

◀ Reproductive spore capsules on the underside of a fern, a normal characteristic.

- ▶ recognition of symptom patterns
- ▶ symptom development over time

Start with the individual plant, then the whole planting and finally the surrounding plant community. Get a history of the plant, including what has been done to it and when, and where the plant is. Consider weather data as well as soil and water conditions.

With biotic causes, symptoms usually develop gradually over time on an individual plant, spreading to other similar plants. Most of the biotic agents are host-specific and won't attack multiple kinds of plants or all plant parts, simultaneously.

With abiotic causes, symptoms can appear all at once and usually the injury doesn't continue to spread either on individual plants or onto neighboring plants. Depending on the abiotic factor, damage can be widespread, affecting different types of plants simultaneously.

Refine the diagnosis

Distinguishing between the various biotic and abiotic agents requires careful observation of the affected plant or plants. Symptoms are a plant's response to the problem, not necessarily the problem itself. Symptoms may include galls, yellowing, dead tissue and distorted growth. Signs are evidence of, or the actual presence of an organism. Signs may include insect frass, fungal mycelium or spores, bacterial ooze or the actual insects, mites, rodents.

Abiotic factors can include mechanical, environmental and chemical agents. To identify mechanical problems, look for signs such as broken stems, crushed plants or girdling from plant ties. Check for recent changes in environmental conditions or for extreme environmental events such as lightning, hail or freezes.

Analyze patterns of damage on individual plants and across benches, greenhouses or yards. What do the patterns show you about the source and delivery methods of chemical agents? These may include nutritional problems or phytotoxicity from pesticides, pollutants or poor water quality. Because many of these factors may overlap, you must often rely on a careful review of management practices.

Reference materials

Sometimes you may need help to identify the specific factor. Become familiar with useful refer-



▲ *Entomosporium* leaf spot with lesions and discoloration on *Photina*.

ence books and know the experts to contact. Learn how to collect a good sample. You may need a laboratory analysis to confirm a diagnosis. Be sure you get a high quality sample. It will directly impact the quality of the diagnostic report.

Once you know the problem, you can develop a management strategy. Get more information on disease management from your county Cooperative Extension Service, university worldwide web sites, reference materials and local experts. **LM**

Janell Johnk is an extension plant pathologist at Texas A&M University, Dallas.

▼ Take- all patch on Bermudagrass



Classy roses without the fuss

Here's the latest on roses that can give your clients lots of color and interest without a lot of fuss and bother.

By REBECCA REMBERT

To many landscapers, the word 'rose' induces visions of disease-ridden, cold-damaged, insect-riddled plants. But, like many groups of plants, there are both high-maintenance and minimal-maintenance varieties.

The most commonly available roses belong to the class of Hybrid Tea or Floribunda which are notorious in most parts of North America for being labor-intensive, fussy plants. For those who would like to grow roses but who are unable or unwilling to devote the time and effort necessary to tend a Hybrid Tea rose, many shrub roses offer an alternative. There are certain shrub

roses and climbers which are highly disease-resistant and cold hardy, and they deserve to be considered as an option for landscape situations where a fragrant, colorful, tough shrub is desired.

After a harsh winter, it's certainly disheartening to look at the black canes of a not-so-hardy rose bush. Avoid this by planting cold-tolerant varieties and by installing roses properly. Some roses come as grafted plants, and, unlike most grafted plants, the graft should be buried 1-2 inches below the soil surface in areas where the minimum winter temperature dips below 0°F. Fortunately, many of the cold-tolerant varieties are available as own-root plants, and they do not require the deep planting of their grafted counterparts. The planting hole should be 18-24 inches deep and the soil amended with compost or leaf mold if the drainage is slow. Provide adequate drainage to over-winter roses in harsh climates.

The Rugosa roses embody the qualities of cold-hardiness, disease-resistance and pest-resistance. They require minimal care, and with many varieties comes the added bonus of good rose hip display in the fall. In areas where Japanese beetles can wreak havoc on a summer garden, the Rugosas and many other shrub roses flower most heavily before the adult beetles start feeding. Since most shrub and Rugosa roses are repeat bloomers, only those flowers produced from



Dortmund thrives under difficult growing conditions. Foliage is disease resistant.



New Dawn: famous climber is very fragrant and hardy.

early July to early September are sacrificed. This amounts to very little bloom loss since the heaviest flower crops are produced in May, June and September.

In general, the shrub roses require the same care as any other flowering shrub. They benefit from fertile soil but will flower well in average garden soil. Spraying for pests and disease can be nearly eliminated if resistant varieties are chosen, and pruning can be accomplished in the spring with very little cleanup required later in the season. To maintain the desired dimensions of any shrub rose, reduce the largest

canes by one-third of their height in spring, just before or slightly after they break dormancy. For repeat-flowering climbers, allow them to reach the maximum desired size before pruning. Thereafter, trim off only the dead tips and reduce the laterals (small branches coming off the main canes) to 3-5 buds per stem (reducing the laterals will promote larger blossoms). Pruning may be kept to a minimum and only done when parts are overgrowing.

