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EXTENSION DIVISION

Plant Disease Control Notes

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NEMATODE CONTROL IN HOME GROUNDS

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Nematodes are small roundworms that live in soil, water and plant tissue. They are too small to be seen with the naked eye and are identified with the aid of a microscope. Over 1,239 nematode species are parasitic on plants. In addition to those that feed on plant roots there are species that feed on or in plant stems, leaves, buds and flowers. Many of these nematode species cause decline in ornamentals.

Symptoms of Nematode Attack

Nematode damage to ornamentals is often overlooked because of the small size of nematodes and the fact that they seldom kill plants. Nematodes cause plants to decline slowly and above ground plant parts may be stunted, yellow, dieback, and exhibit plant food deficiency symptoms as well as loss in plant vigor. Affected plant roots may possess numerous galls, root decay, or a general decline in root growth. Nematodes also cause "ports of entry" for other soilborne diseases caused by fungi and bacteria, thereby increasing the severity of these diseases.

Nematode Assay and Control Service

The identification of nematode diseases requires the services of a nematologist and specialized equipment. Nematode control by chemicals, cultural practices or resistant varieties depends upon a positive identification of the kinds of nematodes involved in each nematode disease situation. For this reason, the Plant Disease Clinic in the Plant Pathology and Physiology Department at V.P.I. provides a nematode assay and control service to aid you in nematode disease identification and control recommendations. Contact your County V.P.I. Cooperative Extension Office for information on methods of collecting and handling plant and soil samples for nematode assay.

Chemical Control Procedures

The most effective way to control nematode diseases of ornamental plants is by chemical soil treatment with Nemagon, Fumazone, Dowfume MC-2 or Dowfume MC-33. Nemagon or Fumazone can be applied to soil around living plants.

Nemagon and Fumazone Tolerant and Moderately Tolerant Plants

Nursery plants reported as TOLERANT and MODERATELY TOLERANT to Nemagon or Fumazone are listed on pages 3 and 4. Any plant not listed should be treated at a very low dosage level--and on a very small scale until plant tolerance is determined. Do not apply either material to carnations, chrysanthemums, or dwarf palms.

CHEMICALS RECOMMENDED FOR NEMATODE CONTROL IN HOME GROUNDS

Crop	Nematicides	Application Rates	Remarks
Ornamentals (Small area treatment to soil around established plants) (<u>Postplant Application</u>)	FUMAZONE 86E NEMAGON 12.1 EC	1/2 to 1 teaspoon per square yard of soil depending upon plant species tolerance	<u>Tolerant Plant Species*</u> : (1) Punch holes 1' apart and 10" deep in soil around plants in the root zone area. (2) Prepare a diluted emulsion by mixing 1 teaspoon of Nemagon 12.1 EC or Fumazone 86E per gallon of water. (3) With sprinkling can, drench the area with one gallon of this dilute emulsion per square yard (3' X 3'). Sprinkle plants and treated area with water from garden hose to further wash chemical to root zone. (4) Press hole opening closed to prevent escape of fumigant (wear rubber boots). Soil temperature should be between 55 and 80°F. Apply in spring and fall. <u>Moderately tolerant species**</u> : Use 1/2 teaspoon (Nemagon 12.1 EC or Fumazone 86E) per gallon of water. <u>Safety Precautions</u> : Wear rubber boots and follow manufacturer's instructions.
(Small area treatment to seedbed without plants) (<u>Preplant Application</u>)	DOWFUME MC-2	2 lbs. per 100 square feet	To obtain best results, plow or spade area to 12" depth, prepare soil until it is free of clods and in good seedbed condition. Introduce chemical under a gas-tight cover over area being treated. FOLLOW MANUFACTURER'S INSTRUCTIONS.
(Large area field or seedbed treatment) (<u>Preplant Application</u>)	DOWFUME MC-33	350 lbs. per acre for overall treatment	<u>Apply as a preplant application</u> : This treatment is effective against nematodes and other soilborne pests. Treated area must be covered immediately with a plastic film. A mechanical applicator and plastic tarp layer is available for seedbed and field treatment. FOLLOW MANUFACTURER'S INSTRUCTIONS.

* See page 3

** See page 4

TOLERANT SPECIES

Ajuga	Calanthea	Elm	Lavandula	Peperomia	Taxus
African violet	Callistemon rigidus	Euonymus, Vegetus	Ligustrum-Privet	Periwinkle	Tritoma
Aglaonema	--Bottle Brush	Exochorda	Lily of the Valley	Philodendron	
Amaryllis	Caryopteris		Locust, seedlings	Pilea	Violet
Anchusa	Centranthus	Fatshedera		Pine, White	
Andromeda	Cherry, Mahaleb root stock	Firethorn	Macrophyllim	Pittsorum, Variegated	Weigela
Apple	Columbine	Foreget-me-nots	Maple, red	Plum	Yew, Japanese
Ardisia japonica	Coreopsis	Funkia	Maranta	Pothos	
Arrowwood	Crabapple		Mountain Ash	Potentilla	Zinnia
Asclepias	Crepe myrtle (purple)	Gypsophilum		Protocarpus	
Ash			Nephthytis	Pyrethrum, seed	
Asparagus fern	Croft lily	Heliopsis			
Astilbe	Cryptanthus	Helleborus	Oak, live		
Azalea		Hemlock	Oak, Northern Red	Rudbeckia	
	Daisy	Hibiscus	Oak, White		
Barberry Red Leaf & Dwarf	Dianthus grenadin	Hypericum		Sanseveria	
	Decentra		Pachysandra	Schefflera	
Buxus harlandi	Diffenbachia	Ilex rotundifolia	Pansy	Sedum	
--Boxwood		--Holly	Peach	Spirea	
Buxus japonica	Dogwood, white	Incarvillea	Pear	Syringa-lilac	
--Boxwood	Dracaena		Peony	Sweet Pea (perennial)	

MODERATELY TOLERANT SPECIES

Artemesia	Delphinium	Geum	Pyrethrum, plants
		Gladiolus	
Blueberry	Echinops		Rosa fortuneana (Var. Happiness Rose)
		Lythrum	Rosa sp. (Var. Jiminy Cricket)
Camellia, japonica (Var. Pink Perfection) (Var. Shell Pink)	Forsythia	Magnolia grandiflora	Rosa (Var. Dr. Huey)
Camellia Sasanqua (Var. Elizabeth)	Gardenia fortuniana (Var. Mystery)	Magnolia soulangeana	Rosa (Var. Countesa Vandal)
Campanula	Gardenia jasminoides (Florida, August Beauty)	Phlox	Rosa (Var. Isobel Harkness)
Chrysanthemum		Pine, slash	Stantolina
		Polygonum distortum	
			Vinca

Trade and brand names are used only for the purpose of information and the Virginia Cooperative Extension Service does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others which may also be suitable.

KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label. If disposal instructions are not printed on the label, burn the containers where smoke will not be a hazard, or bury them at least 18" deep in a place where water supplies will not be contaminated.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES.