

Annual Report · 2013

The surveillance programme for maedi in Norway 2013

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Surveillance programmes for terrestrial and aquatic animals in Norway

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Publisher

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ISSN 1894-5678

Title:

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Date: 2014-03-20

Front page photo: Anne-Mette Kirkemo

Any use of the present data should include specific reference to this report.

Example of citation:

Kampen AH, Bakken EH, Jore S, Klevar S. The surveillance programme for maedi in Norway 2013. *Surveillance programmes for terrestrial and aquatic animals in Norway. Annual report 2013*. Oslo: Norwegian Veterinary Institute 2014.

The surveillance programme for maedi in Norway 2013

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None of the investigated flocks were diagnosed with maedi in 2013.

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 2013 is given in Figure 1.

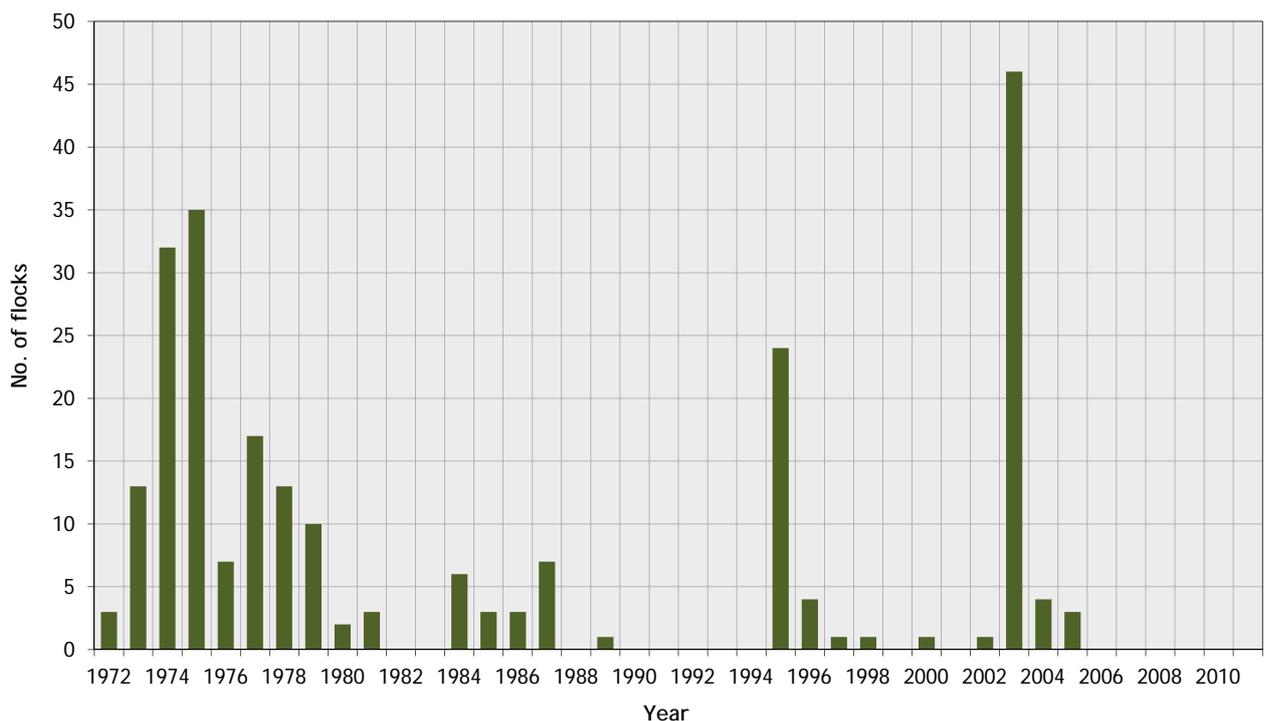


Figure 1. The number of new flocks infected with maedi during the period 1972 to 2013. The bars for 2003 - 2005 show both seropositive flocks detected through the investigations after the outbreak in Nord-Trøndelag county and seropositive flocks identified in the programme.

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.

Materials and methods

In 2013, 500 sheep flocks were randomly selected for sampling. 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 2013 was based on serological examination of blood samples from the selected sheep for antibodies against maedi-visna virus with the ELISA IDEXX MVV/CAEV p28 Ab verification kit, IDEXX, Montpellier SAS, France). Samples with inconclusive or seropositive ELISA results were retested in duplicate with the same ELISA and positive samples were verified by an agar gel immunodiffusion test (AGIDT, Maeditect, Veterinary Laboratories Agency, Weybridge, UK). 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

A total of 13,569 samples from a total of 468 flocks were received in 2013. Nineteen samples were rejected, leaving 13,550 samples from 468 flocks for analysis (Table 1). This is approximately 3.3% of the total Norwegian sheep flocks.

In 2013, none of the investigated flocks were concluded as positive for maedi. Two samples, from two different flocks, had positive serological results. In one flock, there was a history of contact with goats positive for caprine arthritis encephalitis virus. In the other flock, further investigations by PCR and necropsy revealed no signs of maedi in the positive sheep, and all other sheep in the flock more than one year of age were tested and found to be serologically negative.

Table 1. The results and total number of flocks within the frame of the Norwegian surveillance and control programme for maedi 2003-2013

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	1004	29,633	0
2008	15,059	783	23,235	0
2009	14,800	4 7	12,198	0
2010	14,800	188	5,697	0
2011	14,500	467	13,628	0
2012	14,300	479	14,043	0
2013	14,242	468	13550	0

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

** Sampling period: November 20 to December 31.

Discussion

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. 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. Breeding flocks of other sheep breeds than those regulated by The Norwegian Sheep and Goat Breeders Association were selected for sampling in 2009 with no positive findings. In 2010, 2011, 2012 (8) and 2013, flocks were randomly selected for sampling.

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 was 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. All farms involved in the outbreak in 2003 have had their restrictions lifted. The fact that maedi has not been detected in the surveillance programme since 2005 indicate that the prevalence of the infection in Norway is very low.

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