

The surveillance and control programme for maedi in Norway

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None of the investigated flocks were diagnosed with maedi in 2009.

Introduction

Maedi is a progressive viral pneumonia in sheep first described in Iceland in 1939 (1). The disease occurs in several European countries as well as in other continents. The disease visna is caused by the same virus as maedi, but is a neuropathogenic manifestation of the infection (1, 2). Maedi-visna is classified as a list B disease in Norway and is notifiable to the Office International des Epizooties. In Norway, maedi was officially reported for the first time in 1972 (3).

In November 2002 and January 2003, post mortem examinations of lungs from two diseased sheep from two different farms in Nord-Trøndelag county showed histopathological changes consistent with maedi.

During the following investigations more than 15,000 sheep in 300 flocks were serologically examined for maedi-visna infection, and 50 flocks were found to be seropositive (4, 5). The outbreak demonstrated the need for a new, nationwide surveillance and control programme, which was started in November 2003 (4, 6).

An overview of the number of new infected flocks registered each year up to 2009 is given in Figure 1.

Aim

The aims of the surveillance and control programme for maedi are to document the status for maedi-visna virus infection in sheep in Norway, and to identify infected flocks for disease control.

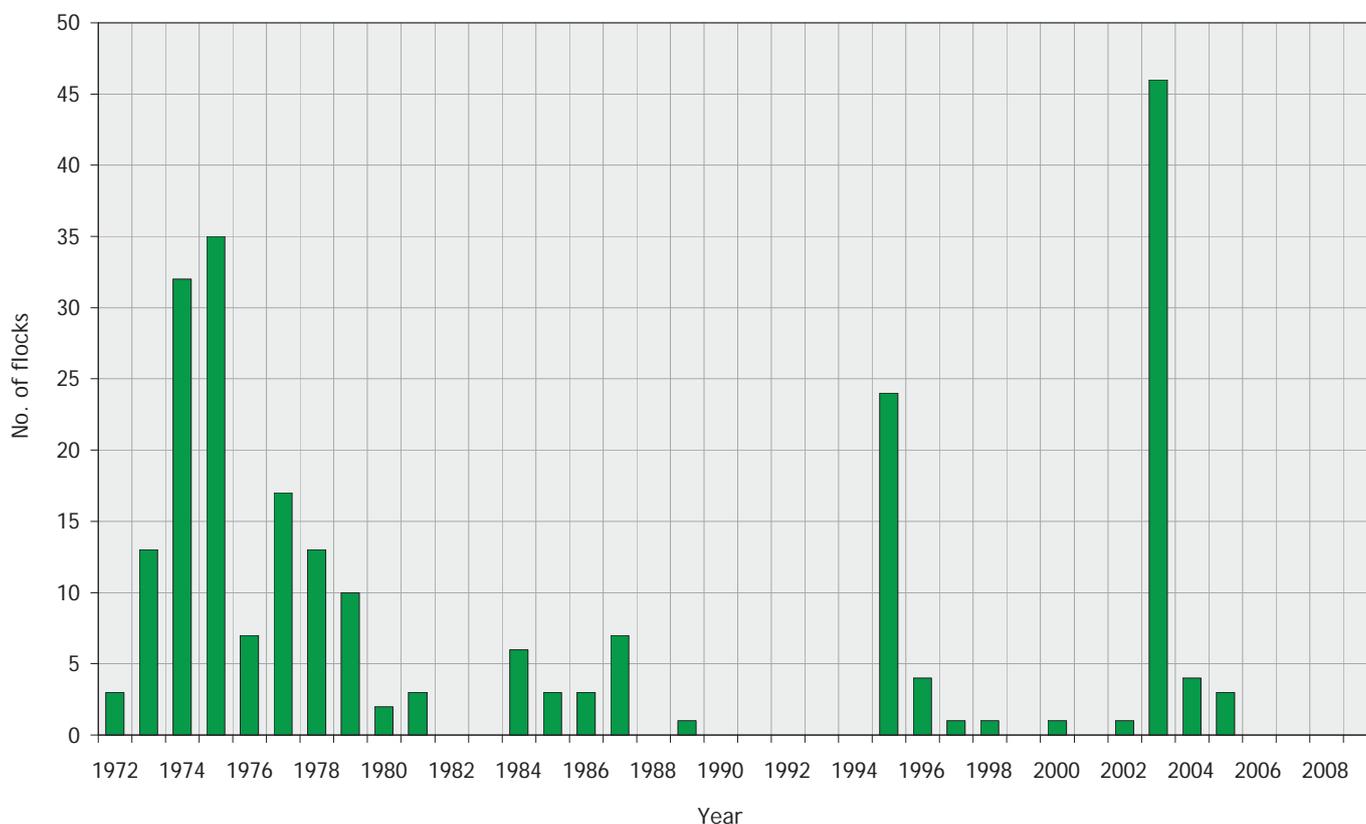


Figure 1. The number of new flocks infected with maedi during the period 1972 to 2009. The bars for 2003 - 2005 show both seropositive flocks detected through the investigations after the outbreak in Nord-Trøndelag county and seropositive flocks identified in the programme.

Table 1. The number of flocks and sheep tested in the Norwegian surveillance and control programme for maedi 2003-2009.

Year	Total no. of sheep flocks*	No. of flocks sampled	No. of animals tested	No. of positive flocks
2003	18,400	456**	13,951	1
2004	17,439	1,230	36,911	1
2005	16,500	940	29,248	2
2006	15,800	911	27,846	0
2007	15,400	1,004	29,633	0
2008	15,059	783	23,235	0
2009	14,800	417	12,198	0

* Based on data from the register of production subsidies as of 31 July the respective year.

