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# Bovine Brucellosis

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Brucellosis (also known as contagious abortion or Bang's disease) is a costly disease of livestock and wildlife. It is caused by a group of bacteria in the genus *Brucella.* The disease has significant consequences for animal health, public health, and international trade.

Brucellosis occurs mainly in cattle, bison, and swine, but can affect other animals (cervids, goats, sheep, and horses) and people.

In cattle and bison, the bacteria of concern is *Brucella abortus*. It has been present in the United States since the 1930s. A longstanding national eradication program mostly eliminated the disease in U.S. cattle. Today, only occasional spillover cases occur in cattle and other livestock near the Greater Yellowstone Area (GYA). Wild bison and elk in the GYA are the last remaining reservoir of this disease in the United

States.

## What To Look For

When signs do appear, they're most obvious in pregnant animals. Here's what to look for:

- Abortion (usually at 5–7 months of pregnancy)
- Birth of weak, unhealthy calves
- Decreased milk production
- Weight loss
- Poor conception rates or infertility
- Retained afterbirths with resulting uterine infections
- Enlarged, arthritic joints (occasionally)

*Note: Appearance alone isn't an effective way to detect brucellosis. Infected animals may appear healthy, even during pregnancy. However, they can still harbor and spread infectious bacteria and serve as dangerous sources of infection.*

On rare occasions, humans have been infected with brucellosis, usually by drinking unpasteurized milk from infected cows or by contact with infected birthing fluids and tissues. Visit the Centers for Disease Control and Prevention online for human health information about brucellosis.

## How To Prevent This Disease

Brucellosis is highly contagious. In most cases, it spreads via direct contact with an infected or exposed animal. It can also spread through an infected animal's milk, aborted fetuses, placental membranes or fluids, and other vaginal discharges.

Here's what you can do to help protect your herd from infection:

**Vaccination**

There's a vaccine for brucellosis called RB51. Licensed for use in nonpregnant female cattle 4 to 12 months of age, the vaccine provides a significant level of

protection (about 70- to 80-percent effective). It's also very effective at preventing abortions, which prevents further disease transmission. RB51 is available only through an accredited veterinarian, State animal health official, or Federal area veterinarian in charge.

All cattle or domestic bison owners, regardless of location, should discuss the advantages and disadvantages of vaccination with their veterinarian. Some States don't allow cattle or domestic bison to be moved interstate for breeding without a record of brucellosis vaccination.

**Management**

Proper sanitation and herd management can help keep brucellosis from spreading. Recommended practices include:

- Clean and disinfect calving areas and other places likely to become contaminated with infective material.
- Wear sturdy rubber or plastic gloves when field dressing and handling tissues from wildlife and feral swine or assisting with calving or aborting animals. Scrub your hands well with soap and water afterward.
- Maintain closed herds (no animals entering or leaving the herd).
- Record individual animal identification and maintain accurate records.
- Isolate and test new animals and those re-entering the herd.
- Arrange diagnostic workups, necropsies, or both for exposed and potentially infected animals.

## How It Is Treated

There's no treatment for brucellosis in livestock.

Once a herd is affected, animal health officials quarantine all infected and exposed cattle and bison and limit their movement to slaughter only. This continues until the disease is no longer present in the herd.

Animal health officials also investigate the detection to determine if other herds are affected and identify the most likely source of infection. We develop herd plans for affected herds, possibly exposed herds, and area herds to control, eradicate, and prevent the spread of the disease.

# Report Signs of Animal Disease

Producers or owners who suspect an animal disease should contact their veterinarian to evaluate the animal or herd. Find an accredited veterinarian.

Animal health professionals (veterinarians; diagnostic laboratories; public health, zoo, or wildlife personnel; and others) report diagnosed or suspected cases of nationally listed reportable animal diseases to APHIS Area Veterinarians in Charge and to the State animal health official as applicable under State reporting regulations.

