



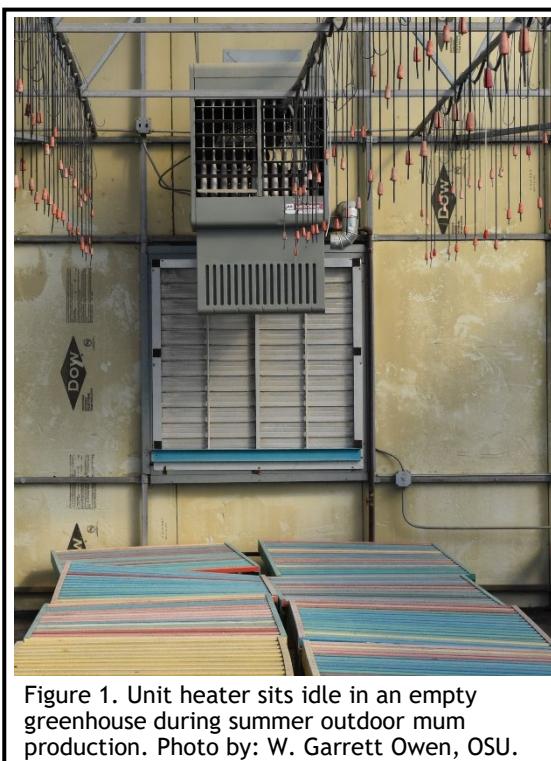
W. Garrett Owen¹
owen.367@osu.edu

Volume 14 Number 45 November 2025

Preseason Checklist for Greenhouse Unit Heaters

A quick preseason inspection of every unit heater in production and retail greenhouses helps ensure heaters will start, run safely, and protect crops during the winter.

Unit heaters in greenhouses and retail garden centers often sit idle from late spring through the fall (Fig. 1). During that period, dust, plant debris, and bird nests can accumulate. Staff may bump gas lines or wiring while moving carts or hanging baskets. Poly, shade cloth, and temporary partitions can be installed too close to the heater. Then the first cold night arrives, and everyone expects every heater to fire, run, and hold temperature. A heater that will not ignite can allow temperatures to fall several degrees before anyone notices, which can stress poinsettias, plugs, overwintered perennials, and early spring crops. A short preseason inspection in early November is one of the simplest tasks and a low-cost method to reduce emergency service calls, prevent combustion problems, and protect crops. The following considerations belong on your preseason greenhouse unit heater checklist.



2025 Sponsors



Funding the Future of Floriculture



P.L. LIGHT SYSTEMS
THE LIGHTING KNOWLEDGE COMPANY

Reprint with permission from the author(s) of this e-GRO Alert.

Confirm Location, Mounting, and Clearances

Start with the physical installation. Make sure the heater is still firmly attached to the truss, post, or wall bracket and that vibration or summer work has not loosened

www.e-gro.org

¹ Assistant Professor and Extension Specialist, The Ohio State University



Figure 2. Ensure the unit heater louvers are set so warm discharge air is directed into the production area. Photo by: W. Garrett Owen, OSU.



Figure 3. Verify the manual shutoff valve on the fuel line is open. Photo by: W. Garrett Owen, OSU.

hardware. Check clearances to poly, shade cloth, energy curtains, hanging baskets, and temporary plastic walls. Manufacturers specify minimum clearances to combustibles and to the discharge. If the discharge air (heated air) louvers are aimed directly at crops, thermostats, or a horizontal air flow (HAF) fan, adjust it so warm air is supplied to the production environment (Fig. 2) or retail space, not at one target. Blocked discharge causes the heater to run longer than needed, wastes fuel, and creates hot and cold pockets that later show up as uneven growth.

Verify Fuel Supply and Piping

Trace the fuel line from the heater back to the source. Confirm that manual shutoff valves are open (Fig. 3), accessible, and clearly labeled. Look for kinked, stressed, or dislodged flexible connectors. Inspect black iron piping for corrosion, especially near floors or areas that stayed wet over the summer. If you use propane, confirm that the tank has fuel, regulators are upright and protected from snow and ice, and that you can reach the tank during bad weather. If you smell gas, see damage, or suspect a leak, then stop and call your fuel supplier. Never bypass safety devices. Fuel problems in greenhouses can lead to incomplete combustion, excess moisture, soot, and in some cases plant injury from ethylene.

