



Holistic Rose Care

Mark Windham

Mark's Mayhems and Maladies: Heat Stresses and Your Roses

Much of the country has seen very hot weather and as I write this, we are not done with June! Rosarians in the Deep South and Southwest select roses suited for hot climates although their roses still suffer some heat damage at this time of year. In the Midwest, Mid Atlantic and Northeast and Northwest, roses have traditionally been selected for cold hardiness instead of tolerance to heat stress. Recent changes in weather patterns over much of the U.S. have led to hotter temperatures which have made heat stress a more universal challenge for rosarians.

Heat stress can lead to scorched leaves (Fig. A) and blossoms (Fig. B). Scorching is a natural way for the rose to control water loss via transpiration as stomates (let water vapor out of leaves) are permanently closed in scorched areas of leaves. The scorched foliage can be tan to brown and may have a chlorotic border. Prune the scorched leaves and blooms off and pray for cooler weather.



Another form of heat stress is called black leaf. Black leaf is poorly understood but occurs in many rose cultivars. Foliage becomes bronze to black when temperatures are high (Fig. C). Black leaf may be due to a combination of heat, spraying pesticides during hot periods and possibly nutritional interactions. To date, black leaf has received little study by the scientific community although inquiries concerning roses with black leaf have increased in recent years. To remove all the black leaf from a bush in the heat of summer may require substantial pruning.

A disease associated with hot temperatures is Cercospora Leaf Spot (CLS). The disease is caused by the fungus *Cercospora rosicola*. Infection and subsequent symptoms occur in hot, humid weather. Spots from CLS have black/purple/brown borders and tan to gray centers (Fig. D). Unlike the cool weather disease anthracnose, there are no observable fruiting bodies in the lesion centers. Unlike blackspot that has diffuse borders, lesions of CLS have smooth borders. Plants with CLS can defoliate, but defoliation is not as common with CLS as it is with black spot. Resistance to CLS is available, but is controlled by different genes than those for black spot resistance. Therefore, resistance to one disease does not imply resistance to both diseases. Fungicides can be used and if needed; the ones for black spot control will work for CLS.

Mark Windham was a distinguished professor of ornamental pathology at the University of Tennessee, Knoxville. After retirement, Mark and his wife Karen love to walk beaches, visit with old rose friends, and enjoy grandchildren.

Mark's Mayhems and Maladies: Stem Canker Wants to Steal Your Roses!

There is nothing more discouraging than to sharpened your pruners and be dressed for spring pruning only to find that brown/gray/black stem cankers have killed many of your roses' canes. This lethal disease starts after roses have gone dormant. While you are snug under a quilt with hot chocolate or tea and assuming your roses have "settled down for a long winter's nap", your roses can be "stolen" by this disease. The suspects for causing this malady include the fungi *Alternaria* spp., *Botryodiplodia theobromae*, *Botrytis cinerea*, *Coniothyrium fuckelii*, *Cryptosporella umbrina*, and *Trichothecium roseum*.

Symptoms of stem canker usually start as small yellow areas on the canes. Cankers may have zonate (target like) patterns of gray and brown. Some cankers remain all year at less than an 3 cm in length and are limited by nodes. Other cankers may grow across nodes and may be longer than 10 cm. Spores are produced on the surface of cankers and can be spread to other canes by wind or splashing rain. Canker fungi usually invade canes through freeze cracks, damage from canes rubbing together during wind events, pruning cuts, and other injuries such as humans pushing canes together while moving between roses.

Application of nitrogen fertilizers late in the growing season, leads to more and larger cankers. One or two weeks before your last Fall rose show or if not showing roses, then 4-6 weeks before the first frost day for your area, stop adding nitrogen fertilizer. Ensure your pruners are sharp, bypass pruners. Minimize late fall pruning. Anvil pruners may crush stem tissues at the cutting site and lead to a greater likelihood of canker formation. Fungicides have not been effective in preventing stem canker and are not recommended for canker management. During winter months, inspect your roses for stem canker at least twice and again at spring pruning. If cankers are observed, remove them immediately. When making the cut to remove a canker, cut at least one inch below the visible edge of the canker discoloration of pith tissue. Failure to detect and reduce canker incidence during winter months can lead to high loss of roses to this disease.

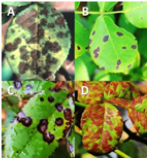


A. Stem cankers ravaging different dormant rose cultivars in early March in Knoxville, TN. Note the blacken stems with intermittent gray and brown cankers. **B.** A close-up of a terminal stem canker at an old pruning cut. The small black flecks on the brown tissue (look like black pepper flakes) are fungal fruiting bodies that release spores.

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Black Spot – What Rosarians Don't Want to Hear, But Need To

Unless living in a dry climate, rosarians will encounter black spot that is caused by the fungal pathogen *Diplocarpon rosae*. The first step in successful disease control is identifying the problem. Black spot is characterized by brown to black lesions with fuzzy edges (Fig. A). Other foliar diseases such *Cercospora* leaf spot (Fig. B) and anthracnose (Fig. C) have smooth lesion borders. Downy mildew (Fig. D) has angular lesions limited by leaf veins. The pathogen's spores require at least six hours of free water to germinate. This is why the disease is severe in times of prolonged rain or days of heavy dew. Some rosarians have eliminated black spot by placing fans on timers and have the fans come on in early morning hours to quickly dry dew.



