



# NEWSLETTER

## PLANT DISEASE RECOGNITION AND PREVENTION

Even if you aren't an expert in plant pathology, you can usually tell if a plant looks "sick". Yellowing leaves, spots, wilting or even oddly-shaped flowers are all signs the plant isn't doing well.

Can you diagnose plant failure by yourself? For most situations, the answer is "Yes".

What to look for. Plant pathologists usually group causes of plant failure into two categories: infectious (caused by a pathogen(s), or noninfectious (caused by environmental stress or improper cultural practices). As a general rule, noninfectious disease symptoms are distributed evenly over a large area or over several different plant species. You can sometimes associate the symptoms with some cultural practice, such as where herbicide applications were prepared or with some environmental events such as a frost or a hail storm. Infectious diseases, conversely, will develop sporadically or be distributed unevenly and are usually restricted to a particular plant species or cultivar.

While plant diseases may be caused by environmental factors, viruses, bacteria or other causes, by far the majority (more than 3/4) of plant diseases are caused by fungi. Fungal diseases are the athlete's foot of the plant world. You can take action to prevent them from spreading, but at best you are practicing a form of prevention by spraying fungicide as most must be applied before infectious agents arrive.

Fungal diseases appear on leaf surfaces as discolorations such as black, white or rust-colored spots or as powdery or moldy growths. Bacterial diseases can cause similar symptoms, but generally kill plants rather quickly. Fungal diseases tend to cause a slow death. The best defense against fungal diseases is prevention—which we will address farther on in this article.

Viral diseases of plants are sub-microscopic, infectious particles that multiply only inside living host cells. Viruses are for the most part beyond the resolution capabilities of a light microscope and have to be determined primarily by electron microscopy and x-ray de-

fraction. Symptoms along with other criteria are used to identify virus diseases. Symptoms would include abnormal leaf color, abnormal vein patterns of leaves, mottling in leaves, spotting patterns in leaves, and abnormal leaf shape as well as abnormalities of flower color, fruit size, shape and color.

Viruses can be spread from plant to plant by several means, including transmission from the parent plant to an offspring through the genetic structure of the plant or through vegetative propagation, grafting and budding, seed transmission and mechanical spread by insects and man. No effective chemicals will control virus diseases. Sanitation and use of resistant varieties of plants has been the most effective means of controlling plant viruses. Loss of disease can be reduced by removing diseased plants and replacing them with healthy replants. Reducing the population of insect vectors by insecticides or by other means, such as elimination of host plants for the insects has given partial control of virus diseases.

Bacterial diseases are microscopic, single-celled organisms that have a cell wall. While most bacteria in the environment are beneficial, several are able to cause leaf spots, stem rots, root rots, galls, wilts, blights, and cankers.

Plant pathogenic bacteria generally survive in infected plants, in debris from infected plants, and, in some cases, in infested soil. Most require a wound or natural opening in the plant to gain entry and require warm, moist conditions in order to cause disease. In most bacterial diseases, photosynthesis and respiration are severely altered to the detriment of the plant.

Bacteria reproduce very rapidly. They are splashed easily from the soil to the leaves and from leaf to leaf by overhead irrigation. They are also easily moved from soil or debris when a worker handles such material and then handles the live plant.

The strict sanitation practices required to control bacterial diseases include destruction of infected plants as well as cleaning and disinfecting tools, benches, flats and pots that are used repeatedly. Overhead irrigation should not be used in crops particularly susceptible to bacterial diseases.

Bacteria are normally present on plant sur-

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**Key ways to prevent diseases before they start.**

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### Special points of interest:

- Enter to win \$25.00 in our Word Find Contest – see page 3 for details
- Link our blog site directly from our website at: [www.mandmlandscapeandlawn.com](http://www.mandmlandscapeandlawn.com)
- \$10.00 coupon for our dedicated Newsletter readers/see page 5

### Plant Disease Recognition and Prevention, cont. from page 1

faces and will only cause problems when conditions are favorable for their growth and multiplication. These conditions include high humidity, crowding and poor air circulation around plants. Too much, too little or irregular watering can put plants under stress and may predispose them to bacterial infection. Other stressors are low light intensity, fluctuating temperatures, poor soil drainage and deficient or excess nutrients. Once bacterial disease begins on the plants, chemical control is not effective.

Prevention is by and far the best defense against plant disease. Plant diseases are best stopped before they start.

