



Research Paper

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BOTULISM IN NORTHERN IRELAND

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This paper reviews the threat posed by Botulism to the Northern Ireland agricultural industry, specifically the threat of the bacterium to the cattle industry.

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BACKGROUND

Botulism has emerged as a threat to cattle in Northern Ireland in recent years. The disease is caused by toxins produced by bacteria called *Clostridium botulinum*. These bacteria are commonly found in the environment and the toxin is produced in decaying carcasses and vegetable matter.

Investigations provide circumstantial evidence that broiler litter is a risk factor for many current outbreaks of botulism in cattle. The presence of the carcasses of birds that have died during production is regarded as the likely source of toxin. It is speculated that even small fragments of carcasses transferred onto pasture by scavenger animals, such as foxes, dogs or crows, can pose a risk to grazing cattle.

Scavengers may gain access to this material after it has been stacked outside or spread on pasture. Therefore, poultry litter should not be accessible to dogs, foxes, crows or other scavengers that may carry carcasses onto adjacent pasture or into cattle housing.¹

The annual numbers of suspect outbreaks from which samples were submitted for botulinum toxin testing in recent years are:

Year	2000	2001	2002	2003	2004	2005	2006	2007
Number of suspect outbreaks	12	31	73	105	54	92	69	28 (to date)

The percentages (and numbers) of submissions in which suspect botulism toxin was confirmed from year 2000 are:

¹ The EU Animal By-Products Regulation No. 1774/2002 prohibits the on-farm burial or land spreading of carcasses which should instead be disposed of by rendering or incineration.



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Year	2000	2001	2002	2003	2004	2005	2006	2007
Percentage cases confirmed	0	0	15.7	27.9	24.1	16.3	13.0	17.9
No of cases confirmed	0	0	11	29	13	15	9	5

Source: Department of Agriculture and Rural Development, July 2007.

CLINICAL SYMPTOMS AND TREATMENT

Cattle of all ages are susceptible to botulism, which is characterised by a progressive muscle weakness (paralysis). Affected animals may be weak, stagger about, or go down. In most cases the disease is fatal although some animals may recover. When a large amount of toxin has been ingested, the animal may be found dead without having shown any signs of disease.²

The clinical signs in affected animals include:-

- lack of muscle tone resulting in progressive flaccid paralysis.
- muscle tremors, loss of co-ordination, hind limb stiffness, reluctance to move.
- muscle weakness, first in the hindquarters, then progressing to the forequarters, head and neck.
- animals may lie on their chest with the head turned towards the flank (similar to cows with "milk fever").
- inability to chew or swallow and drooling of saliva
- protrusion of the tongue
- sudden death.

² Source: 'Control of Botulism in Cattle', Dr Seamus Kennedy, Agri-Food and Biosciences Institute, Veterinary Science Division, December 2006 - <http://www.afbini.gov.uk/adds-cattle-botulism-in-12-december-2006.pdf>.



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Treatment of botulism in cattle is rarely successful. It is therefore better to prevent the disease occurring. There are two important ways in which the chances of an outbreak of botulism can be reduced³:

- Preventing access to contaminated feedstuff and bedding,
- Where there is an unavoidable chance of exposure to broiler litter, vaccinating against botulism.

EFFECT ON PUBLIC HEALTH

The toxins usually associated with botulism in cattle rarely, if ever, affect humans. However, where the disease is suspected on a farm, the Food Standards Agency (FSA) in Northern Ireland requests that all milk and meat from animals showing signs of the disease be with-held from sale for human consumption. Milk and meat from healthy cattle are not affected by these restrictions.

Reports from private veterinary surgeons, and a reducing number of submissions of suspect botulism cases, indicate that the various control measures already implemented by the industry are having a positive impact on the incidence of this disease. However, as cases continue to occur, both the Department of Agriculture and Rural Development (DARD) and the Agri-Food and Biosciences Institute (AFBI) advise farmers to take steps to prevent this disease.

The Food Standards Agency has recently amended its advice on the management of outbreaks of suspected botulism in cattle. This follows recommendations in a report by the Advisory Committee on the Microbiological Safety of Food (ACMSF).⁴

Milk and meat from clinically affected cattle should not enter the food chain. There are now, however, no restrictions on milk or meat from healthy cattle from affected farms.

³ Source: DARD leaflet on 'Botulism in Cattle', December 2006 - <http://www.dardni.gov.uk/botulism-in-cattle>.

⁴ See December 2005 report from Advisory Committee on the Microbiological Safety of Food, Ad Hoc Group on Botulism in Cattle - <http://www.food.gov.uk/multimedia/pdfs/acmsf2006botulismcattle.pdf>.



DARD ACTION⁵

DARD is not currently planning to take any action in this area. However from 2003 to 2005 DARD issued a Botulism leaflet, each year, to all herd owners in Northern Ireland and co-operation between DARD and representatives of the poultry and cattle sectors resulted in agreed control strategies which appear to have led to a decrease in the number of suspect outbreaks reported from 2004. This likely reflects the use of a combination of improved biosecurity by broiler producers and cattle farmers and also vaccination. An inactivated cattle vaccine is available for use in Northern Ireland with a special licence. DARD/AFBI is not aware of an outbreak of botulism in any vaccinated herds.

AFBI and DARD have been working closely with the livestock and poultry sectors in Northern Ireland to help ensure that producers are aware of the most effective control measures.

ULSTER FARMERS UNION COMMENT

The Ulster Farmers' Union says Botulism must be dealt with effectively in Northern Ireland to ensure that another animal health disease doesn't become a major problem for the farming industry. The UFU welcomed the fact that a vaccine was now becoming available for the disease, which seems to have emerged in sporadic isolated incidents in Northern Ireland. UFU President Douglas Rowe said a small number of Union members had lost livestock because of suspected cases of botulism and action to prevent further cases would be welcomed. Mr Rowe said; "We are still learning about this disease but farmers whose herds have been affected know that it can have a serious affect on the farm business. We would urge DARD to do everything possible to tackle the disease".⁶

⁵ Information provided to Agriculture & Rural Development Committee by DARD, July 2007.

⁶ See UFU website - <http://www.ufuni.org/PortalNewsDetail.aspx?id=1a2684e0-7f7a-403f-8866-8d310fe57158&mid=419>.