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disadvantage of the cryosurgical method is its poor reliability. Furthermore, the time needed to dehorn a calf (about 10 minutes), is longer than with cautery and the method is more awkward to use in the field than the hot iron. The advantage of cryosurgery is that the method is probably less painful for the calf than cauterisation. However, it is not totally painless and should not be used in unsedated/unanaesthetised animals. More investigations are needed to find out if increased reliability and reduced pain can be achieved by freeze cycles other than those tested in this study.

Acknowledgements. – This study was made possible by financial grants from the Swedish Board of Agriculture and by two animal rights organisations, Svenska Djurskyddsföreningen and Djurvännernas förening i Stockholm.

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Eradication programme for caseous lymphadenitis in goats in the Netherlands

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Veterinary Record (1996) **138,** 237

IN the Netherlands, goat husbandry has developed strongly over the past decade. About 40 per cent of the goats kept professionally are located in the southern part of the country where most goat farmers have joined the Amalthea cooperative.

Caseous lymphadenitis (CL), caused by *Corynebacterium pseudotuberculosis*, soon became a problem after it was first recognised in the Netherlands in 1984; it probably entered the country through the importation of infected goats (Schreuder and others 1986). Enlargement of the mammary lymph nodes and the development of abscesses, which can rupture and contaminate the milk, are characteristics of the disease; these factors convinced the goat farmers of the cooperative of the need to eradicate CL.

All the members of the cooperative had to participate in the CL eradication programme and comply with a number of conditions: all goats had to be individually marked and thus registered; and all participating goat farmers had to implement the rules of the programme.

In goat herds where CL is identified, all animals with clinical signs of the disease have to be disposed of. Goat breeders are advised to thoroughly clean the stables, removing all bedding and topsoil, and disinfecting with chlorhexidine and cetrimide solution (Savlon; ICI); the kids are reared separately and deprived of colostrum. Remaining goats, older than six months, are examined serologically by a double-antibody sandwich ELISA every six months (ter Laak and others 1992). An immunoblot assay is used as a confirmation test for ELISA-doubtful and positive reactors (ter Laak and others 1992). When all goats of a herd have negative titres on two consecutive occasions and, provided no goats have been introduced into the herd, herds are certificated as CL free.

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TABLE 1: Effect of the eradication programme on the incidence of caseous lymphadenitis in goats of the Amalthea cooperative

Year	Number of herds	Goats older than 1 year	Serologically positive goats	Herds with serologically positive goats
1988	60	6200	34	4
1989	62	6800	130	7
1990	54	7400	7	5
1991	51	9000	8	2
1992	44	10,000	1	1
1993	46	11,000	1	1
1994	46	11,000	0	0

In order to maintain the CL-free certification, serum samples of all goats older than one year must be examined by ELISA within 12 months. When all ELISA results are again negative, the herd must then be retested every 24 months. Table 1 shows that the eradication of CL from goat herds of the Amalthea cooperative has proceeded successfully.

The number of herds fell from 60 to 46 in a five-year period, due to the low prices for milk. The number of goats on the farms concerned, however, increased from 6200 to 11,000. In six years the percentage of positive herds decreased from 6·7 to zero and the percentage of positive goats decreased from 0·55 to zero. As of November 1994, all 46 herds, amounting to approximately 11,000 goats, had a CL-free certificate.

The success of this eradication programme is mainly due to the ELISA which has a herd specificity and sensitivity of nearly 100 per cent (ter Laak and others 1992).

For instance, in one herd which had been declared CL-free for one year, one goat reacted serologically positive in both tests. At autopsy, an abscess was found in a retropharyngeal lymph node, from which *C pseudotuberculosis* was isolated. Although the goat farmer concerned had strictly adhered to the regulations of the eradication programme, he had bought hay that originated from a goat herd without a CL-free certificate and which kept goats with abscesses in the hay shed. By regular serological testing the herd has again been declared CL-free.

A programme for eradication of CL in goats can be successful under the following conditions:
- identification and registration of all goats;
- use of a serological test with a high specificity and sensitivity;
- disposal of affected or reacting goats; and
- the awareness of participating goat farmers that the eradication programme is economically justified.

In this way, it is possible to produce goats and goat products from CL-free herds, which may be important in the future within the European Union.

Recently, on one goat farm which did not belong to the Amalthea cooperative and which had not participated in the eradication programme, three goats with abscesses caused by *C pseudotuberculosis* were discovered. Two reacted negatively in both the ELISA and the immunoblot assay and the third goat reacted doubtfully in both tests 10 weeks later. Although titres developed slowly in two goats, one still reacted negatively.

Whether the failure of the serological tests in this herd was due to goat-related factors or differences in the strains of *C pseudotuberculosis*, is under investigation. However, to the authors' knowledge, this is the first failure of the ELISA in goats since mid-1988 when eradication attempts started.

Addendum

As a result of better prices being obtained for milk in 1995, the number of herds increased from 46 to 53. As of January 1996, all these 53 herds, amounting to approximately 13,000 goats, still have their CL-free certificates.

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Veterinary Record 1996 138: 237
doi: 10.1136/vr.138.10.237

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