Check Electrical and Control Wiring

Unit heaters depend on low voltage control wiring and power to the motor and ignition system. Look for wires that have been accidentally pulled loose and tighten electrical connections (Fig. 4). Make sure the service switch is on and labeled. If you have multiple heaters on one zone, confirm that each thermostat is mounted where it senses representative air and is not in the heater discharge path. Thermostats influenced by heater discharge will short cycle and may not bring on backup stages.

Clean the Heater Cabinet, Fan, and Burner Area

Remove dust, leaves, insect parts, and plant debris from the heater cabinet, fan guard, and burner compartment (Fig. 5). Some growers place metal screens over the front of the heater cabinet to mitigate plant material, large insects, and birds from entering the heater, and these need to be cleaned too (Fig. 6). Dust on fan blades reduces airflow and the amount of warm air delivered to the production or retail greenhouse space. If the fan does not spin freely, service or replace the motor before winter. Open the burner compartment and check for insect nests, bird nests, or plastic films that were pulled in during ventilation. These are common in greenhouses that run with doors or vents open in summer or cover unit heaters while the greenhouse glazing material is removed (Fig. 7). Obstructions can disrupt the flame pattern and cause nuisance lockouts. Inspect heat exchangers for cracks (Fig. 8).

Inspect Combustion Air Stack Vent

Every fall, look carefully at the vent. Confirm that the vent stack is securely attached, properly pitched, and terminates outside the greenhouse (Fig. 9). Look for rusted sections, disconnected joints, or holes where flue gases could reenter the house. Seal gaps between the vent penetration and the greenhouse to reduce cold air infiltration. Heaters that do not vent correctly can spill combustion products into the greenhouse. This increases moisture and can introduce low levels of ethylene that injure crops.

Test Fire and Observe the Sequence

After mechanical checks, run the heater. Set the thermostat a few degrees above the current air temperature and watch the entire cycle. A typical sequence includes:



Figure 4. Inspect unit heater electrical wiring and connections to ensure no wires were accidentally pulled loose while the unit sat idle from late spring through fall. Photo by: W. Garrett Owen, OSU.



Figure 5. Example of a grower inspecting and cleaning each unit heater burner cabinet to ensure it is free of dust, leaves, insect parts, and plant debris. Photo by: W. Garrett Owen, OSU.

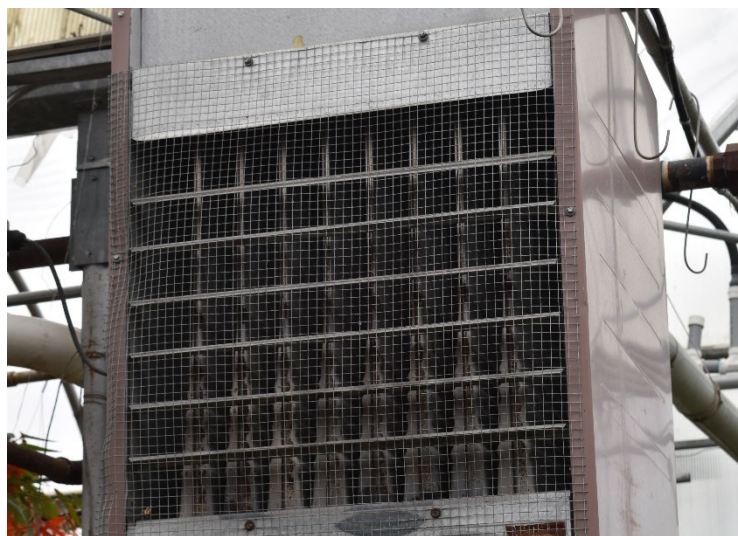


Figure 6. Wire screen placed over a heater to prevent birds from nesting when the heater is not used during late spring to fall months. Photo by: W. Garrett Owen, OSU.



Figure 7. Example of covering a unit heater during the summer months with poly when the greenhouse glazing material was removed. Growers should check the heater for any loose wires or connections or poly that has entered the cabinet. Photo by: W. Garrett Owen, OSU.

