

# Systox for Nematode in Daffodils

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The ravages of the bulb and stem nematode *Ditylenchus dipsaci* (Kuhn) Filipjev (eelworm) have long plagued daffodil growers. The hot water treatment presently in general use is often not wholly effective; some nematodes escaping destruction (4). Basal rot is often spread during hot water treatment in spite of the addition of formalin to the water. Granting that the bulbs are usually effectively disinfected, bulb production land, especially Long Island, is limited and eelworm infestations are already present in many of these soils. Urgently needed has been a nematocide which would reduce the amount of infestation when applied to planted, growing, nematode-infested bulbs. This paper describes the use of Systox, and the results obtained.

The presence of bulb and stem nematode in the leaves and stalks of daffodils justifies grouping it, for control purposes, with other foliar nematodes. Successful control of foliar nematode on chrysanthemum and Vanda orchids was obtained by foliar applications of parathion (1), (2), (3). These facts suggested the use of similar phosphate insecticides for controlling the bulb and stem nematode. Of great interest is a new systemic phosphate insecticide, Systox\*, which is readily absorbed by plants, rendering their sap toxic to aphids.

Trials were conducted using Systox both as a spray and as a drench against bulb and stem nematode in daffodil. Flats containing 70-80 infested daffodil plants, variety Lawrence Koster, were sprayed once with Systox at the rate of 1 quart 32% active material per 100 gallons. Nematode counts taken before and one week after treatment indicated a 75% reduction in the number of nematodes present per bud. Counts made three weeks after treatment showed an increase in the number of nematodes present. These data indicated the necessity of spraying more than once to obtain adequate control.

The following experiment was then carried out. Single, visibly infested King Alfred daffodil plants were transplanted from flats to five inch pots filled with sand. The plants were grown in the greenhouse at 60°F. for one week before treatment. They were then divided into 3 groups of 24 plants each and treated as follows: A) drenched once a week for three weeks with 100 ml. of Systox at the rate of 20 grams of 32% active material per gallon; B) sprayed once a week for three weeks with Systox at the rate of 20 grams of 32% active material per gallon; (the amount of Systox running into the pots during spraying was minimized by holding the pots on their sides during treatment) C) no treatment. Nematode counts were made 5 days after each treatment. Samplings of each plant were made from both leaf and bulb tissues

\* Supplied by Plant Products Corporation, Blue Point, Long Island.

and living and dead nematodes were tabulated. (The method used to count these nematodes will be published elsewhere). Only the last count is shown in Table 1. since two treatments did not give adequate control.

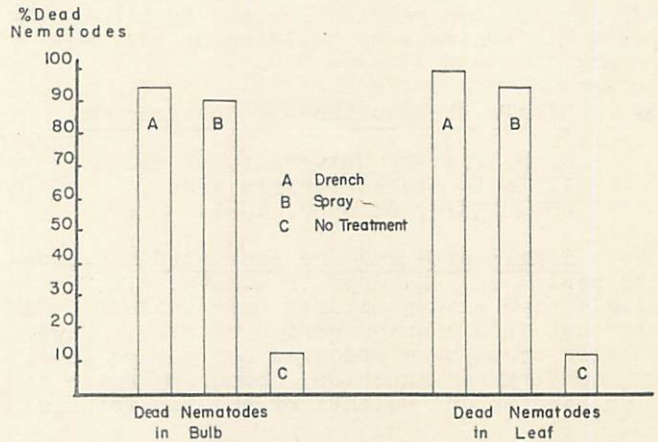
Table 1. Total number of nematodes present and the per cent of dead nematodes in bulb and leaf tissues of daffodils sprayed or drenched 3 times with Systox at 20 grams per gallon.

	Total number of nematodes per gram of tissue		Percentage of dead nematodes after 3 treatments	
	Bulb	Leaf	Bulb	Leaf
A (drenched)	412.0	100.0	93.4	100.0
B (sprayed)	100.0	137.0	90.0	93.2
C (untreated)	1212.0	3837.0	12.5	12.0

The table clearly shows: 1) that Systox killed bulb and stem nematode in daffodils; 2) that Systox reached nematodes in the bulbs whether it was drenched on the soil or sprayed on the foliage; 3) that after three treatments as described, the total nematode population was markedly reduced. These facts are shown graphically in the diagram.

Badly distorted, infested foliage, which normally would produce twisted flowers with short, crooked stems, gave rise to normal flowers with normal stem size when sprayed with Systox. This was attributed to the killing of nematodes infesting the flower stalks of these plants.

Although Systox appears to have great promise for the control of bulb and stem nematode during the growing or forcing seasons, it should be remembered that this is only a preliminary report and does not constitute a recommendation. Systox is now being tested in field experiments and the results will be available next year. This laboratory will be happy to learn of the results of others trying this new systemic, phosphate insecticide against bulb and stem nematode.



The effect of Systox upon the nematode infestation in daffodil bulbs and leaves.

continued on page 4

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