GRIFFIN GAZETTE

Vol. 43 | Issue 1 | 2026

PLANTING TO PROFIT
the power of container gardening workshops

SYNGENTA FLOWERS COMBOS
success without the guesswork

RESCUE IS NOT ALWAYS GUARANTEED
plan with protection

CLEAN CEA FACILITIES
grow better crops

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Welcome to the Griffin Gazette, delivering industry tips and insights from notable partners and experts.

In each issue, we bring you valuable knowledge, innovative strategies, and expert advice to help you stay ahead in your business. As a family-owned nationwide leader and distributor for more than 7 decades, Griffin Greenhouse Supplies offers resources, workshops, and training to help you build a thriving growing business with knowledge-sharing and caring.

As your single source supplier for all your horticultural needs, we invite you to join us as we explore and serve industry expertise and empower your journey of growth and success.

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1.800.888.0054

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Brookhaven, NY
Schenectady, NY
Perrysburg, OH
Morgantown, PA
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COVER PHOTO:
Kwik Kombo Playa Blanca Mix from Syngenta Flowers

GriffinExpo

SAVE THE DATE

WEST EXPO
August 26-27, 2026
Grand Sierra Resort, Reno, NV

EAST EXPO
September 10, 2026
Lancaster Marriott at Penn Square, Lancaster, PA

From PLANTING TO PROFIT:

the power of container gardening workshops

Grow customer loyalty and revenue in four easy steps!

By Hannah Sadosky, Retail Education Manager

Did you know hosting workshops at your garden center is a business strategy for increasing sales? Let's look at how to execute workshops that push profits and drive overall revenue.

STEP 1: Choose a Workshop Topic That Sells

It's important to keep in mind that it's not just about choosing an idea—there's a strategic science behind workshops to ensure success. Container gardening workshops are among the easiest to execute and directly connect to your business. These workshops are appealing to both new and experienced gardeners.

For example, an Herb Planter Workshop where participants can pick, plant and take home their own herb garden. During the workshop, attendees can learn about different herbs, discover how to infuse them into different meals or refreshing drinks, then plant their own herb planter to take home. By learning about your extensive herb and plant selection, customers build confidence through a learning experience. They'll then look to your garden center for the best selection. That's why when your workshop theme aligns with your business, you set the stage for profitability.

STEP 2: Build Sales Into the Experience

When deciding on a workshop theme, establish clear goals for your workshop. What other products in store can you showcase and upsell? You may choose to demonstrate planting techniques and recommend gloves, specific soils, tools, or plants available in-store. This reinforces that your garden center is a trusted resource, especially when showcasing the extensive selection of high-quality plants, products and new varieties that surpass what's available at box stores. Focus on workshops that promote your high-margin products, such as container gardening with premium containers or organic fertilizers. Plan and align discussion topics with items you want to sell more of.

STEP 3: Create an Engaging, Hands-On Workshop

When carving out your workshop, be sure to choose the right instructor. The right instructor has not only expertise, but enthusiasm! This increases the likelihood that attendees will purchase the supplies used during the workshop and come back to attend workshops in the future. Seal the workshop experience with hands-on activities that leave them with a finished project—like a container garden!

STEP 4: Promote Smartly and Price with Purpose

Market your workshop through social media and in store; price it to cover costs while remaining attractive. Offering free workshops may sound like a great idea, however, you may consider charging a small fee. Even charging $5 helps to hold consumers accountable. Some garden centers offer prepaying to reserve their spot by simply calling into the store; this increases the likelihood of both customer attendance and a profitable workshop. Other ideas to increase revenue from workshops is offering exclusive discounts to attendees on products to encourage immediate sales. Many garden centers encourage attendees to return by offering coupons for future use.

THE BOTTOM LINE

Well-executed workshops can significantly boost your garden center's profit margins. Focus on topics that promote your products, create engaging experiences, and turn attendees into loyal customers for sustained growth. It's essential that the workshop you develop aligns with your garden center's business goals and showcases your extensive range of product offerings. Emphasize your garden center's value and variety—make sure customers understand that you are the go-to resource for the best plants and gardening supplies.

CONTAINER WORKSHOP *idea zone*

01

Planning a BBQ, party, or cooking at home? Join our Backyard Herb Garden workshop to plant and discover the easiest herbs to grow and cook with! Perfect for elevating your meals and impressing your guests. Don’t miss out on this fun, hands-on learning experience!

02

Join us in the greenhouse for an exciting garden center workshop! Discover our extensive selection of plants and learn how to grow the tastiest salads. Whether you're choosing your favorites or experimenting with unique flavors to spice up your meals, this is the perfect opportunity to get inspired and start your gardening journey.

03

Join us in the greenhouse for Toddler & Me Herb Planting! Bring your little ones for a fun, hands-on gardening adventure. Perfect for parents and tots to learn, play, and grow together!

