

OBSERVATIONS ON RED LICE (*DAMALINIA OVIS*) INFESTATIONS IN SHEEP ON THE TRANSVAAL HIGHVELD

G. F. ZUMPT*

SUMMARY

Observations on large scale infestation by red lice (*Damalinia ovis*) confirm the epizootiological pattern of this disease, namely:

1. that it occurs during relatively mild winter conditions when the preceding summer infestation has reached a certain base level; and in sheep in poor condition, mainly as result of overall nutritional deficiency;
2. that spread is greatly accelerated by large scale direct contact such as occurs in auction yards, and to a lesser degree by indirect contact when uninfested sheep are immediately brought into premises previously vacated by infested sheep.

As the eggs are resistant to the usual insecticide dips, a second dipping 10-14 days after the first, is required. This procedure, coupled with restriction of movement of infested sheep, ensures adequate control.

INTRODUCTION

Infestation of sheep by the red louse is a well-known occurrence in South Africa and the parasite is familiar to most farmers. In the past only sporadic cases of severe infestations were observed and the lice never really created any great problem nor caused economic loss to the sheep industry. Nevertheless, during the winter months of 1969 (March to September) on the Transvaal highveld in the Ermelo and Carolina districts, the incidence of the lice on sheep

increased dramatically in number and severity. It is well known, and confirmed by excellent laboratory work in Australia¹, that infestation increases during the winter months, especially if the population on the host is at least two lice per square inch at the end of summer. During the period under review, conditions for high louse infestations had been favoured by comparatively mild winter weather. The grazing on the highveld consists mainly of sour veld which becomes unpalatable in winter. The grazing on the whole at this time was poorer than usual, as little rain had fallen during the summer; the drought conditions had also prevented farmers from growing sufficient feed for their livestock; all these factors had resulted in a poor condition of the sheep. From the observations made, it was clear that animals in such a condition are more susceptible to heavy infestations by the red louse. Infestations of sheep flocks had increased and several severe outbreaks had been reported. This constituted such an economic threat to the farming community, that the condition had to be proclaimed a scheduled disease.

AETIOLOGY

The parasite responsible is referred to as the red louse or red-headed louse of sheep, *Damalinia ovis* (Shrank, 1781) (Phthiraptera: Ischnocera: Trichodectidae). The insect (Fig. 1) can easily be seen with the naked eye when the wool is parted. Studies in Australia^{1,2} have elucidated the exact distribution of the parasites in the fleece according to temperature gradients. As winter temperatures prevailed during the present study, lice were mainly found about 1.3-2.5 cm from the skin surface, with very few specimens more than 3.5 cm from the skin.

* State Veterinarian, Ermelo, Transvaal.

Private Bag 2408
Louis Trichardt.
Transvaal
R.S.A.

As the common name implies, the louse is reddish to light brown in colour. It injures the skin of the host by biting; this results in the secretion of serum, which serves as a source of food for the parasite. Only small quantities of the serum released are actually utilized by the lice; the rest congeals in the fleece, giving rise to the typical matted wool which characterizes severe infestations. In such an infestation, the whole or major parts of the lower half of the body are affected, resulting in difficulties in movement and walking by the affected animal. Although the "scratch symptom", as observed, for example, in sheep scab caused by the mite *Psoroptes ovis*, is not usual, it may occur particularly in severe louse infestations. This results in the partial loss of fleece with a typical "pulled-out" appearance (Fig. 2). Care must be taken not to confuse this with sheep scab, but diagnosis by the recognition of the lice is simple.

EPIZOOTIOLOGY

The parasite normally completes its life cycle on one individual host and is very host-specific. The shortest life cycle recorded is 34 days, in Australia¹. Oviposition is a slow process and each ovum matures before it is laid. The ova are tightly affixed to the wool fibres, and as a rule are highly resistant to adverse conditions, including dipping. They are quite sensitive, however, to prolonged high environmental temperatures.

Under ideal conditions, the lice can spread rapidly by direct contact between hosts. This is important, especially in kraals, shearing sheds and auction enclosures. It was evident when severely infected sheep came into contact with "clean" animals at the weekly auctions held in the area mentioned. Although indirect contact as a mode of spreading has not been stressed by other workers—the lice being very sensitive to sudden fluctuations in temperature—it is believed that this does take place to a certain extent, but then, only if contact of clean sheep with an infected area is almost immediate. It was observed at auction kraals, where sheep were constantly moved into different enclosures as they were sold.

Heavily infested sheep can easily be detected (Fig. 2), but the so-called "carriers" create problems. These animals appear com-

pletely normal, but small numbers of lice would be seen if the sheep were to be examined carefully. As a rule, infestation increases during the winter months, but if sheep are healthy and in good condition, the infestations do not become severe. As soon as stresses occur, however, such as insufficient winter feeding, the resistance of the animals is lowered and the louse population increases at an alarming rate. This is what happened in the winter months of 1969 on the Transvaal highveld, when the condition spread rapidly.

CONTROL

Because louse and other ectoparasitic infestations normally do not constitute a major problem in this area, sheep are usually dipped only once a year, i.e. after shearing in mid-summer from November to January. Under normal conditions the single annual dipping is sufficient to keep the parasite population down to a low level (less than 2 lice per square inch).

For the efficient control of *D. ovis* the sheep had to be shorn and dipped almost immediately afterwards, without regard to the state of growth of the wool. Naturally this resulted in considerable economic loss to the farmer, as such fleeces would not realize good prices. Nevertheless, this procedure was followed in order to control the outbreaks under discussion and very good results were achieved. No resistance to BHC dips was observed⁴, but many other effective preparations are available which could have been used if resistance to BHC or other insecticides⁵ had been a complicating factor.

Re-infestation was observed to be particularly high after the first dipping; this was explained by the fact that the eggs appear to be resistant to the effects of BHC. A second dipping, 10-14 days after the first, became standard practice, with highly satisfactory results.

CONCLUSIONS

Most farmers are aware of the dangers and economic loss that will befall them if they fail to control lice adequately in their stock, and they therefore co-operate with the Division of Veterinary Services to de-

crease the incidence of the disease. Problems are encountered with speculators, who tend to spread the parasites by allowing heavily infested sheep to mix with others at public auctions. Fortunately most speculators today realize the importance of control at such places and prevent the marketing of infested stock. I am, therefore confident that the problem will be successfully controlled in the future, and only the occasional sporadic cases will be encountered.

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FIG. 1. Female (left) and male (right) of *Damalinea ovis* (after Werneck⁵).

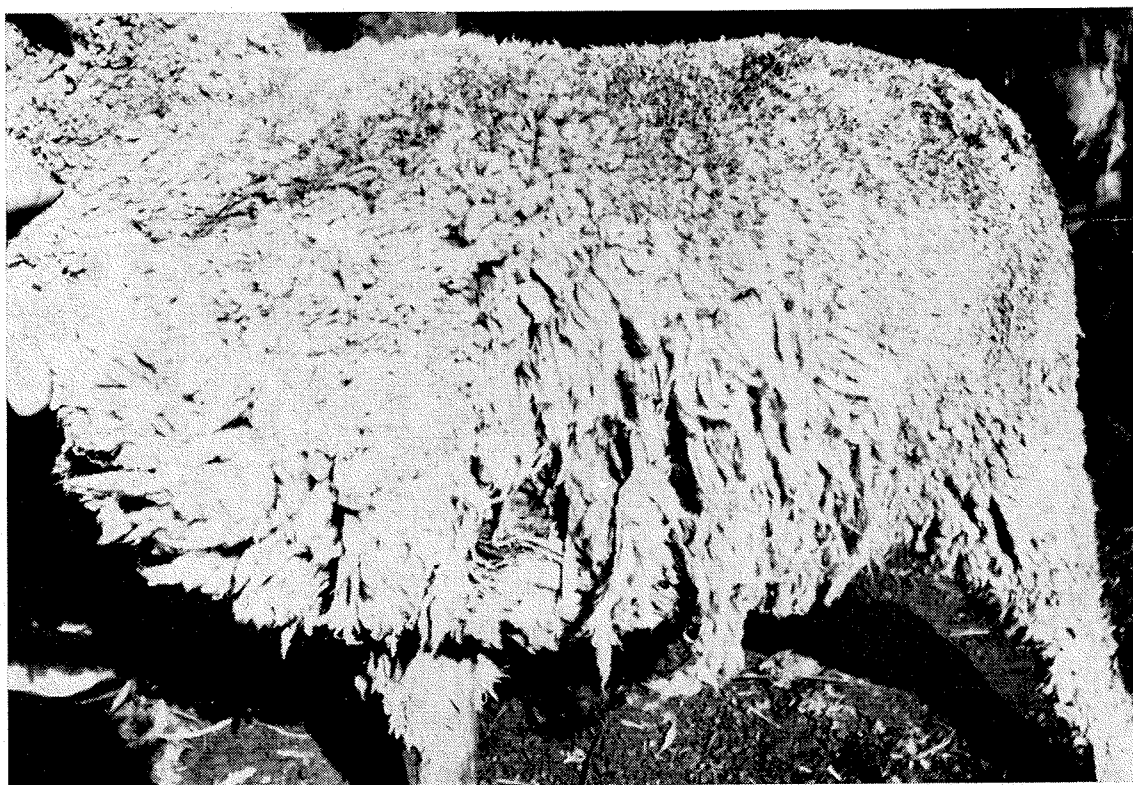
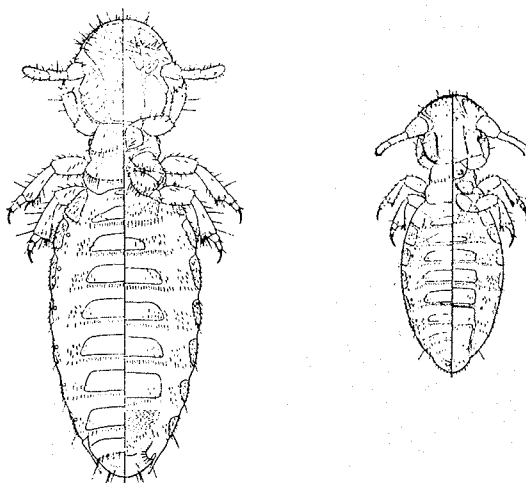


FIG. 2. Appearance of sheep heavily infested with *Damalinea ovis*.

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