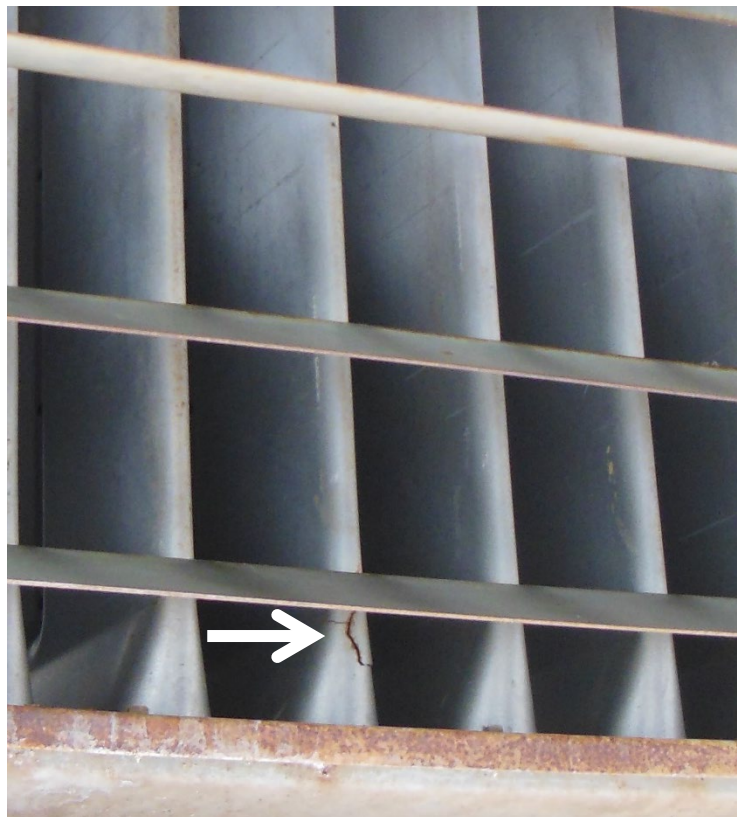


Figure 8. Example of a cracked heat exchanger that resulted in a crop challenge. Photo by: W. Garrett Owen, OSU.



Figure 9. Confirm that the vent stack of the unit heater is securely attached, properly pitched, and terminates outside the greenhouse. Photo by: W. Garrett Owen, OSU.

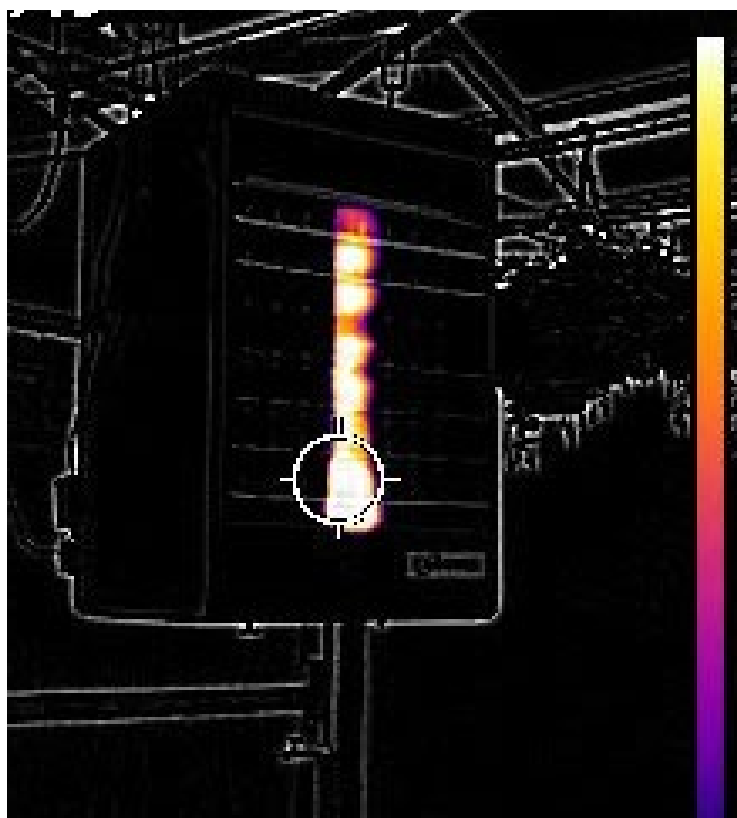


Figure 10. Thermal imaging is used to observe the unit heater's firing sequence during startup after a preseason check. Photo by: W. Garrett Owen, OSU.