The easiest way to control black spot is host plant resistance. For many decades, rose catalogs were long on resistance claims but short on resistant plants. Today, many modern hybrid tea, floribunda, and shrub roses are resistant to the disease and catalog claims are more reliable. A best strategy for eliminating fire blight is to discard susceptible roses in your garden and plant new, resistant stock. This strategy is unpopular due to costs and frankly rosarians are often emotionally attached to their plants. I encourage new rosarians to avoid giveaway from other rosarians unless they are sure the roses are resistant to black spot. They should be encouraged to plant only resistant roses in their gardens.

Many rosarians, especially exhibitors, spray their roses for black spot. Some use "soft fungicides" such as botanical oils, milk, baking soda, etc. These strategies often fail when disease pressure is high. Others use metal sprays such as copper or zinc. The hardcore exhibitors will likely use fungicides such as Daconil, Bayer Advanced Rose Fungicide, Fertilome Systemic Fungicide II, etc. It has been my experience, that the need for fungicides can be reduced by using the biology of the pathogen against itself. The fungus needs free water. Break the pathogen's life cycle by reducing periods of foliage wetness. This can be accomplished by reducing the number of plants in your garden to give sufficient airspace between plants for foliage to dry quickly – considered as heresy by many rosarians. Another way is to water when foliage will dry quickly such as in the middle of the day even if using drip irrigation. Prune roses for open centers to aid in foliage drying. Pick off diseased leaves though it is a tedious task. If diseased leaflets defoliate, convert your leaf blower into a vacuum using the vacuum attachment and the accompanying litter bag for picking up the defoliated leaflets.

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Mark's Mayhems and Maladies: Downy Mildew Can Ruin Your Day (and Garden)

We love Spring due the expectation of future blooms. Unfortunately, Spring is also the perfect time for downy mildew. M.J. Berkeley, the father of Plant Pathology, wrote on rose downy mildew control over 160 years ago. Though we have learned more about downy mildew since Berkeley's time, it remains one of the more difficult rose diseases to manage.

Downy mildew is caused by a fungal-like organism called *Peronospora sparsa*. Though it looks like a fungus, its genome is more similar to the human genome than to a fungal genome. Beside roses, it infects blackberries, dewberries, boysenberries, wild brambles (all *Rubus* species), and cherry laurels. Foliar lesions are red, maroon, purple or black. Leaf veins often border lesions and give the lesions an angular appearance.



Roses, infected the previous year, serve as reservoirs of the pathogen for early spring infections. The pathogen can sporulate and plants can be infected at 40F. However, symptoms will not appear till temperatures get into the 50s. Optimum symptom expression is in the low 60s. On most spring days, humidity levels are too low for downy mildew spores to germinate. However, after sunset, the air cools rapidly and relative humidity spikes, often to 90% or higher. This is the perfect environment for spore germination and for infection to occur, especially in crowded beds, unheated greenhouses, and high tunnels.

Pruning to allow good air movement around foliage is useful for downy mildew management. However, in cool, wet weather, this technique may have little effect. Rouging symptomatic foliage, picking up defoliated leaves, and inspecting new plants for downy mildew symptoms before planting are effective for reducing downy mildew impacts. Unfortunately, bio-soil products such as plant extracts and biological pesticides have not been effective for management. Agri-fos, Dithane, and liquid copper are labeled for homeowner use and are effective for preventing infections. Researchers in Germany have found resistance to downy mildew in wild *Rosa* species. However, resistance in cultivated roses is a long time away.

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Mark's Mayhems and Maladies becomes Mark's Mayhems, Maladies, and Misadventures in 2027

2026 Columns

Due	Description
1/5	Don't Bring Home Others' Mistakes and Problems
2/5	Why Are So Many Afraid of Crown Gall?
3/5	Powdery Mildew – The Athlete's Foot of the Rose World
4/5	I Thought Rust Was for Californians!
5/5	Why Do I Keep Getting Rose Mosaic?
6/5	Becoming Your Own Disease Diagnostician
7/5	What the Heck is Black Leaf?
8/5	Root Knot Nematode – A Disaster Waiting to Happen
9/5	English/Cottage Gardens vs Traditional Gardens for Reducing Diseases
10/5	Ghost Spotting and Other Spooky Petal Blights
11/5	Making Your Roses Lean, Mean, Disease Fighting Machines
12/5	Armillaria Root Rot – Game Over, You Lose!