RETAIL PRODUCT *Special*

ORDER YOUR CONTAINERS TODAY

and start planning your workshop tomorrow!

11" 1.4 GAL. SIMPLE STONE HERB WINDOW BOX SLATE

Item #: 82930017
Vendor #: CTI
CP/UOS: 32
Sell Price: $3.20
Special: $2.82

9" 1 GAL RODEO SQUARE PURPLE HAZE

Item #: 82930103
Vendor #: CTI
CP/UOS: 46
Sell Price: $1.58
Special: $1.39

SYNGENTA FLOWERS *Combos*

SUCCESS WITHOUT THE GUESSWORK

By Lauren Kilpatrick, Technical Trial Manager

Today's consumers demand convenience without compromise, driving the popularity of ready-made combination planters. Shoppers are drawn to mixed containers that deliver instant visual impact and season-long performance, eliminating the guesswork of pairing together compatible plants. They want confidence that their purchase will thrive throughout the season, transforming patios and porches into vibrant living spaces with minimal effort. Syngenta Flowers Kwik Kombos™ and, the new Patio Playbook Guide, remove the guesswork with ready-made mixes for retail programs designed to help growers produce, and retailers sell winning combinations that meet the needs of their customers.

COLOR FOR EVERY SEASON

This ready-made retail program features single-species and multi-species combinations, tested and selected for matching uniformity and longevity. Kwik Kombos™ pull from top-performing Syngenta Flowers genetics that make growing plants and profits easy while providing simplicity in the greenhouse and excitement at retail. There are close to 80 curated mixes organized by color category for consistent programming from early spring through summer sales. Choose from Bright & Bold, Coastal Hues, Jewel Tones, Monochrome Blends, Primary Colors, and Red, White and Bloom to create a cohesive color palette program across all seasons and any region in North America.

COLOR FOR EVERY SEASON AND EVERY REGION

Photos: Syngenta Flowers CAST Display, Gilroy CA, 2025

PROVEN PERFORMANCE

Built on top-performing Syngenta Flowers genetics, each mix is also rigorously tested and selected for uniformity, compatibility, and season-long performance. Our trialing process starts at propagation, here varieties are evaluated together as multi-liners to confirm they can be produced successfully in the same cell. Mixes are then transplanted outdoors for summer long garden evaluation trials, where we assess balance, vigor, and visual impact under real-world conditions. Only combinations that maintain uniformity and appeal throughout the entire growing season advance to commercial Kwik Kombos™ status.

Shown in this article are a couple of standout New Introductions that performed well in the 2025 Summer Trials

Example of freshly stuck and hydrated 2 and 3 component multi-liner Kwik Kombos™ trays.

Pictured above, is Playa Blanca™ Mix a fabulous late-season monochrome mix with fun texture following the classic "Filler, Thriller, and Spiller" combo recipe for dramatic appeal.

Lucas Greenhouses, NJ WK 30

Pictured left, Dekko™ Rosé Rhapsody™ Mix – A mid-season combo with three of our favorite Dekko varieties. We love our Dekko petunias for their exceptional garden performance. Shown in this article are a couple of standout New Introductions that performed well in the 2025 Summer Trials

Colorado State University, CO WK 32

And lastly, pictured here, Surfside Sunrise™ Mix. A refreshing mid-season combo with my all-time favorite bullet proof verbena, Lanai® Green Apple.

Raker-Roberta's, MI WK 32

GROWER RESOURCES FOR COMPLETE PRODUCTION SUPPORT

Our commitment to delivering high-quality, well-balanced mixes is also supported by a range of comprehensive grower resources. We have updated and created several new technical resources that make growing Kwik Kombos™ even easier.

Kwik Kombos™ Culture Guide provides comprehensive growing instructions from propagation to finish.

READ MORE

Multi-Liner Kwik Kombos™ Production Techniques delivers key production information including propagation tips and timing guidance.

READ MORE

Kwik Kombos™ Production Methods: Multi-Liner vs. Single-Liner Strategy Tech Sheet that compares both strategies, examining their impact on efficiency, crop quality, and overall costs.

READ MORE

These resources are designed to equip growers with the knowledge and techniques needed to deliver successful Kwik Kombos™ programs that impress at retail and post-consumer purchase.

INTRODUCING THE PATIO PLAYBOOK: INSPIRATION AND FORMULAS, READY TO GO

This concept differs from Kwik Kombos™ multi-stuck liners by having you propagate vegetative and seed components separately before transplanting them together into a single container for finishing. We've created an inspirational guide that provides ready-to-execute winning container combinations, taking the guesswork out of mix design. Featuring a curated lineup of MVPs (most valuable plants) from the Syngenta Flowers portfolio from dynamic annuals and dependable mums to hardy perennials and premium foliage. Each page delivers strategic insights, proven formulas, and the inspiration you need to create eye-catching, season-long performers. Designed for performance, simplicity, and visual impact, the Patio Playbook equips you with game-changing combinations that drive consumer demand and deliver a championship season. Visit our online Patio Playbook Guide here:

READ MORE

So, stop guessing! Choose from these ready-made retail program, tested and selected for matching uniformity and longevity so you can be sure your combo makes customers say “I am a gardener.”

