

Manuka Blight

Scale Insects Associated with Manuka Species in New Zealand

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AN apparently introduced scale insect of the genus *Eriococcus* has been artificially established throughout both islands of New Zealand within the past 10 years. The insect is associated with both red manuka (*Leptospermum scoparium*) and white manuka or kanuka (*L. ericoides*). Infested plants show a heavy coating of black fungus on the lower leaves and stems. This combination of fungus and insect, known colloquially as manuka blight, is associated with the death of red manuka but not of white manuka. The writer concludes that the insect causing "manuka blight" is now so well distributed that if further artificial transfer were stopped, it is probable that the insect would continue its natural spread into all sizeable areas of manuka. The insect's effect on red manuka affords the most spectacular example of biological control of a plant yet seen in this country.

THE majority of the coccids (scale insects) associated with manuka (*Leptospermum*) species in New Zealand were described by W. Maskell (1887) in the period 1882-84; the locality records were limited and apparently none of the species was considered to be of economic importance. Little work on the coccids of manuka was done between that time and 1945. Extensive surveys of the coccid complex associated with manuka were carried out by Sewell (1949) and Hoy (1949). These surveys have been continued up to date. It is now possible to present a clearer

picture of the distribution of the known coccids and to summarise the current information on two apparently introduced species of the genus *Eriococcus*.

Distribution of Coccids on Manuka

The scale insects recorded by Maskell may be listed in order of frequency of occurrence as follows: *Coelostomidia wairoensis* Mask., *Ctenochiton flavus* Mask., *Inglisia leptospermi* Mask., *Lepidosaphes leptospermi* Mask.,

Inglisia ornatus Mask., and *Asterolecanium epacridis* Mask. The known distribution of these insects is shown on the accompanying map (Fig. 1).

These coccids are relatively confined in distribution and apparently innocuous to the host plant. It will be seen from Fig. 1, however, that one notable exception to this comparatively restricted distribution is *C.*

wairoensis, a relatively large orange-red coccid which is commonly found on white manuka and to a less extent on red manuka throughout the North Island and the northern portion of the South Island as far south as Peel Forest. The association of this insect with the host is characterised by the presence of large amounts of a black fungus. Infested plants are rarely killed even when this insect is present in large numbers.

The two species of *Eriococcus* fall into a different category in that they are both definitely harmful to the host plant.

A disease of red manuka characterised by the appearance of a heavy

Fig. 2—Distribution of *Eriococcus* sp. on manuka species.



The darkened areas are those where the species is established.

Dots indicate infestations which are not yet extensive.

Fig. 1—Distribution of scale insects other than *Eriococcus* sp. on manuka species.

- *Coelostomidia wairoensis*
- 1 *Eriococcus leptospermi*
- 2 *Inglisia leptospermi*
- 3 *Inglisia ornatus*
- 4 *Lepidosaphes leptospermi*
- 5 *Ctenochiton flavus*
- 6 *Asterolecanium epacridis*



growth of sooty mould on the infected plants was noted in the upper Orari Gorge about 1937. By 1945 a considerable portion of the manuka in the Geraldine district had been killed. Investigation showed the presence of an eriococcid (referred to in this article as *Eriococcus* sp.). A survey by Sewell (1949) showed distribution of this new species in Canterbury from Fairlie in the south along the foothills to the Okuku Range near Amberley. The majority of isolated manuka stands on the Canterbury Plains were also infested. No insects were reported from the North Island. Hoy (1949), however, recorded the presence of this species at Tangoio (near Napier), and Wairoa. These areas had been artificially infested with insects from the Geraldine district between 1945 and 1946. Today *Eriococcus* sp. has been transported artificially to many other localities and is established widely throughout the North and South Islands, the range being from south of Lake Manapouri to Kaitaia.

In Canterbury *Eriococcus* sp. has become established, largely by natural spread, over 4½ million acres. In the Wairoa area, partly by natural spread from the introduced infestations at Tangoio and Waihi (Wairoa County) and partly by artificial distribution, the area of infestation has grown from approximately 60 acres in 1945 to 1½ million acres today. In North Auckland there are now two large areas infested, one in the Kaitaia-Kaikōhe region of approximately 850,000 acres and another near Warkworth of 25,000 acres. On the west coast there is