# Controlling Brucellosis

Expand All

## Current Status

All 50 States, Puerto Rico, and the U.S. Virgin Islands are brucellosis-free, except for the occasional spillover of cases occurring in livestock near the Greater Yellowstone Area due to bison and elk having the disease. For the latest updates by State, view our Status of Current Eradication Programs and latest Summary Reports and Affected Herd Maps (see below).

It is important to note brucellosis is present in free-ranging bison and elk in Yellowstone National Park, Grand Teton National Park, and the area around those parks. This threatens the brucellosis status of the surrounding States and the health of their cattle and domestic bison herds, which are free of the disease.

### Summary Reports and Affected Herd Maps

Federal and State animal health officials jointly conduct surveillance for bovine brucellosis and tuberculosis (TB). When infected animals are identified, officials investigate these cases to determine if additional animals or herds of animals are

infected.

The reports below provide updates on these investigations and summary information about brucellosis and TB-affected cattle, bison, and captive cervids herds that have been detected during the year. The summaries also include information about herds that were detected in previous years, but are being managed under a test-and-removal plan.

**NEW - National Brucellosis and Tuberculosis Quarterly Report StoryMap**

**FY 2024**

- Quarter 3, FY 2024 Report (1.92 MB) (April-June 2024)
- Quarter 2, FY 2024 Report (3.7 MB) (January-March 2024)
- Quarter 1, FY 2024 Report (1.79 MB) (October–December 2023)

**FY 2023**

- Quarter 4, FY 2023 Report (3.75 MB) (July–September 2023)
- Quarter 3, FY 2023 Report (4.38 MB) April–June 2023)
- Quarter 2, FY 2023 Report (4.37 MB) (January–March 2023)
- Quarter 1, FY 2023 Report (599.16 KB) (October–December 2022)

Updated maps will be posted when changes regarding affected herds occur.

To request archived reports and herd maps from fiscal years 2015 to 2022, please contact aphisweb@usda.gov.

## Eradication Program

Through the Cooperative State-Federal Brucellosis Eradication Program, APHIS works to eliminate the disease from the United States in domestic cattle and bison. This longstanding program has had dramatic results. Brucellosis used to be widespread in U.S. livestock. In 1956, there were 124,000 affected herds found by testing in the United States. By 1992, that number dropped to 700 herds. Today, the number of affected domestic herds has declined to single digits.

Success depends on support and participation from livestock producers. The basic approach is to vaccinate calves in at-risk areas, test cattle and domestic bison for infection, and send infected animals to slaughter. Other key features of the program include live animal testing and slaughter surveillance to find infected animals, investigating affected herds, wildlife surveillance, and keeping wildlife away from livestock during the high-risk calving period.

The program's Uniform Methods and Rules (226.42 KB) and brucellosis regulations (9 CFR Part 78) set the minimum standards for States to achieve eradication. States are designated brucellosis-free when they have:

- No infected cattle or bison for 12 consecutive months under an active surveillance program, or
- Additional surveillance measures in place around areas that have brucellosis infected wildlife to ensure early detection of any disease spillover.

For current brucellosis State classifications see the updates posted at Status of Current Eradication Programs.

The livestock and dairy industries and the American consumer have realized great financial savings from the success of the Cooperative State-Federal Brucellosis Eradication Program. Annual losses from lowered milk production, aborted calves and pigs, and reduced breeding efficiency have decreased from more than $400 million in 1952 to less than $1 million today. Studies have shown that if brucellosis eradication program efforts were stopped the costs of producing beef and milk would increase by an estimated $80 million annually in less than 10 years.

## State Reports

APHIS reviews State brucellosis eradication programs biannually. Our reports and the corresponding State responses are posted as they become available.

### Idaho

- 2021 Idaho APHIS Report (244.72 KB)
    - 2021 Idaho Response (274.38 KB)
- 2018 Idaho APHIS Report (1.48 MB)
    - 2018 Idaho Response (5.11 MB)

**Montana**

- 2022 Montana APHIS Report (219.81 KB)
  - 2022 Montana Response (250.03 KB)
- 2019 Montana APHIS Report (1.98 MB)
  - 2019 Montana Response (130.15 KB)

**Wyoming**

- 2023 Wyoming APHIS Report (189.58 KB)
  - 2023 Wyoming Response (257.9 KB)
- 2020 Wyoming APHIS Report (185.75 KB)
  - 2020 Wyoming Response (266.85 KB)
- 2017 Wyoming APHIS Report (529.58 KB)
  - 2017 Wyoming Response (475.53 KB)

## Surveillance

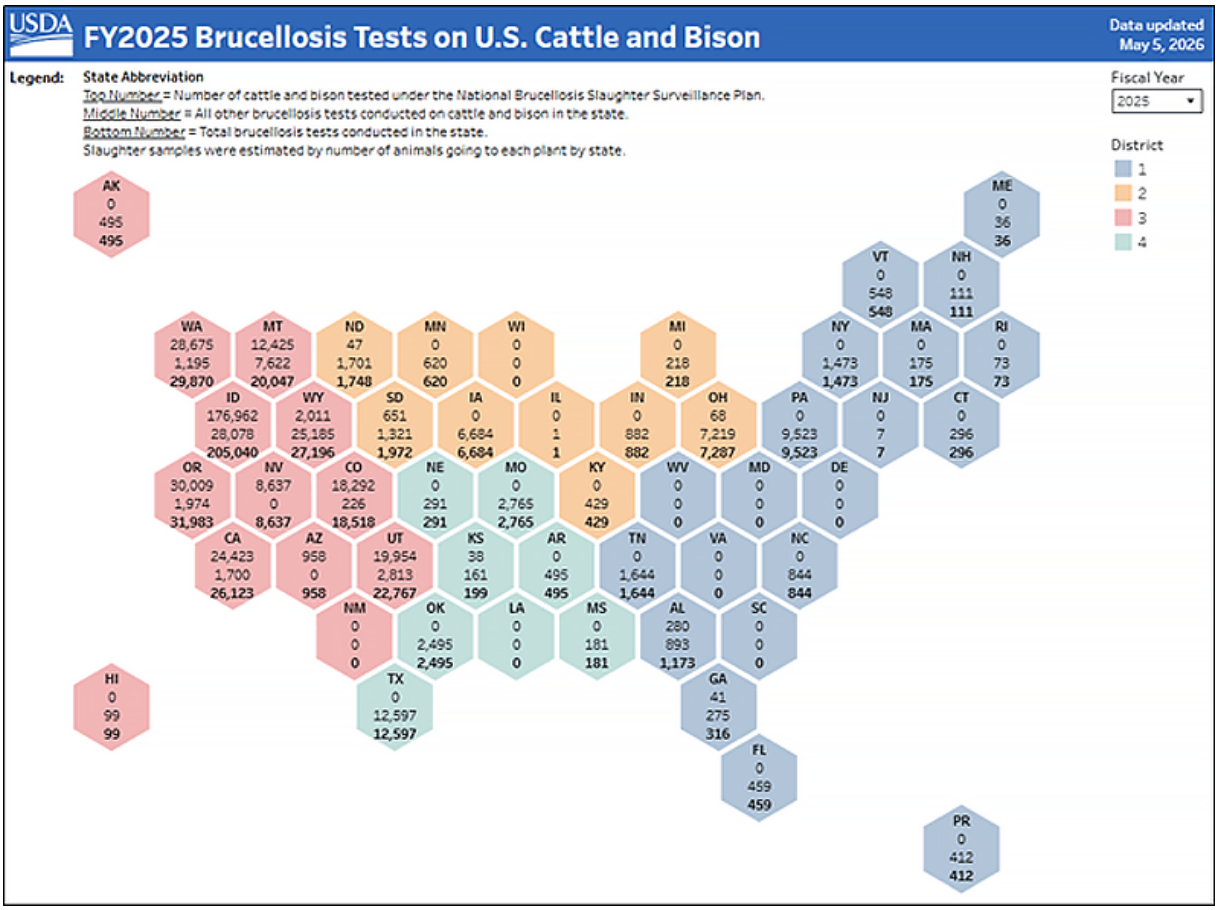
APHIS conducts surveillance on animals at slaughter by testing their blood for *Brucella* antibodies. We test around half a million animals each year. This level of surveillance is more than sufficient to detect 1 affected herd out of 100,000 herds at a confidence level of 95 percent. Estimated prevalence is 0.002 percent. Our national surveillance strategy exceeds World Organisation for Animal Health standards for a country recognized as disease-free for brucellosis.

