Less spraying for celery leaf blight

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INTRODUCTION

The fungus *Septoria apiicola* is responsible for late blight in celery (Figure 1), and without intensive calendar spraying can cause losses of up to 90%. This project aims to devise ways of controlling celery late blight with less spraying and so minimise the costs and hazard to users and the environment.

Figure 1. Symptoms of late blight. Small brown spots develop on the older outer leaves. These quickly turn dark brown and may join to form larger spots. Losses are due to slower growth rates, post harvest rots and labour for trimming diseased shoots.

The TomCast model (Table 1) can be used to predict the likelihood of celery late blight. Applying fungicide at these times rather than on a weekly basis could mean fewer sprays. Weather stations (Figure 2) in celery crops are used to transmit temperature and leaf wetness readings for determining the Disease Severity Value (DSV).

METHOD

We performed a summer field experiment in Victoria and Queensland using different spraying treatments and DSV thresholds which were based on those described previously (1). Systemic fungicide was also applied at canopy closure, to reduce disease.

Recently the Disease Doctor™ computer program (Figure 3) has become available to facilitate growers' use of weather station telemetry with TomCast. We examined the software's output with a view to increasing its accuracy and user friendliness.

Table 1. TomCast model (2).

Mean temp. (°C)	Hours of leaf wetness required to produce daily Disease Severity Values (DSV) of :				
	0	1	2	3	4
13-17	0-6	7-15	16-20	21+	
18-20	0-3	4-8	9-15	16-22	23+
21-25	0-2	3-5	6-12	13-20	21+
26-29	0-3	4-8	9-15	16-22	23+

0 = conditions unfavourable for spore formation. 4 = conditions highly favourable for spore formation. DSV's are scored over a 24 hours period and accumulated until the threshold is reached, typically 20 DSV's.

Figure 2. A weather station used in this project. In the foreground is the solar panel unit which also contains the modem and transmitter for sending telemetry via the mobile phone network.

RESULTS AND DISCUSSION TO DATE

Unfortunately no late blight appeared on the crops, and no assessment of TomCast was possible. However, for the Victorian experiment, 5 fewer sprays at the 20 DSV threshold were needed when compared to weekly spraying.

The Disease Doctor™ program (Figure 3) was enhanced by: improving its help file, enabling it to operate on a computer network, and correcting a DSV calculation error.

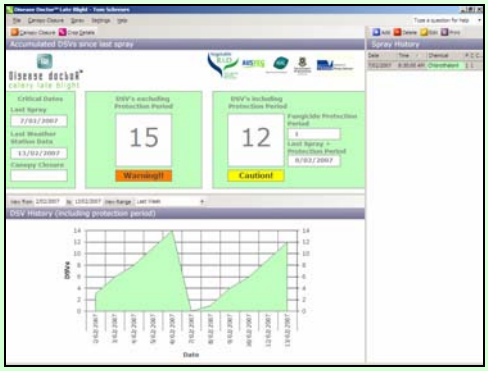

Figure 3. Screen shot of the Disease Doctor™ program.

Further field trials are planned, and so is an investigation on the use of vapour pressure deficit as a means for determining leaf wetness. This could negate the contamination and calibration issues of the leaf wetness sensor.

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1. Minchinton, E. (2005). Evaluation of disease forecasting model to manage late blight (*Septoria*) in celery. HAL report VG04016.
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