



Home Garden Disease Control Begins This Fall

H. Arthur Lamey
Extension Plant Pathologist

Cynthia Ash
Diagnostician

**COOPERATIVE
EXTENSION
SERVICE**



North Dakota State University, Fargo, North Dakota 58105

NORTH DAKOTA
STATE UNIVERSITY

JUN 23 1987

SERIALS DEPT.
LIBRARY

When the autumn leaves have fallen from the trees and frost has killed the tomato vines, most homeowners are ready to forget about plant diseases until next summer. Actually this is the perfect time to start controlling next year's diseases. A little work in autumn can prevent a lot of trouble next summer! Why is this so? A fall cleanup of the yard and garden removes plant refuse on which many plant disease organisms (called pathogens) survive the winter. This cleanup, called fall sanitation, reduces the number of pathogens next spring, so it will take longer for pathogen populations to build up to damaging levels. A general cleanup of dead leaves and annual plants is needed. Here are some specific suggestions that are especially important.

- 4.3 **Vegetables.** Remove unproductive plants and continue weed control in late summer, since these old plants and weeds harbor diseases and insects. After a killing frost, make a total cleanup of all plants still in the garden. Take special care to remove all tomato and potato vines as well as fruits and tubers; all parts harbor blights that may cause severe losses. Be sure to remove all vines and fruits of cucumber, melon, and squash. Continue control of the cucumber beetle into fall, as the bacterial wilt pathogen overwinters only in the cucumber beetle. If corn smut was a problem, destroy (by burning, burying or depositing in a sanitary landfill) all smut galls to reduce the amount of overwintering smut. After cleaning up all the crop refuse, spade or rototill the soil to bury any remaining bits of crop refuse.

Apples. Check for fireblight that has moved from fruit spurs or suckers into main branches one or more inches in diameter — this is done most easily after the leaves have fallen from the trees. The diseased suckers can be identified by the curled ends of the suckers and the dark brown to blackened leaves that hang on the suckers after the tree has lost the rest of its leaves (Fig. 1). Diseased fruiting spurs will have shriveled fruits on them. Check at the base of the diseased sucker or spur. If the bark on the main branch is sunken and slightly discolored around the base of the sucker or spur, the disease has penetrated into the branch. Mark the edge of the discolored bark, as this branch must be removed or the diseased portion cut out, as described in Circular PP-454, "Diseases of Apples and Other Pome Fruits." This should be done in the dormant season, preferably in March or early April before the sap starts to run. Be sure to disinfect pruning tools as described in Circular PP-454. Be especially careful to prune or cut disease out of main branches — failure to do so will result in these branches being girdled and dying.

Prevent sunscald by applying white interior latex paint to the southwest side of the trunk and main branches, or by using other effective shading materials described in Circular PP-454.

Rake up and destroy all apple leaves in the fall, since the apple scab fungus overwinters on these dead leaves.



Figure 1. How to identify a fireblight canker. Note the shriveled spur and the dark sunken bark on the main branch at the base of the spur. The edge of the canker is indistinct and hard to recognize.

Other Fruits. Rake up and destroy leaves of all fruit trees and small fruits, taking care to also destroy any rotten or dried up fruits still hanging on the tree or bush. If not done earlier, all black knot cankers should be removed from chokecherries and plums, pruning several inches below the knot as described in Circular PP-689, "Disease Control in Cherries, Plums, and Other Stone Fruits." Cut out all diseased raspberry canes as well as all two-year-old canes that bore fruit this summer. Protect cherries and plums from sunscald, as described for apples.

Ornamentals. Remove and destroy all annuals. Cut out and destroy all diseased rose canes and destroy all rose leaves. Spray with lime sulfur before mulching or burying non-hardy roses for the winter. If you had peony blight, cut off all peony plants level with the ground and destroy the tops after a killing frost -- this will reduce the danger of peony blight next year. If your peonies did not have blight, you could leave the tops to catch snow, then cut them off level with the ground in early spring before the new shoots appear. Similar treatment of other herbaceous (non-woody) ornamentals will help prevent disease carryover.

If white mold killed some of the flowers, special care is required during their removal. Details on white mold and its control are contained in Circular

PP-899, "White Mold of Vegetables and Ornamentals." Plants that are killed by white mold are best removed and destroyed as soon as possible. If you delay removal, the soil may be contaminated with the hard black bodies of the white mold fungus. These bodies survive long periods in the soil. When removing white mold diseased plants, watch for these hard black bodies and remove as many as possible.

Lawns. Don't fertilize your lawn between mid-July and mid-September. Fertilization done in late September promotes turf root development, but does not stimulate lush growth of the blades and does not promote snow mold. This procedure gets the lawn ready for next spring but reduces the number of late summer mowings and waterings needed.

Fertilizer applications during the hot season can stress lawns and result in serious lawn disease. Late July or August applications may promote snow mold in years with heavy November snows. Keep the lawn mowed and raked in the fall, since snow molds develop more readily when thick mats of grass are buried under the snow. However, mowing should not be shorter than normal; close mowing or "scalping" will not permit good root development in the fall.

Trees and Shrubs. If ash or oak antracnose was serious, rake up and destroy all leaves from these trees. Remove and destroy small branches with severe antracnose cankers. Similarly, if any other tree species has a serious leafspot problem, rake up and destroy the leaves. Thin barked trees such as mountain ash and silver maple need to be protected against sunscald, as described above under "apples."