- National Bovine Brucellosis Surveillance Plan (789.75 KB)

Two primary surveillance procedures are used to locate infection without having to test each animal in every herd. Some States check milk from dairy herds two to four times a year by testing a small sample obtained from creameries or farm milk tanks for evidence of brucellosis. Cattle and domestic bison herds that do not produce milk for sale are routinely tested for brucellosis by blood-testing animals sold from these herds at livestock markets in some States or at federally designated slaughter facilities. With certain exceptions, herd tests for disease investigations must include all cattle and bison over 6 months of age except steers and spayed heifers. In

addition, some States require blood testing of adult cattle and bison upon change of ownership, even if sold directly from one farm to another. If brucellosis test-positive animals are detected in surveillance testing, the cattle and bison remaining in the herds from which such animals originated are tested.

### FY 2025 Brucellosis Tests on U.S. Cattle and Bison




| State | FY25 National Surveillance Plan Tests* | FY25 Non-National Surveillance Plan Tests** | TOTAL |
|---|---|---|---|
| AK | 0 | 495 | 495 |
| AL | 280 | 893 | 1,173 |

| State | FY25 National Surveillance Plan Tests* | FY25 Non-National Surveillance Plan Tests** | TOTAL |
|---|---|---|---|
| AR | 0 | 495 | 495 |
| AZ | 958 | 0 | 958 |
| CA | 24,423 | 1,700 | 26,123 |
| CO | 18,292 | 226 | 18,518 |
| CT | 0 | 296 | 296 |
| DE | 0 | 0 | 0 |
| FL | 0 | 459 | 459 |
| GA | 41 | 275 | 316 |
| HI | 0 | 99 | 99 |
| IA | 0 | 6,684 | 6,684 |
| ID | 176,962 | 28,078 | 205,040 |
| IL | 0 | 1 | 1 |
| IN | 0 | 882 | 882 |

| State | FY25 National Surveillance Plan Tests* | FY25 Non-National Surveillance Plan Tests** | TOTAL |
|---|---|---|---|
| KS | 38 | 161 | 199 |
| KY | 0 | 429 | 429 |
| LA | 0 | 0 | 0 |
| MA | 0 | 175 | 175 |
| MD | 0 | 0 | 0 |
| ME | 0 | 36 | 36 |
| MI | 0 | 218 | 218 |
| MN | 0 | 620 | 620 |
| MO | 0 | 2,765 | 2,765 |
| MS | 0 | 181 | 181 |
| MT | 12,425 | 7,622 | 20,047 |
| NC | 0 | 844 | 844 |
| ND | 47 | 1,701 | 1,748 |

| State | FY25 National Surveillance Plan Tests* | FY25 Non-National Surveillance Plan Tests** | TOTAL |
|---|---|---|---|
| NE | 0 | 291 | 291 |
| NH | 0 | 111 | 111 |
| NJ | 0 | 7 | 7 |
| NM | 0 | 0 | 0 |
| NV | 8,637 | 0 | 8,637 |
| NY | 0 | 1,473 | 1,473 |
| OH | 68 | 7,219 | 7,287 |
| OK | 0 | 2,495 | 2,495 |
| OR | 30,009 | 1,974 | 31,983 |
| PA | 0 | 9,523 | 9,523 |
| PR | 0 | 412 | 412 |
| RI | 0 | 73 | 73 |
| SC | 0 | 0 | 0 |

