

3500/12 CONTROL OF PEARL SCALE WITH VYDATE

TERMINAL REPORT

Cat. 1436

Object: To determine whether pearl scale (Margarodidae) can be effectively controlled with foliar applications of Vydate applied when the pest is at the first larval stage in its life cycle.

Location: ZSA Experiment Station, pot trial.

Design: Observational, 5 pots of each treatment.

Treatments: 7 treatments as follows:

	Date of application of Vydate		
	<u>10.12.82(A)</u>	<u>24.12.82(B)</u>	<u>7.1.82(C)</u>
Control	-	-	-
A	*	-	-
AB	*	*	-
ABC	*	*	*
B	-	*	-
BC	-	*	*
C	-	-	*

- Conduct:
- (a) Vydate was applied at the rate of 12 l/ha of product (25% E.C) using a small hand sprayer with sufficient water to give adequate foliar cover. Actual application was based on 1,2ml of product per m², and 9,6 was applied in 600ml water to 15 pots covering 8m².
 - (b) The first application on 10th December was timed to coincide with the stage when most eggs had hatched into 1st stage larvae, with a few very small developing cysts in evidence.
 - (c) The cane stools in the pots were dug from heavily infested areas in various fields on Hippo Valley Estates, but mostly from Section 20, Field 15D. Additional adults were added to these pots during October and November to ensure high population levels, but the numbers were not noted because the initial populations were unknown anyway.
 - (d) The cane stools were dug up in September within about 2 months of harvest, and at the time of spraying in December the cane in the pots was approximately 1,5m in height.
 - (e) On all three dates of application the Vydate was sprayed in hot sunny weather without rainfall interference.

(f) The stools.....

- (f) The stools were removed from the pots in May, 1983, and the cysts were separated from soil and roots and counted. The dominant pearl scale present was Margarodes salisburyensis, mixed with relatively low numbers of M. perinquelyi.
- (g) At the time of cyst counting, top growth was separated from roots and measured to determine whether there were any growth differences between treatments.

RESULTS

The most interesting and perplexing aspect of the results, which are recorded in the attached table, was that cyst numbers were very much lower in the untreated control pots than in those which were treated with Vydate.

Within the 5 pots of any individual treatment there was considerably variation in cyst numbers, as would be expected from random selection of infested stools in the field. The possibility exists that the 5 pots chosen for the controls were all of exceptionally low population, but this seems unlikely when all others were heavily infected. A statistical analysis of cyst numbers showed that differences were significant ($P=0,05$), in spite of very high variability, indicating that these differences were definitely associated with treatments.

A possible explanation is that the Vydate effectively controlled a predator/parasite complex without having any effect on the pearl scale, but this seems unlikely as there was no evidence of any other organisms in the soil when the counts were made and in any case they would have had to be root-feeding to be affected by the Vydate.

Variation in the growth parameters measured was as great within treatments as it was between treatments, and the differences that were recorded were too small to be meaningful.

CONCLUSIONS

The most important result of this exploratory trial was that scale populations were not adversely affected by Vydate treatment, although there was evidence of cyst numbers declining as the spraying date advanced. It is thus possible that this insecticide may have a more pronounced effect at a later stage of cyst development when the pest is feeding more actively.

A follow-up investigation was initiated in 1983 to compare two concentrations of Vydate aimed at controlling either the first instar larvae (Nov/Dec treatment), or the cysts (Apr/May treatment), using potted cane stools of known initial infestation level.

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Treatment	Mean no.cysts per pot	Mean wt. per 1 000 cysts(g)	Mean stalk wt. (g)	Mean stalk length(m)	Mean internode length(cm)	Mean plant wt. (kg)
<u>Individual treatments</u>						
Control	601	7,15	428	1,50	9,33	4,39
A(1 applic. of Vydate)	5 325	7,80	398	1,49	9,18	4,84
B(1 " " ")	1 008	7,54	370	1,42	9,34	4,47
C(1 " " ")	1 299	7,11	407	1,38	8,56	4,22
AB(2 " " ")	5 415	8,85	494	1,45	8,56	3,54
BC(2 " " ")	1 562	7,91	361	1,39	8,95	4,23
ABC(3 " " ")	3 405	9,57	415	1,54	8,46	4,73
<u>Main effects</u>						
Control	601	7,15	428	1,50	9,33	4,39
A(Mean of A, AB, ABC)	4 715	8,74	436	1,49	8,73	4,37
B(Mean of B, AB, BC, ABC)	2 848	8,47	410	1,45	8,83	4,24
C(Mean of C, BC, ABC)	2 089	8,20	394	1,44	8,66	4,39
Trial means	2 659	7,99	410	1,45	8,91	4,35