For complete culture information, tools and resources, please visit https://www.syngentaflowers.com/ams/. Be sure to sign up for our emails so you can stay up to date on the latest news, events and culture recommendations!

Lauren Kilpatrick is a Technical Trial Manager for Syngenta Flowers North America.

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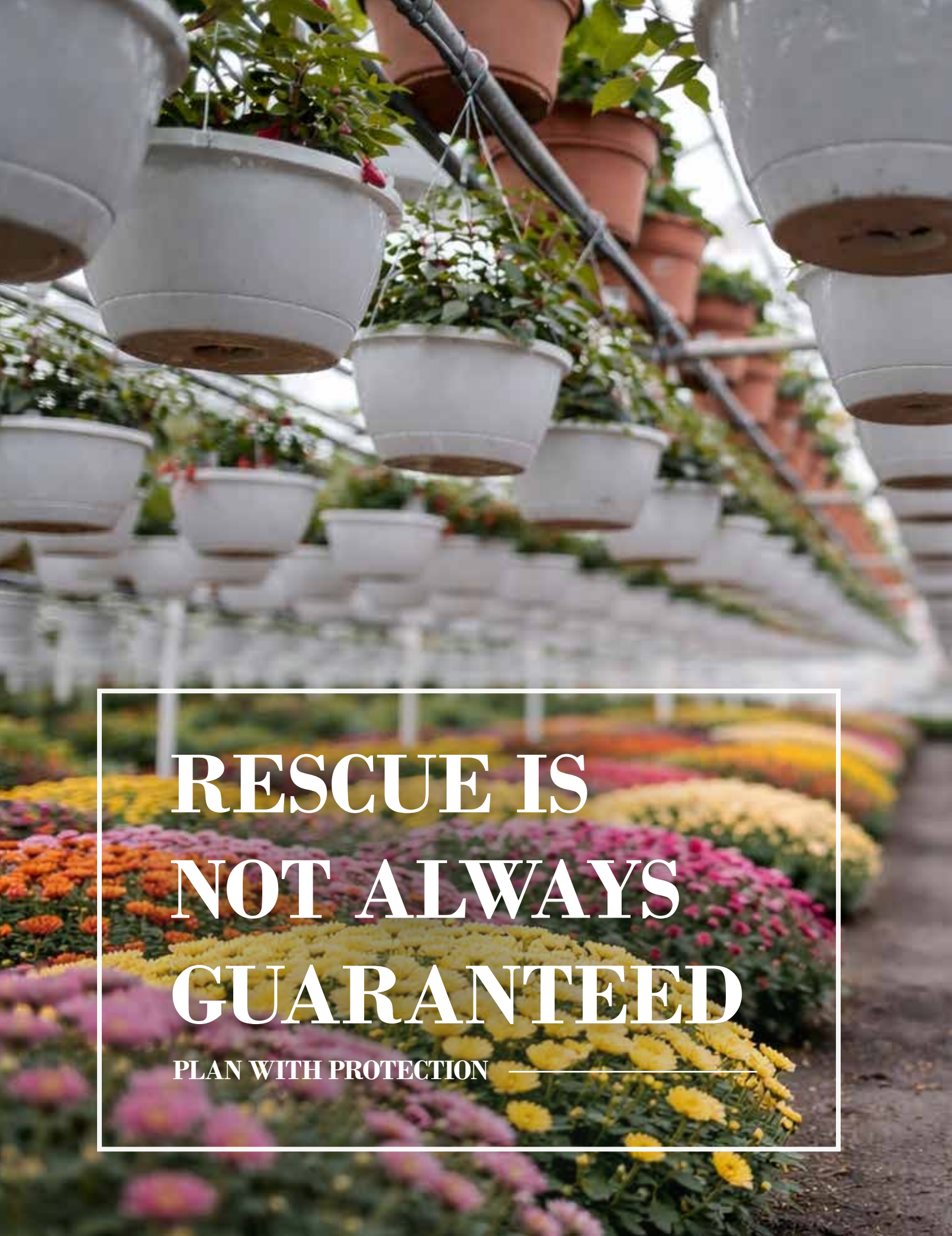
RESCUE IS
NOT ALWAYS
GUARANTEED
PLAN WITH PROTECTION

By Karen Stever, Ph.D., GGSPro Technical Specialist

Early spring ornamental crops are maturing in the greenhouse at this time of year, whether you are in the East, West, North, or South. It may even be close to shipping time in warmer climates. Too often, scouting is pushed to the back burner when the foliage fills in, providing shelter and ample feeding opportunities for pests (Figure 1). Discovering an infestation of aphids, thrips, whiteflies, or mites during the shipping process is one fire no grower looks forward to putting out.

