

A Drought Of Possibilities

Dry weather conditions can be damaging for your plants and your business. Learn which plants can withstand a drought and how to grow them efficiently.

By Rick Schoellhorn

As I sat on my front porch watching the “snow fall” of ash from the Florida wildfires this past May, it seemed very appropriate to write an article on drought tolerance. There’s nothing like the smell of wildfire smoke to bring out an appreciation for rain. Rain is a subject that many consumers across the United States are thinking about this year. In the floriculture industry, we tend to think of drought years as bad for business and they surely can be, but with a national wave of “green” philosophy and no sign of relief for drought-stricken areas, it is still our job to help growers, and consumers, succeed in gardening in times of little water.

If you are in a drought area of the United States, this article is for you. You can turn a drought into an opportunity to teach your grower staff how to grow drought-tolerant crops and your customers how to use them. When working with the public make sure to stress that even the most drought-tolerant plants need regular watering to get them estab-

lished before reducing watering, remember consumers hear “drought tolerant” and figure it means “immortal without water.” Establishing plants in the landscape usually takes about two weeks of regular watering and then another two weeks of slow reduction.

Growing Drought-Tolerant Plants

This may seem like common sense, but it never hurts to have a refresher on some basics. If a plant is well adapted to drought, then it stands to reason it will require some changes in your basic production protocols to be produced under the lower light, cold wet soil, and luxury levels of water and nutrients we normally use to produce less drought-tolerant annuals. So the first thing to consider is how early do you want to bring these crops in? The earlier you start, the more critical good grower skills are.

Here is a breakdown of the major environmental factors you need to look at. Growers may want to pass this information along to retail customers as the same rules apply throughout the supply chain. ♦



Top: Cuphea 'Lavender Lace'. Middle: Chrysocephalum 'Flambé Yellow'. Bottom: Lantana 'Anne Marie'. (Photos: Proven Winners)

Cuphea Varieties		
Genus species	Common Name/Cultivar	Highlights
<i>Cuphea hyssopifolia</i>	'False Mexican Heather' 'Allyson' 'Lavender Lace'	Very fine-textured plants with white, lavender or pink flowers up to ¼-inch in size. Bullet-proof in hot-dry locations, but not much impact from a distance.
<i>Cuphea llavea</i>	'Totally Tempted Bright Cherry Red' 'Rico Red' 'Georgia Scarlet Scarlet' 'Tiny Mice Scarlet' 'Flamenco Samba Burgundy' 'Flamenco Rhumba Scarlet' 'Flamenco Cha Cha Purple' 'Flamenco Tango Light Lavender'	Medium-textured group of hybrids, also sold as <i>C. belparophylla</i> , all do best in bright light with large Crape Myrtle-like blooms in shades of red, pink to purple.
<i>Cuphea cyanea</i>	Black-eyed Cuphea 'Caribbean Sunset Bright Orange' Pink forms – generally less vigorous	Medium-textured group with unique almost miniature fuchsia-like blooms in mass all summer.
<i>Cuphea ignea</i>	Cigar Flower Many seed cultivars and a few vegetative items.	Medium-textured, usually vegetative forms more upright and woodier. Seed forms are quicker but generally softer plants overall.
<i>Cuphea micropetala</i>	Perennial Cigar flower Candy Corn Flower	Mostly one clone, but hardy to USDA Zone 7. Short day flowering reaching 5 ft. tall in a season.

Figure 1. Drought-resistant cuphea varieties.



www.PetersABC.com

YOUR EASIEST LINK TO THE BEST WATER SOLUBLE FERTILIZER SOLUTION

The original Peters® water soluble fertilizers have always been the right choice. Now the patent-pending Peters® A-B-C Selection System™ makes Peters the easiest choice. This revolutionary system quickly identifies which water soluble fertilizer is best for any crop in any operation.

Growers across the country have already discovered just how easy it is. Two simple steps and a few easy clicks at www.PetersABC.com, and you'll receive Peters brand fertilizer recommendations based on your water quality and crop type. The Peters A-B-C Selection System is your connection to more efficient, effective plant nutrition. Try it today!



© 2007 The Scotts Company LLC, Worldwide Rights Reserved.

