THRIPS CONTROL ON NERINE FLOWERS WITH FLUVALINATE

ALAN CARPENTER and ADRIENNE STOCKER

Horticultural Research Centre
Private Bag, Levin

The control of insect contaminants on flowers for export can be a major problem. Handling of cut flowers for export involves many manual operations and continual contact with the product by the staff. Thus it is most desirable that any insecticide used close to harvest should have low toxicity to be compatible with handling requirements. Few low toxicity insecticides are registered for use on ornamentals in New Zealand (O'Connor 1987). With the registration of the synthetic pyrethroid, fluvalinate, in 1987, growers had access to a low toxicity product with activity against a wide range of insect and mite pests.

The product has the additional advantage of being an aquaflow formulation which is perhaps its most important feature. Flowers sprayed with an emulsifiable concentrate may be burned and wettable powder formulations can leave unsightly deposits on flowers. The aquaflow formulation avoids both these problems and thus has a major advantage over other products.

A wide range of insects and mites can be associated with cut flowers. Unlike many other insecticides, fluvalinate has some miticidal activity (Penman *et al* 1986). For flowers to pass a quarantine barrier it is desirable that they have no insects present, either dead or alive. Synthetic pyrethroids make plants unattractive to insects and so may also help avoid initial infestation.

It has been shown that a range of insecticides do not affect the display life of nerines, and that spraying individual flowers at spathe split with diazinon can produce an insect free crop (Carpenter 1987). The major difficulty with such a strategy is the cost of spraying individual flowers every 2-3 days. This note reports on a trial investigating the efficacy of fluvalinate for thrips control on nerines, and the regularity of spraying needed to produce an insect free product.

The cultivar used was *Nerine bowdenii* "Pink Triumph". Four plots 2 m × 1 m were randomly assigned to the following treatments: sprayed once per week, sprayed twice per week, sprayed three times per week and unsprayed. Fluvalinate (Mavrik Aquaflow) was applied to runoff at 2 ml/5 litres with a Gardena 5 litre pressurized sprayer. The first spray was applied when the spathe of the earliest flower began to split and the last spray was applied when the spathes of the last flowers began to split. The last flowers were picked 2 days after the last spray. A buffer of 15 cm was left unpicked at each end of each plot: no flowers were picked from this zone for the main trial.

Inflorescences were picked when one floret had begun to open. They were taken to the laboratory, completely dissected, and the insects present counted. Picking occurred three times per week. On 4 April, 10 flowers from each treatment were placed in water at 20 °C to evaluate the effect of the spray programmes on display life. Display was considered to have ended when half the petals on half the florets of an inflorescence began to discolour and wilt.

Occasionally flowers at various stages of development from adjoining beds, and over-mature flowers from the buffer zones between the treated plots were harvested and dissected to assess insect infestation. These flowers are listed in the results as "outliers" and "over mature outliers". The latter were flowers further open than would be acceptable for export.

The result of the trial are shown in Table 1. The variation in the number of blooms picked per treatment is due to variations in plant populations per plot.

Even on unsprayed plots the number of thrips per flower was low. There was no difference between the thrips incidence in flowers sprayed twice or three times per week;

once weekly spraying had an intermediate thrips level between the unsprayed and the other treatments. Thrips incidence in the "outliers" picked at optimum maturity for export was higher than in the trial proper, and the incidence of thrips in overmature flowers was high from a quarantine standpoint.

Thrips incidence on the unsprayed controls was only 10% of that found in a previous trial (Carpenter 1987), although incidence in the "outlier" categories was similar. In the earlier work flowers were selected from amongst a larger population of flowers of mixed maturity, a set of conditions more related to the "outliers" used here. In the experiment reported here plots were managed more commercially, with all flowers being harvested as they reached optimum maturity. This method prevents the build up of thrips populations which occurs in overmature flowers, and thus limits the spread of thrips to newly opened inflorescences.

The research reported here shows that appropriate management of the flower crop, together with a twice weekly spray with fluvalinate allows the production of virtually thrips free flowers. Once weekly spraying, allowed some insect infestation of the flowers, which for markets with rigid quarantine systems, is probably unacceptable.

TABLE 1: Thrips populations, spray efficacy and display life of nerine flowers treated with fluvalinate.

Treatment	No. of flowers	No. of thrips	% reduction in thrips	Display life (days)
unsprayed	191	13	-	12
weekly spray	116	3*	76	12
twice weekly spray	116	1	92	12
thrice weekly spray	119	1	92	12
"outliers"	90	19		-
"overmature outliers"	29	27		-

Duration of harvest 28/3/88—4/5/88; First spray 23/3/88; Last spray 2/5/88.

* two of these thrips were dead

Note: 2 spiders were found in unsprayed flowers. On the unsprayed, weekly spray and "overmature outliers", 2, 1 and 2 aphids respectively were found.

REFERENCES

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