

YARD'N'GARDEN

Controlling Diseases in the Home Vegetable Garden

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Disease control in the home vegetable garden must start long before seeds and plants are placed in the ground. Plan a long range program and keep records from one year to the next, especially of the location of plant types within the garden. This will facilitate effective crop rotation, which is one method of minimizing root rot diseases caused by soil-borne pathogens.

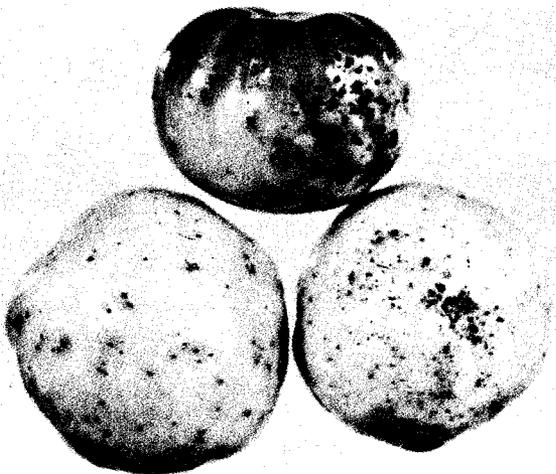
Another important way to control disease is by establishing good cultural and sanitation practices. This includes proper soil preparation, fertilizing, and watering, as well as early detection and removal of infected plants. The latter is especially true if you want to exclude the use of fungicides in vegetable production.

An equally important, but frequently overlooked, method of disease control in the garden is the use of disease-resistant vegetable varieties. There are many disease-resistant varieties available to the home gardener that produce abundant, high-quality fruit under Minnesota growing conditions.

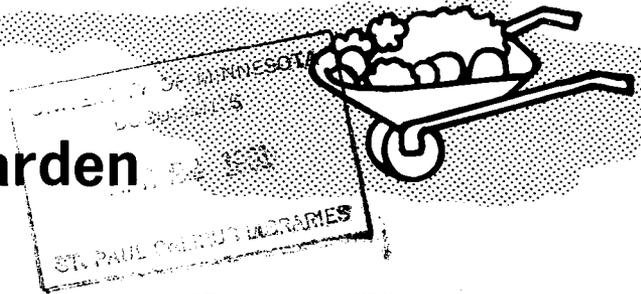
GENERAL PRACTICES

Treatments presented here are those generally necessary to control commonly occurring diseases. All treatments are not needed in all locations every year. Past experience and the degree of perfection desired help determine a disease control program.

The gardener must be aware that diseases can be introduced via infested seed or through the purchase of diseased plants; therefore, careful inspection of transplants is recommended. It is desirable to purchase seed and transplants from a local, reputable, reliable source.



Bacterial speck of tomatoes. Bacteria can come from seed, plants, or from contaminated tools or containers.



Aster yellows on carrot. Note multiple crowns and excessive side branches on main root. Control aster leafhopper to prevent infection.

You also should be aware of virus diseases that infect vegetable crops. These pathogens usually are transmitted from plant to plant by insects or by handling infected plants. The use of cigarette or tobacco in any form by the home gardener should be avoided. Tobacco mosaic virus, often a contaminate of tobacco, can be transmitted from plant to plant simply through handling; therefore, do not smoke while handling or transplanting plants. (See *Tomato-Tobacco Mosaic Virus Disease*, Plant Pathology Fact Sheet No. 27.) Generally plants infected with a virus are stunted, develop a mosaic pattern on the leaves, develop distorted foliage, and produce poor quality fruit. Some control of virus can be obtained by early detection and removal of infected plants, although complete control often is difficult.

For insect control, consult *Controlling Insects in the Home Vegetable Garden*, Extension Folder 593.

The principle method of spreading foliar diseases is by splashing water. Therefore, to prevent spread of these pathogens, foliage should be watered early in the day to allow time for the foliage to dry prior to the evening hours. Proper spacing of plants to provide adequate air movement in and around plants will help reduce disease severity. During periods of frequent rainfall control of foliar diseases becomes difficult even with the use of fungicides. Generally fungicide applications should begin at the first detection of disease.



Septoria leaf spot of tomato. Caused by a fungus.

ASTER YELLOWS

Aster yellows occur on carrots, lettuce, potatoes, tomatoes, and many other plants. This mycoplasma disease is spread by the aster leafhopper insect, and control of the disease requires control of the insect with an insecticide. Treatment during the first half of the growing season is most important. Complete control is difficult, especially when leafhopper populations are high.

SEED TREATMENT FOR DAMPING OFF CONTROL

When planted, seeds are subject to attack by various soil-borne organisms. Fungicide seed treatments are applied to seeds to protect against and help prevent both seed rot during germination and also damping off after plant emergence. Thiram is an example of a fungicide used as seed treatment.

FUNGICIDES FOR SPRAYING OR DUSTING

The following fungicides provide effective control of many vegetable plant diseases. Carefully read the label to determine specific crop usage and limitations for these fungicides.

Benomyl 50% wettable powder
 Captan 50% wettable powder
 Maneb
 Zineb

INDIVIDUAL CROP TREATMENTS

Beans — Rotate crops to help prevent root rot diseases; plant disease-free, western-grown seed; do not handle or work in the garden while plants are wet.

Carrots — Rotate crops; thin plants properly.

Crucifers — (cabbage, broccoli, cauliflower) — Rotate crops; purchase disease-free transplants as well as cabbage varieties with resistance to *Fusarium* yellows.

Cucurbits — (cucumbers, melons, pumpkins, squash) — Rotate crops; purchase disease-free transplants with resistance to specific diseases (consult your seed catalog for specific varieties with disease resistance); apply fungicide when needed for foliar disease control; space plants



Anthrachnose of muskmelon. Caused by a fungus.

properly; control cucumber beetle to prevent bacterial wilt infection.

Onions — Rotate crops; space plants properly.

Peas — Rotate crops; purchase disease-resistant varieties.

Peppers — Rotate crops; purchase disease-free transplants.

Potatoes — Rotate crops; plant certified seed; space plants properly; apply fungicide at first detection of disease.

DISEASE CONTROL TIPS

1. Provide adequate space between plants. This allows good air movement and will be helpful in controlling diseases.
2. Plant disease-resistant varieties when available.
3. Avoid planting tomatoes, eggplant, beans, and potatoes in the same ground year after year. Also avoid successive crops of those vegetables side-by-side during the same growing season because some of them are susceptible to the same diseases.
4. Water plants in the early morning hours so that the foliage will dry. Watering plants in the evening creates ideal conditions for disease development and spread.
5. Control insects early in the season since many of them transmit virus and bacterial diseases to healthy plants.
6. Control weeds around the garden area because many disease organisms survive on weeds and can be transferred to garden crops by insects, wind, etc.
7. Disease control in the garden generally requires the use of a fungicide. Keep a sprayer on hand to apply the fungicides used for disease control.

PRECAUTIONS

Fungicides should be handled with care and respect. Always carefully read the label directions prior to purchase and use. Wash treated vegetables before use.

Purchase only enough fungicide for one season's use because chemicals sometimes deteriorate when held through the winter. Eliminating storage of chemicals between growing seasons also avoids any possibility of youngsters and pets getting into them.

Fungicides should be stored in a locked cabinet. If a fungicide is accidentally swallowed, call a physician immediately, giving the name of the fungicide. Take along the container or package label.

The information given in this publication is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Minnesota Agricultural Extension Service is implied.

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