

# Perennial Ornamental Plants

## *How to Tell if They Are Sick And What to Do about It*

H. S. Fenwick

Extension Plant Pathologist

Abnormal growth of ornamental plants may be due to a wide variety of causes. This check list has been prepared as an aid in diagnosing some of the growth difficulties of shrubs, trees, and other perennial plants around the home. Always consider the possibilities that specific insects and/or diseases could cause difficulties along with causes listed here.

### KEY FOR DIAGNOSING DIFFICULTIES

#### I. Plant stunted, weak growth, leaves off-color, limbs gradually dying

1. Poor soil preparation
2. Drought damage
3. Poor soil drainage
4. Excess soil drainage
5. Planting too deeply
6. Improper soil pH
7. Damage to stem
  - A. Cold damage
  - B. Lawn mower damage
  - C. Sunscald
  - D. Borer damage
  - E. Stem breakage
  - F. Cat damage

#### II. Plants dying suddenly

8. Overfertilization
9. Root rots or insects attacking root system
10. Severe drought damage
11. Leakage from underground gas lines

#### III. Yellowing (Chlorosis)

12. Nutritional deficiency
13. Poorly drained soil
14. Overfertilization
15. Damage to stem
16. Poor soil preparation

#### IV. Browning of margin or tips of leaves

17. Frost or cold damage
18. Drought damage
19. Heat damage
20. Shock due to recent transplanting
21. Poor soil drainage
22. Poor soil preparation
23. Excessive fertilization
24. Root rot diseases
25. Mechanical damage to stem

#### V. Plant failing to flower

26. Plants too young
27. Excessive vegetative growth
28. Floral diseases

#### VI. Failure to produce berries

29. Cold or frost damage during flowering period
30. Plant is male
31. Improper pruning
32. Floral diseases

#### VII. Loss of berries before maturity

33. Fungus disease attacking berries
34. Drought damage

LIBRARY V.

APR 8 1971

UNIVERSITY OF IDAHO

## Discussion of Common Difficulties

#### I. Plant stunted, weak growth, leaves off-color, limbs gradually dying

1. **Poor soil preparation** is a major reason for generally unthrifty growth of shrubs in Idaho. Almost all soils in the state need organic matter incorporated before shrubs are planted. This increases soil aeration, and water-holding capacity.

**Suggestions:** Work in some form of organic matter with the existing soil before planting a shrub. Dig a large hole so the root system can penetrate

into the new soil mix. Good sources of organic matter are peat moss, peat humus, rotted leaf mold, well rotted manure, partially decomposed sawdust, partially rotted material from compost piles, and cereal straw. Apply extra nitrogen during the first growing season if sawdust or cereal straw are added as organic matter.

Working organic matter into the surface around existing shrubs will not give as good results as when organic matter is incorporated before the shrub

is planted. To correct difficulties if shrubs have been planted in extremely poor soil, dig plants during dormancy in the early spring and make proper soil preparation before replanting.

2. **Drought damage** is likely to occur on plants set in poorly prepared soil. All shrubs and trees need periodic waterings. In southern Idaho where dry winters may occur and drying winds are common in the spring, it is necessary to apply water in early spring before lawns require irrigation. Fill up the soil profile to sustain the shrub or tree until you start irrigation schedules for the lawn. Lack of water is the primary reason for death of recently transplanted woody ornamentals.

An ample supply of water should be applied late in the fall to evergreen shrubs and trees to prevent the condition called "winter drought."

3. **Poor soil drainage** results when plants are located near water drain spouts or situated in a depression where water accumulates. They often will grow poorly or gradually die. The foliage often is pale green in color and premature leaf drop may occur.

**Suggestions:** Divert drain spouts past plants. If the plant is located in a depressed area, remove the plant, increase the soil level so that water will not accumulate in the area, then replant at the new level. Do not attempt to fill in around the plant to correct the soil depression.

4. **Excess soil drainage** occurs when plants are situated in a gravel area or when placed in fill material consisting of large rocks.

**Suggestions:** Remove perennial plants and replace with annual ornamentals. If removal is impractical, apply water more frequently to the area. Since the added water will result in leaching of nitrogen, it will be necessary to make additional applications of nitrogen during the growing season.

5. **Planting too deeply** is a common reason for poor growth of many shrubs. Azaleas, camellias, boxwood, and dogwood are particularly sensitive to deep planting.

**Suggestions:** Check to determine if lower side limbs of the plant are covered with soil. Also dig around the base of the plant to determine if the trunk is below the soil level. If you find the plant planted too deeply, remove it in the early spring while it is dormant, add a soil-organic matter mix to the bottom of the hole, and replant.