Some rosarians see holistic gardeners as hippies



Some holistic rosarians see folks using synthetic chemicals as nozzle heads

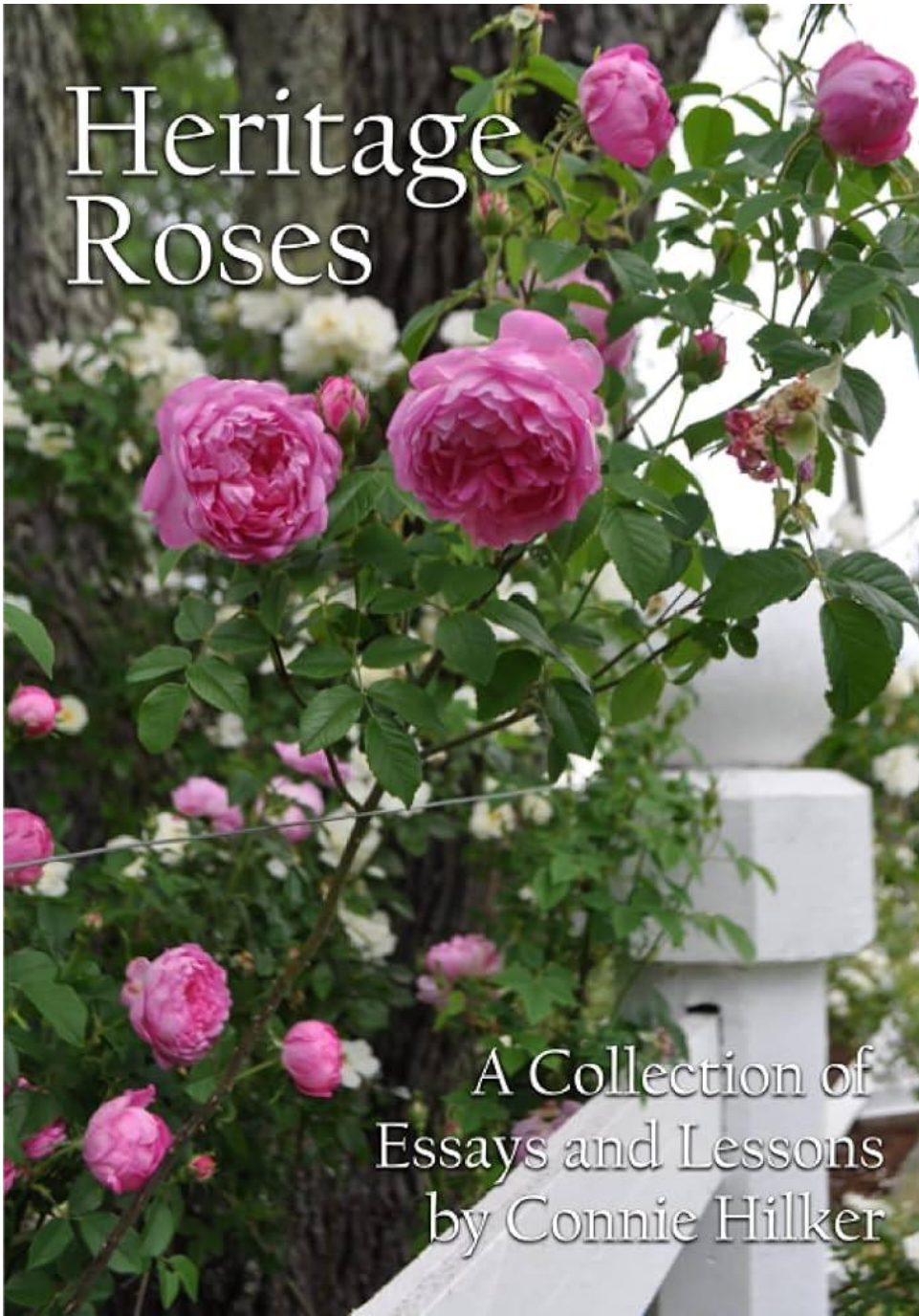
What is Holistic Rose Care?

Google: Holistic Rose Care relies on building a healthy ecosystem in your garden through organic soil enrichment, proper watering, and natural disease prevention rather than relying on synthetic and inorganic chemicals.

Step 1:
**To be successful, holistic rosarians will need to
draft successful players (roses) for their team**

INSIDE THE DRAFT ROOM





Heritage Roses

A Collection of
Essays and Lessons
by Connie Hilker

Antique or heritage roses are a good place to look for roses that are not as impacted by diseases as are modern roses.

Many of these roses are tolerant of diseases and pests. They are susceptible but plant health issues don't make the plants unattractive.

