

# GROWER NEWS

YOUR VOICE IN THE SPECIALTY CROP INDUSTRY

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SPRING 2025 | VOLUME 29 | NO. 1



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GROWERS ASSOCIATION

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A publication of the  
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“THE FARMER IS THE ONLY MAN IN OUR ECONOMY WHO BUYS EVERYTHING AT RETAIL, SELLS EVERYTHING AT WHOLESALE, AND PAYS THE FREIGHT BOTH WAYS.”

- JOHN F. KENNEDY

Spring has once again arrived in Georgia, and for those of us in the fruit and vegetable business, that means long days in the field, late nights managing logistics, and the satisfying sight of fresh produce making its way to market. It's a time of renewal and reward – and we hope this year brings a new focus on Georgia grown fresh produce.

While you're hard at work on the farm, your team at GFVGA is working for you. Our mission remains clear: to advocate for Georgia's fruit and vegetable growers, protect your interests, and push for solutions to the ever-evolving challenges our industry faces.

This year has already brought new opportunities and uncertainties with the Trump administration. Tariff discussions are once again taking center stage, with potential implications for both exports and input costs. GFVGA is monitoring these developments closely and ensuring our growers' voices are heard in Washington. We are actively engaging with the newly appointed Secretary of Agriculture Brooke Rollins, who has already shown a strong interest in specialty crop agriculture. We're encouraged by early conversations and are working to educate the Secretary and her team on the unique needs of Georgia's fruit and vegetable industry.

Our challenges remain, and in some cases, have intensified. Unchecked import volumes continue to bulldoze domestic produce and pricing. Input costs, especially labor, remain at an all-time high. Yet even in the face of these disadvantages, Georgia growers remain diligent and determined.

As we move through this season, know that GFVGA is at the table, in the meetings, and in the field—doing the work to support you. Our strength comes from your engagement and the unified voice of our members across the state. Thank you for trusting us to represent you, and for your continued support of Georgia's fruit and vegetable industry.

Wishing you an abundant harvest this season.

**Austin Hamilton**

Southern Valley Fruit & Vegetable, Inc.  
GFVGA President



Austin Hamilton, President  
Georgia Fruit and Vegetable Growers  
Association



# JOIN GFVGA'S PARTNERSHIP FOR GROWTH

The Partnership Program provides our industry champions with the opportunity to support the work of the Association beyond annual membership dues. The success of our educational, legislative, and marketing efforts is contingent on these investments by corporate partners, businesses, and individuals.



**georgia fruit & vegetable**  
GROWERS ASSOCIATION

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## SECRETARY OF AGRICULTURE ROLLINS VISITS GEORGIA



As lawmakers in Atlanta were busy at work during the 2025 Legislative Session, newly confirmed Secretary of Agriculture Brooke Rollins stopped for a visit to learn more about Georgia's number one industry. Rollins has previously served as general counsel and policy director to Texas Governor Rick Perry before serving as acting director of the United States Domestic Policy Council during Donald Trump's first presidency.

Raised on a farm in Glen Rose, Texas, Rollins is no stranger to agriculture, having received her B.S. degree in agriculture development from Texas A&M before receiving a Juris Doctor degree from the University of Texas.

Hosted by Georgia Commissioner of Agriculture Tyler Harper, Rollins met with leaders from both the Georgia House of Representatives and Senate. Senate Agriculture Chairman Russ Goodman presented Rollins with a letter signed by Lieutenant Governor Burt Jones and Senators addressing the rising H-2A wages and the devastating impact they are having on Georgia farmers.

The Senate letter highlighted the critical need for H-2A reform due to the staggering 31% increase in the Adverse Effect Wage Rate that Georgia has experienced in just the last three years. These increases are estimated to cost Georgia growers over \$250 million in increased wages. This



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wage gap leaves Georgia growers on an unlevel playing field with foreign competitors and continues to lead to increases in imported fruits and vegetables from Mexico and Central America. These increases have led to an unprecedented agricultural trade deficit that threatens our ability to produce the food that feeds our country.

Following her visit to the Capitol, Rollins led a roundtable discussion with agricultural leaders from across the state including fruit and vegetable growers. These discussions covered a wide range of topics including trade issues and the need for agricultural research with the key roles that our land grant universities play in bringing new technologies to the farm. Disaster funding was also discussed, with Rollins reassuring the group that payments would begin in the near future.

Bill Brim of Lewis Taylor Farms appreciated the visit from Rollins and echoed the need for H-2A reforms. “As we head into another growing season, Georgia farmers need relief from wages that are leaving us at a competitive disadvantage. The H-2A program is critical to our success but it has become unsustainably expensive to participate in. We have to make changes to the program because it is the only reliable labor source we have.”

