

What's Growing On?

BASTROP COUNTY MASTER GARDENER ASSOCIATION

February 2022

Please attend our spring plant sale on March 12.

We'll be featuring local-grown native milkweeds for the first time. Seed was harvested from plants raised as seed crops on Master Gardener property, in order to avoid impacting wild plant populations and upsetting local ecosystems.

There will be other native annuals and perennials, trees, shrubs and more.

See you there!

Hosted by the Bastrop County Master Gardeners

TAX-FREE

SPRING PLANT SALE

MARCH 12

BASTROP AREA LIVESTOCK SHOW FAIR ASSOCIATION
 Mayfest Park - 25 American Legion Dr.
 Bastrop, TX 78602
 9:00a-1:00p

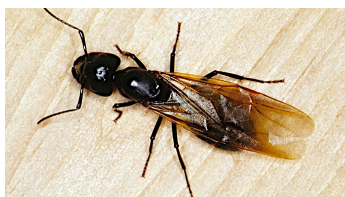


How to Identify Ant & Termite Swarmers

By Wizzie Brown

Soon it will be time for swarming insects to emerge out from their homes in the ground and fly into the air in search of a mate. Usually, this event coincides with warm temperatures and a significant rainfall event but can also occur if you forget to turn off your irrigation system.

“Swarmer” or “alate” are other terms used to describe the reproductive stage of ants and termites. These insects have wings when they initially leave the colony, but the wings are either shed or chewed off after they land on the ground and before they form a nest. So, how do you tell them apart?



Ant swarmers have antennae that are bent at a ninety-degree angle and are said to be “elbowed”. (Carpenter ant swarmer on left, courtesy of University of Nebraska.) The area where the thorax and abdomen meet, sometimes called the “waist”, is constricted,

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narrowed, or pinched. If you find a reproductive that still has wings—they chew off their wings once they have mated and land on the ground—the front wing will be larger than the hind wing and all wings will have few veins. If the wings are missing from the ant swarmer, there will not be a wing stub left on the thorax from where the wing was attached. Male ant swarmers retain their wings after landing on the ground, but they die after mating.

Termite swarmers have antennae that are straight and a thorax-abdomen area, or “waist”, that is broadly joined together. (Termite swarmer on right, courtesy of Mississippi State University.) Termite reproductive wings are similar in size and shape and tend to have a lot of veins. Sometimes with termites you may find only wings that have been left behind due to shedding when the termites land on the ground or you may see the termites themselves with or without wings still attached. If you find a termite reproductive without wings, there will be wing stubs, called “scales”, left behind on the thorax. Male and female termite reproductives shed their wings after landing on the ground, pair up, and find a site to begin a new colony.



For more information or help with identification, contact Wizzie Brown, Texas AgriLife Extension Service Program Specialist at 512.854.9600.

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New Website Features

Check out our website, which features project slideshows, a new photo gallery section, and an events calendar to check out upcoming activities. Find news articles and our newsletters. Thanks to Dave Posh for keeping the info timely for us <https://txmg.org/bastropcounty/>

Volunteering

Master Gardeners volunteer in the community to teach others about horticulture. We follow the research-based recommendations of Texas A&M AgriLife Extension. Members who complete 50 hours of volunteer service in the year after training earn the designation “Texas Master Gardener.” We use our title only when engaged in Texas A&M AgriLife Extension activities.

Setting up an Indoor Growing System

By Howard Nemerov

Previous articles—referenced in the endnotes—addressed how to successfully grow your own starts indoors. This article helps you select all the components necessary to have a working indoor growing system?

My earlier tomato starting article is a bit outdated, but covers basic equipment needs and discusses how to grow better starts.¹ The exception is lighting which was covered in a recent article.² I've converted to LED lights because they outperform fluorescents and are safer and cheaper. ***These plans are for shelves 4 feet long and about 18 inches deep.*** With these dimensions, you can fit three fixtures per shelf along with three 20-start nursery flats for maximum production.

Shelving

For best durability, consider a commercial grade, 5-tier steel shelving system with wheels for easy moving when necessary. The top tier is for storage, leaving you four growing shelves. During assembly, you can customize shelf heights with the included hardware. I have two shorter shelves for seed starting and flats of newer starts, along with two taller shelves for maturing starts (Figure 1).

