

ONGOING BATTLE AGAINST SHEEP SCAB: HISTORY AND PROGRESS

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Martyn Blissitt, Mark Rigby, Brian Hosie review the history of this persistent and expensive problem, with particular relevance to the Sheep Scab Order (Scotland) 2010

THE history of attempts to eradicate sheep scab from Great Britain is one of protracted, resource-intensive and, ultimately, unsuccessful campaigns, reflecting the tenacious and adaptable qualities of the sheep scab mite *Psoroptes ovis*.

It is also a reminder of the effort that was required to achieve the elusive and transient prize of “eradication” in the early 1950s, and of the opportunities lost.

This account is drawn from a review in 2008 – “An evidence base for new legislation and guidance for implementation of a compulsory treatment period for sheep scab” – by ADAS, AHVLA and the University of Strathclyde, published on the Scottish Government website.

Sheep scab controls 1869 to 1992

Sheep scab has been described as the first sheep disease in Great Britain to be subject to statutory regulation.

The laws of King Hywel Dda of Wales in 949 are said to have prohibited the sale of scab-affected sheep between November and April, and banned sheep keepers from grazing sheep on land where scab had been found in the previous seven years.

However, scab epidemics continued to be a serious problem throughout the 14th and 15th centuries, including in sheep exported to Europe – although the *Psoroptes ovis* mite is not reported as being named and identified as the cause of scab in sheep until the first half of the 19th century by scientists in Germany.

Sheep scab was first made notifiable in Great Britain in 1869, and the persistent nature of the mite is shown in the annual records of outbreaks between 1869 and 1952 ([Figure 1](#)).

The Sheep Scab Order of 1898 required local authorities to employ veterinary surgeons to diagnose sheep scab, and by the early 1900s, a series of orders required the compulsory dipping of infested sheep. They variously employed a single, double or triple annual compulsory dip strategy.

The full plethora of traditional control methods began to be applied against the scab mite in the Sheep Scab Order of 1928, which required notification, compulsory treatment or slaughter, use of ministry-approved dips, isolation and treatment, and movement controls.

The intensity of persistent annual campaigns, together with the use of dips that would not now be acceptable in terms of safety or toxicity, gradually made progress possible over the next 30 years. Approved applications of tar-based dips, and nicotine-based products, together with arsenic and lime sulphur, were all used, with a second dip being commonly introduced (within 14 days of the first) to kill emerging eggs.

In 1948, the organochlorine acaricides, gamma BHC (gamma HCH, lindane) were officially approved for use as a single dip formulation and were essential components of the arsenal of controls eventually responsible for the total “eradication” of sheep scab from Britain in 1952, 10 years after the reported eradication of scab from lowland flocks.

A paper published in *State Veterinary Journal* (1969, **24**: 72) is entitled “The last sheep scab case”, and provides a detailed account of the last case of sheep scab to be recorded at that time in Britain. This “last case” was on a lowland farm in Herefordshire, in February 1952, and is quoted as “a straightforward one. A small lesion on a single sheep, reported by the observant owner, with successful treatment effected by a single dipping of the flock. The origin of infection remained obscure, but it is suggested that it was picked up in the market where the sheep were bought in September 1951”.

The same paper also acknowledged this case as the “last case of sheep scab in native British sheep”, reminding the reader of a previous paper (in *State Veterinary Journal*, 1963, **54**), describing cases diagnosed and “dealt with” in sheep imported from Eire and Northern Ireland “as recently as August 1962”.

In 1973, around 40 cases of sheep scab reappeared in Britain, and this rose to more than 100

cases a year within two years. The next 20 years saw a significant programme of government and agricultural industry intervention, including the traditional application of previously successful notifiable disease control measures, with single or double compulsory dipping – variously the subject of self-regulation or official supervision. Additional measures were applied, including the segregation of treated and untreated sheep, segregated markets and transport, and the approval of newer dipbased products.

Organophosphate (OP)-based dips containing diazinon became available in the early 1980s, as did propetamphous-based products, and in 1987 the first non-OP dip, containing the synthetic parathyroid flumethrin, was licensed for scab control.