Sporting a “Support the Farmer - UGA” hat, Rollins promised to take the message back to Washington that Georgia growers are asking only for a level playing field and fair wages. We look forward to continuing to work with Secretary Rollins to bring about meaningful change for Georgia’s fruit and vegetable industry.





# GFVGA LAUNCHES REDESIGNED “EVERY BITE COUNTS” ON PRODUCE BITES WEBSITE

The Georgia Fruit and Vegetable Growers Association (GFVGA) is excited to announce the launch of a redesigned “Every Bite Counts” feature on their Produce Bites website.

As part of an ongoing effort to make the website more engaging and easier to navigate, this important section has undergone a major redesign, featuring streamlined content and an updated visual style.

The primary goal of the redesign was to streamline navigation for visitors. Now, the important information in the ‘Every Bite Counts’ section can be accessed on a single landing page where visitors can effortlessly click through to each content area, enhancing their browsing experience and encouraging deeper exploration of the site.

“The updated ‘Every Bite Counts’ section is more than just a functional improvement—it’s a complete evolution of the user experience,” said Samantha Kilgore, CMO, GFVGA “By creating a seamless navigation flow and revamping the design, we’re excited to help our visitors discover the essential role of Georgia-grown produce.”

“We’re proud of the work we’ve done in reimagining this part of the website,” said Brooke Holman, Account Director, TPI “The design improvements are intended to not only make the site more intuitive but also more visually compelling – helping to better communicate the organization’s mission and encourage consumers to visit their favorite grocery stores to find Georgia grown fruits and vegetables.



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# Produce BITES

This update to the “Every Bite Counts” section is just one step in an ongoing campaign to elevate the Produce Bites platform. GFVGA and The Partnership look forward to continuing to enhance the website’s functionality and design to further promote the benefits of fresh, locally grown produce.

“Agriculture is the number one industry in Georgia, and fruits and vegetables contribute over \$1 billion to Georgia’s economy.” said Chris Butts, Executive Vice President, GFVGA. “This new refreshed site will help us tell our story of how every bite of fresh fruits and vegetables impacts our local community, our economy and our health.”

For more information, visit <https://producebites.com/every-bite-counts/>.



## LOCALLY GROWN, LOCALLY LOVED

# IS YOUR OPERATION IN COMPLIANCE WITH THE NEW AGRICULTURE WATER RULE?

BRENDEN ST. JOHN, FOOD SAFETY SPECIALIST, PRODUCE FOOD SAFETY SERVICES A SERVICE OF GFVGA

Just a couple of weeks ago on April 7, 2025 the fresh produce industry quietly gained another FSMA Produce Safety Rule component as the Agricultural Water Rule went live. This final rule went into effect for “large” farms defined by produce sales more than \$500,000.00, respectively.

Also known as Subpart E - Ag Water of the FSMA Produce Safety Rule (PSR), this final rule has replaced the requirements of determining microbial quality criteria with frequent testing to instead implementing a high level, systems based assessment to be conducted at least once a year.

Factors to consider for the Ag Water Assessment include understanding the water source, distribution system, any conveyance system in between to water source and distribution to the crop, how the water is being used, any specific crop characteristics, how the crop is being grown, environmental factors, flooding potential and frequency, and UV exposure. There is even a section to collect “other information” which is where the industry can continue to conduct baseline water tests (which is recommended by GFVGA’s Produce Food Safety Services) to understand water quality.

The ultimate goal is to determine if your water is “of safe and of adequate sanitary quality for it’s intended use.” The FDA Ag Water Assessment Builder is a helpful tool to capture the results and make determinations for next steps.

The Rule describes agricultural water as water “used during growing activities for covered produce using a direct water application method, and water used for certain activities during and after harvest.” These activities would include washing, cooling, transportation, and handwashing.

If any of the three components of the agricultural water definition is not met, then the water as used is not agricultural water.

- Covered activities – Growing, harvesting, packing, or holding covered produce.
- Covered produce – Produce that is subject to the requirements of the PSR. The Rule covers most fruits and vegetables that are typically consumed raw, including items like apples, carrots, lettuce, tomatoes, berries, and leafy greens, mushrooms, and some nuts, as long as they are grown for human consumption and considered “raw agricultural commodities (RACs); produce that is usually cooked or processed before eating is generally not covered under the rule.
- Water applied to the crop in a way that is intended to, or is likely to, contact covered produce or food contact surfaces.

Several things impact pre-harvest water risks including the source of the water used (e.g., surface, well, municipal), how it is applied (e.g., overhead, drip, furrow) and when it is applied (e.g., at planting, during production, right before harvest).

The FSMA Produce Safety Rule requirements related to ag water used for sprouts and ag water used during harvest and post harvest activities have not changed with the roll out of Subpart E that relates to only pre-harvest ag water. Additionally, the Produce Safety Rule requirement to conduct the Ag Water Systems Inspection is different from the Ag Water Assessment described in Subpart E.

