

G²

GRIFFIN GAZETTE
SPRING 2013

INDUSTRY INFORMATION TO HELP YOU GROW



Reach your
**PERENNIAL
POTENTIAL**

Rust or
Oedema?

HOT TRENDS
for your
Fall Pansy
Program

GARDEN MARKET AT GRIFFIN
GRIFFIN'S NEW RETAIL DIVISION

Griffin Hard-goods Locations

Toll-Free Order Line
1.800.659.4346

General Inquires
1.800.888.0054

Cheshire, CT	Auburn, NY
Stafford Springs, CT	Brookhaven, NY
Ball Ground, GA	Schenectady, NY
Tewksbury, MA	Morgantown, PA
Gray, ME	Knoxville, TN
Bridgeton, NJ	Richmond, VA
Ewing, NJ	

**SHS Griffin
Green-goods Locations**

Toll-Free Order Line
1.800.454.8159

Lisle, IL
Downers Grove, IL

EVENT DATES

OFA Short Course
July 13-16, 2013
Columbus, OH

Griffin MA Expo
August 14-15, 2013
West Springfield, MA

Griffin PA Expo
September 11-12, 2013
Lancaster, PA

All articles and material featured in this Gazette cannot be duplicated without written permission. Copyright © 2013 by Griffin Greenhouse & Nursery Supplies.

Cover Photo

WonderFall Purple
& Blue Shades



Microbial Insecticides

How do they fit in?

By Rick Yates, GGSPro Technical Services Manager



The number of microbial insecticides labeled for greenhouses and nurseries continues to expand. Why consider microbial insecticides? The list of attributes is attention-getting: good plant safety, low mammalian toxicity, good compatibility with biological control agents (BCAs) and modes of action that are different from traditional insecticides. While they cannot be applied directly over the top of all BCAs there are many opportunities to use them as a part of an integrated approach to insect control where targeted compatible insecticides supplement biological control. (GGSPro can help you accomplish this.) Resistance management is an increasingly urgent matter as we lose pesticides to resistance and regulatory action faster than new modes of action are being registered. Microbial insecticides with their unique modes of action allow the opportunity to take some of the resistance pressure off of our traditional pesticides by replacing or supplementing them in control programs.

	Active ingredient	Major Greenhouse Pests Labeled	Edible Crops-Greenhouse	Omri Listed®?	REI hours
Botanigard ES, Botanigard WP	Beauveria bassiana strain GHA -11.3%	Aphid, mealybug, plant bugs, thrips, weevils, whitefly	Herbs and vegetables	No	4
Met 52 EC	Metarhizium anisopliae strain F52 -11%	Aphid, mealybug thrips, whitefly	Onions, celery, lettuce, spinach, peppers, tomatoes, berry crops	No	4, 0 for soil in-corp
Mycotrol	Beauveria bassiana strain GHA -10.9%	Aphid, mealybug, plant bugs, thrips, weevils, whitefly	Herbs and vegetables	Yes	4
NoFly	Paecilomyces fumosoroseus strain FE 9901, blastospores -18%	Aphid, fungus gnat, mealybug, plant bugs, thrips, weevils, whitefly	No food crops	Yes	4
Preferal	Isaria fumosorosea Apopka Strain 97 -20%	Aphid, leafminer, mealybug, plant bugs, spider mite, thrips, whitefly **	Herbs, spices, strawberry, vegetables	Yes	4

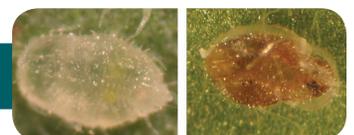
** soil treatments control: soil-borne caterpillars, grubs, thrips pupae, rootworms, weevils

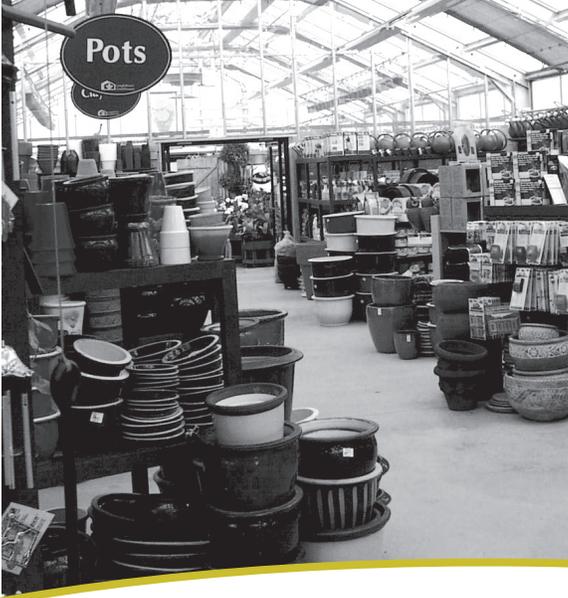
With such an impressive list of attributes why are we not seeing more of them being used in commercial greenhouses at this time? Microbial insecticides are similar to insect growth regulators in that they take some time to work. Often multiple applications are needed to achieve sufficient infection levels and high rates of control. Growers naturally prefer products that work faster when they are available. In general, microbial insecticides need warm, moist conditions for a period of time after the application to maximize effectiveness. After years of educating growers to the benefits of keeping humidity low in greenhouses, this understandably makes some uneasy. Greenhouses that otherwise maintain excellent cultural conditions have not reported foliar disease problems from occasional evening sprays but the concern is understandable. GGSPro has strategies to help minimize this risk. Last but not least is that some of these products have unique handling and mixing instructions that if not followed can lead to failures.