| State | FY25 National Surveillance Plan Tests* | FY25 Non-National Surveillance Plan Tests** | TOTAL |
|---|---|---|---|
| SD | 651 | 1,321 | 1,972 |
| TN | 0 | 1,644 | 1,644 |
| TX | 0 | 12,597 | 12,597 |
| UT | 19,954 | 2,813 | 22,767 |
| VA | 0 | 0 | 0 |
| VT | 0 | 548 | 548 |
| WA | 28,675 | 1,195 | 29,870 |
| WI | 0 | 0 | 0 |
| WV | 0 | 0 | 0 |
| WY | 2,011 | 25,185 | 27,196 |

* Includes slaughter establishments selected per the National Bovine Brucellosis Surveillance Plan (789.75 KB)

** Includes tests conducted on cattle in the State other than those tested under the National Brucellosis Slaughter Surveillance Plan, such as at livestock markets and on the farm for certification of the herd or sale or for diagnostic purposes

Slaughter samples are an estimated of number of animals going to each plant by State.

## Eliminating Brucellosis in the Greater Yellowstone Area

To continue demonstrating the United States' brucellosis-free status, we must lessen risks of brucellosis transmission from wildlife to livestock. The biggest risk of transmission is wild elk and bison that harbor the disease in the Greater Yellowstone Area (GYA). This can occur when elk or bison abort or calve near where livestock graze or are fed or when introducing a brucellosis-exposed animal into a herd.

Reintroduction of the disease into a brucellosis-free State could have a serious economic impact on domestic livestock markets and affect export markets. APHIS works with State and other Federal agencies to prevent this. Our goal is to contain the spread of brucellosis from free-ranging bison and elk to domestic bison and cattle and eliminate the disease from the GYA while maintaining viable free-ranging bison and elk herds in the GYA and national parks.

- Revisiting Brucellosis in the Greater Yellowstone Area (National Academies, 2020)

## Vaccine Information

In 1996, APHIS licensed *B. abortus* strain RB51 vaccine for use in cattle as part of the cooperative State-Federal Brucellosis Eradication Program. *B. abortus* strain RB51 is a variation of the naturally occurring *B. abortus* wild strain. This genetically stable variation produces antibodies that are different from the antibodies produced by natural infection. This results in vaccinated animals not testing positive on traditional brucellosis diagnostic tests.

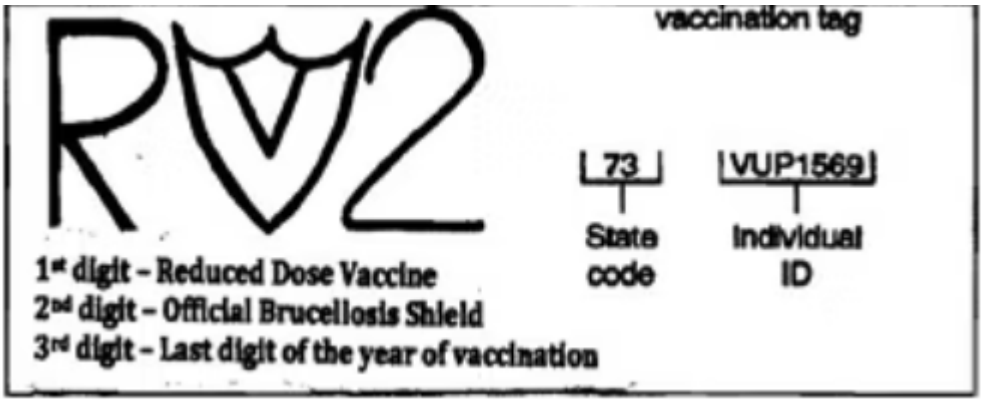
### Using RB51

Strain RB51 vaccine must be administered by an accredited veterinarian or by a State or Federal animal health official. Approximately 3.5 million calves are

vaccinated annually as part of ongoing efforts to maintain disease freedom. Given that *B. abortus* is now geographically limited to the Greater Yellowstone Area in wildlife, the need for routine vaccination of calves has decreased.