Following are some key ways to prevent diseases before they start:

1. Have a good understanding of infectious diseases as outlined above. Diseases occur only when the following three components are present at the same time:

- A. A susceptible *host plant*.
- B. A *pathogen* capable of causing disease.
- C. An *environment* conducive to disease.

Break the links in the triangle at any point and disease will not be as likely to occur. Ways to accomplish this are: plant a disease-resistant cultivar therefore removing a susceptible host and avoiding infection, clean up black-spotted rose leaves in the fall reducing the amount of black spot fungal inoculum, and adopt cultural practices that make the environment less conducive to infection. By eliminating overhead watering or limiting overhead watering to early morning so that plants can dry off quickly, you can discourage infection by foliar pathogens that thrive on damp leaves.

2. Select the right plant for the site you intend to use it in.

- A. Read the site. Observe the site at different times to understand the sun and wind exposures.
- B. Test the site. Don't guess—soil test.
- C. Know your plants. Find out how the varieties that you want to plant tolerate sun, wind, and various soil conditions.

D. Find out about common problems. Get a handles on the diseases of the plants you want to grow.

3. Use disease-resistant varieties. Selecting plants with genetic disease resistance is the best way to prevent disease. No plant will be completely disease-free, but some plants have fewer major disease problems. Get information from your local garden center or the Extension Service in your state.

4. Keep a clean garden: rouging, rotating crops, and sanitizing tools. Eliminating the pathogen that can cause disease is a time-honored approach to disease prevention. Sanitation for disease control is just as important today. An extreme form of sanitation is called rouging: removing in-

fest plants as soon as they are noted. Rotating crops is another ways to prevent disease. Many soilborne pathogens remain in the ground for a considerable time, often for many years. Sanitize tools with alcohol between pruning cuts. Clean and remove soil from tools periodically.

5. Create a well-balanced soil. Soils with good texture and good organic matter content tend to have a healthy balance of soil organisms, from earthworms to bacterial and fungal microorganisms that cycle nutrients. Developing soils that have good overall texture and drainage characteristics and good organic matter content, which will optimize microbial activity. Adding compost to your soil will help you achieve these goals.

6. Keep plants healthy: proper watering, mulching, pruning and fertilizing.

You can limit the amount of stress your plants suffer and the likelihood that they will develop certain infectious and non-infectious diseases. Proper planting should be one of the first considerations.

Once plants are installed, proper watering is crucial. Plants have individual needs that depend on the species, the size of the plant, and its stage of development. Soil type and weather conditions also come into play. Too little water can stress plants and excessive watering results in poor overall root function and greater susceptibility to root rot diseases. Many plants, including your lawn, need about one inch of moisture per week during the growing season.

Mulching is a crucial disease prevention practice. Mulches help cool soils and conserve and moderate moisture over long periods, which can help plants resist stress due to lack of water.

Pruning is another important disease preventive assuring better air movement and sun penetration of the canopy. Most fungi thrive under moist conditions, and fungal spores are more likely to germinate and infect leaf tissue when leaves remain wet.

Fertilizing plants will both prevent non-infectious diseases (disorders), such as nutrient deficiencies, and help plants tolerate the damage resulting from infectious diseases.

7. Don't overwater, overmulch, etc. . .

You can overdo many good horticultural practices such as mulching. Too much mulch piled against the base of trees and shrubs will keep too much moisture against the trunks, encouraging fungal infections. Excessive mulch can reduce oxygen levels in the soil, leading to poor root metabolism and increased root rot disease. Add only enough to maintain a total depth of 2-3 inches.

Vigorous overwatering is a common trigger of plant disease. Waterlogged soils cause root function to suffer because oxygen levels are low.

Overfertilizing is another case of too much of a good thing. Roots can suffer from overly high levels of fertilizer: they will lose water through osmosis when fertilizer salt concentrations are higher in the surrounding soil-causing "fertilizer burn" on roots.

8. Learn to tolerate some diseases

For instance, Lilac are infected by powdery mildew year after year, but it never seems to hurt the plant.

9. Fungicides are preventative not curative

Even when you do decide to use fungicides, prevention is still the key. All but a few fungicides must be applied before the fungus enters plant tissue to prevent infections and subsequent disease development. Timing is crucial: even with fungicides, prevention— not cure— is the name of the game.