PETERS
EXCEL[®]
WATER SOLUBLE FERTILIZER

PETERS
PROFESSIONAL[®]
WATER SOLUBLE FERTILIZER

crop cultivation



Oenothera hybrid 'Lemon Drop'

Light. Drought-tolerant plants prefer high light. It is part of the adaptation to drought in all sun-loving species. Many of these crops have fine hairs on the surface of the leaf to help break up high light levels when established in the landscape. For growers, the main point is to keep these plants in high light levels, hanging baskets or brighter production houses. A plant that loves high light is going to stretch that much more if produced in a low light setting.

Air circulation. Drought tolerance in plants is primarily the ability to manage water loss better than other plants. One way drought-tolerant spe-

Chrysocephalum Varieties		
Genus species	Common Name/Cultivar	Highlights
<i>Chrysocephalum apiculatum</i>	'Baby Gold' 'Flambé Yellow' 'Flambé Orange' 'Silver Sunburst' Numerous unnamed vegetative forms.	Some variation in foliage types from bright gray to gray green.

Figure 2. Drought-resistant *chrysocephalum* varieties.

Lantana Varieties		
Genus species	Common Name/Cultivar	Highlights
<i>Lantana montevidensis</i>	'Luscious Grape' 'Trailing Lavender' 'Trailing White'	Prostrate trailing forms which are the only truly trailing types so far but breeding is always moving this forward.
<i>Lantana camara</i>	Patriot series Lucky series Landmark series 'Anne Marie' 'Red Spread' Bandana series	Patriots definitely set the standard in lantana, but new series are emerging with complete color ranges and more compact habits.
Lantana hybrids	'New Gold' 'Gold Mound' 'Silver Mound' 'Luscious Lemonade'	Intermediate forms with mounding habit. Less upright than <i>L. camara</i> .

Figure 3. Drought-resistant *lantana* varieties.

cies do this is by controlling water loss due to drying winds. A greenhouse with poor air circulation is problematic because the plants don't have a way to control water uptake when there is no wind to move water out of the plant. Since these plants prefer good air circulation, they suffer in tightly packed, high-density plantings and generally use far less water than other crops. In fact, a lot of growers overwater these crops because their water needs are less than traditional annuals surrounding them on the bench. The main point is to

make sure you have good air circulation in your production house. Horizontal airflow fans go a long way toward increasing crop quality.

Nutrients. In most production greenhouses, one fertilizer rate is applied to everything. For the most part this is fine for drought-tolerant species. Just manage your growing environment, and realize that when other factors are less than optimal, adding fertilizer isn't going to help. A standard bedding plant fertilizer blend is fine for most of the crops mentioned

SPECIALIZING IN HEAVY DUTY GREENHOUSE FRAMES

Code and Non-Code



\$2343⁰⁰

30 x 96 Quonset 2 3/8" Bows 13ga. — 6' OC
3' Side Walls 2 7/8" 13ga. — 14' high @ center

2—48 x 100 6mil 4yr Poly\$630.00
1—Poly Fan & Bracket\$65.00
24 pcs Wire Lock\$243.60
*also available in 40' wide

Also offering:

- heaters
- poly
- ground cover
- shade cloth
- wire lock
- injectors
- exhaust systems
- complete systems
- poly carbonate
- roll-ups



\$975⁰⁰

20 x 96 Quonset 1 5/8" Bows .072 ga. — 6' OC
4' Side Walls 1 7/8" .072 ga. — 8 1/2' high @ center

2—32 x 100 6mil 4yr Poly\$420.00
1—Poly Fan & Bracket\$65.00
22 pcs. Wire Lock\$223.30

Prices good thru Aug 2007



20357 Hwy 99E • Aurora, Oregon 97002
(503) 678-2700 • 1-800-347-2701 (outside Oregon)
Fax 503-678-2789 • www.ovg.com • ivans@ovg.com

Write in 737

AGO
Perennials • Grasses • Bulbs
Carnivorous • Tropical Foliage

Tissue Culture Liners

www.agristarts3.com
19825 SR 44, Eustis, FL 32736
(352) 589-8055

Write in 742

Oenothera Varieties		
Genus species	Common Name/Cultivar	Highlights
Oenothera hybrid	'Evening Primrose' 'Lemon Drop' 'Siskiyou Pink' <i>O. fruticosa</i> 'Frühlingsgold'	Heat and drought loving, tolerant of poor soils with bright-yellow flowers all summer
Oenothera species	Many seed forms available <i>O. tetragona</i> <i>O. biennis</i>	Yellow, pink, red and orange species

Figure 4. Drought-resistant oenothera varieties.

