

Chemical control of floral malady of *Polianthes tuberosa* L.

H. S. CHAKRABARTI

Zonal Adaptive Research Station, Krishnagar, Nadia, West Bengal, India

Among the six chemicals tested, Nuvacron(0.15%) and Metacide (0.15%), controlled the disease by 86% and 52% respectively over untreated control plot.

Key words : *Aphelenchoides besseyi*, tuberose, foliar and spike infestation, contact and systemic insecticide, systemic fungicide

INTRODUCTION

The floral malady of tuberose appeared to be a recurrent problem since 1987 in Ranaghat Block-II, Dist. Nadia, West Bengal. Chakrabarti and Ghosh (1993), first time, reported *Aphelenchoides besseyi* Christie causing the malformed flower of tuberose from India.

In this present study an attempt has been made to study the effects of contact, systemic as well as both contact and systemic insecticide and a systemic fungicide on the control of floral malady of tuberose.

MATERIALS AND METHODS

The sun-dried tubers, 2.5 - 3 cm long, were grown on April, 15, 1993 in the farmer's field, Matikumrah, Ranaghat Block-II, Dist. Nadia, in 3 M × 2 M plot; each plot having 3 replications for each treatment, with a spacing of 25 cm × 20 cm.

Total N, P, and K at the rate of 150, 200 and 200 Kg/ha respectively including a basal FYM : 10 T/ha. were used.

Foliar application for each treatment was made thrice at an interval of 10 d at maximum elongation to spike initiation stage. Data were taken at an interval of 10 d following application of respective treatments. The percent of foliar infestation and the percent of spike infestation were counted.

The following chemicals were used, namely, Furodon 3G (2,3 Dihydro-2,2-dimethyl-7-benzo-furanyl carbamate), Metacide (0,0 Dimethyl-O-pnitrophenyl phosphorothiate), Bavistin (2-(methoxy carbamoyl) benzimidazole),

Nuvarcon (dimethyl(E)-I-methyl-2-methylcarbamoylvinyl phosphate), Rogor (0,0 dimethyl s - methyl carbamoyl methyl phosphorodithioate), and Dimecron (2-chloro-2-diethyl carbamoyl = I=methylvinyl dimethyl phosphate). Nuvarcon, Metacide, Dimecron and Rogor were sprayed at the rate of 1.5 ml/l. Bavistin was used - as 1 g/b and Furadon 3G was used as 1.5 Kg/ha. Plain water was sprayed as control.

RESULTS

The analysis of results in case of spike infestation showed significant difference among the treatments i.e. significant at 1% level of significance (Table 3). No significant difference between the replication was observed. Considering the spike infestation (Table 1), Nuvarcon showed the best performance as compared to other treatments.

In case of foliar infestation (Table 2), although the treatment difference was not significant at 5% level of significance in most cases, still Nuvarcon showed the best performance against other treatments. Here also the replication difference was not significant.

Table 1. Mean values of spike infestation (%)

Treatments	dose	Dates of Observation				Grand Mean
		19.9.93	29.9.93	10.10.93	31.10.93	
Nuvarcon	1.5 ml/b	18.77	14.4	9.5	12.9	13.37
Metacide	1.5 ml/L	52.66	35.56	23.4	52.5	41.03
Bavistin	1 g/b	50.5	29.73	31.5	61.3	43.26
Dimecron	1.5 ml/b	51.5	61.7	35.4	45.1	48.42
Furadon 3G	1.5 kg/ha	63.8	54.56	37.7	61.3	54.34
Rogor	1.5 ml/b	66.3	45.2	53.97	88.7	63.54
Control(Plain water)	87.13	78.5	90.8	85.7	85.53	

Metacide, Bavistin & Furadon D/App. : 30.8.93, 19.9.93 & 30.9.93

Nuvarcon, Dimecron & Rogor D/App. : 30.8.93, 19.9.93 & 11.10.93

Table 2 Mean values of foliar infestation (%)

Treatment	Dose	Dates of Observation			Grand Mean
		18.9.93	29.9.93	10.10.93	
Nuvarcon	1.5 ml/b	2.83	2.33	4.67	3.28
Metacide	1.5 ml/L	3.83	3.00	4.33	3.72
Bavistin	1 g/b	5.8	4.66	5.00	5.15
Dimecron	1.5 ml/b	4.83	3.33	5.33	4.5
Furadon 3G	1.5 kg/ha	5.63	4.00	4.00	4.54
Rogor	1.5 ml/b	6.37	5.33	5.33	5.68
Control(Plain water)	7.93	10.93	9.67	9.31	

Table 3 'F' Values for different treatments and replications

Date of App.	Date of Obs.	Spike Infestation		Foliar Infestation	
		Rep.	Treat.	Rep.	Treat.
30.8.93	18.9.93	0.26	8.61**	0.8	1.32
19.9.93	29.9.93	1.07	6.3**	1.46	7.07**
30.9.93	10.10.93	0.16	18.34**	3.73*	3.86*
11.10.93	31.10.93	0.15	11.72**	-	-

** Highly significant at 1% level

* Significant at 5% level.

- Data not recorded

DISCUSSION

In the present study the effect of Nuvacron as a foliar treatment appeared very much evident on the successful control of both foliar and spike infestation of tuberose. The positive effect of Metacide as a foliar treatment on the control of spike infestation of tuberose corroborated to the early indication made by Chakrabarti and Ghosh(1993).

Experiments on insecticides and fungicides made by early workers proved enormous success on the control of white tip nematode, *A. besseyi* on rice. Gomi and Kogure (1956) used Folido for root dipping and found effective in control of rice white tip nematode than hot water treatment. Templeton *et al.* (1971) applied Benlate 50 (50% benomyl) as seed treatment and found effective control on white tip nematode disease.

Bavistin as a foliar treatment appeared almost at par with Metacide in the present study and showed significant control (50%) on the spike infestation of tuberose. On the basis of these findings, it is assumed that tuber dipping in chemicals will be helpful to control the disease as *A. besseyi* is basically a tuber borne pathogen. Further success on chemical treatments as tuber dipping will be very much economic and more convenient for the farmers.

ACKNOWLEDGEMENTS

Grateful thanks are due to Mr. D.Mukherjee, Director of Agriculture and Ex-Officio Secretary to the Department of Agriculture, Govt. of West Bengal, Writers' Buildings, Calcutta-700 001, for giving me an opportunity to undertake the present investigation.

Sincere thanks are due to Mr. D.K.Banerjee, Assistant Entomologist, Rice Research Station, Chinsurah, Hooghly, West Bengal, for giving his valuable guidance in course of my present investigation. Sincere thanks are also due to Mr. P. K. Bera, Assistant Entomologist of the same Institute, for kindly analysing the experimental data.

REFERENCES

- Chakarbarti, H. S. and Ghosh, S. C. (1993), Studies on the floral malady of *Polianthes tuberosa* L. in West Bengal *J. Mycopathol Res.* **31**(2): 109-115.
- Gomi, M. and Kogure, M. (1956). Effect of Folidol on the control of the rice white tip nematode. *Proceedings of the Kanto-Tosan plant protection Society* **3**, 20-21. [Ja]
- Templeton, G. E., Johnston, T. H. and Daniel, J. T. (1971). Benomyl controls rice white tip disease. *Phytopathology* **61**, 1522-1523.

(Accepted for publication 10 December 1994)