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**OTHER INDUSTRY RESOURCES:**

- FSMA PSR Ag Water Webinar with CONTACT’s Produce Safety Science
- FDA’s Requirements for Harvest and Post-Harvest Agricultural Water in Subpart E for Covered Produce Other than Sprouts

If you have any questions about the newly released Ag Water Rule or any other FSMA or market based food safety program, please reach out to Brenden St John at bstjohn@pfssinfo.com or 706.881.0456.

*Produce Food Safety Services is a service of The Georgia Fruit and Vegetable Growers Association providing nationwide consultation, food safety program development, training and education for fresh produce growers, packers, shippers & processors. Our professional food safety experts have the experience to work alongside an operation to create, train & help implement food safety programs that work. Find assurance through proven PFSS professionals with experience in PrimusGFS, GLOBALGAP, PrimusLabs, USDA, Produce Harmonized Standard, National Organic Program, and other audit schemes.*



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# THE WASHINGTON UPDATE

BY ROBERT REDDING, *GFVGA LOBBYIST, WASHINGTON, D.C.*

## **USTR Ambassador Testifies Before Congress on U.S. Trade Policy Agenda**

The U.S. Senate Committee on Finance and the U.S. House Committee on Ways and Means each recently held full committee hearings titled “The President’s 2025 Trade Policy Agenda” with U.S. Trade Representative Ambassador Jamieson Greer as a witness.

During the Senate Committee on Finance hearing on April 8, 2025, Ambassador Greer stated, “Our agricultural trade balance – which historically resulted in trade surpluses for our farmers – was in deficit the last two years of the Biden Administration and likely will take some time to recover.”

“One important driver of these negative trends has been unfair, unbalanced, and non-reciprocal trade. This includes the effect of higher tariffs imposed by other countries on the United States, the effect of non-tariff measures that promote other countries’ exports and obstruct U.S. exports, and other foreign economic policies favoring overproduction and degrading America’s manufacturing capacity,” he added.

## **GFVGA Supports Bill to Modernize the National Agricultural Statistics Service**

On March 25, 2025, Rep. Barry Moore (AL-01) and Rep. Don Davis (NC-01) re-introduced bipartisan legislation establishing a commission to modernize the National Agricultural Statistics Service (NASS). NASS statistics are widely used by groups looking for credible data to inform products, services, decisions, and outcomes. These groups include producers, insurance adjusters, commodity traders, federal agencies, and policy makers. The Georgia Fruit and Vegetable Growers Association signed in support of this legislation.

“Data provided by the National Agricultural Statistics Service is critical to help producers and stakeholders make informed decisions,” said Rep. Moore.

“Establishing a commission to modernize NASS’ function will help the Department of Agriculture improve data reporting, and increase producer response rates, while reducing survey fatigue among producers.”

“Producers across eastern North Carolina rely on data from the National Agricultural Statistics Service to improve their practices and make educated decisions for their farms,” said Rep. Davis. “The commission will provide complete and thoughtful recommendations on ways to modernize, which will provide USDA and our producers with more accurate data and a more engaging process.”

## **GFVGA Signs Letter to Support Uniform Pesticide Labeling Requirement**

The Environmental Protection Agency (EPA) recently opened a public comment period for feedback on a petition received from the Attorneys General of the States of Nebraska, Iowa, Alabama, Arkansas, Georgia, Indiana, Louisiana, Montana, North Dakota, South Carolina, and South Dakota. The petition requested the EPA to initiate rulemaking to clarify that statements on pesticide labels regarding health claims that are inconsistent with EPA’s finding would be false and misleading under federal pesticide law.

The Georgia Fruit and Vegetable Growers Association recently joined over 290 agricultural organizations in signing a letter to support the filed petition.

Their letter stated, “As organizations representing farmers, ranchers, retailers, co-ops, academics, manufacturers, and other pesticide users, we write to offer our strong support for the state attorneys general (AG) petition seeking rulemaking to modify the false or misleading statements subsection of the code of federal regulations (CFR) (EPA-HQ-OPP-2024-0562). Without rulemaking, we are concerned recent state actions requiring pesticide labels to carry language inconsistent with EPA safety findings will create a patchwork of false and misleading, and potentially mutually exclusive, state labels. The propagation of these labels not only risks disrupting commerce, but it could also confuse pesticide users and erode public confidence in science- and risk-based regulation. Rulemaking would significantly help to resolve these challenges, which otherwise are only likely to intensify.

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To that end, we urge EPA to grant the state AG petition and initiate rulemaking under 7 U.S.C. § 136v with respect to state labeling or packaging requirements for products subject to FIFRA.”