Mid or late-season drenches are cheap insurance to prevent pest outbreaks that can disrupt sales or shipping. What to apply and when can be dependent on your historical and regional pest issues. Available drench products are not sufficiently effective to rid a crop of mealybugs and are no longer recommended. Spider mites and broad mite species are also not controlled by a “come from behind” drench application. Kontos is the only drench product that provides protection against common mite species as well as aphids and thrips. As such, a Kontos drench must be applied early, typically as soon as plants are rooted in post-transplant. A spray program is typically the best approach for both mealybugs and spider mites – please contact GGSPro to assist you with an effective spray schedule to clean up active infestations for these challenging pests.

Figure 1: Full greenhouse - abundant opportunities for pests to hide and feed.

This article will focus primarily on aphid and thrips control as they are the two primary targets for preventative greenhouse drench applications. There are a handful of routes that end with these pests taking up residence in your crops. The first is that they get routed directly to the greenhouse on starting rooted and unrooted material (Figure 2). “Dipping” incoming plant material is a very good way to mitigate this risk. *See Griffin’s January 2026 Insider Article on dipping or call GGSPro for more information regarding dip options and procedures.*

The second route for pest migration to crops is from the floor to the foliage. Aphids can harbor on basically any weed present in the pre-season greenhouse. To compound the situation, aphids don’t need to mate to reproduce, so it only takes the presence of one female to start colonization of the crop. Even after baskets are hung, aphids can form wings to fly up and multiply on clean material, where thorough spray coverage becomes considerably more difficult. Thrips hold over in the cracks and crevices of the floors or benches as the pupal stage. Once the heat is turned on in preparation for new crops, the development of the pupae speeds up, and a new population of adults moves from hiding places to active growing areas. Reach out to GGSPro for inter and intraseason sanitation strategies to help keep your production spaces clean before and while plants are present.

Figure 2: Thrips infestation due to non-treated starting material.

Figure 3: Aphid populations quickly rising with increasing temperatures and rapid plant growth.

The last route of entry occurs later in the spring, when average temperatures are quickly on the rise. Thrips are brought in on air currents from warmer climates to our south. Aphids are also transported in by the movement of overwintered plants, the landscape, and people's hands or clothing. Mid- to late-season drenches can prevent these pests from getting a foothold in the greenhouse either through protection or knocking back low populations (Figure 3).

Selection of the best drench product depends upon a number of factors, beyond the identity of the invading pest. For blooming plants, the time between the application and the sales period should be considered. Products in Mode of Action (MOA) 4A, also known as "neonicotinoids / neonics", are recommended as early to mid-season products for the protection of pollinators. These chemicals, Flagship 25WG and Safari 20SG, should be positioned primarily for aphid control. Based on grower input, we no longer have high confidence in the active ingredient Imidacloprid (another common MOA 4A) for aphid control. When applied as a drench, most MOA 4A active ingredients can last for around 5 weeks or more in flowers. As such, these products should be avoided when the time to sale is approaching at least 5 weeks or less. Altus with MOA 4D is a more selective cousin of the neonicotinoids listed above. It is acceptable to use Altus later in production, depending on the level of the population. Heavy colonies of aphids or emergency treatments at the time of shipping call for foliar sprays.

Aria WDG (MOA 29), Endeavor WP (MOA 9B), and Mainspring (MOA 28) provide additional modes of action for drenching. Aria WDG or Endeavor WP have the best safety profiles for late-season drenches with regard to pollinators and beneficial insects used in production. Aria WDG has traditionally been used in rotation as a foliar spray option, and we are still gaining experience on how to use it most effectively as a drench application. The active ingredients of these products rise quickly in the plant, but the actual death of the pest may take a few days upon ingestion of the active ingredients. Kontos (MOA 23) is slow to rise through the plant, making it best utilized for early to mid-production for aphids.

Thrips protection by drench application must be planned for, because of the products we have available and their described characteristics. The products that can be used in a drench application for thrips include Kontos (MOA 23), Mainspring (MOA 28), and Mainspring Xtra (MOA 4A + 28). Note, these products control both aphids and thrips. Each of these products has a relatively long period of expected control and a similar residual impact on pollinators, although they are not quite as efficient in entering the flower tissue as with leaf tissue. Kontos will require 2-3 weeks to reach the top of the plant and will control pests for about 5 weeks after that. The Mainspring formulations will reach active growing points of the plant within a few days and will help protect against pests for up to 8 weeks. From an economic standpoint, it is important to time drench applications (i.e., apply them early enough) so we maximize the number of weeks that the grower receives pest protection. As a drench, a product's "cost in use" (CIU) is assessed using application rate, volume applied per container, and residual. We encourage you to work with GGSPro to understand your drench strategy's CIU and see how proper timing, pollinator safety, and adequate protection can be achieved while saving you profit dollars.

