

Parasitic Skin Diseases of Large Animals

J. C. WOOD, B.V.Sc., M.R.C.V.S.

Cooper Technical Bureau, Berkhamsted, Herts

Vet. Rec. (1970). 87. 471-473

SUMMARY.—The paper contains a short review of some of the more important recent developments in the control of parasitic skin diseases of farm livestock in Britain.

IN THEORY the diagnoses and treatment of parasitic skin disease should be a simple matter. The parasites themselves are often visible to the naked eye, very efficient insecticides are usually available to remove them, and the skin lesions resolve quickly when the infestation has been eliminated. Diagnosis seldom proves difficult, but the application of an insecticide to each member of a large group of often fearful or hostile animals involves a degree of hard physical work and determination not required in many other forms of veterinary practice. If the treatment is not applied efficiently the results are disappointing and may cause the clinician to doubt the efficiency of the insecticide, the resistance status of the parasite or even his original diagnosis. The parasitic skin diseases may, therefore, assume a greater complexity than they merit.

There have been few important developments since this subject was reviewed in the Information Supplement in 1966 and only the more important aspects will be described in this paper.

Mange Mites

Infestations of *Sarcoptes scabiei* cause the most serious form of parasitic mange encountered in Britain. They are highly contagious and spread quickly through susceptible groups of animals. Infestations usually cause a marked loss of condition in their hosts and in severe cases may prove fatal. Cattle, pigs, and goats are most commonly affected and, as the mite is not host-specific, the infestation may be transmitted to human attendants.

Psoroptic mange is less common than the sarcoptic form in cattle in Britain, but occurs occasionally. A similar condition in sheep, sheep scab, was eradicated from the mainland in 1952 but sporadic outbreaks still occur in Ireland.

The most common form of mange in British cattle is caused by infestations of *Chorioptes*. The disease often

takes a mild form and lesions tend to remain localised or to spread slowly. They usually resolve spontaneously when animals are turned out to graze in the spring. Chorioptic mange is not very contagious and may affect only a few animals in a herd.

"Itchy leg", or foot mange, in horses is caused by a chorioptic mite which is now believed to be identical with the mite infesting cattle.

An initial diagnosis of mite infestation is usually made by examination of skin scrapings, although *Psoroptes* are large enough to be just visible to the naked eye. Dead acari may be seen in scrapings and skin crusts for several weeks after successful treatment and only the presence of live mites in a fresh preparation can be considered as indicative of persisting infestation. The rapid and progressive resolution of lesions gives a reliable guide to the efficiency of treatment.

Good results can be expected from treatment only if the entire body surface of the infested animal, and all others in the group in contact with it, is thoroughly wetted with an efficient acaricidal preparation. This is best achieved by dipping, but saturation spraying is also effective. Scrubbing of affected areas is not necessary. Treatment must be repeated on two or three occasions at intervals of 10-14 days.

Gamma BHC and diazinon are the most active veterinary acaricides available for the treatment of mange. Resistance to acaricides has been reported amongst strains of *Psoroptes* in Argentina, but there is no evidence of resistance in Britain.

Demodex infestations in large animals are rare in Britain. In cattle, infestations are usually mild and are unlikely to be diagnosed in live animals, although the lesions caused may become apparent in hides during tanning. Infestations have been reported in goats as causing a "pustular rash" over the head, neck, and shoulders.

Mites are usually present in pus from nodules. *Demodex* infestations in large animals are often intractable to treatment with acaricides, although they may regress spontaneously.

Trombicula

The larvae of "harvest mites", *Trombicula* spp., parasitise all species of domestic animals during the summer months. Infestations are most commonly seen on the head, feet, and in the flexures of the limbs, where mites cause an allergic reaction with severe pruritis and copious exudation of serum. The small pink-red coloured mites can usually be seen on the affected skin, with the naked eye or with the aid of a hand lens. The larvae are susceptible to acaricides such as gamma BHC and regular treatment will give a measure of protection to animals exposed to infestation.

Ticks

Ticks are of economic importance as vectors of several pathogenic organisms rather than on account of the skin lesions they cause. Their bites may, however, result in localised abscess formation or ulceration. In lambs a generalised staphylococcal pyaemia, "tick pyaemia" may follow infection with tick-borne fever.

There is some evidence that dipping lambs before exposure to ticks may reduce the incidence and severity of tick pyaemia, and dipping adult sheep will give several weeks protection against reinfestation by adult ticks. Dipping or spraying with ixodicides is not a practical or economical means of protecting sheep and cattle against tick-borne diseases such as louping ill or piroplasmosis.

Lice

Infestations of lice cause loss of hair or wool by rubbing or biting, but there may be little evidence of damage to the skin itself. The presence of lice should be suspected when hair has been de-nuded, exposing patches of smooth clean skin.

Even light infestations of the body louse *Damalinia ovis* may seriously affect the condition of sheep in winter due to loss of wool. Louse infestations on cattle, although unsightly, probably rarely affect the physical condition of their hosts. It is believed that infestations tend to be heaviest on debilitated cattle due to the reduction in self-grooming by licking.

To eradicate louse infestations the coats of all animals in the group must be saturated with insecticidal wash by dipping or spraying. In sheep in full fleece one such treatment with an efficient modern insecticide will give residual protection against reinfestation for four to six months. In cattle, horses and pigs a single treatment may be adequate, but on haired animals the residual activity is limited and a second treatment 10-14 days after the first may be necessary.