Lights

I use two full-spectrum LED fixtures per shelf, with a red/blue fixture in the center. Plants use more red and blue light, but they use the entire spectrum to some extent. Growing with red/blue lights alone did not produce the best starts, and some species performed poorly under red/blue, resulting in lost crops.

The full-spectrum products on the right are examples.³ Performing a search on “LED grow light 4 foot” should return numerous results. (Master Gardeners must refrain from promoting specific products or companies.) Combining two 4-fixture sets of the full-spectrum example above with one set of red/blue fixtures gives you 4 full shelves.⁴

The good news with buying products like 4-fixture sets is that they often come with all the necessary mounting hardware, including adjustable hanging cables to control distance from plants and cables to connect fixtures in series, if desired.

Sample LED fixtures discussed here are not your only option. For me, buying decisions hinge on positive outcomes with technical support who willingly share technical data like output levels (PAR values) at varying distances from light to plant. Contact the manufacturer before investing to ensure you're getting quality products.

Sample questions to ask them:

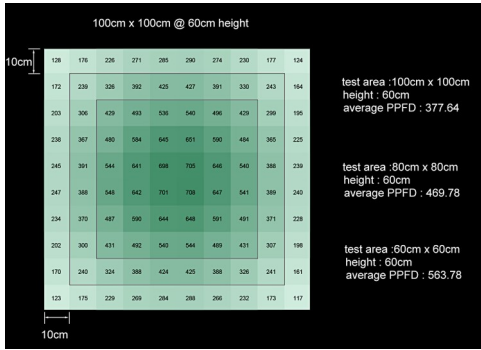
- May I obtain a spectrum analysis of your fixture?



Figure 1: Steel shelving with LED fixtures. Photo by Howard Nemerov

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- What are the PAR values at varying distances?
- Do you have a PPF graph for your fixture?



See my article on fluorescent versus LED lighting to understand these acronyms.⁵ Manufacturers should know these terms if they're selling quality LED lights.

Many LED offerings are square or rectangular, designed to cover an entire growing area with one fixture. For certain applications, these may be preferable. Figure 2 shows PPF at various distances from the center of a square fixture. Note the drop in intensity as you move towards the edges. This is true for LED strips, too: They are less intense towards the ends. The benefit of 4-foot strips is that this drop-off isn't as pronounced, providing better growth for the entire shelf. A good manufacturer will tell you light intensity at various heights, as in Figure 3. Figure 4 contains a PPF graph provided by the manufacturer upon request. While intensity drops off toward the ends, it's not as dramatic as the decrease shown in Figure 2. They also provided the width of their testing range, which shows why three fixtures per 18" deep shelf is better than two. I have found the 3-strip arrangement discussed above to provide sufficient light intensity for all my seedlings, be they tomatoes or flowers. Figure 4 also shows why lights should be less than 8" from plants for best growth, since PPF declines rapidly at greater distances.

Figure 2: PPF graph, courtesy of ATOP Lighting.

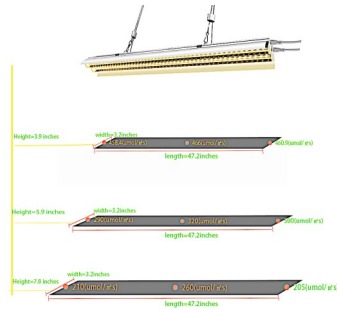


Figure 4: PPF graph, courtesy of Monios

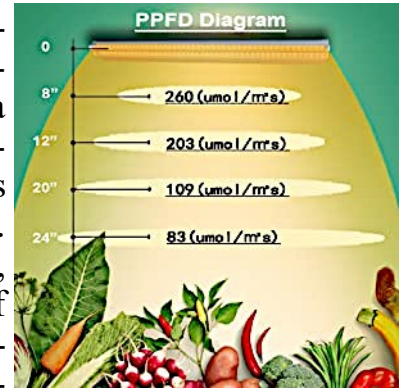


Figure 3: PPF diagram, courtesy of Monios.

Timer and Power Strips

Consider a reliable, two-outlet timer, allowing you to plug in two power strips so that you can plug in fixtures and control photoperiods from one location.⁶ Power strips with built-in surge protectors help in case of storm-related fluctuations.⁷ You'll need two strips, one each for two shelves. If you choose to not connect fixtures in series, each 6-outlet power strip will be full. (Figure 5)



Figure 5: Sample timer and power strip, courtesy of Home Depot.

