

TWCA[®] Quarterly

2020 Volume 7 Issue 4

IMAGINE A DAY WITHOUT WATER 10

WATER WARS 12

CITY PAVEMENT: AIR POLLUTION 16

WEST COAST WILDFIRES 20

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.....CONTENTS

04

Administration Page
Anything worth doing

06

Important Notice
TWCA Has Moved

07

NGBS Webinar Summary
October 6th, 2020

08

Fall Lawn Treatment
7 Musts for Your Yard

10

Imagine a Day
Without Water
National Education Campaign

12

Water Wars
How conflicts over resources are
set to rise amid climate change

15

TWCA Membership
Application
Become a Member

16

City Pavement
A Big Source of Air Pollution

18

Proposed DOE Shower-
heads and Clothes Washer
Regulations
Severely Reduce Water Efficiency

20

West Coast Wildfires
Creating a Defensible Space

22

National Drought
Summary
October 6th, 2020

30

TWCA Events Calendar
Fall Schedule

Anything worth doing is worth doing poorly - anonymous

It's east to get caught up in the "right" way to do things; are we meeting all the needs? Have we covered all the contingencies? Is everything being accounted for. And it's understandable; we all want to do a good job, to make a good product. But the reality is, trying to answer those questions ahead of time sometimes keeps us from doing the things that need done.

Sometimes (most times for me, honestly) its better to just get out into the weeds and turn a project loose, warts and all, and see what needs improved upon. Often those ugly, gawky projects that, at first blush, seem destined for the scrap heap become our most successful and collaborative works.

You can always fix a problem, correct a mistake, rewrite the gobbledy-gook. The most important thing is to just DO the thing. Get something out into the world. It's not perfect. Ever. And that's okay. As we undertake new projects for 2021, many of them more ambitious than any we've done in the past we are embracing this ethos. So together, lets get out there and get things done. Poorly.

TWCA is a members driven organization; if there is something you would like to see in the TWCA Quarterly, please contact Evanne Gutierrez at evanne@tgwca.org or Jack Karlin at jack.karlin@tgwca.org.

MISSION STATEMENT

TWCA is committed to
water conservation and
dedicated to preserving the
ecological benefits of turfgrass
in the managed environments

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Vice President
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Kristen Pick

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Kyle Atkinson

STAFF

Program Administrator
Jack Karlin

Administrative Assistant
Evanne Gutierrez

Brand Ambassador
Dr. Michael (Mike) Kenna

Educational Consultant
Cheryl Corson

IMPORTANT NOTICE

TWCA HAS MOVED

If you didn't already know, TWCA has closed up shop on 3rd Ave and has migrated to a work from home model. With this new model, TWCA is still committed to serving our members, providing tools, educational material, and support.

Not only in a pandemic did TWCA continue to operate, it felt as if we were busier than ever collaborating with those in the industry to bring forth new opportunities for our members.

Shifting away from a physical location opened substantial funding for other programs and opportunities. TWCA is leveraging this to expand existing projects and venturing into new and exciting directions.

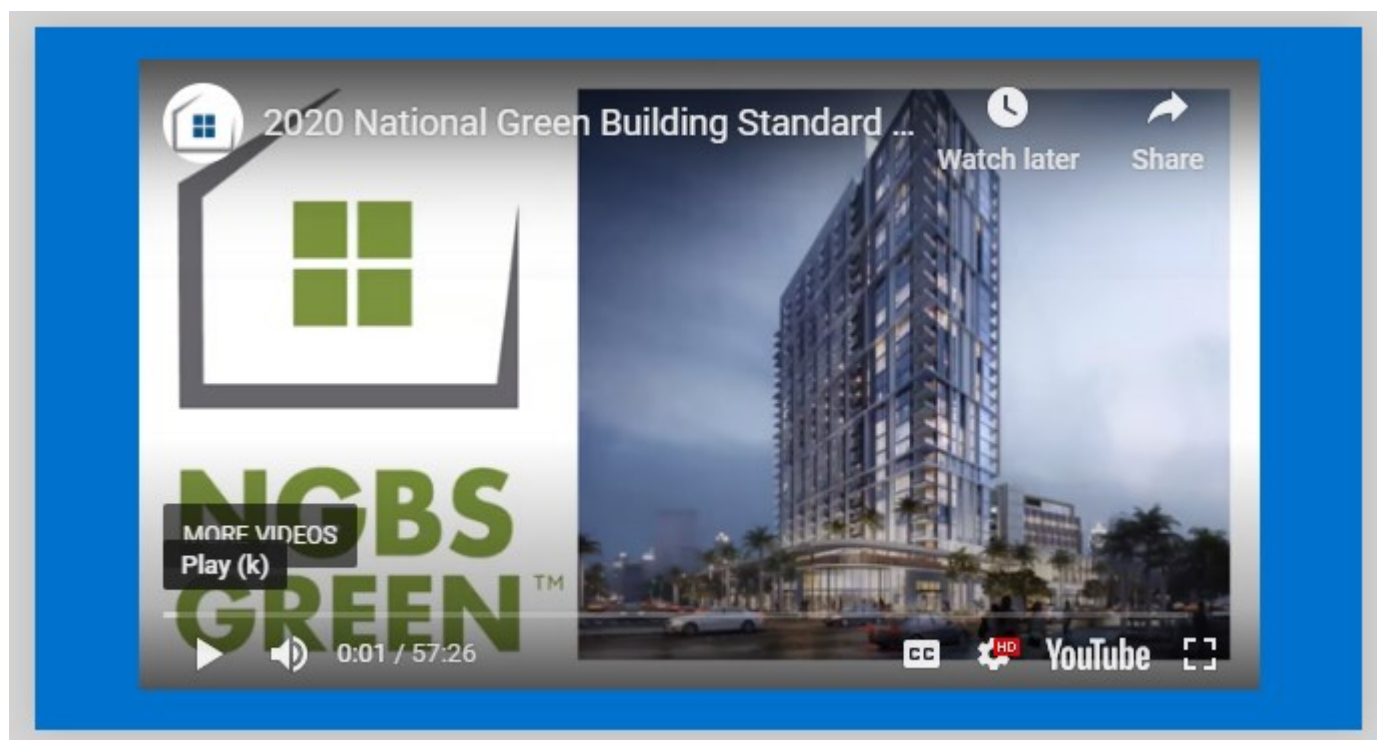
Going forward, TWCA will continue its remote operation and will be utilizing a PO box for a physical mailing address.