Use of heritage/antique roses in a holistic garden makes sense if you do not plan to exhibit

Dr. Steve George, at Texas A&M and David Zlesak (Univ. of Wisc. River Falls) along with others at Univ. MN, CSU, Iowa State, and others have lead in identifying rose cultivars resistant to diseases, drought, alkaline soils, and roses that thrive with minimum care

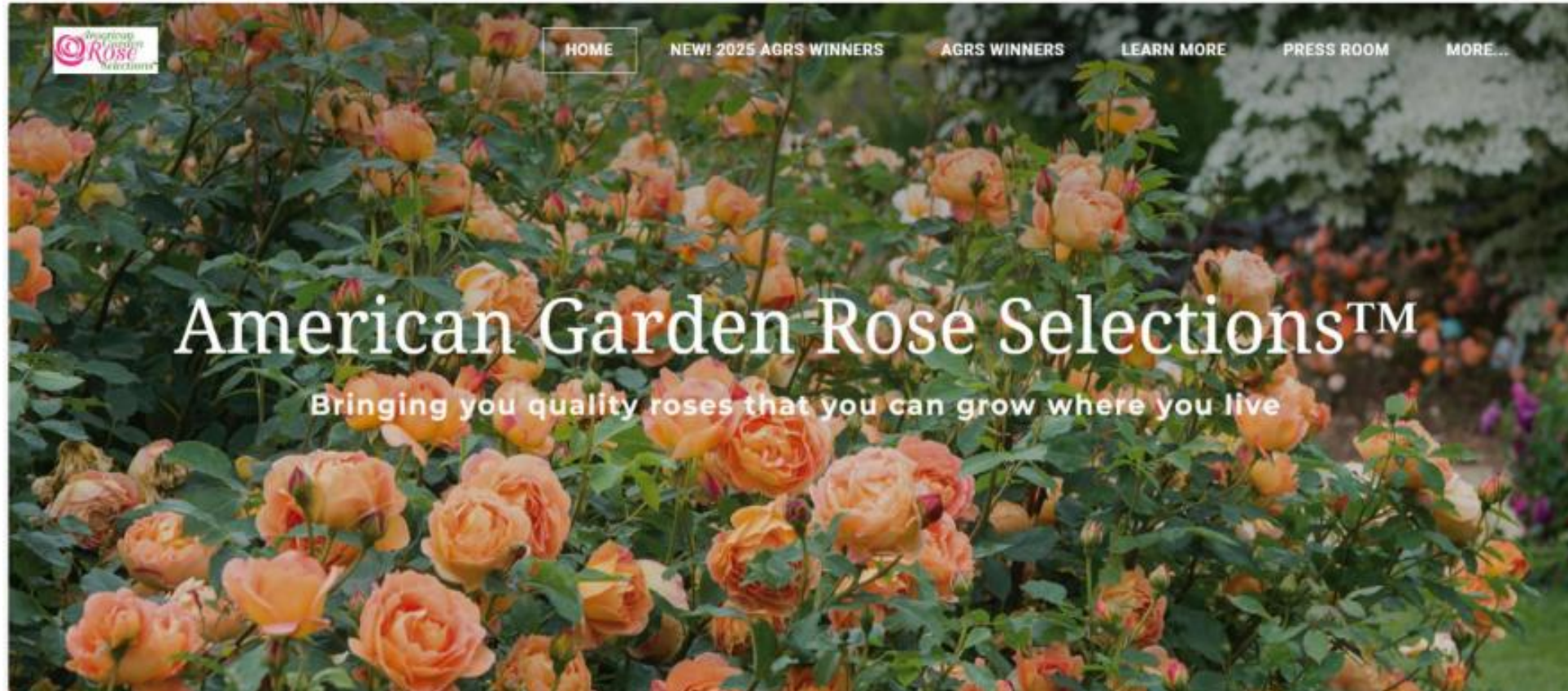
The website is easy to navigate.

<https://aggie-horticulture.tamu.edu/earthkindroses/>



American Garden Rose Selections™ (AGRS) is a partnership between expert rosarians and rose breeders/industry partners to identify new rose cultivars that thrive and resist diseases throughout U.S.

<https://www.americangardenroseselections.com/>



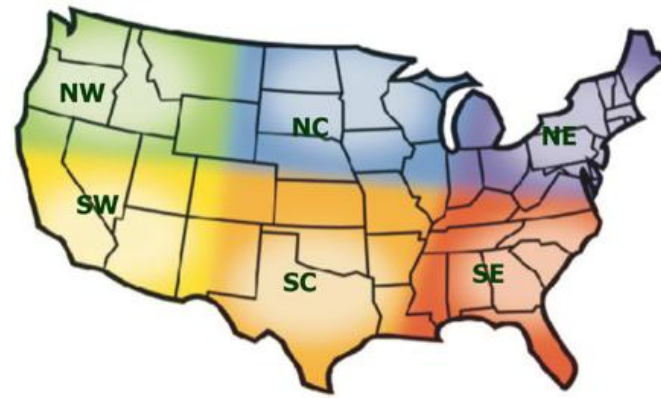
American Garden Rose Selections™



2025 AGRS™ Winners



2026 AGRS™ Winners



AGRS™ Regions

- ✓ Six regions / multiple test gardens per region
- ✓ Roses rated for outstanding rose characters, disease resistance, & fragrance
- ✓ To be a winner, all roses must have superior performance in at least three regions
- ✓ Roses are grown as rosarians grow them: regular watering, fertilization, etc.
- ✓ Information about all winners for each region is given on the website

Black Leaf Will Likely Be Less Encountered When AGRS Is Used To Select Roses

Black leaf is becoming more common as the climate warms, especially in northern regions where roses are selected based on cold tolerance