Penstemon Varieties		
Genus species	Common Name/Cultivar	Highlights
Penstemon hybrid	'Lilliput'	Dwarf, heat, and drought tolerant, smaller purple flowers but great for late spring season. No pinch required.
<i>Penstemon gentianoides</i>	Cathedral Series Phoenix Series	Huge foxglove-like flowers in intense colors of red, purple and white.
Penstemon hybrids and species	Navigator series Rondo Series	Lavender tone blooms, on dark-green foliage, bright-pink highlights.

Figure 5. Drought-resistant penstemon varieties.



Penstemon 'Lilliput Rose'.

here. If you are starting early in the season, definitely use a Cal-Mag formulation for low-light production. The extra calcium and magnesium will help keep the plant moisture levels in balance. Avoid high ammonium fertilizers during cold, cloudy weather.

Temperature. In most cases, drought tolerance also equates to a plant that likes high temperatures. These plants are going to be slower in cold conditions but really kick into growth with higher day temperatures. A general minimum temperature range is 65° F nights and 75° F days, but if you can raise that temperature, the plants will move through production faster.

Water. In general, drought-tolerant crops do not need as much water in production as other crops. In fact, it is a great way to encourage stem elongation. Working with your grower to keep drought-tolerant plants in an area where they can be kept on the dry side will save everyone a lot of problems as well as input costs in production.


Effects Of Oedema

So what happens when you can't manage these factors with real precision? Well, you can expect to have some quality issues, likely will be using more plant growth regulators and learning a lot about Oedema.


Oedema is an environmental response to too much moisture in the plant and no way to move it through the plant's system. As a result, the surface of the plant's leaves begin to blister or pucker. Many growers assume there is a problem with the plant, but usually it is a problem with the growing environment.

If you see Oedema in your crops, increase air flow in the greenhouse, water early in the day to reduce the amount of water plants carry overnight and increase light and temperature levels during the day. Oedema has been in greenhouses since they were first developed, but in most cases some simple changes in greenhouse


Reliable
Ventilation Equipment
Since 1937!



Quietaire's Angle Flow - Aluminum or Galvanized Angle design incorporates all of the excellent qualities of the standard box design plus it increases fan performance which lowers cooling costs.



Quietaire's Stainless Steel Trough Cooling System - No sump required! This cooling system is self-contained, highly efficient and has a long life expectancy.




Quietaire's HAF 18 Fan - Efficiently improve conditions in your greenhouse with horizontal air flow fans. The fans push air in greenhouse continuously causing mass air movement.


Rely on Quietaire to manufacture long lasting, low maintenance, durable and dependable ventilation products. The type of products that you can count on for years to come!

Quietaire

Web Site: www.quietaire.com
Email: info@quietaire.com
Call (713) 228-9421 Fax (713) 228-9425
or write Quietaire for details.
505 North Hutcheson Houston, TX 77003



Write in 784



MultiEVA Plastic Is Proven To:

- Improve Fuel Efficiency By 3-5%
- Eliminate Dripping
- Optimize Light & UV Transmission
- Be Extremely Durable

A Testimonial from Seaciff Greenhouses

"We have used many different greenhouse coverings over the years but we will only use MultiEVA in the future. Our greenhouses have never been so dry. Our flowers flourish under this plastic and our vegetable transplants now reach maximum maturity for the space utilized."

John & Bob Ondejko

Richard Colasanti, David Boutros or Adam Cervini
Ph: 519.326.6000 Fax: 519.322.4848 E-mail: sales@excaltiburplastics.com
P.O. Box 459 Ruthven, Ontario N0P 2G0

www.excaltiburplastics.com



Write in 732

crop cultivation



Cleome hybrid 'Senorita Rosalita'.

environment will solve the problem.

Cal-Mag fertilizer also will help as calcium and magnesium help maintain good membranes in the plant cells and avoid the symptoms of Oedema. Usually Oedema will go away if plants are moved to outdoor production but this isn't always possible, so manage the environment and the problem takes care of itself.

High Drought-Tolerant Crops

Cuphea. There's a lot of work being done to bring this genus to the market in a big way. Many breeders are developing hybrids, and almost

Cleome Varieties		
Genus species	Common Name/Cultivar	Highlights
Cleome hybrid	'Senorita Rosalita'	Seed free, lavender pink form, 2-5 ft. depending on location grown. Season long flowering.
<i>Cleome hassleriana</i>	Sparkler Series Spirit Series	White, pink and purple large flower masses, early summer performance is amazing.
Cleome hybrid	Linde Armstrong	A standard, more compact than others with purple toned foliage and pale pink flowers.

