THE STATUS OF LANTANA IN NEW ZEALAND

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SUMMARY

Lantana (*Lantana camara*) (Verbenaceae) is one of the world's worst weeds because under favourable conditions it can form vigorous impenetrable thickets on rangeland and forest margins, and some forms are extremely toxic to ruminants. The New Zealand form of lantana is non-toxic, and can be safely grazed. It is distributed more widely than literature records suggest. Its present distribution is recorded to provide a basis for monitoring its possible spread.

INTRODUCTION

Lantana is a vigorous, thicket-forming woody weed which originated in temperate Central and South America. It has attractive multicoloured flowers and has been widely distributed throughout the world as an ornamental.

Lantana has been recorded as a weed of 14 crops in 47 countries. It is estimated that 4 million hectares of Australian rangeland are infested with lantana (Holm *et al* 1977). Attempts to control it in Queensland include a biological control programme which has continued for over 20 years, and which appears to be very effective in the warmer, wetter regions of southern Queensland (Haseler 1980).

Lantana has two attributes which make it a weed:

Toxicity

In ruminants ingestion of as little as 4 g of dry foliage per kg body weight can cause poisoning characterised by disturbance of liver function, photosensitisation and jaundice. A quantity of 0.7 kg of toxic lantana leaves fed to a cow over 3 days proved fatal in one test (Seawright 1965). After a single feed lantana poisoning is characterised by reduction in food intake and faeces production, while longer term effects include reduced performance, abortion and death. Three triterpene acids; Lantadene A, Lantadene B, and reduced Lantadene A are the toxic principles involved. Considerable research into the toxicology of lantana poisoning and the distribution of poisonous varieties of *Lantana camara* has been carried out in Queensland (Seawright 1963; 1965; Seawright and Hrdlicka 1977).

Vigour

Where lantana becomes established in grazing areas it can spread rapidly, forming dense impenetrable thickets which shade out desirable pasture species or become the dominant understorey in forests (Holm *et al* 1977). In many countries it therefore fulfils a role similar to that of gorse in New Zealand, and is particularly undesirable in hill country pastures.

In New Zealand lantana is best known as a garden ornamental, but as early as 1895 the pink and yellow-flowered form was naturalised at Kohukohu in Northland (Thomson 1922). Because of its major importance as a weed overseas, lantana was listed as a noxious weed from 1919 (Atkinson 1920) until 1978, but in that time never became the problem which had been anticipated.

The importance of lantana as a weed in New Zealand is assessed here. The toxicity of lantana foliage taken from two populations is reported and the known distribution of the weed is defined to provide a basis for monitoring future spread.

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MATERIALS AND METHODS

Toxicity

Foliage samples from the two oldest known lantana populations at Kohukohu (Hokianga County) and Whangaroa (Whangaroa County) were air dried at 60 °C, autoclaved, re-dried for 24 h and then ground to a fine powder. Three Merino lambs of 9-15 kg body weight were placed in metabolism cages, and dosed by way of a stomach tube with a suspension of this powder in water (Seawright 1965).

Toxic lantana foliage in Queensland causes poisoning when ingested at rates of 4-6 g/kg body weight (Seawright 1965). The dose chosen for our tests was 15 g/kg body weight in case New Zealand material was less active. Test animals were examined daily for outward symptoms of lantana poisoning including reduced food intake and faeces output, and were bled to determine the levels of serum bilirubin and the concentrations of various enzymes of hepatic origin.

Distribution

The distribution of the pink and yellow flowered form of lantana in New Zealand was determined from literature records, from the herbarium records of Botany Division, DSIR, and from the personal records of botanists and Noxious Plant Officers (Fig. 1).

During December 1982, lantana distribution in parts of Hokianga and Whangaroa counties was mapped. Ten minute searches along roadsides and adjacent waste ground were carried out at frequent intervals on roads throughout both counties when plants were in full flower and easily visible. Distributions revealed by this method are shown in Fig. 2.

RESULTS AND DISCUSSION

Toxicity

Sheep dosed with 15 g/kg body weight of New Zealand lantana powder showed no symptoms of lantana poisoning. Further investigation confirmed that the three toxic triterpene acids were absent from both New Zealand samples (J.A. Lamberton, CSIRO, pers comm). Chemically, the variety naturalised in New Zealand closely resembles the non-toxic Queensland form "Bundaberg small-flowered pink".

Distribution

Early accounts of lantana in New Zealand suggested that the distribution of this plant was restricted to small stretches of coastline on Hokianga harbour, and to Whangaroa and Tauranga Bay in Whangaroa County (e.g., Atkinson 1920; Thomson 1922; Hilgendorf 1967; R. Cumber pers comm). As Figure 1 shows, lantana is in fact much more widely distributed. In particular it has now been recorded near Houhora (W. Sykes pers comm) and on roadsides between Opotiki and East Cape.

Fig. 1: Distribution of *Lantana camara* in New Zealand

In the 1982 survey it was found that lantana is now very widespread, and abundant in several places in Hokianga County. On the northern shore of the harbour it is common up to 25 km west of the original collection site at Kohukohu, while heavy infestations were also found on the south shore near Rawene and Horeke (Fig. 2). At Kohukohu density is greatest at sea level, but it is also common at 200 m altitude.

In Whangaroa County the distribution of lantana was similar to that observed in 1976 (Hill, unpublished data). A very heavy infestation in regenerating bush was observed at Kaheka Point (Fig. 2).

Fig. 2: Distribution of *Lantana camara* in Hokianga and Whangaroa Counties

Lantana sometimes produces thickets of entwining canes and causes a nuisance along shorelines and in bush margins. It has never been a problem in New Zealand pastures however, presumably because it is grazed by stock without adverse effects.

Apart from the pink-flowered form, the garden variety with orange flowers occurs naturally at three known locations in New Zealand. The toxicity of this form was not tested but it is unlikely to be poisonous to grazing animals (Seawright 1965; unpublished data).

CONCLUSIONS

Lantana found in New Zealand can be safely grazed by sheep and cattle. The distribution presented here suggests that lantana may become a weed of ungrazed areas and wastelands in some areas. The maps presented will allow future assessment of its spread to be made.

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