In summary, despite some unique challenges microbial insecticides are likely to continue to play an increasingly important role controlling insects and mites in commercial greenhouses and nurseries. If previous experiences have not met expectations, let's work together to try and improve performance. The extra effort will be rewarded over time.

Read and follow all label directions. Pesticides other than those mentioned may be safe, legal and effective.

Photo on left: Healthy whitefly nymph, Photo on right: Nymph infected by Botanigard®. Photo Credit: Bioworks®, Inc.





Garden Market at Griffin

We're growing retail to serve you better!

Spring is almost here! At Griffin Greenhouse Supplies we want to thank you for your business and continued support! We wish all of our customers the very best in 2013!

Today's retail market for lawn and garden is fast paced and continues to grow with new sales opportunities across the country. Griffin Greenhouse Supplies proudly announces that beginning in April, we will be stocking more products for your store to retail to your customer. The NEW Griffin Retail Group division has recently been staffed by experienced lawn and garden supply chain professionals to help with this exciting expansion. Additional manufacturers, new product categories and improved margins on our existing retail product offerings are just some of the advantages of our exciting news for our customers! Now you can sell your plants with essential garden products that will help make consumers more successful in their gardens!

With a low minimum order amount and small shipping fee, Griffin now offers you expanded sales and profit opportunities. We will be adding some of the nation's best manufacturers and best selling products delivered by shipment from our Stafford Springs, CT. warehouse.

Ask your Griffin sales specialist for more details! We will be adding new vendors and products monthly and continue to provide the best service that Griffin is known for. Now you can think of Griffin for your retail store products, as we continue to develop new ways to best serve you, our valued customer!

Take a look at just some of our expanded vendor offerings...and there's more to come!





Griffin is *growing* to help you grow.



Griffin and SHS: Industry Service at Every Level

By Peter Konjoian

Our greenhouse industry is anchored in every community, every state, every province throughout North America. That fact allows the adjective "extensive" to be used. Those of us who run a greenhouse operation or conduct business with those who do use the adjective "intensive" to describe what goes on in these agricultural establishments. So, defining our industry as both extensive and intensive creates a base, a necessity if you will, for servicing said industry at many levels.

During the week that this column was written, a major story dominated the headlines: the merger of American Airlines and US Airways. How coincidental to the announcement late last year of Griffin's acquisition of Syngenta Horticultural Services (SHS). While at a significantly lower level on the economic totem pole compared to the airline industry, the recent Griffin-SHS consolidation is every bit as important to our industry's health.

Industry Consolidation

A driving factor in consolidation for any industry is to remove cost from the supply chain. We have been witnessing this for a number of years as Griffin has expanded its original New England footprint into the Mid-Atlantic and Southeast regions, making it a true East Coast distributor. The SHS acquisition expands Griffin's footprint significantly further, making the company a national distributor for green goods. Economies of scale, in essence the elimination of inefficiencies, is one outcome of the growth.

As growers, you and I have operated this way for our entire careers. Expanding our greenhouse and nursery ranges always results in lower per-unit cost inputs. Purchasing more pots and potting media always earns cost discounts and lowers per-unit production cost. Within reason, we all try to capitalize on this economic principle.

Limitless Supply-Chain Networks

A major benefit of the SHS Griffin integration is the almost limitless access to plant cultivars from a global breeding, propagating and marketing network.

Unprecedented consolidation both within a single industry sector such as floriculture and between sectors including floriculture, nursery, vegetables and even agronomy has spawned complete supply-chain consolidation. Business-to-business activity is becoming more efficient. SHS evolved in this way and now offers Griffin customers access to a much broader portfolio of genetics.

Breeding, Breeding, Breeding

It's often stated that plant breeding is the life blood of our industry. New cultivars of annual, perennial and woody ornamental species drive our livelihoods. Add vegetables and other edible crops, and it's quite clear that new varieties are our epicenter.

I find it fascinating how plant breeders are now crossing lines between what is ornamental and what is edible. In years past, consumers maintained separate flower and vegetable gardens with the vegetables often tucked away in the farthest corner of the backyard. Today, one is just as likely to see rainbow colors of Swiss chard growing under the mailbox as petunias or geraniums. Instead of deadheading spent flowers while bringing in the mail, the consumer is almost as likely to harvest a side dish for supper.