Starts as a bronzing of leaves which rapidly turn black

Black leaf is associated with high temperatures; likely cultivar dependent

Poorly understood – may be affected by spray timing and nutrition

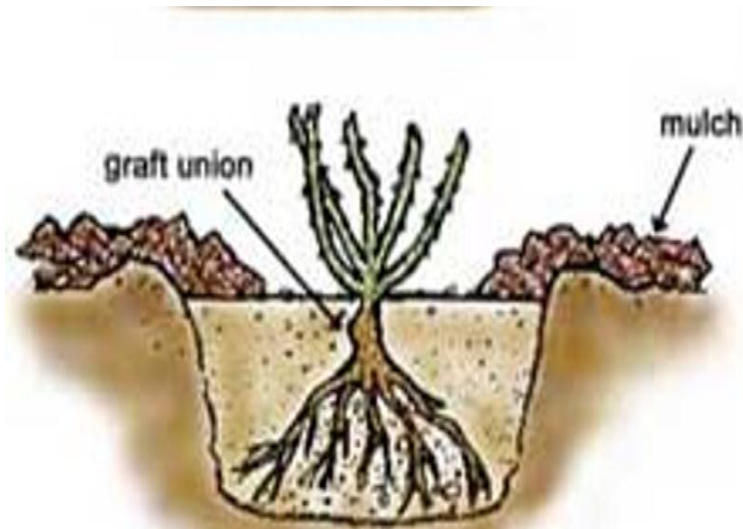
Save time and money by choosing roses adapted to your region that are also resistant to foliar diseases



Holistic Gardening Begins With A Solid Foundation



- Most of us are not blessed with beautiful soil to plant in
- Invest in a good pH meter. Soil pH should be above 6 and below 6.6
- Drainage is important so water can perk in or out depending on rainfall. **DIG AN UGLY HOLE!** If heavy clay is encountered, use organic matter, compost, or sand (more than 15% by volume) to improve soil drainage





I have been researching seaweed extract. North Atlantic Kelp is likely to have the biggest bang for the buck. Stimulation of root growth, meristem activity, and enhanced photosynthesis have been documented in research reports (mostly from Europe)

These products are used as examples and are not endorsed



In theory, you should only have to apply once. However, I recommend following the label directions and apply every two years for several rotations

What About Microbes Other Than Mycorrhizae?

Google Scholar is full of research articles about microbial growth response in roses, but most work has been done in vegetables/floral crops

PDF Impact of **Trichoderma**, Manure and Fertilizer on Flower Yield and Postharvest Traits in **Rose** under Polyhouse

AK Singh, A Sisodia, A Srivastav, D Kumar... - Annual Research & ..., 2025 - researchgate.net
... **Trichoderma** produces **growthpromoting** substances like auxins, stimulating leaf and shoot development while enhancing nutrient uptake. Inorganic fertilizers supply readily available ...
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PDF Changes in antioxidant enzyme activities, hormone levels and **growth** traits of **rose** induced by three native strains of **Trichoderma harzianum**

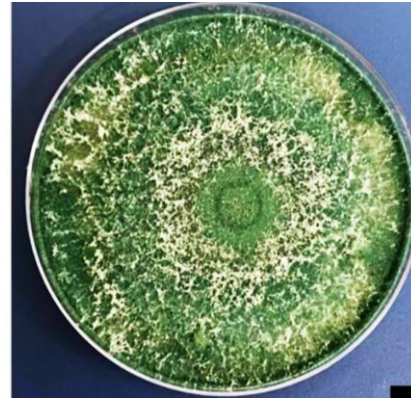
AM BALOCH10, RUI MIAO10, D Sui, AW Baloch... - Pak. J. Bot, 2020 - academia.edu
... , POD and CAT activities in **rose** leaves treated with **Trichoderma** strains were increased ... in rice (*Oryza sativa* L.) induced by plant **growth promoting** fungi under drought stress. Afr. J. ...
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Effect of organic media and biological fertilization on the vegetative and floral **growth** and some qualitative traits of two **rose** hybrids.

FJKFJ Kazem, NMANN Alwan - Iraqi Journal of ..., 2026 - jcoagri.uobaghdad.edu.iq
... and **Trichoderma** biofertilizers on the **growth** and flowering of two varieties of **roses**. The ... plot-1) Factor 3: the addition of Azospirillum was designated as C1, **Trichoderma** as C2, in ...
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PDF Effect of **Trichoderma**, Organic Manure and Inorganic Fertilizer on **Growth**, Flowering and Post-harvest Parameters in **Rose** cv. Top Secret

M Singh, AK Singh, A Sisodia, A Srivastav... - Journal of Plant & ..., 2025 - researchgate.net
... two groups, viz., **Trichoderma** inoculated plants and **Trichoderma** uninoculated plants, to assess their effects on **growth**, flowering and postharvest quality of **rose** cv. Top Secret, under ...
☆ Save Cite Related articles All 2 versions



Culture of *Trichoderma harzianum*. Some strains have been patented for their ability to impede soil pathogens or enhance plant growth and number of flowers

!!! Results with fungi and bacteria to promote growth **is real**, but results can be **erratic** due to changes in the soil environment. Have fun. Try it on some of your roses but not all; see if it works!