Strain RB51 is as effective as the previously used *B. abortus* strain 19 vaccine and causes fewer abortions in cattle. It is currently licensed for use in **non-pregnant** female cattle 4 to 12 months of age. It should not be given to pregnant cattle as it may induce abortion. If given according to the label, it does not produce any readily observable clinical signs of disease after vaccination and does not produce a local vaccination reaction at the injection site.

Vaccinated calves (official calfhood vaccinates) must be identified with the official USDA ear tag and a vaccination tattoo placed in the right ear. The tattoo is comprised of an "R" to distinguish animals vaccinated with RB51, followed by a shield, and the digit of the last year of vaccination. All vaccinations must be recorded on form VS4-26 (412.66 KB).



Sample brucellosis tattoo of an animal vaccinated in 2012

Booster vaccinations, known as “adult vaccinations,” may be used as a disease management strategy in areas where *B. abortus* is endemic in wildlife or in case of an outbreak.

**Special Considerations**

Normally, the vaccine strain is cleared from the blood stream within 3 days of vaccination and is not present in nasal secretions, saliva, or urine. As a modified live vaccine, in rare cases, vaccinated animals may not clear the vaccine promptly and shed the vaccinate strain in milk or other secretions. Because strain RB51 can be

shed in the milk of vaccinated animals, all milk or milk products consumed from vaccinated animals should be pasteurized for food safety purposes.

RB51 vaccine is not considered protective against *Brucella suis* (Olsen 2010) and therefore is not useful in areas where cattle may be exposed to *B. suis*.

Brucellosis can affect many other domestic and wild animal species, as well as humans. If people are exposed to strain RB51, the disease can be treated by antibiotics. However, strain RB51 is resistant to rifampin and penicillin.

**Bison**

While preliminary studies indicate that RB51 is safe and efficacious in bison calves, the vaccine is not yet licensed for use in bison. For RB51 to be conditionally licensed in bison, additional safety and efficacy trials must be completed. The vaccine is being used routinely in the Greater Yellowstone Area in farmed/owned bison. Vaccinated bison will be recognized as official vaccinates provided that the proper vaccination charts and identification are completed as required under the Brucellosis Eradication Uniform Methods and Rules (226.42 KB).

## Regulatory Information

- 9 CFR Part 78
- Uniform Methods and Rules (226.42 KB)
- FDA “Grade A” Pasteurized Milk Ordinance (2017 revision)

## Archived Environmental Documents

- Draft Environmental Assessment: Bison Quarantine Feasibility Study (1.45 MB) (December 2005)
    - Decision Notice and Finding of No Significant Impact: Bison Quarantine Feasibility Study (2.99 MB) (June 2006)
- Environmental Assessment: Study of Shedding and Venereal Transmission of *Brucella abortus* by Bison Bulls in the Greater Yellowstone Area (91.35 KB) (February 2010)

    - Summary of and Responses to the Comments Received on the Environmental Assessment Prepared for the Proposed Study of Shedding and Venereal Transmission of *Brucella abortus* by Bison Bulls in the Greater Yellowstone Area (44.62 KB)
    - Finding of No Significant Impact for the Proposed Study of Shedding and Venereal Transmission of *Brucella abortus* by Bison Bulls in the Greater Yellowstone Area, Environmental Assessment (304.4 KB) (April 2010)
- Environmental Assessment: Evaluation of GonaCon, an Immunocontraceptive Vaccine, as a Means of Decreasing Transmission of *Brucella abortus* in Bison in the Greater Yellowstone Area (271.39 KB) (May 2012)
    - Finding of No Significant Impact for the Proposed Study: Evaluation of GonaCon, an Immunocontraceptive Vaccine, as a Means of Decreasing Transmission of *Brucella abortus* in Bison in the Greater Yellowstone Area (946.71 KB) (May 2012)

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