Despite this application of intensive and expensive policy measures in an attempt to eradicate the disease for a second time, the number of incidents continued to rise throughout a five-year period of supervised compulsory dipping between 1984 and 1989.

The failure of the eradication policy, and the expense incurred by Government and industry alike, led to a decision by the Ministry of Agriculture, Fisheries and Food to effectively deregulate sheep scab in 1992, although in strict legal terms the disease remained on statute books pending changes to primary legislation.

The previous 20 years of controls ([Figure 2](#)) had been ineffective in achieving eradication, and a number of factors influenced policy makers and ministers to adopt the deregulation policy.

These included:

- varying degrees of noncompliance in different parts of Great Britain;
- the lack of a reliable sheep identification and tracing system;
- large numbers and movements of sheep within dealer networks;
- the unsustainable, resourceintensive, and unpopular notifiable disease procedures in the face of an increasing number of cases;
- treatments were not always 100 per cent effective;
- flocks could not always be fully gathered and it was difficult to treat all sheep within a small enough time window (problems with common grazing especially); and
- the use of some acaricide products was ineffective as a result of operator error.

In addition, movement controls and segregating treated and untreated sheep were not well

received by the industry, and concerns were starting to be expressed about the use of OP formulations, particularly for human health, and especially for dipping operators.

The impact of pollution incidents and the increasing regulatory burden associated with maintaining sheep dipping facilities on farms were further disincentives for compulsory treatment programmes.

After effective deregulation, Government involvement was officially restricted to prosecuting farmers on animal welfare grounds where untreated sheep were not provided with timely treatment for scab, under the Agriculture (Miscellaneous Provisions) Act 1968.

Background to the Sheep Scab (Scotland) Order 2010

More recently, it has been difficult to assess with any accuracy the number and distribution of sheep scab cases in Scotland.

However, different postal surveys since 2000 have suggested between 10 per cent to 15 per cent of sheep farms in Scotland have experienced scab in any one year. The most recent survey, conducted by Scottish Government in 2006, indicated that 14.7 per cent of respondents had experienced sheep scab during the previous five years (15,500 questionnaires issued, 4,720 questionnaires returned – 34.4 per cent return). Respondents described 666 cases of sheep scab in Scotland in the previous five years to 2006.

Scotland's sheep scab industry working group

Responses to this last survey stimulated the creation of a cooperative industry-led action group, which became the Scottish Sheep Scab Industry Working Group.

The group was established to develop new and targeted initiatives to reduce the incidence of scab throughout Scotland. Through this group, the sheep industry in Scotland has a major voice in shaping new policy, supporting industry-led initiatives to control Sheep scab better, removing the stigma of having scab, and removing any incentives that may exist to hide a case.

In 2010, sheep industry and local authority representatives on the working group expressed their desire for a return to effective compulsory notification of suspect and confirmed sheep scab cases, to allow more targeted enforcement action. The intention was to deal better with a perceived minority of sheep keepers who repeatedly failed to deal with scab in their flocks, and reported to be undermining the efforts of the majority. The pre-existing sheep scab order (1997) was no longer considered robust enough to tackle the problems of sheep scab. In Scotland, it had proved perfectly possible to eradicate sheep scab on a farm, and even within a region, for as long as producer motivation could be maintained. Otherwise, notwithstanding the potential for eradication on islands, a national eradication programme is unlikely to be successful or sustainable, given the free movements into Scotland of potentially infected sheep from elsewhere.

Sheep Scab (Scotland) Order 2010

The Sheep Scab (Scotland) Order 2010 came into force on December 17, 2010. It revoked and replaced the 1997 order in Scotland, and provided for compulsory notification (by owners, or those in charge) of sheep that are affected, or suspected of being affected with, sheep scab.

Where sheep scab is suspected or confirmed, automatic movement restrictions are triggered, preventing the movement of sheep on to or off the premises. The owner, or keeper, must take all reasonable steps to prevent sheep straying, or coming into contact with sheep from outside the premises.