Every Griffin Grower Expo seminar program includes a new-varieties session for the upcoming production season. Griffin's – now SHS Griffin's – plant experts have been on the cutting edge of this topic for many years and the session draws packed audiences. Imagine what this year's installment will bring. Reserved seating may be necessary!

Small Growers Benefit

Access to the rich SHS Griffin assortment is perhaps the most significant upside of the Griffin-SHS alliance. Small and mid-sized growers benefit from more varieties available from more sources via SHS Griffin's national network of young-plant producers. Growers also benefit from the knowledge and experience within the SHS Griffin network – more information about best practices and market performance that can be applied to our own operations.

Griffin's commitment to making these varieties available to small growers will continue to be a priority. After all, there is no profit for a small grower if a minimum order for a new variety results in overproduction and shrink at the production level. Small growers have learned that it's not just what one grows but how much that determines whether a crop yields a profit or loss.

Concluding, Griffin's acquisition of SHS is a win-win. A national footprint and greater supply-chain efficiency makes Griffin stronger and healthier. Access to more genetics via the legacy SHS network brings new opportunities for many growers. And no doubt this year's Grower Expos new-varieties session will be the most exciting one ever.

long lasting insect control, *healthier* plants and *happy* customers

By Andy Seckinger, OHP, Inc

Aphids and many other insects are a constant problem for ornamental production managers. Staying ahead of these pests is a high stakes balancing act: starting with clean material (cuttings or plugs) and then keeping it clean. Keeping nursery crops free of pests throughout a relatively long production cycle (up to 5 years) often involves the regular application of insecticides to prevent plant damage and economic loss.

Shortage of labor has made it more of a challenge for growers to start their crop plants free of insect pests and keep ahead of any potential pest issues. When labor is plentiful, it is easier for growers and their staff to stay ahead of insect pest problems and therefore, grow higher quality plants on schedule. Delivery of high quality plants on schedule is what in the past has led to better sales and further growth, which in turn fueled our industry in the last 20 years. In today's market the labor force is no longer there – in most operations one person now does the work of three – the trend of starting several crops of plugs and cuttings within a short window of time has made it even more of a challenge for growers to make sure plant material starts clean and it is kept that way.

Among the major challenges faced by growers is controlling insect pests such as aphids, and others. A major advance in insect control was the introduction of neonicotinoid insecticides starting with Marathon® (imidacloprid) systemic insecticide in 1994. Substituting many spray applications against whitefly, growers just waited until the root system was developed and then applied Marathon granular to the soil surface for up to three months of whitefly control. While this represented major savings for the grower it still meant waiting until the plants were spaced out to apply and then applying to individual pots. In addition to having to wait for root development, application of Marathon to long term nursery crops would need to be complemented with foliar sprays as the Marathon would 'run out' before crops were finished and ready to sell.

OHP is very happy to announce the release of Discus® Tablets to tackle these issues and offer the grower an alternative for extended control and a more efficient way to deliver a systemic insecticide. Discus Tablets are a combination of imidacloprid (the active ingredient in Marathon) and a fertilizer-charge formulated into a pellet or tablet. The fertilizer is included in the formulation to enhance the uptake of imidacloprid and is not meant to enhance or supplement a fertility program in the target crop. There is also a documented positive plant health response in plants treated with Discus Tablets beyond that produced by the fertilizer alone.

How to use Discus Tablets?

The most efficient way to use the tablets is to place them 1 to 2 inches below the soil surface at time of transplant or repotting or when placing individual or multiple plugs in a container. Since growers are handling the containers at that point during production, placing the tablets into the soil is an easy add-on to the process. Suggested uses for Discus Tablets work especially well in long term crops such as perennials grown in hanging baskets, trees and shrubs, or large mixed patio containers. Upon watering, the tablets begin releasing imidacloprid during a 2 to 3 week period and then provide up to one year of insect control in the treated container and up to two years in field plantings.

Key Foliar pests: Aphids, lacebugs, leafhoppers, leaf feeding beetles, Japanese beetle adults

Key Soil-borne pests: Black vine weevil larvae, White grubs

Persistent pests such as Japanese beetle adults, Black vine weevil larvae and White grubs that have life cycles that are difficult to time are especially well suited to an extra-long residual product such as Discus Tablets. When the pest is in the right stage to be controlled, Discus will be there. Discus Tablets are an excellent fit for nursery containers, as well as annuals such as hanging baskets which usually have aphid and other insect issues. This novel method of applying a systemic insecticide not only saves time and labor, it also ensures that the plants are protected even after the sale. This added value enables growers to deliver quality plants but also ensure happier customers. Discus Tablets deliver insect control up to a year in containers and up to two years in field plantings

For more information contact your Griffin sales representative or Griffin customer service at 1.800.659.4346.





Reach Your Perennial Potential

By Beth Engle and Allison Klicek

The union of the legacy Griffin and SHS plant businesses brings a range of opportunities to our customers, including an expanded product offering. Customers of both legacy companies can now benefit from new perennial vendors and programs.

