

DISEASE NOTES OR NEW RECORDS

First report of benomyl resistance in *Elsinoe fawcettii* in New Zealand citrus orchards

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Abstract. Benomyl resistance in *Elsinoe fawcettii* Britancourt & Jenkins was recorded for the first time in New Zealand citrus orchards in October 1999. Isolates resistant to a discriminatory dose of 5 mg L⁻¹ benomyl were found in 5 of the 18 sites tested.

Citrus scab (caused by *Elsinoe fawcettii* Britancourt & Jenkins) is the cause of significant losses in the New Zealand lemon export industry. A limited number of fungicides is available to citrus growers for the control of this disease (benomyl, folpet and copper). Of these, benomyl has been the most effective. Resistance of *E. fawcettii* to benomyl has developed in citrus-growing regions overseas, such as Florida (Whiteside 1980) and Japan (Ieki 1994), seriously compromising the efficacy and future use of this fungicide in those areas.

From January to June 1999, scab-infected citrus twigs, leaves and fruit were collected from four sites around Auckland and from 14 sites around Kerikeri. Kerikeri, situated approximately 250 km north of Auckland in the North Island of New Zealand, is one of the major citrus growing areas of this country. Scab lesions were scraped with a scalpel onto a semi-selective medium (Whiteside 1986) and after 3 days, individual colonies of *E. fawcettii* were removed with forceps onto potato-dextrose agar (PDA). Only one colony was isolated from each fruit, leaf or twig.

Eighty-four isolates of *Elsinoe fawcettii* were tested for resistance to benomyl. Growth on agar amended with a discriminatory dose of 5 mg L⁻¹ benomyl was used to distinguish between sensitive and resistant isolates. Mycelial plugs were taken from the edge of each colony and placed onto PDA amended with 0 and 5 mg L⁻¹ benomyl. The

inoculated plates were incubated at 20°C and examined after 7 days for evidence of growth of *E. fawcettii*.

Of the 84 isolates screened, 32 proved resistant to the discriminatory dose of 5 mg L⁻¹ benomyl. At this rate benomyl was totally ineffective in preventing the growth of resistant isolates. Resistant isolates were found at 5 of the 18 sites tested, all in Kerikeri. Of these, all isolates from one site known to have received regular benomyl applications were resistant. The spray history was unavailable for the remaining four sites where 33–100% of isolates were resistant.

The limited number of fungicides available for the control of citrus scab in New Zealand emphasises the importance of the adoption of resistance management strategies for benomyl use in citrus orchards.

References

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Accepted 13 November 2000