For more information about TWCA visit tgwca.org or email us at : info@tgwca.org



NGBS Webinar With TWCA

Summary



On October 6th, TWCA partnered with NGBS, presenting a webinar on the NGBS program for the upcoming year.

As an NGBS Green Partner, TWCA is working to enhance the value of both drought tolerant turf and Green Building codes. We've worked hard for the past four years creating incentives for using TWCA Qualified products in residential and mixed-use multi-family residential designs.

Cindy Wasser Schultz takes us on a high level look at green developments and creating incentives for sustainable developments. Go to tgwca.org to watch the webinar about NGBS 2020.

Follow up Webinar

TWCA will be hosting a follow-up webinar entitled *NGBS 2020: Building Markets with Builders*. This follow-up is scheduled for 10th November 2020 at 9am Pacific. In it we will discuss the points availability for TWCA Qualified turf, different certification paths, and how to maximize the benefits of using TWCA Qualified turf in NGBS development projects.

You can join in with the link:

https://bit.ly/TWCA_NGBS_2020

Please contact us at info@tgwca.org with any questions you may have.



Fall Lawn Treatment

7 Musts for Your Yard

Among turf care experts, it's a well-known fact that the best way to ensure a thick, green, and healthy lawn in the spring is to give it some well-timed care in the fall—in other words, right now. But according to Scott Frith, CEO of Lawn Doctor, a lawn care company with more than 200 franchises around the country, many homeowners make the same basic mistakes before grass goes dormant, and then wonder why their grass isn't doing better the following year. Wonder no more. Here is Frith's seven-step program to getting a beautiful lawn next year.

1. Remove the leaves.

A carpet of colorful autumn leaves may look nice and be fun to play in, but they're no good for grass. They block the light and trap moisture, potentially fatal knockout punches for the unlucky turf underneath. So when the leaves are falling, blow or rake them away as often as you can. Even after the trees are bare, continue raking out the corners where the wind piles leaves up. If you don't, come spring, the grass under that soggy, decaying mat will be dead.

2. Keep cutting, but to the correct height.

Don't put that mower away yet. Grass continues to grown up to the first hard frost, and so will need regular cuts to keep it at an ideal 2½- to 3-inch height. If you let it get too long, it will mat and be vulnerable to fungi like snow mold.

Cutting grass too short is just as bad, because it curtails the root system—root depth is proportional to cutting height—and impedes the lawn's ability to withstand winter cold and dryness. Regular mowing also gets rid of those pesky leaves, chopping them up and leaving behind a soil-enhancing mulch.

3. Continue watering.

Frith says that people tend to let up on watering in the fall as the weather gets cooler. "They figure that nature will take care of things for them," he says. While it's true that there's more rain, more dew, and less evaporation at this time of year, that may not be enough to keep the grass roots well hydrated and healthy going into the winter.

If your lawn isn't getting at least an inch of water a week—a simple rain gauge is a useful way to keep track—then keep the sprinklers or irrigation system running until the end of October. By that time, you'll want to disconnect hoses and flush the irrigation system to avoid frozen pipes and spigots.

4. Loosen the soil.

Regular aeration—once every couple of years, according to Frith—prevents soil from becoming compacted and covered with thatch, a thick layer of roots, stems, and debris that blocks water, oxygen, and nutrients from reaching the soil.

A core aerator corrects both problems by punching



holes through that thatch and pulling up plugs of soil. "It's a good idea to aerate a lawn right before fertilizing," Frith says. "All those holes in your turf will let the fertilizer reach right to the roots, where it can do the most good."

5. Add fertilizer.

Just as grass roots need water to last the winter, they also benefit from a shot of the plant sugars that protect roots from freezing and give the entire plant the energy to bounce back in the spring. Those sugars are produced by chlorophyll, which grass produces in abundance when there's enough nitrogen.

That's why Frith recommends a late-fall application of a slow-release granular 24-0-10 fertilizer. The numbers indicate the percentage by weight of nitrogen, phosphorus, and potassium, respectively. Potassium is also important at this time because it aids in root growth, disease protection, drought tolerance, and cold resistance. (A soil test can tell you how much of each nutrient your lawn actually needs.)

Frith cautions against spreading fertilizer close to waterways, however; they are vulnerable to contamination from runoff. Lawn Doctor's company policy is to maintain a 5-foot buffer wherever water is present.

6. Spread seed.

"A dense lawn also is good protection against weeds," Frith says, which is why it's important to overseed existing turf. Not only does that fill in thin spots or bare patches, it allows you to introduce the latest in resilient, drought-tolerant grasses. Fall is the best time to overseed because the ground is still warm, moisture is more plentiful, nights are cool, and the sun is not as hot during the day. But even then, "overseeding is one of the most challenging lawn-care chores," Frith says.

You can't simply broadcast seeds over an established lawn and expect them to take hold. They need to be in full contact with the soil, kept moist

until they germinate, and be well enough established before it gets too cold. Renting a slit seeder is a better option than broadcasting, but those machines are notorious for tearing up turf and leaving your lawn looking like a harrowed field.

Frith says that Lawn Doctor's proprietary Turf Tamer power seeder, which sows seeds by injecting them into the soil, is a less-damaging option.

7. Stay on schedule.

Each of the steps above has to be done at the right time for best results. Otherwise, it's wasted effort. For instance, overseed too late and the seedlings will be too tender to survive. Fertilize too early and the grass will send up tender blades that will get hammered by the cold. Fertilize too late and the grass roots won't be able to absorb all those nutrients you're feeding them. Thinking about aerating in the spring because you can't get around to it this fall? Don't bother. Spring aeration just makes it easier for weed seeds to get established.

