

## PARATUBERCULOSIS IN SWEDEN

Viske D<sup>1</sup>, Larsson B<sup>2</sup>, Norell B.<sup>1</sup>, Bölske G.<sup>2</sup>, Engvall A.<sup>2</sup>

*After having considered Sweden free from paratuberculosis for three decades, 41 herds have been found infected since 1993. Two main sources of infection are identified: recent imports of infected animals in the 1990's and a domestic chain of infection within the Limousine breed, probably originating from imports of cattle in the 1970's. Swedish legislation promotes a stamping out policy in affected herds, and restrictions are put on cattle accommodations and pastures for up to three years. The herd owner is fully compensated by the government. A cost/benefit analysis indicates that future numbers of imports and possible links to Crohn's disease are decisive when calculating the gain of control measures of this type, and that future losses are estimated to 13 millions USD per annum within 50 years if paratuberculosis is allowed to spread without control in Sweden.*

### SWEDISH LEGISLATION PROMOTES STAMPING OUT POLICY

After having considered the country free from paratuberculosis for three decades, one clinical case of the disease was diagnosed in an imported cow in 1993. In Swedish legislation, paratuberculosis is included in the list of epizootic diseases, and consequently a stamping out policy was applied in the affected herd. Since 1993, another 40 herds have been found infected and stamped out. So far, no infection is found in dairy cattle.

### SOURCES OF INFECTION

Two main sources of infection are identified: recent imports of infected cattle in the 1990's (in total 9 herds, mainly Blonde d'Aquitaine) and a domestic chain of infection within the Limousine breed, originating from imports of cattle with an undetected infection in the 1970's (31 herds). The domestic chain of infection was revealed when clinical signs of paratuberculosis appeared in three of the herds. The other 28 infected herds in this chain have been identified by tracing back and forward, culling contact animals and taking samples at slaughter.

### MEASURES TAKEN BY THE AUTHORITIES

Following stamping out, restrictions have been put on cattle accommodations and pastures for up to three years. According to Swedish legislation the herd owner is fully compensated for economical losses. Several actions have been initiated from the authorities since the first outbreak in 1993:

- **Increased awareness** : The veterinarians in field and at abattoirs are asked to increase the awareness of the disease. Clinical suspicion and findings at slaughter are compulsory notifiable.
- **Testing of imported animals** : All animals imported 1980-1994 (805 animals) were, if alive (n=520) tested twice (2x serology, 2x faecal culture) with an interval of at least three months. Eight herds were found infected in this survey. If the imported animal(s) had been slaughtered a serological survey was performed, revealing no infection.
- **Random sampling at slaughter** : Samples from the ileum and the ileocaecal lymphnodes from 3,166 randomly chosen sanitary slaughtered Swedish adult cattle were cultured. One cow was found positive for paratuberculosis. The source of infection is still unknown.
- **Testing of Limousines** : To clarify the spread of infection within the Limousine breed, all purebred Limousines over 2 years of age in Sweden have been tested by serology once and faecal culture twice. This survey will be finished during 1997 and so far two more herds have been found infected, both linked to the domestic chain.

### REVIEW OF LEGISLATION AND COST/BENEFIT ANALYSIS

In spite of the recent cases of paratuberculosis, serosurveys made on cattle and sheep and the slaughter survey mentioned above indicate that the rate of infection in Sweden is very low (0-0.23% with a confidence level of 95%). In connection with an ongoing review of the Swedish legislation on epizootiological diseases a cost/benefit analysis for the paratuberculosis eradication has been made. The outcome of the analysis is that future numbers of imports and possible links to Crohn's disease are decisive when calculating the gain of control measures of this type. Future economical losses are estimated to 100 million SEK (13 million USD) per annum within 50 years, if paratuberculosis is allowed to spread freely in Sweden. The current import level of 50 animals annually, jeopardizes the net benefit of a stamping out policy, since not even voluntary paratuberculosis testing at import will reveal all infected animals. The current suggestion is to continue controlling paratuberculosis in Sweden and possibly to start a monitoring program for breeding herds of all breeds.

<sup>1</sup> The Swedish Board of Agriculture, S-551 82 Jönköping

<sup>2</sup> National Veterinary Institute, S-750 07 Uppsala