Things to Reduce Heat Stress

1. If you have clay in your soils, start with an ugly hole!
2. Don't use designer mulches. Pine straw is a better insulator against heat than hardwood or pine mulch because it traps more air. Univ. of Maryland demonstrated that pine straw has no effect on soil pH
3. **Kaolin** clay is sold as Surround WP online at organic supply houses. Used for pest control of fruits and fruit tree foliage. Also used to reduce heat stress. Keeps fruit tree foliage 10-15F cooler than untreated foliage. I have never heard of it used on roses, but it would be an interesting trial for heat stress control. Once again, who is to do the research? I have lots of questions, but there are zero answers

Organic Fertilizers

Alfalfa Tea: 5-1-2 plus calcium, iron, magnesium and zinc



1 gal of tea per bush.

Don't get on foliage!

How to make:

- 10-12 cups alfalfa pellets*
- 1 cup of fish emulsion
- 1 cup of liquefied seaweed

Use 33 gal garbage can. Add ingredients and fill can with water (hard stream) and stir with a shovel. Steep for 1-4 days covered.

*Some people use only alfalfa pellets

Use in mid Spring and and in mid Summer

Mills Magic Mix is out of production, but can be made.



Made by Beaty Fertilizer, Cleveland, TN
Product is currently not available

For Do-It-Yourselfers*

- 100 lb cotton seed meal
- 100 lb fish meal
- 50 lb alfalfa meal
- 50 lb of blood meal
- 50 lb of bone meal

*2 cups around each
plant's drip line

Alternatives to organic fertilizers

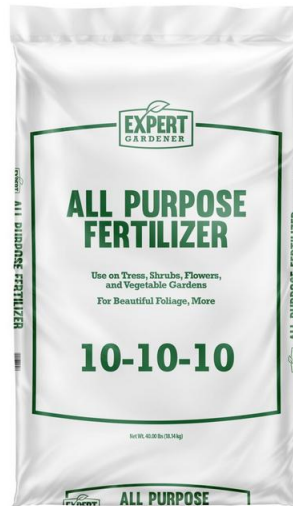
Liquid feed

- More expensive, but safer
- Easily way to add macro & micro nutrients
- Effects are quick, may be taken up by foliage
- Many products on the market



Inorganic fertilizer

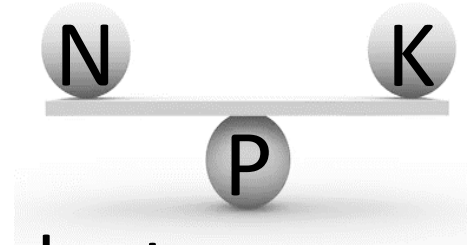
- 10-10-10
- Epson salts – rosarians swear by it, but don't use them unless instructed to do so via soil test results



Too much fertilizer is as bad or worse
than too little fertilizer



Keeping soils in balance is key!

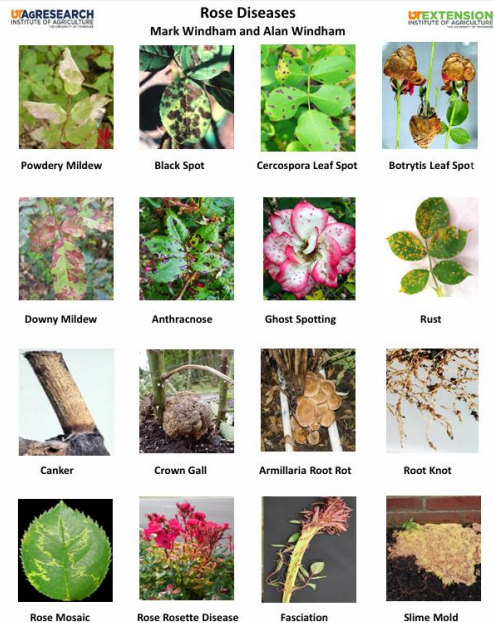


High phosphorus (P): stunted plants, poor root systems, mycorrhizae impeded; magnesium and iron change state and become less available to plant. Zinc uptake is impeded. Often “tired” rose beds that no longer support good rose growth are very high in P. P is not motile in soil water. I have seen beds with over 1000X the recommended levels of P!

See why a soil test every 2-3 years is important?