If sticking to the schedule during the fall is proving too difficult, a lawn care service can handle the jobs that aren't getting done. Most often, those are the ones that require renting heavy machinery like core aerators and slit seeders, which are hard to transport, a bear to operate, and often in short supply at the rental yards at this time of year. Delegating one or two of those chores to a pro during this busy season will ensure the work gets done when it should—and that you will be enjoying a thick carpet of green grass next year.

Thomas Baker/This Old House

Imagine a Day Without Water. On October 21st.

No water to drink, or wash your hands with. No water to shower, flush the toilet, or do laundry. Hospitals would close without water. Firefighters couldn't put out fires and farmers couldn't water their crops. Disease would spread.

This year, as communities across America faced the public health threat of the coronavirus pandemic, water and wastewater systems continued to do their job, 24/7, keeping the water flowing. Many Americans take water for granted every day. But what would a day be like without water? Imagine a Day Without Water 2020 is the sixth annual day to raise awareness and educate America about the value of water.



Imagine a Day Without Water

Imagine a Day Without Water is a national education campaign that brings together diverse stakeholders to highlight how water is essential, invaluable, and in need of investment. This year, the day of action will take place on October 21, 2020, and will include events, resolutions, student contests, social media engagement, and more, all across the country.

Frequently Asked Questions (FAQs)

Who can participate?

Anyone who cares about water and our nation's infrastructure challenges is encouraged to join. In the past, we've recruited water and wastewater providers and agencies, mayors, local officials, contractors, civil engineers, schools, aquariums to participate in Imagine a Day Without Water, but welcome all those with a water story to tell!

How does my organization sign up?

Visit our sign-up page, enter a few basic pieces of information and you're in!

What should my organization do for the day?

If you need some ideas to get started, check out our list of Ways to Participate.

What if we want to do something that isn't on your list of suggestions?

Go for it! We encourage you to participate in whatever way best fits your organization and your community.

What materials do you have that we can use?

Our Resources page includes social media graphics and customizable templates. Additionally, the Value of Water Campaign toolkit, "What's the Value of Water?" has another suite of useful materials including print ads, bill stuffers, and more.

Can we suggest additional materials we want?

Of course! Please send your ideas on what materials would be of help to the program manager, Katie Henderson at khenderson@uswateralliance.org.





Photo courtesy of Mohammed ALwasfi/Xinhua

Water Wars: How conflicts over resources are set to rise amid climate change

About a quarter of the world's population faces severe water shortages exacerbated by climate change - and with that is coming conflict, social unrest and migration

From Yemen to India, and parts of Central America to the African Sahel, about a quarter of the world's people face extreme **water shortages** that are fueling conflict, social unrest and migration, water experts said on Wednesday.

With the world's population rising and climate change bringing more erratic rainfall, including severe droughts, competition for scarcer water is growing, they said, with serious consequences.

"If there is no water, people will start to move. If there is no water, politicians are going to try and get their hands on it and they might start to fight over it," warned Kitty van der Heijden, head of international cooperation at the Netherlands' foreign ministry.

"It's threats like these that keep me up at night," the diplomat told a webinar hosted by the World Resources Institute (WRI), a U.S.-based research group.

According to the WRI, 17 countries face "extremely high" levels of water stress, while more than two billion people live in countries experiencing "high" water stress.

One in four children worldwide will be living in areas of extremely high water stress by 2040, researchers estimated.

In terms of water availability, "at some point we are going to hit the wall, and that wall might be different in different places", Heijden said.

Climate change is compounding the challenge, she said, with cities such as India's Chennai and South Africa's Cape Town battling severe water shortages in recent years related in part to erratic rainfall.

Disputes over water have for millennia served as a flashpoint, driving political instability and conflict, the water experts said.

And "the risks of water-related disputes are growing .. in part because of growing scarcity over water", said Peter Gleick, co-founder of the California-based Pacific Institute, which jointly published the report with WRI and The Water, Peace and Security Partnership.

But as water scarcity grows, water systems are also increasingly becoming targets in other types of conflicts, said Gleick, whose institute has compiled a **chronology of water conflicts** that dates back 5,000 years.

In Yemen, years of fighting has destroyed water infrastructure, leaving millions without safe water to drink or grow crops. Wells and other water facilities also have been targets in Somalia, Iraq, Syria and other countries, he said.

Smarter Irrigation

Recurring droughts in parts of Central America and the African Sahel in recent years have triggered migration as subsistence farmers, whose harvests have been decimated by low rainfall, seek refuge and jobs in other countries.

One key to tackling water scarcity is boosting investment in more sparing use of water in agriculture, an industry that absorbs more than two-thirds of the water used by people each year, the experts said.

Farmers in some drought-hit areas are switching to more efficient sprinkler or **drip irrigation**, and are using remote monitoring tools to make sure they apply just the right amount of moisture at the right time and in the right place, they said.

Conserving forests, wetlands and watersheds, including those around cities, can help absorb rainfall, helping stem crop losses from flooding and drought.

"Where possible such green infrastructure should be used with or instead of traditional physical infrastructure like dams, levies (or) reservoirs," said Charles Iceland, head of global and national water initiatives at WRI.

That's both because it can cost less and because it encourages preservation of ecosystems, he said.

As water becomes more precious, communities living in water-scarce hot spots must be included in making decisions about its use and management, the experts said.

"Only in that way can we make real progress," said Heijden, noting that women and youth need to have a strong voice in those decisions.

She said a range of options were available to deal with worsening water scarcity, but getting them into practice could be a challenge.

"We know the many solutions that are there, but to actually implement them we still face many barriers, be they technical, financial or in terms of political will," she said.

*Anastasia Moloney
Thomson Reuters Foundation*





MEMBERSHIP APPLICATION

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Online: <https://www.tgwca.org/become-a-member.html>

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City pavement is a big source of air pollution

Especially in warm, sunny weather, petroleum-based pavement and roofing release compounds that contribute to unhealthy air.

By Ula Chrobak/Popular Science

Photo courtesy of Alekandar Langer/Unsplash

Witnessing a hazy summertime sky in Los Angeles, you might be tempted to blame the cars and trucks that teem on the region's roadways. And that's mostly right, but an increasing share of air pollution is coming from the stuff below those vehicles: asphalt.