Listed below is a selection of cold-hardy, disease-resistant rose varieties that will grow and flower well in full sun or partial shade:

Ballerina. This hybrid musk will grow to 4'H x 4'W and produces large clusters of single, apple blossom-like blooms all summer. Even though the blossoms have no scent, Ballerina will produce a good crop of rose-hips if the flowers are not deadheaded.

Blanc Double de Coubert. A beautiful Hybrid Rugosa which produces large, double, pure white flowers with a strong clove fragrance. It will grow to 5'H x 4'W and flowers heavily in early summer with a good repeat bloom in the fall. A very hardy and disease-resistant rose.

Dortmund. This is a hardy climber that can also be grown as a large shrub. It produces clusters of bright cherry-red, single blossoms with white centers on a plant that will grow to 10'H x 6'W. The flowers have a nice scent and are produced off and on all summer if the earliest crop is deadheaded. Foliage is very shiny and disease-resistant.

Frau Dagmar Har-topp. A hybrid Rugosa shrub with papery, single flowers that appear in abundance in late spring to early summer, followed by a good repeat bloom until fall. The

flowers are very fragrant and are produced on a compact shrub of 3'H x 3'W with abundant rose hips in the fall.

Hansa. This is one of the hardiest Rugosa hybrids, producing strongly fragrant, purplish-red, double flowers in great profusion in early summer with a lighter repeat until fall and a great rose hip display late in the season. Will grow to be 5'H x 5'W.

John Cabot. A hardy climber developed in Canada that produces double, lightly fragrant, purplish-pink blooms in early summer with a lighter repeat until fall. It is disease-resistant and can be used as a pillar rose or on a wall. It will grow to be 6-10'H x 6'W.

New Dawn. This is perhaps the most famous climbing rose of all time. Its light pink, very fragrant, double blossoms appear in profusion in early summer and repeat well into fall. This tough hardy



Ballerina produces large clusters of single, apple blossom-like blooms.

climber needs room as it will grow to be 10-20'H x 10'W.

Pierette Pavement. The pavement series of roses offers tough, hardy shrubs that stay compact and require very little maintenance. This selection produces double, spicy-scented, reddish-pink blooms off and on all summer on a 2.5'H x 3'W shrub.

Sea Foam. This is a reliable, ground cover-type rose with small, healthy foliage. It carries an abundance of sweetly scented, double, white blossoms all summer on a 2'H x 3-5'W plant.

Thérèse Bugnet. Very fragrant, large double flowers are produced in great quantity on this variety in early summer with a lighter repeat in the fall. This hardy shrub sports colorful maroon-red stems in winter and grows to 6'H x 6'W. **LM**



John Cabot is disease-resistant and can be used as a pillar rose or on a wall.

The author is retail manager at Art Form Nurseries, Chagrin Falls, Ohio. She formerly owned a nursery specializing in hardy roses.

Nonseeded grasses

The term 'nonseeded grasses', refers to the type of grass plants which are propagated vegetatively. Most grasses in this category are warm-season grasses which grow in the warm temperate to tropical climates.

By A.D. ALI, Ph.D., Davey Tree Expert Company



Nonseeded grasses can be established by sodding, plugging or sprigging. Sodding is the most common for establishing an 'instant' new lawn. Plugging is less expensive than sodding, and some homeowners prefer this method of establishing entire lawns or renovating certain sections of the lawn. However, with plugging, weed control is needed until the lawn becomes

established. Sprigging is often used to establish a large area, like an athletic field, using Bermudagrass.

Watering is critical during the early

stages of establishment to prevent desiccation of the sprigs (portions of plant stems, stolons). Again, weed invasion is possible with sprigging until the grass establishes a thick, dense surface.

Five of the most common non-seeded grasses are: St. Augustinegrass, bahiagrass, Bermudagrass, zoysiagrass and centipedegrass. The following is a brief description of their culture, use, pests and cultivars.

Watering is critical during the early stages of establishment to prevent desiccation of the sprigs

Hybrid bermudagrass, shown, and common types have a wide variety of uses: lawns, cemeteries, parks, institutional grounds, airfields, athletic fields, fairways, greens, tees, roughs and rights-of way.

ST. AUGUSTINEGRASS

(*Stenotaphrum secundatum*) is native to the West Indies, but has been widely distributed to Mexico, Africa, Australia and the southern and southeastern US. It is an aggressive, stoloniferous, coarse-textured grass. It grows in a variety of soil types; however, it performs best in sandy loam, well-drained, fertile soils with pH 6.5. St. Augustinegrass has good salt tolerance, fair shade tolerance and poor traffic tolerance.

Culture: Mowing height should be between 3 and 4 inches. Mowing at shorter heights stresses the turf and predisposes it to drought and insect problems. Annual fertilization should be 3-6 lb N/1,000 sq ft/yr. In alkaline soils, St. Augustinegrass may suffer from iron deficiency. The yellowing can be corrected with foliar application of chelated iron. Water during dry-spells is important to prevent stand dieback. Apply between .75 to 1 inch of water per week. Thatch can be a problem in St. Augustinegrass lawns. Verticutting (dethatching) will be required if thatch exceeds a depth of 1-inch in order to maintain the health of the turf. Propagation is through vegetative parts such as sprigs, plugs or sod.

Use: this grass is the major type of lawn turf in areas of the

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11-gauge
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