Propagation Mat

I have two 23" by 15" caged propagation mats (Figure 6).⁸ You want them caged: flats should not rest directly on a heating mat. That can cause root burn, and moisture from flats could damage the mat.



Figure 6: Propagation mat, courtesy of AM Leonard.

Thermostat

Unregulated propagation mats maintain a temperature that will melt plastic starting flats and cook seedlings. Thermostats are fairly easy to set up. There are many offerings on the internet. My personal opinion is that



spending \$35-40 is a good investment.⁹ I won't trust my crop investment to cheap sensors or components that break in a couple years.



Figure 7: Thermostat, courtesy of Amazon

You could plug two propagation mats into one thermostat via an extension cord. The only downside is that both mats are set to the same temperature. Otherwise, you can buy two thermostats to germinate crops with different heat requirements. For example, you could germinate tomato and pepper seeds at 78° with one mat, while germinating Zinnias and Marigolds at 72° on the other.

Conclusion

This is a brief overview of everything you need to set up a working indoor growing system. Do your research and select what works for you. It could be a smaller system to see if you want to get more involved with propagation. The goal here is to educate before buying so that you don't have to pay for "learning experiences." Investing in a good growing

system can set you back \$1,000, but growing your own starts pays off in savings from not buying starts, plus the satisfaction that you are growing what you want and have control over how they're grown (Figure 8).

Grow Stand Setup Cost			
		Units	Amount
Shelving	204.98	1	204.98
Timer	11.98	1	11.98
Power Strip	29.47	2	58.94
Propagation Mat	74.86	2	149.72
Thermostat	43.95	2	87.90
Lights			
Full Spectrum	119.99	2	239.98
Red/Blue	119.99	1	119.99
Subtotal			873.49
Sales Tax			72.06
Total			945.55

Figure 8: Estimated system cost.

Endnotes

- ¹ Nemerov, Howard. "Tomato Growing at Home: From Seed to Harvest." What's Growing On? December 2019. <https://txmg-wpengine.netdna-ssl.com/bastropcounty/files/2019/12/2019-12-Newsletter-1hn-1.pdf>
- ² Nemerov, Howard. "Fluorescent versus LED Lighting for Indoor Growing Systems." What's Growing On? January 2022. <https://txmg-wpengine.netdna-ssl.com/bastropcounty/files/2022/01/01-Jan-2.pdf>
- ³ "Monios-L T5 LED Grow Light, 4FT Full Spectrum Sunlight Replacement with Reflector." Amazon.com. Accessed January 24, 2022. <https://www.amazon.com/gp/product/B07ZCQQLW5?th=1>
- ⁴ "Monios-L Grow Light, LED Plant Light for Indoor Plants." Amazon.com. Accessed January 24, 2022. <https://www.amazon.com/gp/product/B07BPWD1LY/>
- ⁵ Nemerov, Howard. "Fluorescent versus LED Lighting for Indoor Growing Systems." What's Growing On? January 2022. <https://txmg-wpengine.netdna-ssl.com/bastropcounty/files/2022/01/01-Jan-2.pdf>
- ⁶ "Defiant 15 Amp 24-Hour Indoor Plug-In Heavy-Duty Mechanical Timer with 2-Grounded Outlets, White." Home Depot. Accessed January 24, 2022. <https://www.homedepot.com/p/Defiant-15-Amp-24-Hour-Indoor-Plug-In-Heavy-Duty-Mechanical-Timer-with-2-Grounded-Outlets-White-49807DI/203677447>
- ⁷ "Yellow Jacket 15 ft. 6-Outlet 1,440-Joule Surge Protector Power Strip." Home Depot. Accessed January 24, 2022. <https://www.homedepot.com/p/Yellow-Jacket-15-ft-6-Outlet-1-440-Joule-Surge-Protector-Power-Strip-51380001/204667729>
- ⁸ "PROPAGATION MAT 90 WATT 23-INCH X 15-INCH." AM Leonard. Accessed January 24, 2022. <https://www.amleo.com/propagation-mat-90-watt-23-inch-x-15-inch/p/GM1>
- ⁹ "Jump Start JumpStart MTPRTC UL Listed Digital Controller Germination Heat Mat Thermostat." Amazon.com. Accessed January 24, 2022. <https://www.amazon.com/Hydrofarm-Germination-MTPRTC-Controller-Thermostat/dp/B000NZZG3S/?pldnSite=1>