A new study published yesterday in *Science Advances* finds that asphalt pavement and roofing give off lots of gases that go on to form air pollutants. In summertime, asphalt in cities might contribute more to pollutants called secondary organic aerosols than cars and trucks.

A large chunk of the fine particulate matter pollution in urban areas—ranging from 20 to 70 percent—is secondary organic aerosols, or SOAs.

Though air pollution vastly improved in recent decades—thanks largely to technology and policy aimed at motor vehicles—it remains a problem in many large cities. Parts of Southern California, for example, still can't meet EPA standards for fine particulate matter.

As aerosol pollution from vehicles has declined, the relative contribution from other sources has grown. Atmospheric scientists have measured a gap between emissions from known polluters on the ground and the actual pollution in the air. "Atmospheric scientists and air quality managers have been on the hunt for 'missing [secondary organic compound] sources' for decades," Jessica Gilman, a tropospheric chemist with the National Oceanic and Atmospheric Administration, wrote in an



email to *Popular Science*. “It’s labeled as a ‘missing’ source because we have generally observed more SOA mass than what we know can be formed from the typical/traditional precursor/ingredients.”

Drew Gentner, a chemical and environmental engineer at Yale University, wanted to see how much asphalt contributed to this mysterious mix. If you recall that distinctive tang of fresh pavement, what your nose is picking up is the volatile organic molecules emanating from the petroleum-based material. So, Gilman says, it’s intuitive that asphalt could be a source for those aerosols of unknown origin.

Gentner and his team put samples of a common asphalt mixture into a furnace and warmed it up through a range of temperatures. They also subjected the pavement to UVA and UVB light—simulating the effect of sunshine. The researchers measured the emissions and types of chemicals gassing off from the pavement chunks.

Both heating up and bathing asphalt in light spiked the emissions it produced. With heating, emissions doubled as the material warmed from 40 to 60°C (104 to 140°F)—a realistic summertime pavement temperature in many urban areas. Sunlight also increased emissions, by almost 300 percent over a sample without light. Heat and sunlight also seem to cause different chemical responses. After a sample had been warmed for nearly two days it was releasing a low but constant amount of volatile compounds, and adding sunlight caused a new spike.

Next, the researchers calculated what that could mean for a large developed area—Southern California. Using their experimental findings together with known values of asphalt use in the area, they estimated how much all that pavement could be impacting the air. They found that asphalt from roofs and roads may contribute as much secondary organic compounds as all the vehicles in the region on an annual basis.

To be clear, this finding applied to just one type of pollutant. Cars still add a lot of pollution, and are a dominant source of ozone. But, in urban areas in the

summertime, these aerosols from asphalt and other non-vehicle sources contribute to smog. “[Secondary organic compounds] have been of great interest to air quality researchers,” says Gentner. “Especially in the summer and in urban areas, it’s a significant component of smog.”

This category of pollutants is challenging to understand. Not only do they come from myriad sources—asphalt is a big one, but paints and other products also release the precursor compounds to pollutants—but the chemical reactions that create these secondary compounds are also complex. While there’s been a lot of progress in understanding and reducing vehicle emissions, unraveling non-combustion pollutant pathways remains a major challenge. “If we want to solve our air quality problem, we’re going to need to expand our view to include less traditional sources,” says Allen Robinson, a civil engineer studying fine particulate matter at Carnegie Mellon University, who was not involved in the study.

“These emission factors and emissions estimates are so essential for understanding air quality and there are many missing sources that we need to get a better understanding of,” adds Eri Saikawa, an environmental scientist at Emory University who was not involved in the research, in an email to *Popular Science*. “There is still so much that we do not understand about secondary organic aerosols, and these studies are very important to push the field forward.”

Gentner says that future research could help reveal how different types of asphalt and ways of applying it could reduce emissions. It’s also possible that so-called cool pavements—which use reflective materials to avoid absorbing heat—could reduce the amount of pollutants that form from asphalt. “It’s clearly something that needs some work,” says Robinson. “We still have 100,000 premature deaths each year in the U.S. from elevated fine particulate levels. If we’re going to make progress on that, we’re going to need to think about these types of sources and how we control them.”

Proposed DOE Showerhead and Clothes Washer Regulations Would Severely Reduce Water Efficiency

Submitted September 2020

The U.S. Department of Energy (DOE) has announced two different rulemakings to change the definitions of showerheads and create a new unregulated class of Clothes Washers, following up on President Trump's repeated pledges to tamper with water efficiency and revert back to decades-old high flow standards. AWE has prepared two comment letters and we are asking for organizations to join us.

Showerheads

DOE proposes to define a showerhead as follows: "Showerhead means any showerhead (including a handheld showerhead) other than a safety shower showerhead." DOE then proposes to include in its regulations its interpretation of the term "showerhead" to mean "An accessory to a supply fitting for spraying water onto a bather, typically from an overhead position."

Under DOE's proposed definition, each showerhead included in a product with multiple showerheads would separately be required to meet the 2.5 gpm standard established in federal law, rather than the total flow being 2.5 gpm. DOE also

proposes to eliminate the terms "body spray" and "safety shower showerhead" from the showerhead definition. As a result, multiple showerheads would be routinely allowed in shower stalls, and body sprays and safety showerheads will have no legal flow requirements whatsoever.

"This is a dramatic step backward in water efficiency," said AWE President and CEO Mary Ann Dickinson. "It is unconscionable for the Federal government to be adopting regulations that date back to the 1980s, when we are now facing water resource scarcity in 40 of the 50 states."

What is not clear is whether the proposed regulation change on showerheads will affect states that have adopted their own stricter standards over the years. AWE is researching this issue with legal experts.

AWE has drafted an opposition letter and we are asking organizations to sign on. Numerous groups have already come out in opposition to this showerhead proposal, such as ACEEE. Here is a statement from Consumer Reports:



Photograph: Justin Sullivan/Getty Images

"There is absolutely no need to change current showerhead standards," David Friedman, vice president of advocacy at Consumer Reports and a former DOE official during the Obama administration, said in a statement. "Thanks to the standards, consumers have access to showerheads that not only score well on [Consumer Reports] tests and achieve high levels of customer satisfaction, but also save consumers money by reducing energy and water consumption," Friedman added.