Figure 6. Drought-resistant cleome varieties.

every one of them will have standout performance under dry consumer conditions. Cuphea has a high oil content in the plant, which helps it to withstand low water conditions. Many species also have a layer of fine hairs on the surface of the leaf to control water loss under dry conditions and reduce the amount of light penetrating the leaf surface. This means they love high light and do really well in dry or very bright conditions. Many growers experience Oedema with this group so look for those that are Oedema resistant.

Chrysocephalum. This group of EX-Helichrysum (Yes, they changed the name) are making a rebound with a lot of new forms entering the market. Baby Gold was the old standard but look for improved foliage forms and differences in stem strength, from stiffly upright to more semi-trailing types. Usually yellow forms are best for foliage and orange forms are more ever-blooming, but both are excellent for hot-dry locations.

Lantana. Lantana is still growing rapidly in popularity despite some invasivity issues in Australia and the southern United States. This group of plants has so much to offer; they are bird and butterfly attractants and tough as nails in the

landscape or containers. Most new breeding is aimed at taming their growth habit as older cultivars tend to get quite large. Northern growers should be careful of very dwarf types as their vigor in cold production can be very different from their performance later in the season when temperatures are high.

Oenothera. This genus is both tough and easy. They need good drainage and bright light, but many are tolerant of cool production conditions. Seed types range from 6 inches to 4 ft. tall and are beautiful and somewhat fragrant when in bloom. Definitely a genus to watch.

Penstemon. Here is a group that many growers struggle with because of early season low light and overwatering. But once you figure it out, this crop is amazingly easy and the sell-through is very fast. Different species and hybrids vary in their season of flower and most require deadheading to rebloom, but all-in-all, they're great, especially perennial forms for western United States. As an annual or perennial, they look very spectacular in bloom.

Cleome. These may seem old fashioned, but new interspecific hybrids are changing and creating a new market for this crop. The interspecific



The One That Works!™

LIQUID ROOTING HORMONE

- Choice of professional plant propagators
- Roots everything from hardwoods to succulents
- As low as 5 cents per 100 cuttings

EASY TO USE



DIP 'N GROW, INC.

Clackamas, Oregon 97015-1888
Toll Free: 866-347-6476 • FAX 503-445-0101
email: sales@dipngrow.com
www.dipngrow.com

DIP 'N GROW®

Distributor Inquiries Welcome Available in 3 convenient sizes for the professional nurseryman and the home gardener at leading nursery supply outlets.

For Info and Ordering, Call
1-800-635-4532



Speedy Seeder
(Vacuum Seeder)
Offers Many Advantages

(Available with a Flip)
Easy to Use • Mounted Vacuum Seed Channel • Accurate Fast • Low Cost • Stainless Steel Construction • Seeds Melon to Raw Petunia, in cell pack or plug flats, in 10/20 and 13/26 flats • More efficient seeding.



Germination Chamber

Our Germination Chamber Enables You To Get Your seeds Off To A Faster Start. These Portable "Hot Houses" Feature Automatic Temperature Control • Stainless Construction • Polycarbonate Doors • Removable Doors and Shelves • Caster Wheels • Operates On Standard 110 Volt Outlet • Optional Water Reservoir Available.

ARRIVES FULLY ASSEMBLED & READY TO USE!!!

P.O. Box 1140 • Kinston, NC 28503
Phone: 252-523-9300 / Fax: 252-523-3691
www.carolinagreenhouses.com

Write in 733

Write in 786

Agastache Varieties		
Genus species	Common Name/Cultivar	Highlights
<i>A. cana</i> & <i>A. mexicana</i> hybrids	Acapulco Series 'Apache' 'Color Spires Orchid' 'Color Spires Pink' 'Heather Queen' 'Red Fortune' 'Sonoran Sunset'	Most dramatic flowering, heat tolerant, open habit. Use water and light to control growth. Many are hardy to USDA Zone 5.
<i>A. aurantiaca</i>	'Coronado'	Golden-orange masses, similar in performance to <i>A. cana</i> types. Hardy to USDA Zone 5
<i>A. foeniculum</i>	'Color Spires Steele Blue' 'Golden Jubilee' 'Black Adder'	Large leaved and upright, with spikes of dense flowers in pink, white and blue. Great for honey production, as the bees love the plant as a nectar source.
<i>A. astromontana</i>	'Pink Pop'	Similar to <i>A. cana</i> types, but a strong performer at most public trials. Pink-to lavender-toned flowers.