Legacy Griffin customers will want to check out Walters Gardens in Zeeland, Mich. (online at www.waltersgardens.com). Walters offers perennials and temperennials as bare root and as liners, depending on species and variety. The company serves as a producer for breeders across the United States and around the world; they also have a perennial breeding program of their own, with a tissue-culture lab on-site at their Zeeland headquarters. In addition to all this, Walters contributes to the Proven Winners perennial program with such varieties as Hibiscus Summerific™ 'Cranberry Crush' and Leucanthemum 'Banana Cream.'

As an SHS Griffin customer, you can take advantage of Walters' Summer Selections program, running from July 15 through October 14, 2013. Through this program, Walters extends a five-percent discount on plant orders valued at \$1,000 - \$2,999; plant-material orders of \$3,000 or more qualify for a 10-percent discount. Orders must be booked by September 30, 2013, to qualify. Please note the discount doesn't include tags.

Legacy SHS customers should get to know North Creek Nurseries, located in Landenberg, Penn. (online at www.northcreeknurseries.com). North Creek Nursery is known both for perennial liners and for their native-perennial programs. Their brand, American Beauties Native Plants, offers a venue to educate consumers about gardening with native plants and the benefits of using them in the landscape. Of course, North Creek is more than native perennials but they are certainly experts in the field!

Tips to Add Excitement and Value to Your Programs

When planning your next perennial program, consider adding some diversity to your usual selections. For example, do you have Phlox divaricata (native!) in your program? This is a lovely species

that flowers after the P. subulata but before the P. paniculata. Commonly known as Woodland Phlox, it's also fragrant and comes in shades of pink or blue.

Another opportunity to diversify is with the Iris family. Many growers offer the tall German Bearded Iris, but this family includes miniature varieties as well as tall. Think about adding Siberian, Japanese and, if you sell in the right zone areas, Louisiana Iris to your offering. Do you create annual combination containers for retail sale? What about adding perennials to the mix? Consider using Miscanthus 'Morning Light' as your tall item in the middle. How about adding some of the uniquely leaved Heuchera as an item on the side, such as Heuchera 'Midnight Rose' or Heuchera 'Peach Crisp'? Heuchera can add both color and texture to your designs.

Look to some of the low-growing sedum as potential 'spiller' components in your combinations. Sedum 'Lemon Ball' has the added benefit of being more 'touchable' and less likely to shatter than other chartreuse-colored Sedum. Think color and texture, and plant requirements. Don't fall into the trap of annual vs. perennial; that's limiting, and does a disservice to both your customers and your plant material.

Adding perennials to your combo planters creates value (and can command a higher price point!); Encourage your customers to enjoy the plants in their combo pots during the summer, then transplant them into the fall landscape to reap years of enjoyment.

Beth Engle is an assistant product business manager – perennials for SHS Griffin; she can be reached at bengle@griffinmail.com. Allison Klicek is marketing programs manager for SHS Griffin; she can be reached at aklicek@griffinmail.com.

Photo Caption: 1. Leucanthemum Banana Cream (image courtesy of Walters Gardens, Inc.) 2. Iris ensata Gusto (Image courtesy of De Vroomen Garden Products) 3. Iris Ruffled Velvet (Image courtesy of De Vroomen Garden Products) 4. Hibiscus Summerific™ - Cranberry Crush (Image courtesy of Walters Gardens, Inc.)



Is it **Rust** or **Oedema** on the geraniums?

By Virginia Brubaker, GGSPRO Technical Support Supervisor



Diagnosing rust on geraniums can be a challenge for growers. Rust begins with yellow spots on the underside of the leaves and can rapidly develop brown fungal spores called pustules in the center of each spot. As the pustules grow they produce a distinctive concentric ring. They are raised up off the leaf surface and feel rough to the touch. The area on the upper leaf above this spot will also turn yellow then eventually brown. Untreated, infected leaves turn yellow, dry, and drop prematurely resulting in defoliation of the plants.

Combinations of cultural and chemical control are required to control geranium rust. This disease is spread by splashing water and handling. Avoid splashing water and minimize handling of infected crops. Avoid carrying over geranium stock and never bring geraniums into the greenhouse from outside as these are common avenues of infection.

As soon as an outbreak is detected clean all obviously infected leaves off of the plant and carefully take them out of the greenhouse in sealed bags. Immediately treat all of the geraniums with a fungicide such as Camelot O, Compass, Daconil, Disarm O, Eagle, Heritage, Spectro, Strike, Pageant Intrinsic, Phyton, Protect or Terraguard. Repeat this sequence on a weekly basis, rotating MOA's to avoid resistance, until no more pustules appear.