6. **Improper soil pH** often occurs in the alkaline soils of southern Idaho. High soil pH also can be encountered in northern Idaho around new houses when

construction mortar is not removed. The major symptom of improper pH is yellowing of the leaves. The leaf veins often remain green, while the areas between the veins are yellow or pale green. When severe, the leaves of some plants may be nearly white.

**Suggestions:** If chlorosis occurs, attempt to correct the condition by adding chelated iron or ferrous sulfate or zinc sulfate (see "chlorosis" section).

7. **Damage to stems** can be caused by many environmental or mechanical factors, such as cold, heat, lawn mowers, borers, breakage, or animals.

- A. **Cold damage** often results in bark splitting, which may not become evident until summer. If only certain limbs are dying, trace them back to the trunk and check for split bark.

- B. **Lawn mower damage** results in the stunted growth or sudden dying of shrubs and small trees located in the lawn area. If the trunk is completely girdled, the plant will die. Any damage to the trunk of woody plants provides a port of entry for some insects and disease causing organisms.

- C. **Sunscald** can occur during the winter as well as summer, particularly when trees and shrubs are subjected to a southwest exposure of bright sunlight. The reflection of the sun on snow can increase stem temperatures causing sap flow. A rapid decrease in temperature then can result in cold damage. Intense heat and sunlight during the summer can cause stem damage that appears similar to cold damage.

**Suggestions (A, B, C):** Protect stems from winter and summer sunscald by inserting thin boards 12-24 inches long into the soil about 18 inches away from the stem to deflect and/or absorb the sun's rays. To prevent lawn mower damage plant a circular flower bed around the base of shrubs located in the lawn area. Also, paint any wounded area with a tree wound compound.

- D. **Borer damage** is a common cause of foliage dying on twigs of shrubs or trees, particularly dogwood, birch, and flowering stone fruits. Check the trunk for cracks or dead bark. Paint all wounds with tree wound compounds.

- E. **Stem breakage** is common on those shrubs and trees that have brittle limbs and thus are easily broken by animals and children.

F. **Cat damage** can result from the animals sharpening their claws on the trunks of young trees. Partial or complete girdling can occur.

**Suggestions:** Wrap finely woven wire around the trunk of the tree to a height of 2 to 3 feet. The wire can be held in place by weaving stakes through the wire and pushing them into the soil.

## II. Plants dying suddenly

8. **Overfertilization** is a very common reason for sudden leaf drop or dying of some shrubs during the growing season. Overfertilization can kill many of the small roots which normally absorb water, thus the foliage often turns brown and drops. Dying of the tips or borders of leaves can be a symptom of fertilizer injury to the root system. Injury may occur within a week after a heavy application of a nitrogen fertilizer. When moderate root injury occurs, the results are stunted plant growth and poor leaf color for several weeks due to inactivity of the root system.

**Suggestions:** Water affected plants heavily a few times to leach excess fertilizer out of the root zone. After this, keep plants well watered during the recovery period when new roots are being formed. You can cut down on the possibility of injury by applying fertilizer lightly and frequently to moist soil and then soaking it in thoroughly.

9. **Root rots or insects attacking the root system** are likely suspects if plants die suddenly. When root damage is moderate, plants exhibit symptoms similar to those expressed when there is a lack of water. Therefore, you should check drought damage, injury to the stem, and fertilizer damage.

**Suggestions:** Such injury is very difficult to correct. Eliminate as many stress factors as possible and stimulate new root growth by proper irrigation and fertilizer practices. If needed, identify and control insect pests.

10. **Severe drought damage** — see discussion 2.

11. **Gas injury** can be caused by leakage of a gas main. It can result in sudden dying of trees, shrubs and grass. If this is the cause, several different kinds of plants usually are killed in the same general area.

## III. Yellowing (Chlorosis)

12. **Yellowing** of the foliage of plants can be caused by several factors, but foremost is nutritional deficiency.

A. **Nitrogen deficiency** usually shows up on the lower foliage first and causes an even, light-green color. Under severe nitrogen deficiency,

plants are stunted and generally unthrifty.

B. **Iron and zinc deficiencies** are prevalent throughout southern Idaho. In north Idaho iron chlorosis is encountered when there is a great deal of construction mortar in the soil. Iron chlorosis causes yellowing of the youngest foliage in a definite pattern. The leaf veins usually remain green while the areas between the veins become yellow-green to yellow in color. When the condition is severe, portions or all the leaves may be bleached nearly white.

**Suggestions:** You can correct nitrogen deficiency by adding recommended amounts of a nitrogen fertilizer around the base or drip line of the plant. Then add a sufficient supply of water to leach it into the root zone.