Integrating different modes of action for drench applications allows for planned, season-long control of nuisance pests such as thrips and aphids. Remember, drenches work best on well-rooted plants. Ensure your production schedule incorporates enough time for plant establishment (e.g., 2-3 weeks) and utilize foliar sprays to provide protection leading up to the drench applications as well as while the chemical is being taken up by the plant (i.e., generally around 1 week for most pesticides). As always, read the label completely to ensure proper rates in both how you mix the chemical and how much is applied per container – both are equally important to ensure efficacy, residual, and plant safety. The drenching sections of pesticide labels are often 'uniquely written', or in other words, hard to interpret. GGSPro is here to assist you in understanding pesticide labels clearly and making calculations precisely to prevent waste.

Lost fertilizer is lost profit.

Traditional topdress fertilizers can fail in inclement weather or during transport. Tipped pots mean wasted fertilizer, labor, and money. The molecular bonding technology in Osmocote Fusion bonds the nutrient prills to the soil, keeping them in place in the event of a tipover. This means less waste, stronger growth, and a healthier bottom line. Don't take a chance—stick with Osmocote Fusion.

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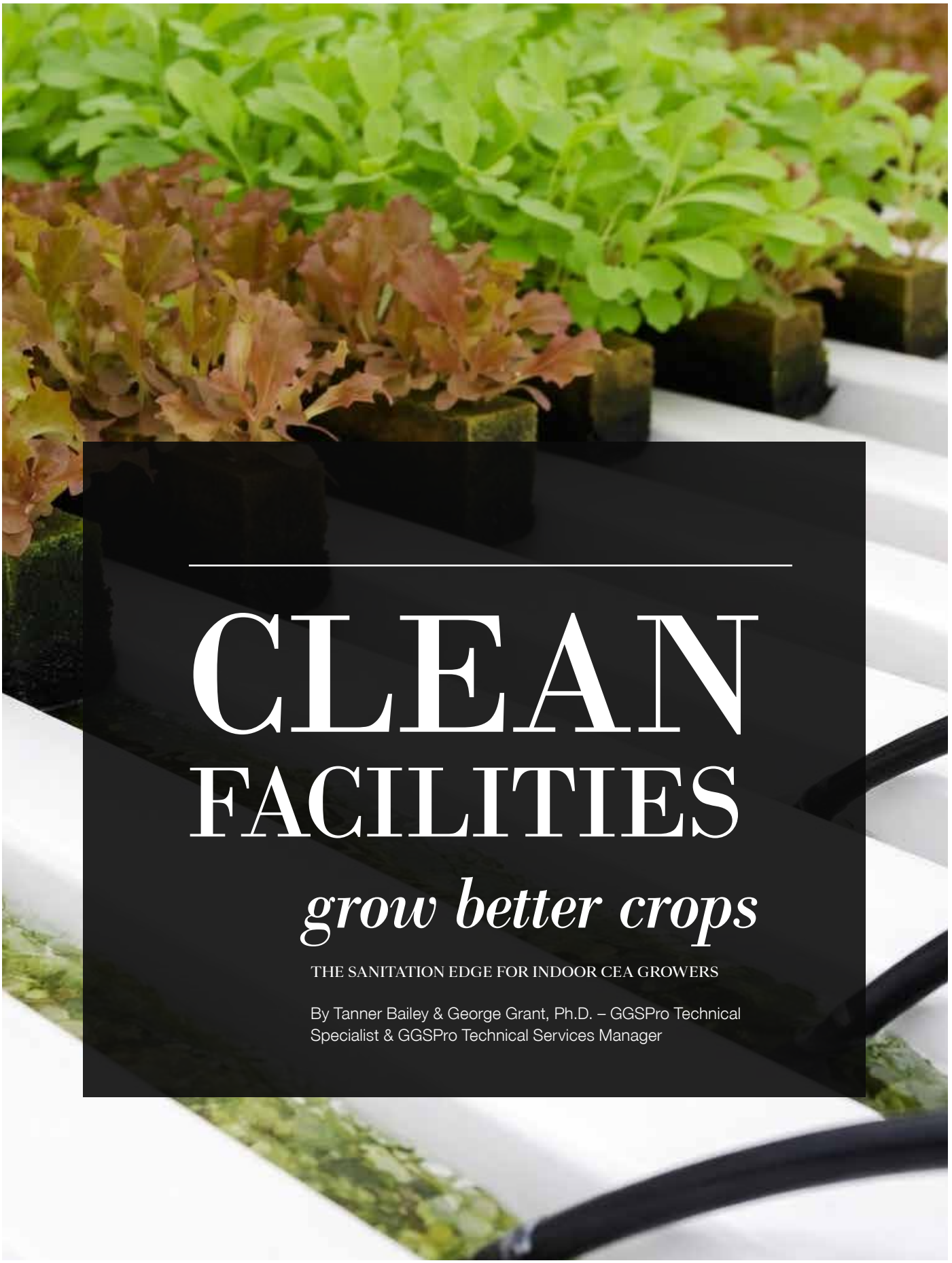