Or is it oedema? Oedema occurs during cool, damp and low light conditions predominately. This year has been no exception. Some growers have dealt with the high cost of fuel by turning back the thermostat, which increases the relative humidity that contributes to oedema. Oedema results from an imbalance in osmotic pressure inside the plant cell. If this pressure inside the geranium plant is great enough it can cause the cells to rupture, creating scab like wounds. Ivy geraniums typically display brown corky lesions on the undersides of the leaves. In severe cases the leaves turn yellow and may fall off. Preventing oedema requires the management of environmental conditions. Do what you can do reduce the relative humidity and keep the air moving with HAF fans. Running the soil dry can aggravate oedema, so strive for even soil moisture. Maintaining adequate fertilizer keeps cell walls more flexible. The warmer, sunnier weather and improved ventilation reduces the occurrence of new symptoms.



Rust on Geraniums



Rust on Geraniums



Oedema on Ivy Geraniums



Oedema on Zonal Geraniums

Hot Trends

with cool profit potential

Fall Pansy Programs By Jeanne Svob

June will be here soon; it's time to plan your fall production. As summer wanes, provide your customers with an irresistible pot, basket or bowl full of incredible color to replace that faltering fuchsia or perishing petunia. Pansies and violas offer an abundance of cool-season choices to carry us from fall into winter and then lift us from winter into spring.

Extra-large flowered Colossus, Mammoth and MGII deliver that traditional garden favorite you remember from grandma's house. Only now the plants are more robust and with shorter, sturdier stems to keep the flowers facing upward. Choose Colossus, with its more controlled vigor, for the best shelf life in fall production. Mammoth will produce a bigger plant for larger pots yet still resist stretching out of shape. MGII has the most vigor and will be the earliest to flower for very early spring sales.

Large-flowered Delta and Karma offer the broadest selection of colors and mixes for the ultimate palette. Delta's large blooms face upright on short stems over compact plants that hold their shape. Unique designer mixes with names like Apple Cider, Cotton Candy and Buttered Popcorn can be paired with Scrumptious Blends POP materials for deliciously irresistible retail appeal. Look to Karma for unusual colors like Blue Butterfly, Copperfield and Midnight Sun to spice up your assortment.

Add some spark to your program: lift the plants up to eye level with the new WonderFall or Cool Wave trailing pansy series in hanging baskets. Or use them as your "spiller" in fall mixed containers with grasses, kales and other fall flowers like Diabunda dianthus or Asti osteospermum. Trailing pansies are also well-suited to the landscape, where they fill three times the bed space of a regular pansy.

WonderFall flowers like crazy with a vigorous, branching habit that requires fewer plants per container. Currently available in 11 colors, including five new for fall 2013, WonderFall features striking bicolors like Blue Picotee Shades and Purple

with Face that are sure to grab attention at retail. Cool Wave capitalizes on the recognition of Wave brand as the first non-petunia in the Wave family. And cool it is, with medium-large flowers on plants with controlled vigor that fill containers quickly and completely.

Let's not forget about the wildly vivid Penny and Endurio violas for the most color impact per square foot. These extremely durable plants that tolerate both end-of-summer heat and winter's cold. The flowers may be small, but their impact is mighty. Check out the 30+ fabulous colors in the Penny series alone. Create a unique offer by selecting your own color palette to feature in handle packs, pots and ovals.

Endurio has a mounding-spreading habit that fills completely in bowls and beds. The series is day-neutral, extending the flowering season late into the fall and providing the earliest spring color. Its habit is also well suited for hanging baskets where it will spill over the edges, creating a ball of color. Plant Endurio with your WonderFall or Cool Wave pansies to add dimension and extend the color life of these high-value baskets.

So, are you ready to get started? Contact your SHS Griffin sales rep. If it's plugs you're after, he or she can match you with the best plug specialist to meet your needs. When working with seed, consider all of your options. Primed seed provides faster, more uniform germination. Need a little extra help with germination in the heat of summer? Try PreNova pre-germinated seed, exclusively from SHS Griffin, for the Delta and Colossus series. PreNova shortens Stage 1 germination, helping you manage through this critical production period.

Your SHS Griffin sales rep is also your ticket to a wealth of knowledge and resources regarding crop culture, merchandising programs and more. Let's work together to make this fall your most successful yet!

Jeanne Svob is seed business manager for SHS Griffin. She can be reached at jsvob@griffinmail.com.



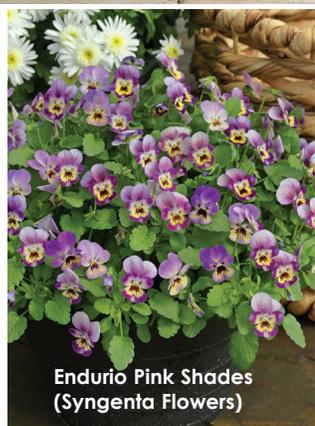
WonderFall Rose Shades with Face
(Syngenta Flowers)



WonderFall Yellow with Red Wing
(Syngenta Flowers)