Figure 11. After a preseason check, a retail garden center unit heater is ready to maintain stable temperatures that protect temperature-sensitive crops and support holiday events. Photo by: W. Garrett Owen, OSU.

thermostat calls for heat, ignition starts, pilot or main flame lights, main burner stays lit (Fig. 10), fan starts, heater runs to set point, burner shuts off, and fan runs out the residual heat. If you use two stages of heat, verify that both stages operate. If the heater fails to start, short cycles, produces a noisy or lifting flame, or the flame blows out when the fan comes on, document the problem and correct it now. Keep a tag or log at the heater with the model, serial number, date inspected, observations, and parts replaced. This makes future service faster.

Recognize Common November Problems

Many early season problems can be corrected before the first hard freeze. These include:

- Fan runs but burner will not ignite.
- Burner lights then shuts off after a few seconds, often due to a dirty flame sensor.
- Heater runs but cannot reach set point because discharge air is blocked by poly or carts.
- Visible soot or discoloration around the vent collar that indicates poor combustion or vent restriction.

Correcting these issues in November improves heater reliability when production and retail greenhouses are full.

Overall, inspect, clean, and test every unit heater before you need it. A short preseason checklist confirms the heater is mounted safely, supplied with fuel and power, vented correctly, and controlled properly. Heaters that start and run on the first cold night help maintain target temperatures, reduce condensation on crops and glazing, and protect crop quality. Doing this work in early November costs far less than an after-hours emergency call and better protects poinsettias, plugs, and overwintered perennials that cannot tolerate sudden temperature drops, while supporting smoother holiday events in retail spaces (Fig. 11).

e-GRO Alert

www.e-gro.org

CONTRIBUTORS

Dr. Nora Catlin
Floriculture Specialist
Cornell Cooperative Extension
Suffolk County
nora.catlin@cornell.edu

Dr. Chris Currey
Assistant Professor of Floriculture
Iowa State University
ccurrey@iastate.edu

Dr. Ryan Dickson
Greenhouse Horticulture and
Controlled-Environment Agriculture
University of Arkansas
ryand@uark.edu

Dan Gilrein
Entomology Specialist
Cornell Cooperative Extension
Suffolk County
dog1@cornell.edu

Dr. Chieri Kubota
Controlled Environments Agriculture
The Ohio State University
kubota.10@osu.edu

Heidi Lindberg
Floriculture Extension Educator
Michigan State University
wolleage@anr.msu.edu

Dr. Roberto Lopez
Floriculture Extension & Research
Michigan State University
rglopez@msu.edu

Dr. Neil Mattson
Greenhouse Research & Extension
Cornell University
neil.mattson@cornell.edu

Dr. W. Garrett Owen
Sustainable Greenhouse & Nursery
Systems Extension & Research
The Ohio State University
owen.367@osu.edu

Dr. Rosa E. Raudales
Greenhouse Extension Specialist
University of Connecticut
rosa.raudales@uconn.edu

Dr. Alicia Rihn
Agricultural & Resource Economics
University of Tennessee-Knoxville
arihn@utk.edu

Dr. Debalina Saha
Horticulture Weed Science
Michigan State University
sahadeb2@msu.edu

Dr. Beth Scheckelhoff
Extension Educator - Greenhouse Systems
The Ohio State University
scheckelhoff.11@osu.edu

Dr. Ariana Torres-Bravo
Horticulture / Ag. Economics
Purdue University
torres2@purdue.edu

Dr. Brian Whipker
Floriculture Extension & Research
NC State University
bwhipker@ncsu.edu

Dr. Jean Williams-Woodward
Extension Plant Pathologist
University of Wyoming
jwilwood@uwyo.edu

Copyright ©2025

Where trade names, proprietary products, or specific equipment are listed, no discrimination is intended and no endorsement, guarantee or warranty is implied by the authors, universities or associations.

Cooperating Universities



In cooperation with our local and state greenhouse organizations



Metro Detroit Flower Growers Association