CLEAN FACILITIES *grow better crops*

THE SANITATION EDGE FOR INDOOR CEA GROWERS

By Tanner Bailey & George Grant, Ph.D. – GGSPro Technical Specialist & GGSPro Technical Services Manager

Indoor edible and medicinal crop production is all about control. We control light levels, temperature, air movement, CO_2, irrigation timing, and nutrition. That level of control is what makes CEA so powerful. But it also means one weak link can show up fast and spread even faster. That weak link is often sanitation.

For indoor growers, cleanliness is not just about looking professional. It is about protecting plant health, keeping crops consistent, and avoiding the kind of problems that force you to spend extra labor and money later. A clean facility helps crops start stronger, finish cleaner, and stay on schedule. One of the biggest reasons sanitation matters in CEA is because everything is close together and often connected. Plants sit in tight spacing, production zones share air and water systems, and people move between rooms all day long. In that environment, algae, plant pathogens, and insects do not have to travel far to become a facility-wide headache. Moreover, it can be difficult to isolate or compartmentalize these issues once they appear. A small issue in a wet corner can turn into a bigger problem when it spreads through standing water, clogged drains, dirty tools, or contaminated carts and trays.

A lot of growers think sanitation means grabbing a sanitizer and spraying it everywhere. That seems like the fastest path, but it usually leads to disappointment. Sanitizers are not built to work through grime, slime, and fertilizer residue and effective sanitation is not a one-step process. “Sanitizers” work best when surfaces are already clean. If you spray a sanitizer onto a dirty bench, the product hits the mess first and never makes good contact with the surface underneath. That is why the strongest sanitation programs follow the same basic process: remove debris, clean and rinse, then sanitize.

It starts with the simplest step, and the step most teams try to rush. Physical cleanup is where real sanitation begins. Old leaves, plant scraps, spilled media, and standing water are not just “dirty”, they are hiding places. They protect pests and create breeding zones for algae, shore flies, thrips, fungus gnats, and microbes. Removing that material is the first way you reduce pressure before you ever mix a product. The best facilities treat this like a reset button between crop turns or between rooms, and they make it part of routine cleanup, not just a big shutdown event.

Figure 1. Algae and biofilm present in hydroponic lettuce production.

Once the debris is gone, the next step is true surface cleaning. This is where many indoor growers see the biggest improvement, because water alone does not remove the films that cause long-term issues. Fertilizer salts, hard water mineral scale, grease, algae slime, and microbial residue work in tandem to form layers on floors, benches, troughs, and walls (Figure 1). Those layers make your growing space harder to keep stable, and they reduce the performance of sanitizers applied afterward. That is where the use of a “cleaner” matters. Acid and alkaline based cleaners break down these residues so they can be rinsed away.

In greenhouse-style production spaces with good ventilation, an acid cleaner like **Strip-It PRO** or **GreenClean Acid Cleaner** is built for cleaning hard surfaces like benching, concrete floors, cooling pads, glazing, and gravel areas. In warehouse-style production and enclosed packing rooms, an alkaline cleaner like **AgH PRO** or **GreenClean Alkaline Cleaner** is commonly used for cleaning floors and other hard surfaces. These products also act as a degreaser for tools and equipment used during processing where sticky residues are abundant. Both categories of cleaners use the same common-sense approach: apply the cleaner at the proper rate, keep the surface wet for an adequate contact period, and rinse thoroughly with clean water. The rinse is a key step. If cleaning products are allowed to dry on the

surface, they can leave behind a visual film that collects dirt later and makes the next cleanup harder.

One sanitation area that gets overlooked in indoor farming is irrigation lines. A facility can look spotless on the outside but still struggle with plant inconsistency because the irrigation system is carrying problems. Over time, irrigation lines naturally build up biofilm. Biofilm is a slimy layer made mostly of bacteria that sticks to the inside of pipes and tubing (Figure 2). This sort of matrix can make it easier for algae and mineral scale to form and compound irrigation clogging issues. In many cases, it is one of the real causes behind uneven watering and moisture management headaches that seem to "never go away." That is why smart sanitation programs include irrigation line cleaning, especially between crop cycles. Using a line-cleaning treatment to break up biofilm, followed by proper flushing, helps reset the system so the next crop starts with clean water delivery.

Figure 2. Biofilm residue development in irrigation piping.