### **Farm Bill Update**

In December 2024, the U.S. House of Representatives and U.S. Senate passed a 1-year extension of Farm Bill programs at the same levels authorized in the 2018 Farm Bill. This extension will expire on September 30, 2025. U.S. House Agriculture Committee Chairman GT Thompson and U.S. Senate Agriculture Committee Chairman John Boozman have expressed their commitment to passing a new Farm Bill this year. The U.S. House and U.S. Senate Agriculture Committees have begun hosting informational hearings in preparation for Farm Bill discussions.

### **Agricultural Disaster Assistance Update**

Congress included agricultural disaster assistance in the final passage of the Fiscal Year 2025 (FY25) appropriations legislation in December 2024.

On March 3, 2025, U.S. Secretary of Agriculture Brooke Rollins announced the USDA's plan to distribute the agricultural disaster assistance passed by Congress late last year. “We are simultaneously working on rapid implementation of the \$20 billion in disaster assistance due to weather conditions outside your control,” Rollins said. “Unlike the previous administration, we are not going to delay for an entire year – and gone are the days of progressive factoring. No longer will you be required to hand in your tax returns.”

On March 10, 2025, a bipartisan group of U.S. Representatives and U.S. Senators sent a letter to Secretary Rollins, urging USDA to expedite the rulemaking process for the agricultural disaster relief funding. Additionally on March 10, a group of Democratic U.S. Senators sent a letter to Secretary Rollins to emphasize the importance of expediting the funding and expressing the need to specifically examine the effect on small farms when determining the process for administering disaster aid payments.

### **Make America Healthy Again Commission Letter**

On April 11, 2025, Republican members of the U.S. House of Representatives and U.S. Senate sent a letter to U.S. Department of Health and Human Services Secretary Robert F. Kennedy Jr., U.S. Department of Agriculture Secretary Brooke Rollins, and U.S. Environmental Protection Agency Administrator Lee Zeldin. The letter emphasized the importance of protecting the Make America Healthy Again Commission from various activist groups.

“We have concerns that environmentalists are advancing harmful health, economic, or food security policies under the guise of human health,” the letter continues. “Despite insinuations to the contrary, regular testing by FDA and USDA finds that more than 99% of all pesticide residues meet extremely conservative limits established by EPA according to the best available science.”



# GEORGIA AGRICULTURAL LABOR RELATIONS FORUM

## DEPENDABLE INSIGHTS IN UNCERTAIN TIMES

September 16-17, 2025 | Tifton, Georgia

# ICE RAIDS: GFVGA'S TOP 5 THINGS TO KNOW

In February of this year, GFVGA hosted the “Georgia Agricultural Operations Webinar: How to Prepare for ICE Raids & DHS Enforcement Action” with Fisher Phillips Partner, Cynthia Yarbrough. Chris Butts, Executive VP of GFVGA, moderated the session and asked Cynthia the tough questions for our members so they could be as prepared as possible for any interactions with the Immigration and Customs Enforcement (ICE) agency.

As immigration enforcement ramps up under new federal directives, growers across the Southeast are voicing concern over how to prepare for a potential ICE raid and how best to inform and protect their workforce. With many farms relying heavily on skilled seasonal labor from Mexico and Central America, any sudden enforcement action could upend operations and create serious legal and personnel impacts. Learning from the confusion and labor shortages experienced in 2012, growers must now proactively prepare for audits, investigations, and even workplace raids that can occur with little or no warning.

From understanding employee rights to ensuring internal compliance, here are GFVGA's Top 5 Things to Know:

## 1. Know the Difference Between a Raid and an Audit

- ICE raids involve immediate on-site enforcement and require a judicial warrant to access non-public areas or detain individuals. These warrants must give a specific scope of search and seizure.
- I-9 audits typically begin with a Notice of Inspection and give employers three days to respond. Do not waive your right to three days. Take the time to prepare with legal counsel and get any documentation in order.

## 2. Prepare Your Team and Assign a Point Person

- Designate an Immigration Point Person who is trained to manage interactions with DHS, ICE, CBP, or local law enforcement agents. Make sure employees know who this person is and how to reach them in an emergency.

## 3. Understand and Protect Employee Rights

- Under the 4th and 5th Amendment, employers and employees have rights, regardless of status.
- Employees have the right to remain silent and are not required to share immigration status or documents unless legally obligated. Employers should always avoid instructing employees what to say but may inform them of their rights.

## 4. If ICE Arrives, Validate the Warrant and Cooperate Calmly

- Always ask to see a warrant and confirm it is a judicial warrant, rather than an administrative one. Only permit agents to access areas and items within the warrant's scope and assign staff to accompany them throughout the facility for their entire duration onsite.

## 5. Document Everything and Contact Legal Counsel Immediately

- Keep detailed records of all agent interactions and seized items. Notify legal counsel as soon as possible. They don't have to be onsite to help but should be consulted right away.
- Fisher Phillips has an “Employers' Rapid Response Team” hotline that is available 24/7 in the event of an active ICE enforcement action. The hotline number is 877-483-7781.