These restrictions are automatically lifted either:

- when the owner (or keeper) confirms in writing to AHVLA that all affected sheep on the premises have been treated or slaughtered and any carcasses disposed of; or
- when a veterinary surgeon confirms that, in his/her opinion, there are no affected sheep or carcasses on the premises.

Exceptions to the automatic movement restrictions do allow sheep to move for treatment, slaughter or under the authority of a licence issued by an inspector. In addition, local authorities have the power to serve notices on keepers/owners of sheep suspected of having scab who are failing to take the appropriate action to diagnose and treat or slaughter.

Notices can be served under the order requiring keepers to arrange and pay for a veterinary surgeon to carry out a diagnostic enquiry to establish whether sheep scab exists in the flock, and where scab is confirmed, movement restrictions are applied until the flock is treated or slaughtered.

Number and distribution of notifications

[Figure 3](#) illustrates the number and distribution of notifications (of suspected or confirmed cases) of sheep scab, made to divisional veterinary managers of AHVLA in Scotland, between December 17, 2010 and December 17, 2011.

There were 144 notifications in total, with a widespread distribution over the majority of mainland Scotland and the islands of Arran, Skye and Lewis. No notifications were received from the Inner Hebridean islands of Mull, Coll, Tiree, Islay and Rhum, nor from Fife, Angus, Kincardine or Morayshire on the mainland.

However, given the otherwise ubiquitous nature of this disease, the assumption is made that sheep scab is likely to be found almost anywhere in Scotland where sheep are kept, with the exception of the Shetland Islands, which are considered to be scab-free. The most notifications were received

from Aberdeenshire and Dumfries and Galloway. All cases were resolved by treatment or slaughter. AHVLA was not required to record which option was taken in each case, but the majority are believed to have been resolved by treatment.

The eight SAC veterinary services disease surveillance centres (DSCs) have continued over many years, with Scottish Government support, to provide free diagnostic testing at the point of delivery to sheep keepers. This now supports the Sheep Scab (Scotland) Order 2010.

[Table 1](#) shows the number of confirmed sheep scab diagnoses made to AHVLA in 2011, and to SAC DSC laboratories in 2010 and 2011. Forty-six confirmed diagnoses were made in SAC DSC laboratories in 2010 and 35 in 2011.

Until relatively recently, sheep scab was considered to be predominantly a winter disease. However, the monthly distribution of notifications to AHVLA and the distribution of monthly confirmed diagnoses in SAC DSC laboratories indicate this is now an all-year-round disease in Scotland, with a tendency to greater prevalence in the winter months.

Fourteen statutory notices were served in seven Scottish local authority areas during the first calendar year of the order. Four notices were served to require a veterinary inquiry to establish a diagnosis, three to require treatment of affected sheep, while the others concerned removals of sheep from a market, removal of movement restrictions notices, and licences to move sheep with scab.

In the first calendar year, the notifications of sheep scab made under the Sheep Scab Order (Scotland) 2010, provide the latest evidence of the current locations and distribution of sheep scab in Scotland. It confirms the endemic nature of the infestation, the widespread problem that scab has become, and the “all-year-round” incidence, with a tendency still towards the winter months.

However, previous postal surveys suggest Scotland might be expected to have 15 per cent of sheep holdings affected annually – around 2,000 cases annually. On that basis, while the 144 cases notified under the order are not indicative of an industry in denial, around 90 per cent of cases are still undetected and unreported.

Efforts are now required to ensure reporting rates are improved, affected sheep are treated promptly, and locations (starting with some island groups) are identified as being areas that are possibly scabfree at present – to provide evidence that could encourage local sheep keepers they have something worth defending on a regional basis.

This article was written on behalf of the Scottish Sheep Scab Industry Working Group. Its members are: National Farmers' Union Scotland; Sheep Veterinary Society; National Sheep Association; Convention of Scottish Local Authorities; Scottish Environment Protection Agency; Animal Health and Veterinary Laboratories Agency; Moredun Institute; Scottish Agricultural Colleges (SAC);

British Veterinary Association; Scottish SPCA; National Office of Animal Health; Institute of Appraisers and Auctioneers; Quality Meat Scotland; Scottish Organic Producers Association.

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