Clothes Washers

DOE proposes to establish separate product classes for top-loading residential clothes washers and consumer clothes dryers that offer cycle times for a normal cycle of less than 30 minutes, and for front-loading residential clothes washers that offer cycle times for a normal cycle of less than 45 minutes. DOE would consider appropriate energy and water efficiency standards for such product classes, if adopted, in separate rulemakings. This means that the new product classes, once adopted, will have no energy and water efficiency standards to govern them. AWE has drafted a letter on this regulation as well.

TWCA

In the effort to conserve water, TWCA is signing letters for both showerheads and clothes washers.

It is our belief that without the significant water savings provided by these existing standards water conservation programs will have to find that savings in outdoor restrictions. Further, by maintaining customer satisfaction level and meeting a stricter water efficiency standard these programs remain an example of the efficacy of TWCA's qualification model.



West Coast Wildfires

Creating a Defensible Space

There was a change in the wind on that Labor Day Monday that filled the skies with smoke and a red orange hue. The wildfires throughout Oregon, Washington and California brought devastation to the West Coast. Many lost their homes, some lost their lives, and thousands upon thousands of acres of beautiful land was destroyed.

Communities rushed to the aide of those in need, helping evacuate animals, providing donations to evacuees, and presenting an atmosphere that said “we are strong, we are going to get through this.”

With evacuation levels lifted, fires contained and put out, government and cities have created educational material on how to protect your home against wildfires.

Creating a Defensible Space

Defensible space is the area between a house and an oncoming wildfire that acts as a buffer that slows the fire and provides an opportunity for fire-fighters to defend the home. Defensible space is created and maintained through the proper management and modification of vegetation in the area immediately surrounding your home.

Through creating and maintaining defensible space, wildfires can be slowed down, the length of flames shortened, and the amount of heat reduced, all of which contribute to whether a home survives a wildfire.

A common misconception is that defensible landscape design calls for the stripping of visually appealing trees and plants, leaving a barren waste-



land of a yard. But, plants—even severely burned ones—can provide stability to the land by way of their root systems, reducing the risk of erosion after a fire. Instead, you'll want to pay attention to:

1. **Reduction of Plant Fuels.** The excess and/or dead plants surrounding your home act as fuels when fire strikes. Remove them from your defensible space, replacing more flammable varieties with fire-resistant ones recommended by your local nursery.
2. **Use native plants in your defensible space.** "Native species—a good southwestern Colorado example is buffalo grass—are fire-adapted, which means that their tops may burn off in a fire, but the roots develop to such an extent that they are the first to regenerate after a

fire," says Jeff Burns, a forester with the Colorado State Forest Service's Alamosa District. These plants offer the fire-wise trait of being easy to maintain, and strong root systems will reduce property damage from erosion. The fire-adaptive traits of native plants ensure the preservation of native species and allow for a landscape that is more likely to survive exposure to extreme heat.

3. **Trees and shrubs can be used in all defensible space zones**, including Zone 1, provided they are a safe distance from other plants and any structures. The trees you select for your landscape should be low in resin and sap content, with no rough bark. Consider replacing shrubs with a less flammable groundcover.
4. **Consider the litter that plants create in the off-season.** Try to select plants that shed minimal amounts of needles, leaves, and other waste. Any area where the ground is thickly covered with pine needles is at high risk, since the presence of very aromatic, dry litter increases flammability in fire-prone locations.
5. **Visit a local nursery and talk to a grower** about which plants will work for your defensible space.
6. **Incorporate fuel breaks like gravel and stone into your landscape.** In the first 3 to 5 feet of Zone 1, replace all of the plants closest to the perimeter of your home with a bed of gravel. Replace mulch with flame-resistant landscaping materials by weaving gravel and stone pathways into your design. The use of these accents will provide visitors with safe passage to view your living collection and impede approaching flame in the event of a wildfire.

Size and Placement of Plants

Now that you've picked flame-resistant plant varieties for your defensible space, you should follow a few guidelines when planting them.

1. **Break up continuity of growth and eliminate ladder fuels.** Depending on the slope of your