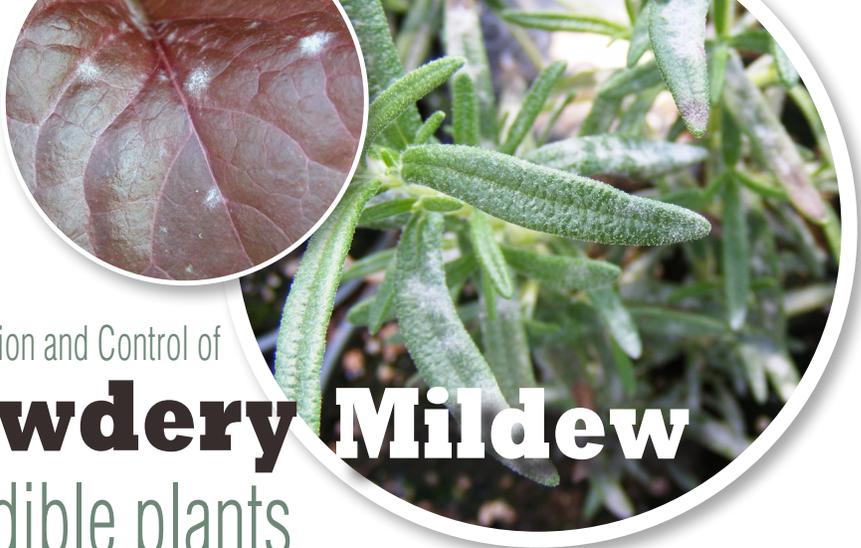


Endurio Yellow with Purple Wing
(Syngenta Flowers)



Endurio Pink Shades
(Syngenta Flowers)





Identification and Control of **Powdery Mildew** on edible plants

By Joanne Lutz, GGSPro
Technical Support Specialist



Powdery mildew can reduce the yield and aesthetic qualities of greenhouse grown vegetables and herbs. Edible crops grown for harvest in hydroponic or ground beds as well as transplants for resale are at risk.

There are many powdery mildews that taken together have the potential to infect a wide range of crops. Fortunately, many are host specific, meaning they infect one or a couple of crops. Cucumber, squash, tomato, lettuce, Swiss chard, basil, rosemary, sage, parsley, lemon balm, mints, hypericum and ginseng are vegetable and herb crops that are susceptible. Fruiting plants such as strawberry, raspberry and blueberry are sometimes produced under cover and are prone to powdery mildew as well.

Initial symptoms may appear as a chlorosis or discoloration of foliage as well as a leaf curl. As symptoms progress stunting and curling of leaves may be accompanied by necrotic patches as the disease takes a toll on the plant. Inspect plants for white-colored fuzzy mycelial growth on the upper and or lower leaf surfaces. Spores referred to as conidia can build up quickly under ideal environmental conditions. Temperatures between 62 - 72° F and relative humidity higher than 70% - 85% favor powdery mildew. Temperatures above 86°F will dry out spores, making conditions unfavorable for growth. The time from first infection until obvious symptoms are present ranges from 3-7 days.

Infections often occur in the spring and fall when cool nights followed by warm sunny

days create rapid temperature changes. Unlike many foliar diseases that require free moisture on plant surfaces for disease development, powdery mildew is inhibited by these conditions. Wind is the primary means of dispersing spores, (conidia), which live for 7-8 days. Powdery mildew is an obligate parasite, meaning it needs a live plant host to survive. It overwinters as mycelium or cleistothecia on dormant or dead plant tissue. Thorough sanitation and removal of weeds between crop productions can reduce future infections. Begin scouting as soon as new shipments of plant material arrive. Scout on a weekly basis. If possible, carefully remove and bag infected leaves so they can be disposed of off-site to limit the spread. Scouting should include both leaf surfaces, stems and buds. Excess nitrogen can encourage the development of powdery mildew and certain other diseases. Monitor crop nutrition to keep fertilizer levels in the optimum range for each crop. Record fertilization applications and review regularly to avoid excessively high or low nitrogen levels in plant tissue. Cultural practices that reduce powdery mildew infection and spread include good air circulation, timely and proper plant spacing, and managing relative humidity. Avoid rapid temperature changes that may increase relative humidity.

For susceptible plants, GGSPro recommends preventative foliar applications of properly labeled fungicides. Growers have a variety of products to choose from, some of which are OMRI listed for organic production. Some perform better with a surfactant. Consult the GGSPro Insecticide and Fungicide Options for Edible Crops bulletin for detailed information. Read and follow all pesticide label directions.

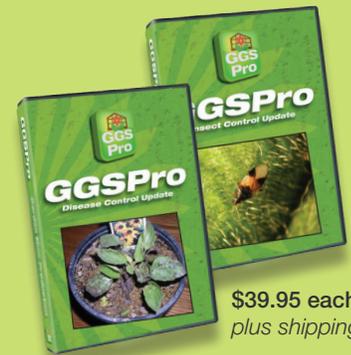
Photo Caption: White web like mycelia growth on lettuce and rosemary.