Spot treatment of visibly infested areas with dusting powders is popular with owners of animals, but is much less effective than spraying or dipping.

Adult lice on cattle are usually killed when their hosts are treated with systemic larvicides against warbles. As the systemic activity is of short duration the treatment does not prevent re-infestation from the hatching of eggs or subsequent contact with other infested cattle.

Strains of the sheep body louse *D. ovis* which are resistant to the organo-chlorine insecticides such as

dieldrin and BHC now occur widely in Britain but there are no confirmed reports of resistance amongst other species of lice in this country.

Sheep Ked

Since the end of compulsory dipping for sheep scab in Britain infestations of the sheep ked *Melophagus ovinus* have become much more common. This large blood-sucking parasite causes loss of wool owing to biting and rubbing by the host. It may also cause staining of the fleece by its faeces. It does not however, even in heavy infestations, cause significant skin lesions. The dips used against lice and maggot fly on sheep provide effective control of keds.

There are indications that keds in some parts of South America have become resistant to the organo-chlorine insecticides, gamma BHC and dieldrin. There has been no evidence of resistance in keds in Britain and Ireland.

Maggot Fly on Sheep

Sheep dips containing dieldrin were introduced in Britain in 1954 and, until their voluntary withdrawal at the end of 1965 on account of persistent tissue residues, the control of maggot fly on sheep ceased to exist as a problem. Since the withdrawal of dieldrin, dips containing a carbamate or one of several organo-phosphorus larvicides have been used. Not all the new dips give as long residual protection as those based on dieldrin, and to obtain the best performance from them dipping management has to be of a high standard. It is, however, quite possible to obtain effective protection against maggot fly by careful use of the new dips.

Although some larvicides are more active than others, and degrade less rapidly, the length of residual protection provided by a particular compound under similar circumstances is proportionate to the amount deposited in the fleece at the time of treatment. Thus if a larvicide has a half-life of four weeks as a result of degradation and dilution in the fleece, doubling the amount deposited during dipping will result in some four weeks longer protection. There are several ways in which the farmer can ensure a high deposit of insecticide.

The concentration in the dip wash should be maintained by frequent replenishments at the recommended strength. These should be made before the bath has lost more than 20 per cent of its initial volume. Regular replenishments however, will not prevent some fluctuation in concentration of insecticide. A more uniform concentration can be maintained if a system of "constant replenishment" is employed. This involves the use of a subsidiary tank or drum at the side of the dip bath from which wash at the "replenishment" concentration is run continuously into the bath during dipping. This not only considerably reduces fluctuation in concentration of insecticides but facilitates handling of the sheep in the dip as the bath is kept full. It also prevents the delays which occur when waiting for a bath to be refilled.

The amount of insecticide deposited in a fleece in-

creases with the length of immersion and all sheep should be kept in the bath for 30 seconds.

Length of fleece at the time of dipping is also important, and as long an interval as possible should be allowed between shearing and dipping. If the lambs in lowland flocks are dipped in late May or early June, it is usually possible to delay the main summer dipping of the whole flock until several weeks after the ewes have been shorn.

By the application of these precautions the modern dips should give satisfactory protection.

Strains of the principal Australian blow-fly, *Lucilia cuprina*, developed resistance to dieldrin as early as 1957, and recently this species has become increasingly resistant to organo-phosphorus larvicides in some areas of Australia.

Resistance to dieldrin was developing rapidly in strains of *Lucilia sericata* in Eire before the insecticide ceased to be available at the end of 1967. No evidence of resistance has been detected in Britain, but it is doubtful if British strains of *L. sericata* would have remained susceptible for many more seasons if the use of dieldrin had continued.

Warble Fly

The introduction of efficient systemic larvicides such as trichlorophon and Ruelene has made treatment of cattle for warbles much more reliable and less laborious, particularly when the products are applied by the "pour-on" method.

These two compounds have been used in eradication campaigns in Eire and Northern Ireland. A campaign began in Eire in 1964 and was so successful that after three years infestations were reduced to such low proportions that it was possible to designate the condition a notifiable disease.

A two year scheme began in Northern Ireland in 1966 and, after two annual treatments, a survey in 1968 showed an incidence of only 0.13 per cent of cattle with warbles.

On the mainland of Britain where there has been no co-ordinated eradication programme, progress has been much less rapid. The data below were compiled by the Hide and Allied Trades Improvement Society and show the average percentage of warbled hides for cattle slaughtered in England and Wales from 1961-69.

31.1	—	1961	10.5	—	1966
28.1	—	1962	9.6	—	1967
22.4	—	1963	8.9	—	1968
18.9	—	1964	8.1	—	1969
17.4	—	1965			

There is little doubt that the steady fall in incidence during the first part of the decade was partly the result of the use of systemic larvicides in England and Wales, but was also due to the fact that, after 1966, the thousands of Irish store cattle which were imported for fattening were virtually free of warbles.

We have benefited from the Irish eradication campaigns, but it would appear that a further rapid reduction in the incidence in England and Wales is unlikely to result from the present system of voluntary treatment.

Résumé

L'article contient une brève revue de quelques unes des réalisations les plus récentes en matière de contrôle des maladies parasitaires de la peau dans le cheptel britannique.

Zusammenfassung

Der vorliegende Bericht enthält eine kurze Übersicht des modernen Fortschrittes auf dem Gebiete der Bekämpfung parasitärer Hautkrankheiten bei Grosstieren landwirtschaftlicher Betriebe in Grossbritannien.