After surfaces and irrigation components are cleaned and rinsed, sanitizing becomes the finishing step. This is where products like **ZeroTol 2.0** and **SaniDate 5.0/12.0** come into play. They are stabilized peroxide-based sanitizers used on hard surfaces, pots, troughs, and irrigation systems to reduce microbial contamination and help prevent carryover between crop cycles. These products are popular in edible crop production because they break down cleanly and do not leave the kind of residues growers worry about. The key is using them at the right time, after cleaning, when they can make full contact with the surfaces you want protected. One way to increase coverage, consistency, and contact time on both horizontal and vertical surfaces is to utilize foaming equipment that applies compatible products as thick foam (Figure 3). **Dramm's Foam 8L** hand pump foamer can be used for precise application in hard-to-reach areas, or the **FM20 Foamer** can be used to treat large spaces quickly. Sanitizers are not meant to replace cleaning; they are meant to complete it. An innovative approach to irrigation line and reservoir maintenance is to outcompete biofilm and algae-forming microbes with beneficial microbes. **BioSafe's Liventia SOS** is new to the CEA world, but it is quickly building major success stories as a non-oxidizing tool that helps keep hydroponic systems cleaner while also providing increased yields through plant stimulation.

Many indoor growers also benefit from thinking beyond cleanup events and looking at water treatment strategies (e.g., Ozone, Chlorine, Cold Plasma, Hydrogen Peroxide/Peracetic Acid) that keep systems stable during production. Continuous treatment programs can help reduce biofilm growth, algae pressure, and slime buildup inside irrigation lines, reservoirs, and hard surfaces that come in contact with water/fertilizer. This is especially useful in long-cycle production systems or operations that fight recurring wet-zone issues around drains, floors, and irrigation manifolds. It is important to manage how and where sanitizing products are injected, since oxidizers do not always play nicely with fertilizer inputs. In those cases, the location of injection points, use of contact vessels, and an efficient way of monitoring sanitizer concentration within the system and what is reaching the crop should all be considered well ahead of time.

Sanitation is not the most exciting part of indoor farming, but it is one of the most profitable when done right. It protects the crop, reduces the chance of expensive surprises, and keeps facilities running more smoothly. When growers build sanitation into the rhythm of production, they spend less time reacting and more time producing. The message is simple: clean first, rinse well, sanitize to finish, and your crops will show the difference.

Figure 3. Cleaner being foamed on greenhouse wall.

GROWSCAPE

RECOGNIZED BY APR AS

RECYCLING DEMAND CHAMPION

The Association of Plastic Recyclers is an international non-profit and the only North American organization focused exclusively on improving recycling for plastics. Their mission is to improve all aspects of the plastic recycling process to create a sustainable business for recyclers that minimizes plastic waste, greenhouse gas emissions, and natural resource extraction.

APR Recycling Demand Champions Program, supported by the Recycling Partnership, recognizes companies that commit to long-term use of North American post-consumer recycled plastic (PCR). Using recycled plastics, especially Post-Consumer is a critical “pull” factor for a healthy recycling system.

Companies with Recycling Demand Champion distinction are not only helping keep plastic out of landfills and the environment—they’re strengthening North American demand, encouraging investment in high-quality, certified PCR, and supporting the shift toward a more circular economy. Demand Champions are required to have an active commitment to PCR use.

Growscape is the first in the horticultural industry to receive this distinction. We’re grateful to every Growscape team member for making this achievement possible and helping us lead the way toward a more sustainable future.

In staying rooted toward our goals, we are proud to incorporate both Post-Consumer and Post-Industrial recycled plastics. Growscape ensures sustainability in everything we do, from strategic partnerships to confidence in our commitments, and progress in sustainable innovation.

ABOUT GROWSCAPE

Growscape unites The HC Companies and Classic Home & Garden, merging decades of expertise in horticultural manufacturing and decorative gardening innovation. With a comprehensive portfolio that spans growing containers, decorative planters, garden décor, and protective packaging, Growscape serves greenhouse, nursery, retail, commercial, and consumer markets across North America.

Dually headquartered in Twinsburg, Ohio and Shelton, Connecticut, with manufacturing and distribution facilities throughout the U.S. and Canada, Growscape is driven by a shared mission to deliver innovation, excellence, and customer-focused solutions at every step, guided by a strong sense of environmental stewardship. At the heart of everything Growscape does is a deep-rooted commitment to sustainability through thoughtful product design, development and eco-efficient operations.

At Growscape, sustainability isn't just a goal —it's a guiding principle, and we are proud to lead the horticultural industry forward with practical innovation, eco-efficient manufacturing, and a deep respect for our planet.

We understand that for our partners to thrive, the planet must thrive, too. That's why we're committed to delivering products and solutions that help growers, retailers, and homeowners succeed —without compromising the environment we all depend on.

Every day, we are dedicated to our shared future that sustains our planet and communities. We continue to shape a more sustainable horticultural supply chain by prioritizing:

- Zero virgin petroleum-based plastic content in all products, which are fully recyclable or degradable.
- 50% reduction in our operational carbon and water footprints.
- Circular economy practices that reduce waste and increase recyclability.