Insect and Disease Control Posters and DVDs

Informative DVDs discuss identification and control of insect and disease problems.

Quick reference posters assist growers in the proper selection of disease and pest control products and how to use them effectively.



3 pc poster set - 18"x 24"
\$39.95 - plus shipping

GGSPRO provides prompt, practical & accurate technical support in understandable terms to growers to enhance crop quality and profitability.

For more information or to order visit GGSPRO.com or call 1.800.659.4346

Managing Highly Alkaline Irrigation Water



New fertilizer formulations offer plant nutrition and help manage water quality.

By Fred Hulme, Everris

Ornamental growers have long struggled with managing growing media pH. Maintaining correct growing media pH is critical for many crops especially if production time is greater than six to eight weeks. Today, numerous popular crops have difficulty absorbing iron — especially when pH levels in their root zones are high. High root-zone pH can tie up micronutrients, especially in crops with a high demand for iron, such as petunias. When media pH rises excessively, micronutrients become less available and young leaves on affected plants turn chlorotic (Figure 1). Unfortunately, many growers of such crops often treat the resulting high pH symptoms by applying high concentrations of chelated iron instead of proactively managing the underlying cause — the growing media with high pH levels itself.

“The most frequent cause of high root-zone pH is poor irrigation water quality, especially high total alkalinity or bicarbonate levels that can cause media pH to skyrocket over time,” said Chris Buchheit, marketing manager for Everris’ ornamental horticulture nutrition products. “Highly alkaline water can also clog injectors and drip lines with calcium carbonate deposits. Current practices to manage high alkalinity are complicated, costly and can potentially create liability issues.”

Defining Water Types

The first step in managing alkalinity in water is to determine how alkaline the water really is. Table 1 shows how Everris defines typical water types, likely root-zone pH management issues and suggested remedies. Irrigation waters with high total alkalinity (Types 3 and 4) are very common, especially in non-coastal USA areas. Additionally, Type 2 water is widespread throughout the entire United States, and it can often benefit from some acidification depending on a grower’s crop or cropping system.

Growers who find themselves in a situation with highly alkaline irrigation water tend to fall into three groups:

- Some growers don’t acidify their irrigation water and allow their crops to suffer from root-zone pH rise (iron deficiencies). They have to accept poor plant quality and the resulting lost profits.
- Other growers wait until they observe obvious deficiency symptoms before they react. They ignore water alkalinity and allow growing media pH levels to rise too high, treating symptoms with higher concentrations or frequent applications of chelated micronutrients.
- Still other growers test their water and devise management programs that include the following elements:
 1. Consider alternate water sources with lower alkalinity levels.
 2. Fight growing media pH rise by using fertilizers with higher potential acidity values (listed on fertilizer labels).
 3. Set up acid injection systems.
 4. Modify lime charge in growing media.

“All these strategies have downsides,” Buchheit said. “Growers who ignore the problem and suffer economically may do so because a simple, easy to- implement solution isn’t available. Those who ignore the high alkalinity but treat the symptoms on selected crops must scramble to apply additives like chelated

iron sprays. This makes their fertilizer programs more costly and complicated — especially when they grow a variety of crops that react differently to rising pH levels in growing media. Those growers who take the trouble to test water and devise a management system still could be taking on additional costs, complexity, labor and potential risk.”

(Article continued on pg. 11)

Table 1: Water Types and Management Suggestions

Water Types	Alkalinity Level	Issues/Suggestions for Managing
Type 1	Very Low: 0 to 60 ppm	Pure water — use of acidic fertilizers will likely result in low root-zone pHs. Select neutral or potentially basic fertilizers.
Type 2	Moderately Low: 60 to 150 ppm	Moderate buffering — select fertilizers that fill nutrients gaps. Some crops/ situations may require more acidifying fertilizers.
Type 3	Moderately High: 150 to 200 ppm	Moderate to high buffering — Many crops/situations may require more acidifying fertilizers and/ or acid injection.
Type 4	Very High: 200 to 240+ ppm	Excess buffering — for best result consider injection of mineral acid.



Photo Caption: Micronutrient deficiency due to high growing media pH.

New Fertilizer Formulations

Growers need to simultaneously provide proper nutrition for their crops and manage irrigation water alkalinity (maintaining growing media pH control). Sometimes these two goals may be at odds, and meeting one objective can often compromise the other objective. For example, using fertilizers with high potential acidity to maintain an acceptable growing media pH range may be a viable option for water types with alkalinity levels below 150 ppm. The key word here is "potential," as the acidification happens over time as plants take up these fertilizers and the roots themselves acidify the soil. The plant must actively uptake nutrients for this action to occur. These fertilizers have a higher content of ammoniacal (NH₄⁺) and urea-based nitrogen, and their use may not always be desirable depending on crop stage and time of year as high NH₄⁺ nitrogen can lead to lush soft growth.

Sometimes highly alkaline waters are calcium deficient, but the only way to add calcium is to add a potentially basic fertilizer. Unfortunately using a calcium-containing fertilizer with this type of water will further contribute to rising root-zone pH levels whenever it's applied.