The Georgia Fruit & Vegetable Growers Association is committed to staying up to date on these actions and will continue to monitor and communicate updates to members.

To see other webinar topics and information, please visit our “GFVGA Webinars” page under the “Events and Communications” tab on our website at [www.gfvga.org](http://www.gfvga.org).



# GRAFTING AS A TOOL TO ENHANCE VEGETABLE PRODUCTION

BY SUDEEP PANDEY AND ANDREW B. OGDEN

## Introduction

Grafting is an ancient agricultural technique, believed to have originated over 2,000 years ago in China and the Mediterranean region. Initially used in fruit trees, grafting has since been adapted to various vegetable crops to improve resilience and productivity. The technique gained popularity in vegetable production in the mid-20th century, particularly in Asia, as a response to soilborne diseases and environmental stress (Lee et al. 2010).

Grafting is a horticultural technique that involves joining the tissues of two plants, so they grow as a single unit. This practice has been widely adopted in vegetable production under adverse environments posing abiotic and biotic stresses to enhance disease resistance, stress tolerance, and overall plant vigor (Kyriacou et al. 2017). The ability to utilize traits of root physiological tolerance to stress independently of scion characteristics has facilitated the application of grafting. Research has shown that RNA, protein, and other small molecules can translocate from the rootstock to the scion, directly affecting scion physiology. This leads to enhanced vegetative growth, flowering, fruit quality, and higher yields (Davis et al. 2008). There are several types of grafting methods used in vegetable crops, including splice grafting, tube grafting, cleft grafting, and approach grafting. Each technique has specific applications depending on the crop and production system (Davis et al. 2008).

## Benefits of Grafting

Grafting offers numerous advantages for vegetable production, making it a valuable tool for modern agriculture. Some key benefits include:

- **Disease Resistance:** Many rootstocks are bred for resistance to soilborne pathogens such as Fusarium, Verticillium, and bacterial wilt, reducing reliance on chemical treatments.
- **Enhanced Stress Tolerance:** Grafted plants often show better adaptability to drought, salinity, and temperature extremes, leading to improved yields in challenging environments.

- **Increased Yield and Quality:** The use of vigorous rootstocks can enhance nutrient and water uptake, leading to higher fruit production and quality.
- **Extended Growing Season:** Grafted plants can start earlier in the season and remain productive for longer, allowing farmers to optimize their harvest cycles.
- **Reduced Chemical Input:** By increasing natural disease resistance, grafting helps reduce the need for chemical pesticides and soil fumigants, promoting sustainable farming practices.

Grafting is widely used in fruiting vegetables to enhance production efficiency. Grafting onto resistant rootstocks helps combat soilborne diseases and enhances vigor in tomato (Pandey et al. 2020). In watermelon and other cucurbit commercial production, grafting is used extensively to prevent Fusarium wilt and enhance drought tolerance (Coskun 2023; Reyad et al. 2021). Also, grafting improves resistance to bacterial wilt and root-knot nematodes in eggplant and peppers (Brezeanu et al. 2021). In cucumbers grafting provides protection against soilborne pathogens and enhances nutrient uptake (Bayoumi et al. 2021; Coskun 2023).

## Grafting for cold resistance in cucumber

Cucumber is an important vegetable crop in the United States, and its production in controlled environment agriculture (CEA) systems is increasing. The optimum temperature required for cucumber production is 26–30°C (80–85°F). Maintaining the optimum temperature in greenhouses during colder seasons increases energy costs for growers (Bhattarai et al. 2025). The parthenocarpic cucumber ‘Diva’ is one of the popular greenhouse cucumber varieties cultivated which is prone to cold stress as most of the other cucumber cultivars. Low soil temperatures affect plant growth due to limited water and nutrient absorption. Grafting onto cold-tolerant cucurbit

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rootstocks has shown potential to enhance cold resistance in cucumbers. Cold-tolerant cucurbit rootstocks could be used as a rootstock to reduce heating costs. One of the rootstocks is a fig-leaf gourd (*Cucurbita ficifolia*), also known as Malabar gourd, chilacayote, or shark fin melon, is a cool-season squash native to the high-altitude regions of the Andes Mountains, that grows well at a relatively low soil temperature (15°C) (Ahn et al. 1999; Tachibana 1988).

Tetsukabuto squash (*C. maxima* × *C. moschata*), also known as Japanese winter squash, a winter squash hybrid, is an excellent rootstock for grafting watermelon, melon, and cucumber, offering disease resistance. Additionally, as a winter squash, it may exhibit greater adaptability to cooler temperatures, enhancing the cold tolerance of grafted crops.