Unless there was good rainfall in early autumn, be sure to water all evergreen trees and shrubs heavily just before freeze-up. This is very important because evergreen needles continue to lose water through the winter, but the rate increases rapidly on warm sunny days in late winter when the roots are frozen and unable to take up water. If the plants are low in water, the needles can dehydrate and be killed rapidly. When watering trees and shrubs be sure to apply at least 3 inches of water. An inch of water soaks down 5-6 inches in dry soil, so 3 inches will soak down 15-18 inches; this is the minimum needed to reach the roots. When larger trees or shrubs are watered with a sprinkler, an old coffee can may be placed under the sprinkler to measure the amount of water delivered. Trees and shrubs can be effectively watered using a root feeder that injects water into the root zone. A soaker hose can also be used. On small evergreens, the hose can be allowed to trickle at the base of the tree for half a day or longer. An application of an anti-desiccant may reduce dehydration of evergreen needles. It should be applied just before freeze-up.

Disposal of Plant Refuse. Home gardeners frequently ask if they can compost plant refuse. Most

foliar (leaf) pathogens are destroyed rather quickly once crop refuse is in contact with soil and the refuse rots. However, some soil borne pathogens, such as the wilt diseases of tomato, are soil inhabitants and are not destroyed by contact with soil or by rotting of crop refuse. Composting will kill most plant pathogens if the compost heats properly and the temperature is maintained long enough. The compost pile must have a **minimum** volume of one cubic yard and **be turned frequently** to kill pathogens in the plant refuse. Turn the pile every two or three days to provide aeration and mixing. Adding sawdust, leaves, etc. helps to provide a mixture more likely to heat properly. Keep the pile at 65 to 75 percent moisture (fairly moist, but not wet). Add water if necessary to maintain the proper moisture. These procedures help maintain high temperatures. Pathogens are killed if the temperature in the pile is 120-160°F for two to three weeks. Temperatures can be checked with a candy or meat thermometer partially buried in the pile. If the temperature is too low or turning is not frequent enough, some pathogens will survive, particularly those near the edges of the pile. If high pile temperatures cannot be maintained, then plant refuse from fall sanitation might best be destroyed. Flower plants with white mold should also be destroyed rather than composting them. Further information on composting is available in Extension Circular H-885, "Composting Practices."

Fall Application of Lime Sulfur. Lime sulfur can be used in autumn after leaf drop to kill many overwintering fungus disease spores. This is a handy way to reduce overwintering populations of disease organisms and can be done in conjunction with fall sanitation. Use lime sulfur after leaf drop and pruning on rose, raspberry and blackberry canes. Lime

sulfur, applied in the fall, will reduce overwintering disease organisms on plum and cherry, including the plum pockets fungus. Spring application just before bud break may be the most effective time to control plum pockets, but fall application also will help. Lime sulfur can be used on apples to reduce the carry-over of several disease organisms, including powdery mildew. It may also be used on various shrubs such as lilac and alpine currant to reduce the overwintering populations of powdery mildew.

For more information consult the following circulars:

- PP-454, "Diseases of Apples and Other Pome Fruits"
- PP-469, "Plant Disease Control in the Home Garden"
- PP-653, "Lawn Diseases"
- PP-656, "Disease Control in Home-Grown Cucumbers, Melons, and Squash"
- PP-659, "Disease Control in Home-Grown Tomatoes"
- PP-689, "Disease Control in Cherries, Plums, and Other Stone Fruits"
- PP-697, "Deciduous Tree Diseases"
- PP-789, "Diseases of Evergreens and Related Problems"
- H-885, "Composting Practices"
- PP-899, White Mold of Vegetables and Ornamentals"

Checklist of Fall Activities. Table 1 gives a checklist of fall home garden activities for disease prevention, see page 4.

TABLE 1. Home garden fall activities for disease prevention.

Plant	Activity
Apple, crabapple	Rake up and destroy leaves Mark fireblight cankers for pruning in early spring. Disinfect pruning tools. Prevent sunscald. Apply lime sulfur after leaf drop.
Ash, Oak	Rake up and destroy leaves if anthracnose was present. Remove branches with anthracnose cankers.
Cherry, Plum	Rake up and destroy leaves. Cut out black knot cankers. Remove abnormal fruits clinging to tree. Prevent sunscald. Apply lime sulfur after leaf drop.
Corn	Destroy smut galls. Remove stalks to prevent carry-over of soil borne stalk rot disease organisms.
Cucurbits (cucumbers, melons, squash)	Remove and destroy unproductive plants. Destroy all plants and fruits after killing frost. Control cucumber beetle into the fall.
Evergreens	Water thoroughly (at least 3" of water) before freeze-up. Apply anti-desiccant just before freeze-up.
Flowers, ornamentals, perennials	Remove and destroy dead plants. Take special care with any killed by white mold.
Lawns	Rake clean and keep mowed. Don't fertilize between mid-July and mid-September.
Peony	After killing frost, cut off tops at ground level and destroy.
Raspberry	Prune out diseased canes; remove 2-year-old canes that have borne fruit. Apply lime sulfur to canes (after leaf drop and pruning).
Rose	Rake up and destroy leaves. Cut out diseased canes. Apply lime sulfur to canes (after leaf drop and pruning).
Tomatoes, Potatoes	Remove and destroy all vines, fruits, and tubers.
Trees	Prevent sunscald on trees with thin bark (e.g. mountain ash and silver maple).
Vegetable garden	After removing all crop refuse, spade or rototill the soil.
