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RESEARCH COMMUNICATION

AN ORF-LIKE CONDITION CAUSED BY TROMBICULID MITES ON SHEEP IN SOUTH AFRICA

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ABSTRACT

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Some flocks of sheep in the Amersfoort district of Transvaal Province developed orf-like lesions, commencing between December and April. The causative agent was identified as a new species of mite belonging to the genus *Guntheria* of the family Trombiculidae.

For almost 30 years, farmers in the Amersfoort district of the south-eastern Transvaal have been baffled by the appearance of lesions on their sheep, mainly on the face, usually commencing in summer between December and April whenever the sheep start grazing in certain camps. These lesions resemble those of orf (contagious ecthyma) a pox viral disease of sheep and goats.

The area affected is classified as *Themeda* Veld or Turf Highveld (Acocks, 1988). It occurs on black turf with an extremely dense *Themeda* veld where other plant species are less important. This veld extends along watercourses far into the surrounding veld types and where overgrazed, the poisonous *Geigeria aspera* is abundant (Acocks, 1988). This region is 1 500–1 750 m above sea level, has cold winters (25–62 days below 0 °C, mean minimum temperature 7,1–7,8 °C), moderate summers (mean maximum 21,6–23,0 °C) and a summer rainfall of from 650–750 mm (S.A. Weather Bureau, 1986).

The onset of the condition is preceded by the sheep shaking their heads as if plagued by flies, thereafter the orf-like lesions appear, followed by secondary infections. The lesions usually start on the dorsum of the nose and the areas around the lips (Fig. 1). Thereafter the areas around the eyes and often the ears become affected. The infra orbital sinus frequently develops weeping eczema. Lesions also occur on the legs, but the facial lesions are dominant. The lesions show macroscopic parakeratosis. Lambs are severely affected and die within 3 weeks probably due to starvation caused by the irritation around the mouth and face. Only flocks grazing in certain camps containing turf developed these lesions. When the sheep were removed from these camps to camps in sandy soil, they recovered spontaneously.

From December 1987 to April 1988, 103 out of 248 sheep on 1 farm displayed lesions visible from a distance of 2 m. Sheep with clearly developed lesions did not reveal any ectoparasites, but very small orange coloured mites were detected on the skin of sheep in the early stages when lesions were not as clearly visible. The mites tended to group together, forming clumps approximately 1 mm in diameter, their mouthparts firmly embedded in the epidermis. Single mites also occurred on the skin. The mites were best detected when the sheep's wool was rubbed against the growth pattern. For the inexperienced eye a magnifying glass is recommended. On one occasion, heifers (18–30 months), which grazed together with the sheep in infested camps, showed no lesions or signs of irritations after 3 weeks, but the sheep were severely affected. Only 2 mites were found on the 45 heifers and these mites were entangled in the hair and not attached to the skin.

FIG. 1 Orf-like lesions caused by trombiculid mites

Indications are that dips registered for the control of sheep scab mites may control these mites. When dipped in Diazinon, no mites could be found on the treated sheep after 2 days. When an 0,5 % cypermethrin aerosol[1] was administered to the heads (1–2 mℓ), the mites were controlled for 2–3 weeks. The untreated legs were, however, rapidly infested. The treated sheep were also reinfested by the mites if kept continuously on infested veld.

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FIG. 2 Partly cleared mounted orange trombiculid larvae belonging to the genus *Guntheria* Womersley from facial skin scrapings of infested sheep

The mites were provisionally identified as a species belonging to the genus *Guntheria* Womersley of the acarid family Trombiculidae (Fig. 2). The specific status has yet to be determined. It appears to be the 1st record of this genus and also the 1st record of veterinary important trombiculid mites on sheep in this country. Larvae belonging to this family are also commonly known as "chiggers" and are, with a few exceptions, parasitic on many kinds of animals especially terrestrial vertebrates. Rats are important hosts. The adult and nymphs are, however, unlike their parasitic larval stage, free-living and predacious on other small arthropods or their eggs and are most often encountered in soil and ground litter. Trombiculid females lay their eggs in the soil from where the larvae or chiggers hatch and wait on the ground or, a few inches above the ground, on plant material to attach to suitable hosts (Krantz, 1978; Nadchatram & Dohany, 1974). Because rats are important hosts for many species of trombiculids the association with turf land, which includes low-lying areas in the infested camps, may be due not only to suitable microhabitats for the mites, but also the occurrence of a specific rodent host in these areas. The sheep may be only accidental hosts, the severe lesions reflecting a lack of host adaptation.

Chiggers are often the cause of dermatitis or trombidiosis in a variety of animals including domestic animals and man in many countries. Man seems to be an accidental host. They are also known as the major vectors of scrub typhus in man in the Asiatic-Pacific region (Krantz, 1978). Although recorded from a variety of wild animals, chiggers seem to be far less important as veterinary or medical parasites in South Africa (Zumpt, 1961).

Geigeria aspera plants were prevalent in certain of the infested turf camps, especially camps which were overgrazed. These plants hosted numerous orange or reddish brown mites. This led to a confusion with the orange coloured mite larvae encountered on the sheep. The mites on the plants were, however, identified as *Cunaxoides oribensis* Den Heyer which belongs to the family Cunaxidae. These mites are predators in all stages and feed on a variety of small arthropods including phytophagous insects and mites, thus explaining their presence on the plants. One sample of mites collected on the *Geigeria* revealed a few chiggers among the cunaxids, but as stated above, the chiggers' presence on the plants was most probably for host seeking or even sheltering purposes. Further studies on the ectoparasites of rodents and other small ground animals in the infested camps may reveal the natural hosts of this unusual mite on sheep.

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