## WORD FIND—GARDEN TERMS

Send your entry to : **M & M Landscape and Lawn, Inc. HC 80, Box 1100, Sage, AR 72573**

Limit "1" Puzzle per household address

N	R	E	D	W	O	P	E	L	B	A	T	T	E	W	Y
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J	T	S	G	N	O	I	T	A	N	I	M	R	E	G	B

ANNUAL	BARE ROOT	BOLTING
BROADCASTING	COMPACTED SOIL	COMPOST
COMPOST PILE	CULTIVAR	DUST
FUNGICIDE	GERMINATION	HEREBICIDE
HORTICULTURE	LEEK	INSECTICIDE
MOSAIC	MULCH	ORGANIC
PERENNIAL	PH	VARIETY
WETTABLE POWDER	SOIL	BULB
PLANT	DIG	DIRT
GARDEN	RAKE	RAIN
MUD	SOW	PRUNE
WEED	SOD	SEED

FIND THE LISTED WORDS IN THE DIAGRAM. THEY RUN IN ALL DIRECTIONS, FORWARD BACKWARD, UP, DOWN & DIAGONALLY.

Send your entry to M & M Landscape and Lawn, Inc. by March 26, 2007 5:00 p.m. A drawing will be held and the winner of the Word Find Challenge will receive a \$25.00 Gift Certificate from M & M Greenhouse (good through 2007, not redeemable for cash, good for greenhouse retail purchases only not landscape services).

**NAME:** \_\_\_\_\_

**STREET:** \_\_\_\_\_

**CITY:** \_\_\_\_\_ **STATE:** \_\_\_\_\_ **ZIP:** \_\_\_\_\_

**PHONE:** \_\_\_\_\_

## SPOTLIGHT ON PLANTS— HOSTAS, HOSTA HAVE EM!!!

To divide or not to divide that is the question! Hostas are one of those perennials that get better with time. By dividing your plants now you can till in organic matter and improve the soil around the original plant. The divisions you make may be spread about in the landscape.

Hostas are the pre-eminent perennials for shady gardens coast to coast. They are easy to grow and thrive with almost no care, forming larger and bigger clumps year after year. Planted in mass in a woodland setting, they provide a cool airy haven during hot, uncomfortable summer days.

Grow Hostas in well-drained soil amended with plenty of organic matter. Hostas do best if the soil is constantly moist. They survive short dry spells without permanent damage, but don't do well in arid climates. Spreading a generous layer of mulch around the plants helps retain soil moisture. If you see holes eaten in the leaves of Hostas, suspect snails and slugs as the shady, moist conditions favored by most

Hostas are also ideal for slugs and snails.

Hostas come in all shapes, sizes, and colors, Most can be classified into these seven categories:

Blue-leafed types: Examples of these are Blue Cadet, Blue Mammoth, Halcyon, Hycinthina, sieboldiana 'Elegans'

Gold to cream edged types: Include Abba Dabba Do, Bold Ribbons, Golden Tiara, sieboldiana 'Francee Williams'

Gold Leafed Types: Includes 'August Moon', 'Gold Edger', 'Sum & Substance', 'Sun Power', and 'Gold Regal'

Gold to White Center variegated Types: 'Fire and Ice', 'Geisha', 'Gold Standard', 'Great Expectations', and 'Guacamole'

White to Cream Edged Types: 'Allan P. McConnell', 'Fire and Ice', 'Francee', 'Patriot', 'So Sweet', 'Wide Brim' 'Ground Master'

Green Leafed Types: 'Fiesta Verde', 'Royal Standard', 'Fortunei aurea', 'Honey Bells'

Miniature Types: 'Allan P. McConnel', 'Blue Cadet', 'Gold Edger', 'Abby', and 'Gold Drop'

Notice that some Hostas

will fit into more than one classification.

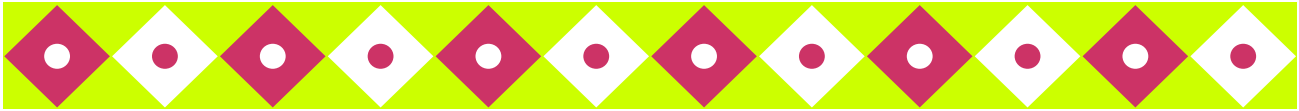
While it is true of most Hostas that they prefer full shade to part shade. There are varieties that are listed as being tolerant of shade to full sun conditions such as:

'Allan P. McConnell', fortunei 'albo Picta', fortunei "aurea", fortunei 'Aureo Marginata', 'Ginkgo Craig', 'Gold Drop', 'Gold Edger', 'Gold Regal', 'Hycinthina', 'Iron Gate Delight', 'Lancifolia', 'Lemon Lime', 'Little Wonder', 'Patriot', 'Royal Standard', 'Silver Crown', 'Sun Power', 'Twist of Lime', 'Vanilla Cream', venusta 'Vera Verde'.