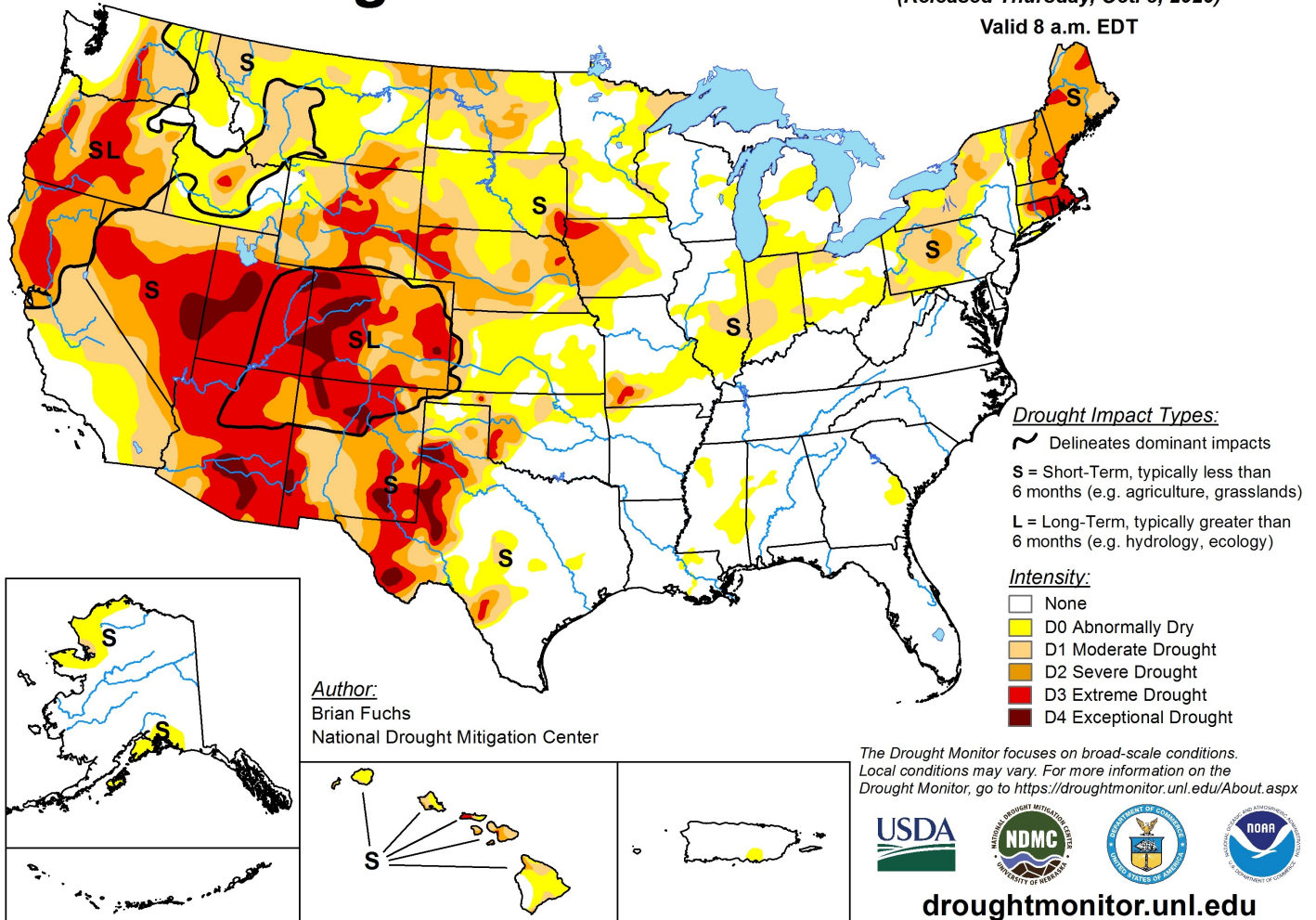
land, trees and plant clusters should be vertically and horizontally clear of one another, since groupings of short and tall plants create an opportunity for easy flame transfer. Make sure trees are trimmed clear 6 to 10 feet off the ground. Keep in mind that fire travels faster up slopes, so the space between plants must be greater than it would be on level ground. For example, a 0 to 20 percent slope requires 10 feet of distance between tree crowns, while a 20 to 40 percent slope requires a 20-foot clearance between tree crowns. Depending on the slope of your property, you may need to clear tree branches 20 to 40 feet from the ground. It's essential to determine the slope of your property before planning your design. Refer to slides 3 to 5 at left for some basic guidelines.

2. **Make sure that any Zone 1 trees are clear of your home**, with branches making no contact with roofing or siding.
3. **Maintenance and Cleanup** The key to an effective defensible space is eliminating fuels, so make sure you get rid of dead trees and plant debris promptly.
4. **Zones 1 and 2 must be well irrigated.** You might even consider installing drip irrigation.
5. **Mow, prune, and trim all zones regularly** to maintain defensible spacing between trees and plant clusters. Then, dispose of litter promptly and appropriately. Consider mowing with a manual mower or string trimmer, to avoid sparks and oil leaks that can start and fuel fires.
6. **Check and clean gutters regularly**, making sure they are free of plant and tree litter.
7. **Place woodpiles outside of Zone 1**, or 30 feet away from your home.
8. **Thin out and space trees in areas maintaining forestry**—typically Zones 3 and 4. Follow the spacing guidelines above and remember to be mindful of slope.

Tabitha Sukhai/This Old House

U.S. Drought Monitor

October 6, 2020
(Released Thursday, Oct. 8, 2020)
Valid 8 a.m. EDT

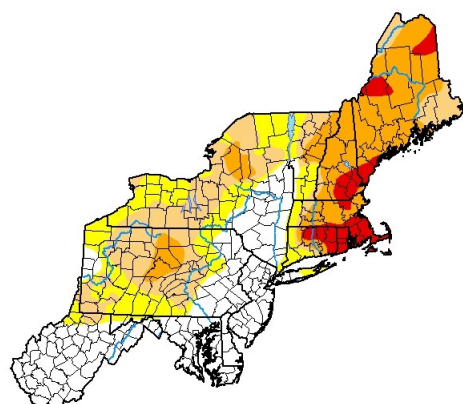


National Drought Summary

Author: Brian Fuchs, National Drought Mitigation Center

Temperatures for the week were below normal over much of the Plains, Midwest, South, Southeast and Mid-Atlantic, with departures of 5-10 degrees below normal for many locations. The West continued to be warm with temperatures near normal to slightly above through the Rocky Mountains and 5-10 degrees above normal over the West Coast. Temperatures in New England were also slightly above normal, with the greatest departures in Maine. Below-normal precipitation dominated almost the entire country. Precipitation amounts were greatest over the eastern seaboard, with the Northeast recording the most rain. Almost no precipitation was recorded in the western two-thirds of the country. In the next several days, eyes will be on Hurricane Delta and where it will make landfall along the Gulf Coast. Current projections are taking the storm ashore in Louisiana.