Disease and Insect Control for Holistic Rose Gardening

Spacing, spacing, spacing! Nothing is more important than proper spacing between plants. Adequate spacing promotes air circulation which promotes foliage drying. Pathogens and insects spread more slowly between plants



What disease and insect problems occur in your area? Do you know what they look like and when they tend to show up? Inspect your plants at least weekly for plant health problems to catch them early

Relationship between water and black spot



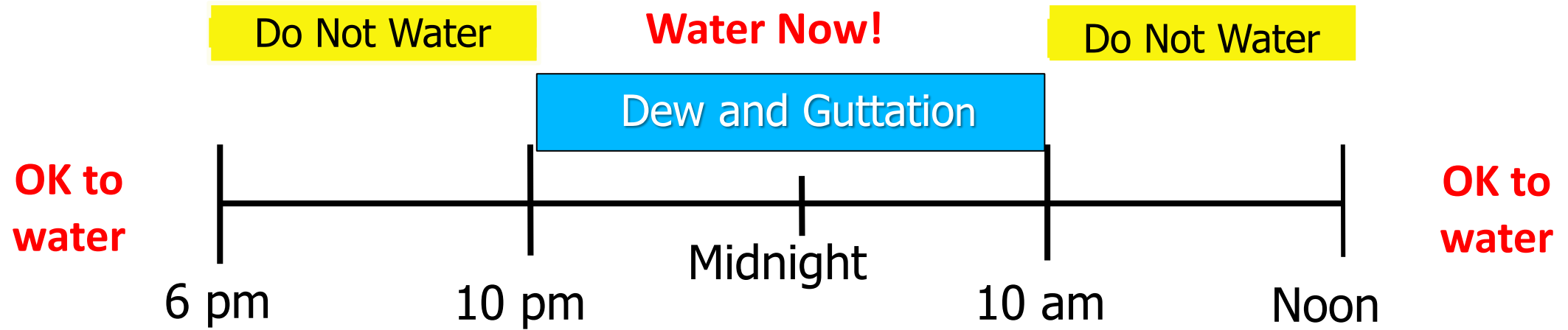
Leaf wetness enhances infection

Conidia dispersed by splashing water, people and insects – don't work with roses when foliage is wet



Spores (conidia) of *Diplocarpon rosae* (black spot fungus) need at least 6 hours of free water to germinate

Proper Irrigation Timing For Black Spot Control



Irrigate when free water is already present on foliage or foliage can dry rapidly

Better yet: use soaker hose or drip irrigation

Dew: small water droplets that result from condensation of atmospheric vapor

Guttation: secretion of water droplets from pores of plants

Space roses to allow good air movement between plants; prune bushes for open centers to promote air movement within bushes

Black Spot Control - Resistance



My Girl Peace
Black spot resistance
test, Poplarville, MS

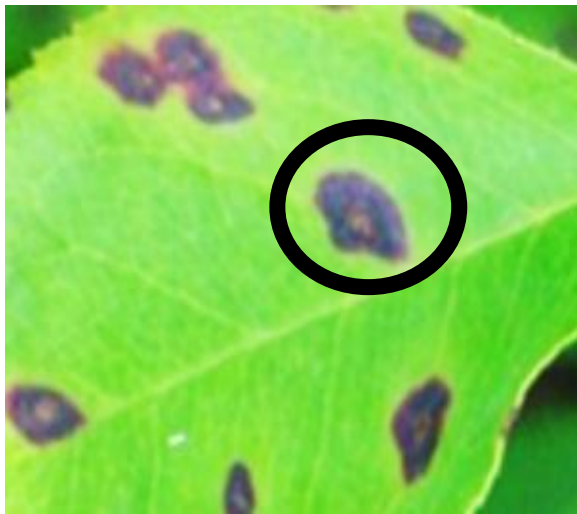
Diplocarpon rosae is genetically variable (has more than a dozen races)

Different races may occur in different places and roses may not be resistant to all races

Changes in the environment and nutrition status of the rose may also cause resistance to fail



Black Spot



Cercospora Leaf Spot

Cercospora Leaf Spot: *Cercospora rosicola*

Black spot lesions have irregular edges. The lesions have “fuzzy” edges. Lesions of Cercospora leaf spot have smooth edges. Both may cause defoliation, but usually worse with black spot

Cercospora leaf spot is favored by hot, humid weather

Resistance is available; may break during prolonged rain events

Many roses resistant to black spot are susceptible

Black Spot (BS) and Cercospora Leaf Spot (CLS) Resistance

Note that resistance to BS does not infer resistance to CLS

[illegible]



Stem Canker

Caused by *Alternaria spp*, *Botryodiplodia theobromae*, *Botrytis cinerea*, *Coniothyrium fuckelii*, *Cryptosporella umbrina*, and *Trichothecium roseum*

Canker starts after bushes go dormant. Yellow lesions on the canes that enlarge to brown, gray, and or black lesions from 1 to 4 inches long

Fungicides are not effective for canker control.

Monitor your roses during winter months and remove canes with canker while cankers are small or you may encounter dead bushes in the spring

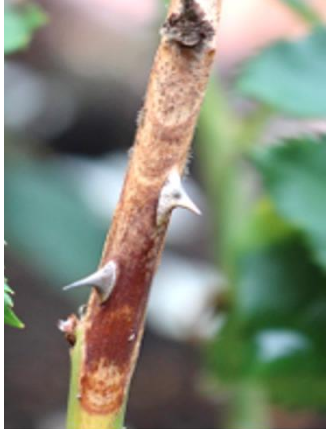
Stem Canker Management

Warmer winter temps may mean more and severe canker issues

Sharpen pruners before cutting canes; a Stihl sharpener is fast, effective, and inexpensive