Recently, a study was conducted in the Controlled Environment Agriculture breeding lab at UGA, using both heterografts (cucumber grafted onto *Cucurbita* rootstocks) and self-grafts (cucumber grafted onto itself) to assess the impact of grafting on cold stress tolerance. The primary objectives of the initial study were to evaluate the effects of grafting on growth and physiological responses of cucumber under chilling stress conditions and to identify key genes and molecular pathways regulated in grafted plants exposed to low temperatures. By comparing heterografts and self-grafts, the study aimed to uncover the physiological advantages conferred by cold-tolerant rootstocks and elucidate the genetic mechanisms underlying improved stress resilience, ultimately providing insights into enhancing cucumber production in cool environments. Future studies will examine the impacts of grafting on yield of greenhouse cucumber grown at suboptimal temperatures.

## Grafting Protocol

**Pre-Grafting:** Scion (*Diva* cucumber) seeds are sown 5–7 days after the rootstocks (*Fig-leaf gourd* and *Tetsukabuto*) to ensure a proper stem size match at grafting. Seedlings are grown in trays under optimal conditions until ready for grafting.

**Grafting Procedure:** The grafting process begins with selecting a rootstock plant with a stem diameter similar to that of the scion. A precise angled cut (45–60°) is made just above one cotyledon, ensuring that the apical meristem is completely removed to prevent unwanted regrowth. The scion is then cut at a matching angle below the cotyledons, and its root system is discarded. The scion and rootstock are carefully aligned to maximize surface contact, secured using a grafting clip, and inserted into the growing medium.

**Healing Process (6–7 Days):** After grafting, plants are placed in a healing chamber or covered with humidity domes to create an environment with 100% relative humidity and 29°C temperature. Placing the plug tray into a solid bottom tray containing a small amount of water helps to promote humidity and reduce drought stress. Complete darkness is maintained for the first 24–48 hours to minimize water loss and promote graft union formation.

From days 3–7, plants are gradually introduced to light and humidity levels are slowly reduced by venting the healing chamber or dome. Careful monitoring is required to prevent wilting, which indicates excessive moisture loss, or stretching, which suggests insufficient light exposure. A well-regulated healing process ensures the scion and rootstock successfully fuse, leading to strong, healthy plants.



**Figure 1.** Grafting process (left to right): seedlings, grafting, grafted plants inserted in media, transplanting grafted plants in growth chambers.

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## Transplanting

Once healed, grafted plants are first acclimated to ambient conditions for 2-3 days and then transplanted with the graft union positioned above the soil line to prevent scion rooting, which could negate the benefits of grafting. Any suckers emerging from the rootstock must be removed to ensure the scion remains dominant. Grafted plants may require wider spacing to maximize growth and yield potential. Grafting clips should be removed approximately one week after transplanting and they can be disinfected and reused for future grafting cycles.

## Results

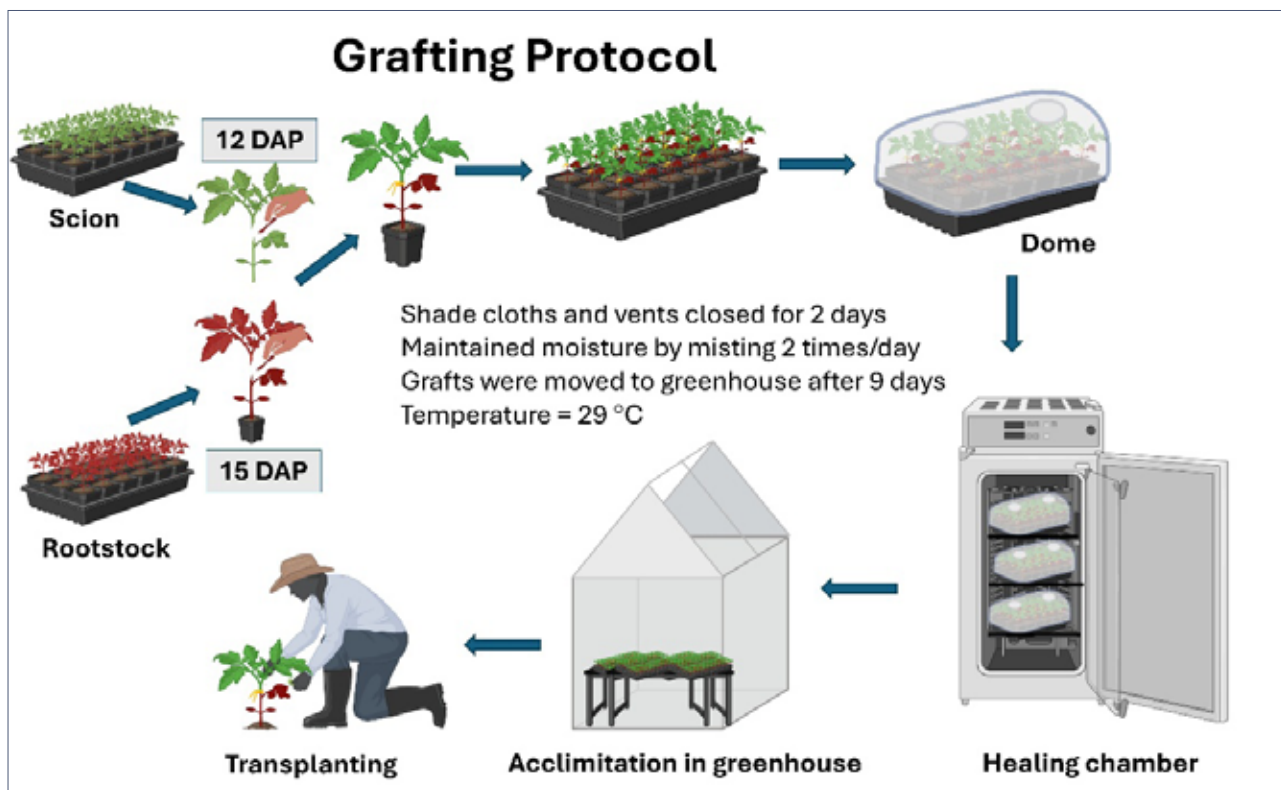
Our preliminary experiment evaluated grafted cucumber plants in three different growth chambers with temperature regimes of 12/7°C, 18/12°C, and 24/18°C, along with ungrafted *Diva* cucumber as a control. The plants were maintained under these conditions for 21 days, after which we collected leaf samples for transcriptomic analysis to assess gene expression changes under chilling stress.