These aren’t aspirations – they are active goals backed by decades of action, innovation, and accountability.

CHELATED VS SULPHATE MICRONUTRIENTS:

understanding
availability
and iron stability

Micronutrients are required in small quantities, but their availability plays a critical role in plant growth and crop quality. Choosing the micronutrient form — particularly sulphates versus chelates — can significantly affect nutrient solubility, compatibility in nutrient solutions, and plant uptake.

This article provides an overview of chelated micronutrients, explains why chelates are often preferred over sulphate forms, and highlights the potential risks associated with mixing sulphate and chelated micronutrients, with a particular focus on iron.

WHAT ARE CHELATED MICRONUTRIENTS?

Chelated micronutrients consist of a micronutrient ion bound to an organic molecule known as a chelator. This chelating agent surrounds the micronutrient in a stable structure that protects it from reacting with other ions in the growing medium or nutrient solution.

This protection prevents micronutrients from precipitating, oxidizing, or becoming immobilized — reactions that can occur when micronutrients are supplied in non-chelated forms. Chelation improves the stability and plant availability of micronutrients such as iron (Fe), manganese (Mn), zinc (Zn), and copper (Cu).

WHY CHELATED MICRONUTRIENTS ARE MORE AVAILABLE THAN SULPHATES

Sulphate micronutrients dissolve in water but exist as free metal ions once in solution. These ions can readily react with phosphates, carbonates, or hydroxides, forming insoluble compounds that plants cannot absorb. These reactions become more common as pH increases, particularly above pH 6.0–6.5.

Chelated micronutrients remain protected from these reactions. The chelating agent keeps the micronutrient soluble and available across a wider pH range maintaining consistent nutrient availability.

IRON: THE MOST COMMONLY CHELATED MICRONUTRIENT

Iron is the micronutrient most frequently supplied in chelated form because it is highly sensitive to pH and oxidation. As pH increases, iron readily converts into forms that are poorly available to plants, leading to deficiency symptoms even when total iron levels appear sufficient.

Chelated iron protects iron from oxidation and precipitation, making it beneficial for greenhouse production, hydroponic systems, and high-pH media.

CHOOSING THE RIGHT IRON CHELATE BASED ON PH

Not all iron chelates perform equally. Chelate stability — and therefore iron availability — is strongly influenced by root-zone pH.

CHOOSING THE RIGHT IRON CHELATE BASED ON PH

Iron Chelate	Relative pH Stability	Typical Use
Fe-Edta	Lowest	Stable Between pH 1.5 - 6.5
Fe-Dtpa	Moderate	Stable Between pH 1.5 - 7
Fe-Eddha	High	Stable Between pH 3.5 - 10

PLANTEX® IRON CHELATES: A SOLUTION FOR GREENHOUSE GROWERS

For greenhouse growers, incorporating Plantex® Iron Chelates into their nutrient program ensures the availability of iron, even in challenging soil conditions.

Plantex® Iron 11% DTPA is ideal for a pH up to 7, ensuring that iron remains in a soluble, plant-available form preventing and correcting deficiencies under mildly acidic to slightly alkaline conditions.

Plantex® Iron 6% EDDHA is top choice for high pH situations. Featuring a strong ortho-ortho isomer, it provides exceptional stability up to pH 10, ensuring reliable iron availability where uptake would typically be limited.

Both products are easy to integrate into any fertility program and can either be applied to the soil as a drench or to the foliage as a fine spray. For best results, mix thoroughly with water until fully dissolved.

COMPATIBILITY RISKS WHEN MIXING SULPHATES AND CHELATES

Using sulphate micronutrients alongside chelated micronutrients can introduce compatibility challenges. Free metal ions from sulphates — particularly copper, zinc, and manganese — can displace iron from its chelate. When this occurs, iron may precipitate and become unavailable to plants.

Depending on pH and solution conditions, this exchange can result in iron losses of 20–50%, increasing the risk of iron deficiency. To reduce this risk, chelated forms of manganese, zinc, and copper are recommended whenever chelated iron is used.

PLANTEX® NUTRITRACE CSM FERTILIZER

Plantex® NutriTrace CSM Fertilizer is a water-soluble fertilizer mix of chelated secondary micronutrients which can be used as a preventative supplement or as a corrective application where known deficiencies exist. By supplying micronutrients in a chelated form, growers reduce the risk of precipitation and maintain availability of those nutrients for plant uptake.

KEY TAKEAWAYS

Chelated micronutrients improve availability by protecting nutrients from precipitation and oxidation. Plantex® Iron Chelates and Plantex® NutriTrace CSM Fertilizer are key tools for greenhouse growers looking to prevent deficiencies and manage micronutrients in their crops. By incorporating these highly effective products into their nutrient programs, growers can ensure their plants have access to necessary nutrients for healthy growth and optimal yields.

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