I even uncovered one variety in my research that was listed as full sun only: 'So Sweet' which was awarded "Hosta of the Year" in 1996 by the American Hosta Growers Group.

So whatever your situation and wherever you need a striking accent plant, try one of these excellent Hostas.

*Hasta La Vista.*



## GREENHOUSE HAPPENINGS

M & M Greenhouse invites you to come on out and see what's new and exciting. We have already received in new shipments of ornamental trees and shrubs. We have all your favorite spring blooming plants such as Lilac, Weigelia, Forsythia, Flowering Cherry, Dogwood, Wisteria, and more. Annual bedding plants will be arriving toward the end of March or first of April depending upon the weather.

Make plans now to attend FNBC's Home and Garden Show on March 30th & 31st at the

Sharp County Fairgrounds at Ash Flat, Arkansas. Be sure and look up our booth. We'd love to see all our good friends and customers and we'll be holding drawings throughout the show.

**\$10.00 OFF**

Must present coupon at time of purchase—not redeemable for cash—for one time retail purchase at M& M Greenhouse only, not valid for landscape services-1 per customer-not to be used in connection with any other promotional coupon

*M & M Landscape and Lawn, Inc.*

Hwy. 9 South, Melbourne, Arkansas

Phone: (870) 368-5522

Expiration Date: Good through 2007

Please accept this Coupon as a "Thank You" to all our dedicated Newsletter readers. Hope to see you soon.

*Happy Gardening*

## MARCH CHORES

\*Now is the time to apply the preventative systemic insecticide Imidacloprid sold as Bayer Advanced Tree and Shrub Insecticide to your azaleas. This will provide season long protection for azalea lacebugs, scale and whiteflies. Read the label carefully and apply as directed. Remember, this is a preventative insecticide application and needs to be done before signs of insects or damage is noticed. This is a good strategy for those shrubs that you have yearly bug problems with, but not necessarily the best for all shrubs in your landscape.

\*Fertilize bulbs now with a complete fertilizer such as 13-13-13 or 20-20-20 as you see the

blades start to emerge from the ground.

\*You can still apply pre-emergent herbicides for annual weeds (those that grow from seed each year, bloom, set more seed and die each season). Pre-emergent herbicides prevent the weed seeds from germinating, but will also prevent grass seed from germinating, so use only on established lawns. Pre-emergent herbicides will not take care of perennial weeds (those that come back year after year from the root system) so you will have to adopt another strategy for control of those weeds. These will require a post-emergent herbicide for control.



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*Thank you for the opportunity to serve  
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AND LAWN, INC.**



**CHECK OUT THE WEBSITE!!!**  
[mandmlandscapeandlawn.com](http://mandmlandscapeandlawn.com)

Owners, Jeff and Linda McAnally, are both Arkansas Certified Nursery and Landscape Professionals.

Jeff has worked in the horticultural business since 1986. Operating first a residential and commercial lawn care business. M & M Landscape and Lawn, Inc. was incorporated in 1994 and we opened our garden center/greenhouse. Jeff, as President, monitors the day to day operations of the landscaping division. His training includes plant propagation workshops, Arkansas Certified Nurseryman Program #195, continuous study of horticultural books, literature and trade articles, yearly seminars at Arkansas Green Industry Association events.

Linda has been involved in greenhouse management and nursery retail since 1995. Linda has completed the ACNLP certification program #283, and oversees the day to day running of the retail nursery as well as works closely with the plant propagation and growing-on of cuttings and liners to a salable product.

## **WHY LANDSCAPE?**

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1. To make your home and neighborhood more beautiful, functional and enjoyable. Plants mark the changing seasons, and add grace and seasonal color. Landscaping makes a house feel like a home.
2. Conserve energy in the summer and save you money. Properly planted trees can cut your air-conditioning costs by 15-35%.
3. Increase your property values. Landscaping increases the perceived value of your property by as much as 15%.
4. Conserve energy in the winter. Proper landscaping can slow cold winter winds, and can cut your heating costs 10-20%.
5. Landscaping is fun. Planting and caring for plants can be a great family activity. Proper landscaping can attract beautiful butterflies and songbirds by providing nesting sites, food and cover for countless species.
6. Nightscaping lighting systems allow you to enjoy your landscape after dark, creating more time for hectic lifestyles.
7. Landscaping helps hold the soil in place and reduces erosion and runoff.
8. Create more usable space with proper terracing & retaining walls.