A key observation from this preliminary study was the high mortality rate in the coldest chamber (12/7°C), indicating that grafting may not be suitable for extremely low temperatures. However, at 21 days, measurements of fresh weight and dry weight showed that cucumber plants grafted onto Fig-leaf gourd rootstock performed better than other grafting combinations and the ungrafted control. This suggests that Fig-leaf gourd provides enhanced physiological resilience under moderate chilling stress.

Based on these initial findings, we plan to conduct a full production-cycle greenhouse experiment to further evaluate grafting benefits under controlled environmental conditions. This expanded study will help determine the long-term effects of grafting on yield, stress tolerance, and overall crop performance.

## Conclusion

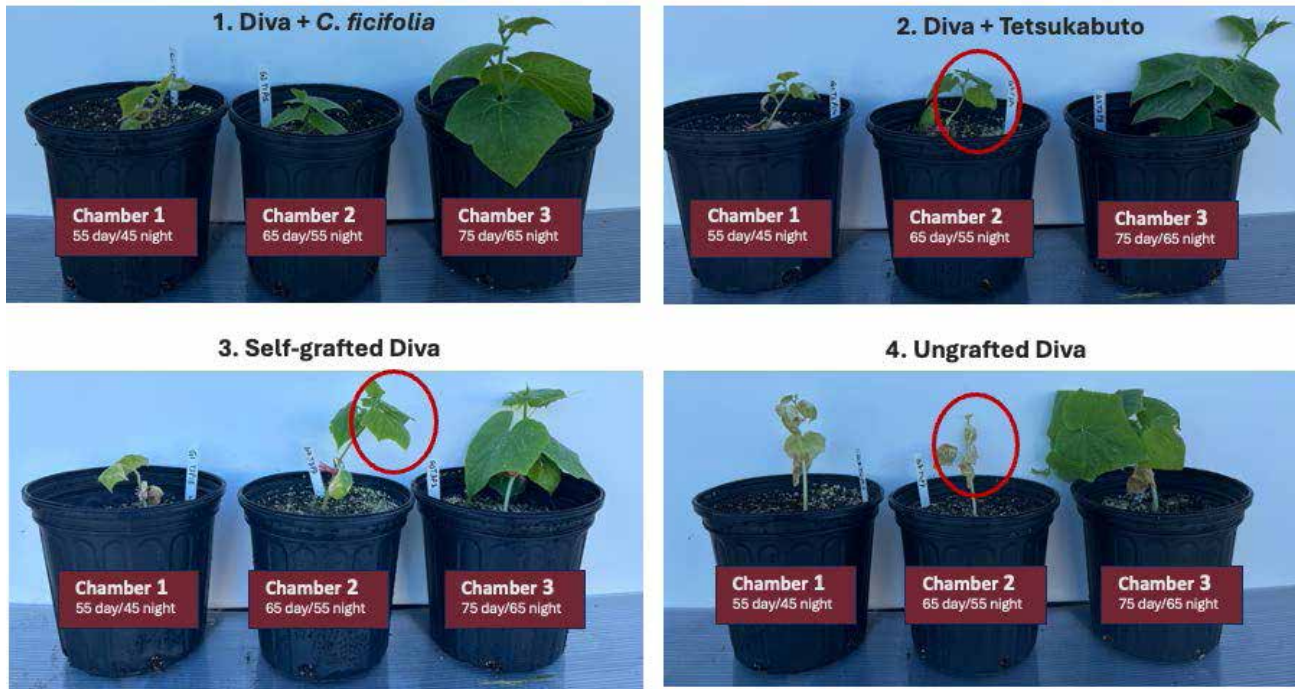
Grafting is most beneficial in environments where soilborne diseases, environmental stressors, or intensive production systems limit traditional plant growth. It is widely used in high-value crops such as greenhouse tomatoes and commercial cucurbit production. However, for small-scale growers, the cost and labor involved may not always justify its use