You can correct iron or zinc chlorosis by adding iron or zinc to the plants in the form of chelates or sulfates. Rapid results may be obtained by spraying (at rate recommended on container). However, this usually will give short-term results as compared with adding these materials to the soil. Add iron or zinc sulfate by scattering on the soil underneath the foliage mass of a tree or shrub. Soak this in with a heavy application of water. Only a very small amount of chelated iron or zinc is needed for a soil application. If the treatments do not result in a normal color to new foliage growth, consider the other causes listed below.

13. **Poorly drained soil** — see discussion 3.
14. **Overfertilization** — see discussion 8.
15. **Damage to stem** — see discussion 7.
16. **Poor soil preparation** — see discussion 1.

## IV. Browning of margin on tips of leaves

17. **Frost or cold damage** often occurs in the early spring after leaf buds have swollen but leaves have not emerged. The damage usually is not visible until a month or more later. The damage is characterized by such malformations as puckering, twisting, or curling of the leaves. The affected leaves are small when compared with leaves that emerge later. Extreme sub-zero temperatures during the winter months may cause damage to dormant leaf buds. The following spring, damage may be expressed as described, or the leaves may not emerge at all.

18. **Drought damage** — see discussion 2.
19. **Heat damage** may occur when plants are situated near a white building or

fence. The reflection of the sun's rays intensifies the heat in the immediate vicinity of the foliage. The transpiration rate of the plant may exceed the rate of water uptake by the roots, resulting in an inadequate supply of water in the leaves. The leaf tips, margins or the entire leaf may suddenly become dry and brittle and turn brown.

**Suggestions:** Apply more water to the plant, move the location of the plant, or repaint the structure to reduce reflection.

20. **Shock due to recent transplanting** is common if trees or shrubs are transplanted when they are not dormant and partially or fully leafed out. Shock may occur also if roots are excessively pruned during the transplanting procedure (even if the plant is dormant).

**Suggestions:** Transplant perennials at the time of year recommended for that variety. If this is impossible then save as many roots as possible and supply extra water several weeks after transplanting.

21. **Poor soil drainage** — see discussion 3.  
22. **Poor soil preparation** — see discussion 1.  
23. **Excessive fertilization** — see discussion 8.  
24. **Root diseases** — see discussion 9.  
25. **Damage to stem** — see discussion 7.

#### V. Plant failing to flower

26. **Young plants** cause anxiety for homeowners who are often overeager for them to flower. Many shrubs and trees simply will not bloom until they are several years old, particularly if they are growing at a fast rate. Many ornamentals are propagated from seed, and the normal seedling variation may result in individual plants that flower at different ages.
27. **Excessive vegetative growth** may delay beginning of the flowering cycle. This usually occurs when the plant is growing under ideal climatic conditions in soil with a high fertility level (especially high nitrogen). Plants located in dense shade may also be delayed in flowering. Certain plants, such as roses, seldom flower heavily in a shaded location.

**Suggestions:** After being patient for a reasonable length of time, you may find

it necessary to root-prune plants during the late fall or early spring to shock them into the reproductive cycle. This may be done by cutting the outer roots with a sharp instrument, such as a shovel or spade, in a circle around the plant to a depth of 12 inches. Do this just inside the outer foliage mass. NOTE: This will reduce the rate of plant growth and may even result in plant injury if followed by drought.

28. **Floral disease** attacking the developing flowers may kill the buds before they open. In mild to moderate attacks the flowers may be discolored or deformed.

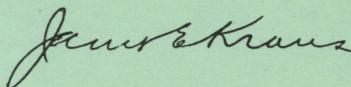
**Suggestions:** Improve air circulation by pruning excess branches. This also opens the canopy of the plant, allowing more rapid drying of the foliage during periods of wet weather. Apply irrigation water to the base of the plant to keep the foliage dry. Apply protective fungicides at 10-day intervals in the spring up to pre-bloom.

#### VI. Failure to produce berries or fruit

29. **Cold or frost damage during flowering period** is the most common cause of the lack of fruiting in shrubs and trees; however, anything that prevents flower production will eliminate berry or fruit production.
30. **Plant is male** may account for its failure to produce fruit. Certain berry-producing plants produce both male and female plants. The male plants do not produce berries. Sometimes there is no male plant nearby to fertilize the female plant, thus the female will not produce berries.
31. **Improper pruning** by using hedge shears to prune shrubs results in removal of most of the tip growth and future flower buds. Berry-producing plants are best produced by removal of individual limbs inside the plant. This does not result in the loss of all the terminal growth.
32. **Floral diseases** often attack the developing berries and fruits. The same protective sprays utilized for protecting flowers can be used to protect the berries and fruits.

#### VII. Loss of berries before maturity

33. **Fungus diseases attacking berries** — see discussions 28 and 29.  
34. **Drought damage** — see discussion 2.



James E. Kraus, Director