Figure 7. Drought-resistant agastache varieties.

types are nearly seed-free, meaning they offer an extended season of performance over traditional forms. This also reduces the risk of invasivity in certain areas of the United States. It's available in great colors, like white, pink and purple. There is some risk of Oedema in early season, but they are fast growing, so use them as a quick crop 3-5 weeks to fill a gallon pot in mid to late spring. Ordering them in too early is a recipe for disaster as they grow so fast it's easy to lose control of them.

Agastache. This is an emerging group of plants for which the breeding just gets better and better. Many are good perennials, but it is usually best to count them as annuals until you have some experience with their performance in your region. All have a wonderful menthol-mint fragrance to the foliage and are strong bee and hummingbird attractors, which is a sales plus. They love bright light, good air circulation and tolerate dryer landscape situations. All are Oedema resistant.

Conclusion

There are many options to look into in terms of drought-tolerant plants. This is only a small sampling. Remember, most drought-tolerant plants cannot be grown under the same conditions in which we grow traditional spring annuals. They need more light, more heat, more air circulation, and less water and fertilizer than the early spring crops. For growers to succeed, they need to plan ahead on timing and spacing of the crops. For retailers to succeed, they need to have a good understanding of how to position the crops and to plan on them being slightly later in spring or remarketed for the summer season.

This is just a short list of the possible crops you can use to deal with drought in your region. Focus on how to produce the crops in your greenhouse. At retail, the tag of drought tolerant, low water input is a sure selling point. Most con-



Agastache 'Heather Queen'.

sumers want less maintenance, and lower inputs, but they will only buy the plants if someone informs them of the benefits. **GPN**

Rick Schoellhorn is director of new products for Proven Winners. He can be reached at rick@provenwinners.com or (386) 462-5826.

LearnMore For more information related to this article, go to www.gpnmag.com/lm.cfm/gp080702

Reader Interest Review

Please write in the appropriate number on the Reader Service Card to indicate your level of interest in this article.

High 1503 Medium 1504 Low 1505

We offer a full line of fruit & vegetable equipment

- Box Shuttle
- Tree Planter
- Ground Hog
- Frost Fan
- Brownie
- 3 Pt. Forks
- 3 Pt. Hi Lift
- Durand Wayland
- Sprayers
- Conveyors
- Freight-Mate

PHIL BROWN WELDING CORP.
4689 - 8 Mile Road, N.W.
Conklin, MI 49403
Phone: (616) 784-3046
Fax (616) 784-5852

CONVEYORS

Equipment That Makes Dollars & 'Sense'

Freight-Mate

Quick Detach In Truck Hydraulic Lift

The **Freight-Mate** is designed to load and unload racks or pallets weighing up to 2,500 pounds, from truck bed to ground level with the push of a button.

This uniquely designed lift has forks, which fold up allowing room to load and unload trucks with forklift or racks from a standard truck dock.

- Adjustable forks (optional)
- Requires less maintenance
- Self contained hydraulic system
- Uses only the space of one pallet
- Can be used with swing or overhead doors
- Can be installed or removed in minutes
- Push button control for lift and swing
- Batteries can be charged from truck or charger
- Not exposed to elements of the road
- Gas powered hydraulic system with Honda engine (optional)



Building the Best Since 1964!



Plant Conveyors

We have all sizes to fit your needs!

Whether you are moving potted flowers or flats in or out of your greenhouse, a **Conveyor System** can save you time and money. With many types of conveyors, we are able to adapt to virtually any situation.

- Portable Belt Conveyors
- Extendable Belt Conveyors
- Corner Conveyors
- Complete Greenhouse Systems

Write in 736

IT'S NOT JUST A GREENHOUSE

It's an Advantage!



Hurricane-Tested Structures Offering Value, Durability and Profitability.

B&K Installations' greenhouses and shade houses are not just engineered to stand up to the harshest weather conditions; they're engineered to give you an advantage every day for your investment.

• Affordable • Superior Strength • Custom designs • State-of-the-art materials

Visit us on the web: www.bkinstall.com



VALUE THROUGH ENGINEERING

Tel (Homestead, Fla.) 305.245.6968
Toll Free-USA 1.800.523.3870
Toll Free-Florida 1.800.624.7612

GREENHOUSES • SHADEHOUSES • HEATING • COOLING • EQUIPMENT • COVERINGS • HARDWARE

Write in 740