are produced that drift through the air and contact adult mosquitoes to kill them.
- Check with your local extension office or department of pest management to determine which pesticides are approved for use in your area.

- The use of pesticides should only be supplemental to controlling mosquitoes through the reduction and management of mosquito egg laying sites.
- Individuals may use hand-held Ultra Low Volume foggers, portable or fogging attachments for tractors or lawn mowers.
- Pyrethrin or 5% malathion can be fogged outdoors. Follow all label directions.
- Contact your local extension agent for assistance in developing a mosquito management plan.

Personal Protection

- People can get Rift Valley fever by being bitten by an infected mosquito.
- Protect yourself against mosquitoes.
- When outside, wear long pants and long sleeves to cover skin.
- Use insect repellants on exposed skin. Repellants with DEET (N,N-diethyl-meta-toluamide) are the most effective.
- DEET is an insect repellent that is safe to use on people but **not** on pets.
- Make sure screens on windows and doors are in good repair.

It is a violation of state and federal law to use a pesticide in any manner that differs from the product label. Use only according to label directions to avoid meat or milk residue hazards, environmental damage, and animal or human injury.

Mosquito References:

Lawler SP, Lanzaro GC. Managing Mosquitoes on the Farm. Department

MOSQUITO CONTROL MEASURES APPENDIX D



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Stringham M, Watson W. Managing Waste Lagoons to Control Mosquito Breeding. North Carolina State University Department of Entomology. <http://www.ces.ncsu.edu/depts/ent/notes/MedVet/wnv-manage.htm>

Larvicides for Mosquito Control. United States Environmental Protection Agency. <http://www.epa.gov/pesticides/health/mosquitoes/larvicides4mosquitoes.htm>



Disinfectants for Rift Valley Fever Virus

Note: Before disinfecting, all surfaces must be cleaned. This includes removing any visible material such as manure, bedding and feed.

Product	Dilution	Mixing Instructions	Comments
Sodium hypochlorite 5.25% (NaOCl) (household bleach)	3%	2 gallons of bleach to 3 gallons of water. Mix thoroughly.	Not effective when area/objects are not clean; unstable in warm, sunny conditions.
Calcium hypochlorite (Ca(OCl) ₂)	3%	30g/liter	Not effective when area/objects are not clean; unstable in warm, sunny conditions.
Potassium peroxy-monosulfate and sodium chloride	2-3%	Follow label directions.	e.g. Virkon-S
Hydrochloric acid (HCl)	2%	10 molar concentration, dilute one part acid to 50 parts water. Always pour acid into water.	Use only when better disinfectants are not available. Damages many metals and concrete.
Citric acid	0.2%	1 ounce powder to 4 gallons of water.	Safe for clothes and body decontamination.

Source: Food and Agriculture Organization of the United Nations (FAO). Manual on Procedures for Disease Eradication by Stamping Out. Part 3: Decontamination Procedures. Accessed August 2, 2005 <http://www.fao.org/DOCREP/004/Y0660E/Y0660E03.htm>