

Botulism

Botulism is a potentially devastating disease that is commonly seen in northern Australia where it is associated with cattle chewing bones to obtain phosphorus or protein.

Cattle in intensive dairy feeding systems that rely on stored feed are at risk of botulism because at some stage the feed may be contaminated with a dead animal or some rotting plant material. Only a relatively small amount of contamination of the feed source with the botulinum toxin could result in an outbreak. The toxin could come from the carcass of a small animal (e.g. a mouse, rat or snake) being accidentally processed with the feed.

Some of the most spectacular outbreaks of botulism have involved dairy cows being fed total mixed rations based on silage. In a recent case more than 80% of the herd was lost in a short period of time. The disease may not be common but the effects can be devastating.

Cause

Clostridium botulinum types C and D produce potent toxins in rotting carcasses, feed contaminated with dead rodents, birds or reptiles, or any rotting material including plants.

Signs of the disease

After ingesting botulism toxin, cattle may die suddenly or develop weakness, paralysis moving from the hindquarters forward and may show a paralysed tongue and drooling. Death is the usual result through paralysis of the breathing muscles.

Potential economic losses

- High numbers of deaths are possible in outbreaks.
- Greatly reduced milk production in chronically affected cases.

Treatment

There is very little that can be done to treat cattle suffering from botulism. Physical removal of the toxin in the early stages may reduce the effects. Good nursing may be of assistance in mild cases of the disease.

Prevention and control

- Several types of botulinum bivalent (including C and D types) vaccine for cattle are available.
- The number of doses required varies with the vaccine e.g. two initial vaccinations and an annual booster, or one vaccination per year, or one vaccination every two or three years. It is important to consider exposure levels when determining if longer vaccination cover will be adequate for your cattle. Consider your circumstances and contact your local veterinarian to discuss the best option for your cattle.
- Ensure cattle are vaccinated before the time of possible exposure to the toxin as protective immunity takes time to develop. This varies between vaccines - from within 14 days of vaccination to 3 to 6 months of an initial dose.
- Always read the label before administering the vaccine.

Vaccination costs

The cost to vaccinate a dairy herd can vary significantly. It is important to compare the different brands and various retailers to ensure you get the most economical vaccination program.

Vaccines available and schedules for use

Botulism vaccines currently registered for use in Australia and their respective vaccination schedules

Vaccine	Prime booster*	Revaccination	Comments
Websters (low-volume bivalent botulinum vaccine for sheep and cattle)	4 to 6 weeks	Annually recommended	A single dose will provide worthwhile protection in extensive pastoral areas.
Ultravac (botulinum vaccine)	4 to 6 weeks in non-endemic** areas	Annually recommended	One dose is sufficient to confer protection in areas where botulism is endemic.
Longrange (botulinum vaccine)	Not required	Annually recommended	
Singvac (2-year single-shot botulinum vaccine for cattle)	Not required	2 yearly; annually in non-endemic areas	Where infection is rare, a 24-month booster interval may not provide optimal protection
Singvac (3-year single-shot botulinum vaccine for cattle)	Not required	3 yearly; annually in non-endemic areas	Where infection is rare, a 36-month booster interval may not provide optimal protection

* After the initial injection

** Non-endemic areas are where botulism infections are rare

Some product information refers to non-endemic areas where the disease is not common and the cattle will not be receiving regular exposure to low levels of the toxin to assist the maintenance of immunity. An annual vaccination is recommended in these situations even when the three-year vaccine is given.

The vaccines vary in their claims and directions for use and it is important to note the differences between the vaccines before selecting one to suit your production system. Refer to the product's label for more information.

Source: Queensland Department of Agriculture, Fisheries and Forestry; 2009