Acid injection causes other issues. It can be complicated to mix, corrode equipment, require the use of protective equipment, create handling and storage hazards and increase costs.

Furthermore, commonly used acids such as phosphoric and sulfuric acids are not always compatible with all fertilizer formulations, often contributing significant levels of sulfur or phosphorus that can compromise nutritional programs.

To address this issue, Everris has recently developed Peters® Excel pHLow®, a new water soluble fertilizer line using technology based on PekAcid®, a proprietary raw material invented by its parent company (ICL) that helps manage high alkaline waters. This unique component is a pure, highly acidic, non-corrosive white crystalline raw material that contributes significant levels of phosphorous and potassium, is highly soluble, fast-dissolving, and when added in stock tank concentrate forms, phosphoric acid. It imparts active acidity properties to Everris' products that will reduce water alkalinity at the point of injection, reducing or eliminating the need to use mineral acid.

"The new Peters Excel pHLow water-soluble fertilizer line offers growers a complete, one-bag nutrient solution and an effective tool to help manage irrigation water alkalinity that's safer- to-use than conventional liquid acids," Buchheit explained. "These new products are available in a variety of nutrient formulations to match crop nutrients needs: Cal-Mag, High Mag and All Purpose. At the same time, they help manage moderate to high alkalinity water, therefore helping control growing media pH."

Buchheit says that Everris tested its new formulations on spring crops sensitive to iron toxicity — marigolds and geraniums, for example — to ensure that the active acidity would not cause any production problems. He says that Peters Excel pHLow treated plants achieved very high quality grades while maintaining acceptable growing media pHs even when higher alkaline water was used. Everris' research and development team also tested various formulations with different nutrient contents to determine their effect on reducing excess irrigation water alkalinity levels. Regardless of nutrient content, all Peters Excel pHLow formulations have roughly equivalent active acidity of 1/3 fl. oz. of 85 percent phosphoric acid or 0.4 fl. oz. of battery acid. These predictable reductions in alkalinity while fertilizing are significant enough to be used to manage growing media pH, but not too excessive to cause problems such as low media pH:

- Concentrations of 100-ppm nitrogen reduces total alkalinity by 19 ppm
- Concentrations of 200-ppm nitrogen reduces total alkalinity by 40 ppm
- Concentrations of 400-ppm nitrogen reduces total alkalinity by 72 ppm

According to Everris, products like Peters Excel pHLow can be a useful tool for growers who want an alternative to liquid acids, who use high ammoniacal nitrogen fertilizers or who are not currently doing anything to manage irrigation water alkalinity in Water Types 2, 3 and 4. For growers who are acidifying now, the use of this type of product should reduce or eliminate the amount of acid being injected. Additionally this type of treatment is well-suited for crops that require lower root-zone pH's. Obviously if water alkalinity levels are extremely high, acid injection remains the most viable option.

"This new technology gives growers a unique opportunity to tackle high water alkalinity management, a critical factor for growing success," Buchheit added. "Peters Excel pHLow is a reliable nutrition source that matches the needs of the plants they are growing. It's also an effective tool to help manage moderate to high alkalinity water — and it's a safer alternative to liquid acid."

Fred Hulme is technical services director for Everris, NA Inc.

Looking for more info on what's going on at Griffins...



Sign up for our

Email Blasts



To sign up for more Griffin info, specials and tips... go to www.griffins.com



Mini Maintenance Kits

The Perfect, Economical Solution for Dosatron Users

The New Mini Maintenance Kits were developed for the Dosatron user and grower who perform maintenance on a regular schedule. The kits can be used as often as necessary to ensure that your Dosatron injects accurately and runs smoothly.

The Kits are available for the 11, 14, 20, 40, and 100 GPM injectors and include:

- Recommended maintenance parts
- Dosa-Klean packet
- Dosa-Lube packet



DOSATRON®

WATER POWERED DOSING TECHNOLOGY

800.888.0054 • www.griffins.com

Special Savings

\$399.00

Usual price \$443.31

Discount price through 4/30/13

Promo Code: **SPRAYER**

DRAMM

BP-4 RECHARGEABLE BACKPACK SPRAYER

The Dramm BP-4 is a rechargeable, battery-powered sprayer that fits comfortably on your back. Operating at a maximum pressure of 140 psi, the BP-4 offers an adjustable pressure knob for flexibility in spraying. Using the high-pressure setting, the BP-4 atomizes spray solutions better than other backpack sprayers, ensuring excellent coverage. The battery-operated pump ensures even flow rates, perfect for even application of greenhouse chemicals. The BP-4 can run for up to 2 hours on a full charge and recharges overnight.

Item # **62-7005**



Model: BP-4

Tank Volume: 3.95 gallons

Power Supply: 12 DC; rechargeable

Continuous spray time: 1 or 2 hrs

Weight empty: 11 lbs.