Use Lysol or alcohol wipes between canker cuts. Make sure you prune back to white pith (bleach wipes not recommended)

Applying nitrogen fertilizers in late Summer to Fall leads to more and larger cankers



Crown gall may be more apparent in warm weather



When transplanting bushes in the Fall, watch for galls (including on roots)

If galls are detected, remove bush and two bushels of soil (large construction wheel barrel)

Sanitize shovel after digging; do not put galled tissues in compost pile



Due to potential movement of crown gall, sanitize pruners between moving to another bush. Once again, Lysol or alcohol wipes are recommended instead of bleach wipes

Protect Your Garden From Introduction Of Crown Gall



Inspect all plant parts for small galls

Bare root roses are easier to inspect than container-brought plants, but inspect root balls as best you can before transplanting

Your best defense against crown gall sanitation of pruning and gardening equipment



To protect new roses from gall, dip roses in a streptomycin solution of 2 tablespoons/2.5 gal of water. Note this is double the rate on the container's label!

Rose Mosaic Virus does not exist. The Rose Mosaic Virus-Complex includes Prunus Necrotic Ringspot Virus, Apple Mosaic Virus, and Arabis Mosaic Virus. These viruses may infect the same plant



Fugal rosarian buy roses in late Summer/Fall can save money. Symptoms for Rose Mosaic will be masked in Summer and Fall. Inspect foliage as best you can for virus symptoms

Some wholesale propagators struggle with the Rose Mosaic likely due to infections in mother blocks. Difficult to detect due to weather conditions

These RRD images came to me in September. Look at how large the rosettes are. Eriophyid mites can be as much as 80X higher on symptomatic foliage at this stage of rosette development. Managing the disease will be difficult because mites may have ballooned before the disease was detected. Newly infected plants may not express symptoms till next year. Learn to identify RRD by early symptoms!



Aphids are a common pest, but are not hard to deal with



Wash aphids off plants with pressure water spray – I have heard of reports from South Carolina that sprays did not work

Use insecticidal soap ('soft' pesticide)

Diane Ackerman: “I don’t mind Japanese beetles having sex on the roses; I just wish they wouldn’t eat at the same time.”



Japanese Beetle Control



These will work, but
there is a better way!



The better
way!!

In Many Parts of The Country, You Will Likely Encounter Sawflies (Rose Slugs)



Two types of rose slugs: one feeds on top of leaves (bristly rose slugs); the other type feeds on the leaf bottoms (curled rose slug)



The slugs are clear and take the color of what they eat. If observed, act quickly – you can blast the rose slugs with a water spray and they can't climb back on bushes

For severe infestations, neem oil may be needed

Spider Mites Are Likely To Be Encountered In Hot And Dry Weather



The mites suck plant juices from underneath rose leaves

Blasting the foliage with a hard stream of water on the back of leaves from a water wand is effective in reducing spider mite populations on leaves and the mite's impacts



Miticides help, but spider mites become less sensitive to miticides over time and then you have a real mess on your hands

Leaf Cutter Bees



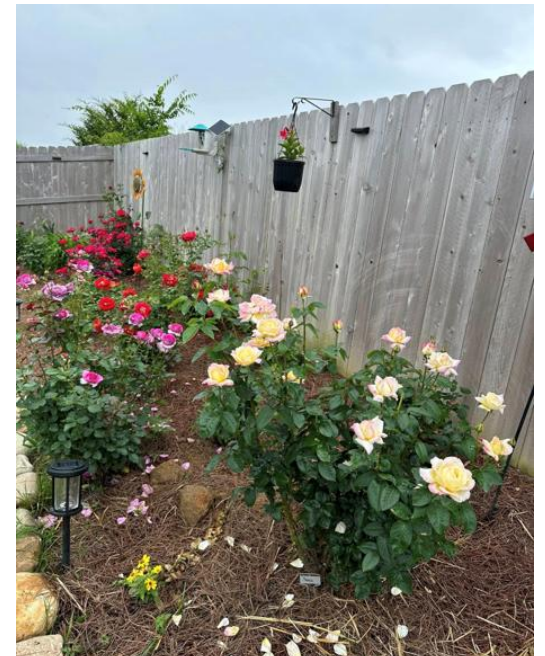
Damage is usually spotty and may be limited to few number of roses or to only a few cultivars

Though esthetically prominent, the damage causes little harm to the rose bush or reduces size or number of blooms



Control is difficult since we do not want to harm needed pollinators. Though not what exhibitors may want to hear – learn to live with them

A holistic approach should bring peace and tranquility with fewer inputs. My daughter has become a rosarian (**pray for her**). Her house is new construction and all top soil was stripped from the lot before construction started. She started with subsoil clay and half price roses from a hardware store. She is improving her soil with organic matter, use of beneficial microbes, and companion plants to reduce spread of diseases and pests. With better selection of roses (i.e. using AGRS™ lists instead of “I want” photos in a catalog), she’ll become a more holistic rosarian with fewer spray inputs. That would save her time and money!





Thank you! Y'all Come See Us!

East Tennessee really is
Big Orange Country!