** Sampling period: November 20 to December 31.

Materials and methods

During the years 2003-2008, ram circles and their member flocks registered by The Norwegian Sheep and Goat Breeders Association constituted the target population for the programme. In 2009, the programme focused on breeding flocks of other breeds not previously tested. Approximately 15 flocks from each of eight different breeds and 30 flocks of semi-domesticated feral sheep were randomly selected for testing, resulting in 144 flocks. In addition, sheep from 303 randomly selected flocks were included. All flocks included in the programme during the last three years were excluded from the selection frame. In total, 447 flocks were selected.

In flocks of less than 30 animals, all animals were sampled. In flocks of 30 to 100, 100 to 200, and more

than 200 animals, samples from 30, 35, and 40 animals were analysed, respectively. Rams and a selection of ewes, all more than one year old, were sampled in each flock.

The programme in 2009 was based on serological examination of blood samples from the selected sheep for antibodies against maedi-visna virus with the ELISA from Pourquier (ELISA CAEV/MAEDI-VISNA serum verification kit, Institut Pourquier, Montpellier, France). Samples with inconclusive or seropositive ELISA results would be retested in duplicate with the same ELISA and verified by an agar gel immunodiffusion test (AGIDT, Maeditect, Veterinary Laboratories Agency, Weybridge, UK). CAEV specific agar gel immunodiffusion test would be performed in cases where CAEV could have been the cause of positive reactions in the ELISA. In case of inconclusive results (including single reactors), new blood samples from the animals would be taken one to two months after the first sampling. These samples would be tested in duplicates in both tests (7).

The meat inspectors at the abattoirs still play an important role in the programme by monitoring sheep and especially sheep lungs for detection of suspicious cases consistent with maedi-visna virus infection.

Results

Samples from a total of 417 flocks were analysed in 2009 (Table 1). This is approximately 2.8 % of the total Norwegian sheep flocks

In 2009, none of the investigated flocks were positive for maedi.

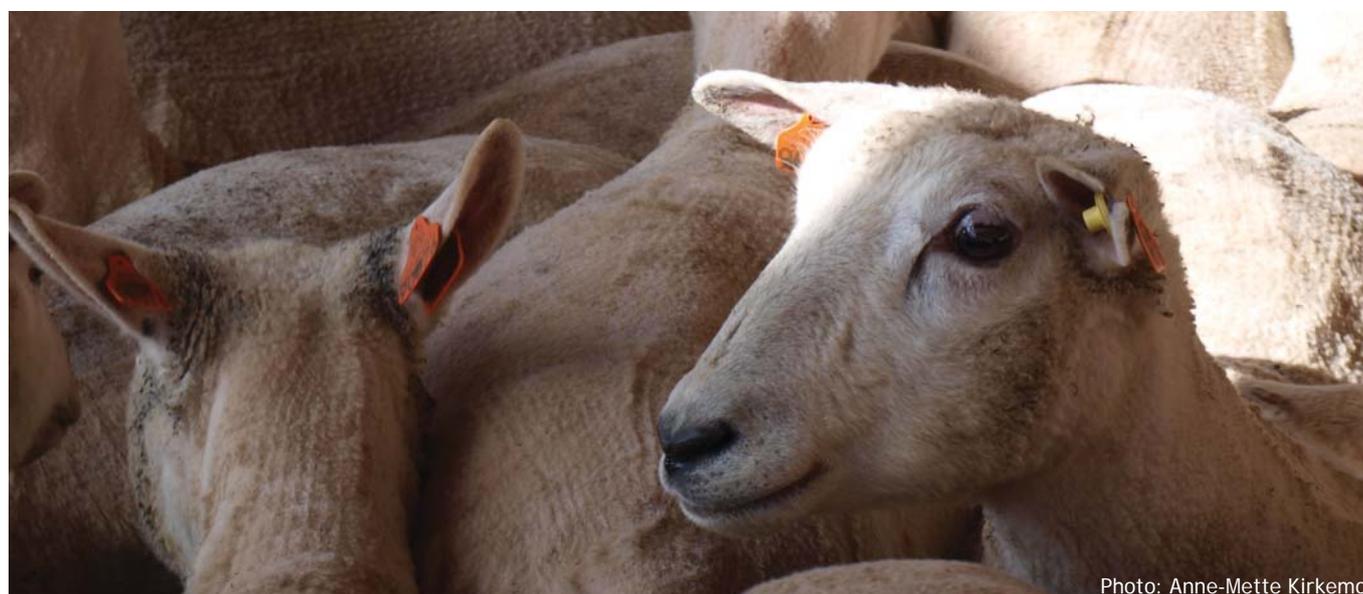


Photo: Anne-Mette Kirkemo

Discussion

Approximately 90 % of the Norwegian sheep flocks in ram circles were screened for antibodies against maedi during 2003 to 2005 and were retested in the programme during 2006 to 2008 (8). Breeding flocks of other sheep breeds than those regulated by The Norwegian Sheep and Goat Breeders Association were selected for sampling in 2009. Hence flocks selling live animals outside of the established breeding system were tested to a larger extent than earlier years.

Results from the surveillance and control programme for maedi, including data from November 2003 through 2006, showed a preliminary prevalence of less than 0.2 % positive flocks. Knowledge about the distribution of the disease so far indicates that it is regionally clustered, and that a more extensive spread of maedi-visna virus has probably been prevented by the restrictions on transfer of sheep across county borders.

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