U.S. Drought Monitor Northeast



October 6, 2020
(Released Thursday, Oct. 8, 2020)
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	32.76	67.24	49.35	27.27	5.85	0.00
Last Week (09-29-2020)	29.83	70.17	45.34	26.30	3.91	0.00
3 Months Ago (07-07-2020)	22.54	77.46	26.07	2.01	0.00	0.00
Start of Calendar Year (12-31-2019)	99.61	0.39	0.00	0.00	0.00	0.00
Start of Water Year (09-29-2019)	29.83	70.17	45.34	26.30	3.91	0.00
One Year Ago (10-06-2019)	56.34	43.66	10.09	1.29	0.00	0.00

Intensity:
None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

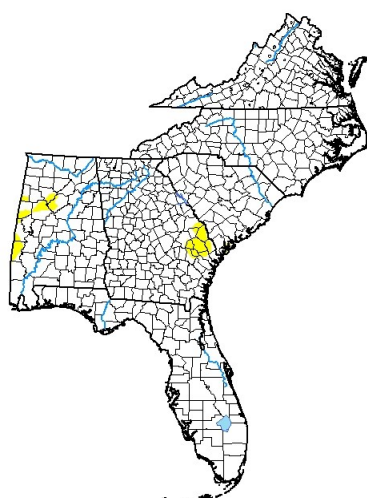
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Author:
Brian Fuchs
National Drought Mitigation Center



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U.S. Drought Monitor Southeast



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	98.03	1.97	0.00	0.00	0.00	0.00
Last Week (09-29-2020)	99.02	0.98	0.00	0.00	0.00	0.00
3 Months Ago (07-07-2020)	99.21	0.79	0.03	0.00	0.00	0.00
Start of Calendar Year (12-31-2019)	93.12	6.88	1.69	0.00	0.00	0.00
Start of Water Year (09-29-2019)	99.02	0.98	0.00	0.00	0.00	0.00
One Year Ago (10-06-2019)	20.05	79.95	60.60	23.41	4.46	0.00

Intensity:
None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

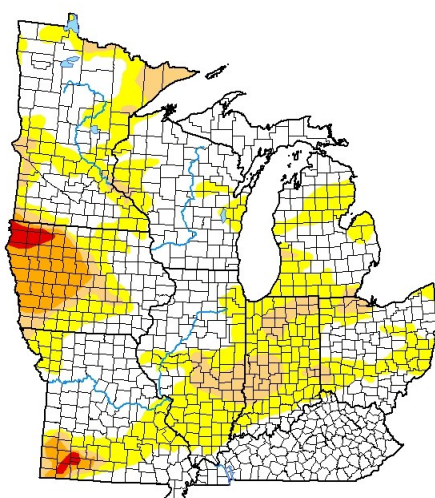
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Author:
Brian Fuchs
National Drought Mitigation Center



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U.S. Drought Monitor Midwest



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.80	43.20	13.33	4.89	0.79	0.00
Last Week (09-29-2020)	58.19	41.81	11.09	3.01	0.00	0.00
3 Months Ago (07-07-2020)	71.11	28.89	5.51	1.01	0.00	0.00
Start of Calendar Year (12-31-2019)	99.74	0.26	0.00	0.00	0.00	0.00
Start of Water Year (09-29-2019)	58.19	41.81	11.09	3.01	0.00	0.00
One Year Ago (10-06-2019)	76.30	23.70	10.50	1.48	0.09	0.00

Intensity:
None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

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Brian Fuchs
National Drought Mitigation Center



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The Northeast

The greatest rains fell from northern Virginia into central Pennsylvania and portions of New England. Coastal areas did not fare as well and conditions continued to dry out there. Temperatures ranged from 6-8 degrees above normal in Maine to 2-4 degrees below normal in western Pennsylvania. Where the greatest rains fell, abnormally dry conditions were improved over eastern New York, southern Vermont and into extreme western Massachusetts and Connecticut. Extreme drought continued to spread into more of southern New Hampshire, eastern Massachusetts and Connecticut. A new area of extreme drought was also introduced in western Maine, as even with the recent precipitation, indicators were still the driest in this region. Abnormally dry and moderate drought conditions were expanded over northern and western New York, eastern and western areas of Pennsylvania and into northern West Virginia.

Southeast

Cooler than normal temperatures dominated the region this week with departures of 6 -9 degrees below normal. Most areas were dry this week, but coupled with the cooler temperatures, development of dryness or drought conditions was minimal. In the short term of the last 60 days or so, there are pockets of dryness developing, and abnormally dry conditions were expanded in southeast Georgia and also western Alabama this week. The impact of Hurricane Delta will need to be watched going forward to determine how quickly other areas could develop into the abnormally dry status.

Midwest

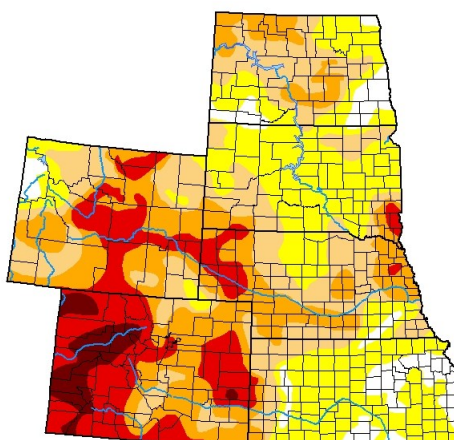
A mix of precipitation over the eastern portions of the region and into Michigan but dry over much of the rest of the area was the theme for this week. Temperatures were well below normal in the region, with most areas 6-8 degrees below normal for the week. Abnormally dry and moderate drought conditions were expanded this

week in portions of Ohio, Indiana and southern Illinois. Portions of northern Illinois were reevaluated based on recent precipitation, and some improvements were made to the moderate drought and abnormally dry conditions based on the short-term precipitation. Areas of southwestern Missouri continue to dry out and a new area of extreme drought was added this week while areas of moderate and severe drought also expanded. Northwest Iowa also saw degradation this week as severe drought was expanded and a new pocket of extreme drought was introduced. Abnormally dry and moderate drought conditions were also expanded over southeast and northeast Minnesota, northwest Minnesota, and portions of western Wisconsin.