**Figure 2.** A schematic diagram representing grafting protocol.

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**Figure 3.** Performance of grafted and un-grafted Diva under the stress of three different cold temperatures after 21 days of exposure.

unless disease pressure is high or abiotic stresses are present. Additionally, compatibility between scion and rootstock varieties does show variation. In some instances, some rootstocks have been reported to reduce scion fruit quality (Devi et al. 2020). Therefore, growers are encouraged to review literature and consult with grafting experts before trying out untested rootstock/scion combinations. In conclusion, grafting presents a powerful tool for enhancing vegetable production, improving plant resilience, and ensuring sustainable farming. As technology advances, the technique is becoming more accessible, making it an increasingly viable option for growers worldwide.

## References

- Ahn, S. J., Im, Y. J., Chung, G. C., Cho, B. H., & Suh, S. R. 1999. Physiological responses of grafted cucumber leaves and rootstock roots affected by low root temperature. *Sci Hortic*, 81(4): 397–408.
- Bayoumi, Y., Abd-Alkarim, E., El-Ramady, H., El-Aidy, F., Hamed, E. S., Taha, N., Prohens, J., & Rakha, M. 2021. Grafting Improves Fruit Yield of Cucumber Plants Grown under Combined Heat and Soil Salinity Stresses. *Horticulturae* 2021, Vol. 7, Page 61, 7(3): 61.
- Bhattarai, K., Ogden, A. B., Pandey, S., Sandoya, G. V, Shi, A., Nankar, A. N., Jayakodi, M., Huo, H., Jiang, T., Tripodi, P., Dardick, C., Wasim Siddiqui, M., & Sajjad, M. 2025. Improvement of crop production in controlled environment agriculture through breeding. *Front Plant Sci*, 15: 1524601.
- Brezeanu, P. M., Brezeanu, C., Ambarus, S., Voda, A., Robu, T., Cristea, T. O., & Calin, M. 2021. The influence of grafting on yield and quality of peppers, eggplants, tomatoes and melons - a review. *Acta Hortic*, 1270 347–354.
- Coskun, Ö. F. 2023. The Effect of Grafting on Morphological, Physiological and Molecular Changes Induced by Drought Stress in Cucumber. *Sustainability* 2023, Vol. 15, Page 875, 15(1): 875.
- Davis, A. R., Perkins-Veazie, P., Sakata, Y., López-Galarza, S., Maroto, J. V., Lee, S. G., Huh, Y. C., Sun, Z., Miguel, A., King, S. R., Cohen, R., & Lee, J. M. 2008. Cucurbit Grafting. *CRC Crit Rev Plant Sci*, 27(1): 50–74.
- Devi, P., Perkins-Veazie, P., & Miles, C. 2020. Impact of Grafting on Watermelon Fruit Maturity and Quality. *Horticulturae* 2020, Vol. 6, Page 97, 6(4): 97.

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Kyriacou, M. C., Roupael, Y., Colla, G., Zrenner, R., & Schwarz, D. 2017. Vegetable grafting: The implications of a growing agronomic imperative for vegetable fruit quality and nutritive value. *Front Plant Sci*, 8: 264809.

Lee, J. M., Kubota, C., Tsao, S. J., Bie, Z., Echevarria, P. H., Morra, L., & Oda, M. 2010. Current status of vegetable grafting: Diffusion, grafting techniques, automation. *Sci Hortic*, 127(2): 93–105.

Pandey, S., Koirala, U., Acharya, P., & Shrestha, S. 2020. Management of Bacterial Wilt Using Grafting Technique in Tomato (*Ralstonia solanacearum*). *World J Agric Res*, 8(4): 129–133.

Reyad, N. E.-H., El-Sayed, S. F., & Azoz, S. N. 2021. Evaluation of grafting using cucurbit interspecific hybrids to control fusarium wilt in cucumber. *Plant Cell Biotechnol Mol Biol*, 50–63.

Tachibana, S. 1988. Cytokinin Concentrations in Roots and Root Xylem Exudate of Cucumber and Figleaf Gourd as Affected by Root Temperature. *Journal of the Japanese Society for Horticultural Science*, 56(4): 417–425.



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