**CONTROL OF POWDERY MILDEW
(*SPHAEROTHECA MORS-UVAE*)
ON GOOSEBERRIES WITH PENCONAZOLE**

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Gooseberries are a minor crop in New Zealand but one which has an export potential. Gooseberry mildew (*Sphaerotheca mors-uvae*) which was found in the Horowhenua in October 1986 (Soteris and Grbavac 1987) has caused considerable losses and damage to this crop. The disease has now been recorded in Taranaki, Hawkes Bay, Wairarapa and Otago. Sheridan and Nendick (1988) suggested the disease arrived on air currents from Tasmania and reported that 50 to 90% of the crop was unsaleable in the Wairarapa in 1987-88 and that the disease was severe in that area in 1988-89.

The symptoms of this disease are small white fungal mats on the underside of the leaves in early spring which spread rapidly under moist, still conditions to cover the fruits, leaves and lateral tips. Leaves are the least affected of the plant parts. Spore production on the plant gives the white powdery appearance typical of powdery mildew infections. The disease distorts new growth and can cause death of leaves and shoot die back. Fruit infected are small, russeted and unsaleable. The fungus overwinters on infected material especially in the buds, and spreads during the season by conidia. The perfect stage of this fungus has not been recorded in New Zealand.

Current control measures are based on cultural practices and fungicide applications. Pruning infected shoots in early autumn, maintaining a free air circulation by winter pruning and avoiding the use of high nitrogen fertiliser are the main cultural controls. Fungicide treatments are based on protectant type fungicides used either post-harvest or in spring.

Penconazole (Topas 100 EC) has been recorded in Netherlands and Switzerland (W. Ruess, pers. comm.) as giving good control of gooseberry powdery mildew with generally good crop tolerance. To confirm this, two trials were carried out on gooseberries (cv. Levin Early) in the Hawkes Bay in 1987 and 1988. The first trial was mainly to establish the safety of penconazole on gooseberries. Treatments were applied late in the season in October 1987 with a repeat application 8 days later. Penconazole was applied at 2.5, 3.5 and 5.0 g ai/100 litres with the addition of a wetting agent. Assessments were carried out on the centre bushes for phytotoxic effects and disease control at 7, 14 and 21 days after the last application. The second trial the following year evaluated the efficacy of three rates of penconazole. Treatments commenced in September with three applications made at 12 to 16 day intervals. The trials were carried out using a randomised complete block design of four replicates of four bushes with plots at 2 x 3 m spacing. Treatments were made with a precision plot sprayer fitted with a combo head of cone nozzles (D2-45) in 1000 litres water/ha at 400 kPa pressure, and included the addition of a wetting agent (Multifilm X-90). Disease assessments were made on one of the centre bushes at 14 and 33 days after the last treatment and recorded the infection on 60 berries/bush and leaves from each of 10 laterals/bush.

No symptoms of phytotoxicity were observed with penconazole in Trial 1. The results from Trial 2 (Table 1) showed that all rates of penconazole significantly controlled berry infections ($P < 0.01$) with no significant difference between the three rates. The length of disease control on the berries was still evident 33 days after the last application which may have been due in part to the reduced inoculum pressure from the earlier applications. Only the 3.5 g and 5.0 g rates of penconazole gave a significant level of control of disease on the leaves over untreated. This may have been due to the overwintering mycelium not being affected by the lower rate of penconazole.

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TABLE 1: Incidence of powdery mildew on gooseberries (1988)

	gai/100 litres	berries	Mean % infected	
			14 days	33 days
			leaves	berries
penconazole	2.5	7.6 B	2 abAB	2.3 B
penconazole	3.5	7.3 B	1 b AB	1.0 B
penconazole	5.0	5.6 B	0.3 bB	0.5 B
untreated	—	25.4 A	4 aA	11.3 A
	C.V.	25.5%	16.4%	30.3%

In summary the trials showed the safety of penconazole at 2.5 to 5 g/100 litres on gooseberries. The efficacy of this product on powdery mildew was demonstrated and confirmed overseas data. Control of gooseberry mildew can be obtained by good cultural practice as reported by Soteris and Grbavac (1987) and the judicious use of penconazole at rates of 3.5-5.0 g/100 litres at approximately 14 day intervals in the pre-harvest period.

REFERENCES

- Sheridan, J.E. and Nendick, D.K., 1988. In: Cereal Diseases 1987-1988. *Mycology and Plant Pathology Report No. 25*. Botany Dept. Victoria University of Wellington.
- Soteris, J.J. and Grbavac, N., 1987. American gooseberry mildew, a new disease in N.Z. *New Zealand Commercial Grower*, April: 22-23.