High Plains

Cooler than normal temperatures dominated the eastern half of the region with departures of up to 6-8 degrees below normal while the western half was warmer than normal with departures of 4-6 degrees above normal. Precipitation was almost none existent in the region for the week, with only a few areas of light showers in portions of South Dakota and Nebraska. Moderate drought and abnormally dry conditions were expanded in portions of eastern North Dakota. In eastern, southwest and central Nebraska, severe drought expanded along with some expansion of moderate drought. Moderate, severe, and extreme drought also expanded in western Nebraska as the entire state continues to dry out. In South Dakota, moderate drought was expanded in the northwest while severe drought was expanded in the southeast. A new area of extreme drought was also introduced in southeast South Dakota. Extreme drought was introduced in far southwest South Dakota while moderate drought also expanded to the east. In northeast Wyoming, moderate drought expanded while severe drought expanded slightly in the southeast. Eastern Colorado had a large expansion of extreme drought conditions

U.S. Drought Monitor High Plains



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.44	93.56	64.87	40.96	18.25	3.42
Last Week 09-29-2020	6.73	93.27	62.11	36.56	16.16	0.54
3 Months Ago 07-07-2020	32.89	67.11	35.83	13.99	7.39	0.00
Start of Calendar Year 12-31-2019	75.57	24.43	12.06	4.79	0.00	0.00
Start of Water Year 09-29-2020	6.73	93.27	62.11	36.56	16.16	0.54
One Year Ago 10-08-2019	78.95	21.05	8.36	2.30	0.00	0.00

Intensity:
 None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

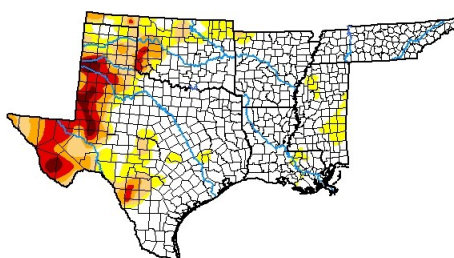
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National Drought Mitigation Center



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U.S. Drought Monitor South



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	68.72	31.28	19.89	12.98	7.00	1.66
Last Week 09-29-2020	71.83	28.17	18.56	12.16	6.27	1.66
3 Months Ago 07-07-2020	63.16	36.84	19.39	7.13	1.62	0.00
Start of Calendar Year 12-31-2019	63.30	36.70	20.62	5.16	0.37	0.00
Start of Water Year 09-29-2020	71.83	28.17	18.56	12.16	6.27	1.66
One Year Ago 10-08-2019	43.84	56.16	32.74	16.67	4.35	0.00

Intensity:
 None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

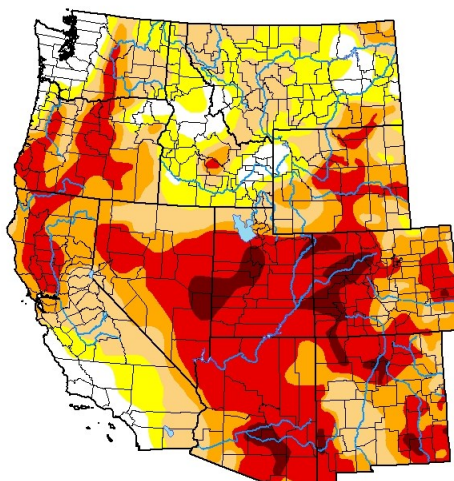
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National Drought Mitigation Center



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U.S. Drought Monitor West



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7.96	92.04	77.48	56.22	35.20	4.50
Last Week 09-29-2020	8.51	91.49	76.07	54.55	33.11	2.31
3 Months Ago 07-07-2020	34.34	65.66	44.65	23.23	5.05	0.00
Start of Calendar Year 12-31-2019	59.17	40.83	18.17	7.12	0.00	0.00
Start of Water Year 09-29-2020	8.51	91.49	76.07	54.55	33.11	2.31
One Year Ago 10-08-2019	69.63	30.37	16.07	5.31	0.00	0.00

Intensity:
 None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

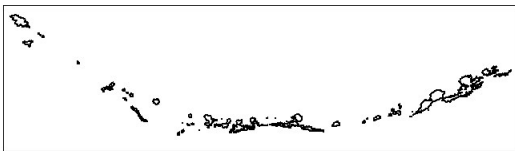
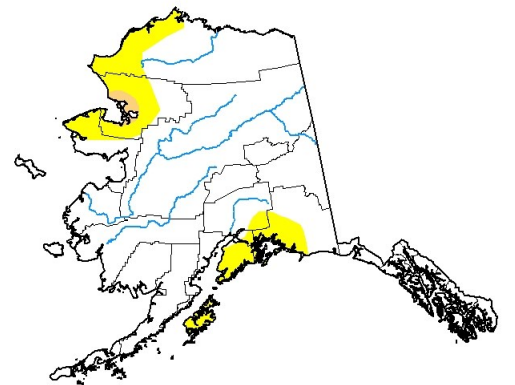
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U.S. Drought Monitor Alaska



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	85.51	14.49	0.85	0.00	0.00	0.00
Last Week (09-29-2020)	77.85	22.15	0.79	0.00	0.00	0.00
3 Months Ago (07-07-2020)	94.42	5.58	0.00	0.00	0.00	0.00
Start of Calendar Year (12-31-2019)	93.18	6.82	0.83	0.00	0.00	0.00
Start of Water Year (09-29-2020)	77.85	22.15	0.79	0.00	0.00	0.00
One Year Ago (10-08-2019)	88.54	11.36	5.03	2.00	0.88	0.00

Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

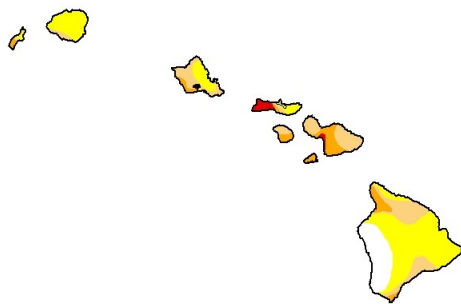
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U.S. Drought Monitor Hawaii



October 6, 2020
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.46	86.54	39.71	13.33	2.25	0.00
Last Week (09-29-2020)	13.46	86.54	39.71	13.33	2.25	0.00
3 Months Ago (07-07-2020)	26.50	73.50	25.46	2.82	0.00	0.00
Start of Calendar Year (12-31-2019)	36.78	63.22	17.58	6.66	0.99	0.22
Start of Water Year (09-29-2020)	13.46	86.54	39.71	13.33	2.25	0.00
One Year Ago (10-08-2019)	72.64	27.36	14.10	6.45	1.04	0.00

Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

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National Drought Mitigation Center



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U.S. Drought Monitor Puerto Rico



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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	94.94	5.06	0.00	0.00	0.00	0.00
Last Week (09-29-2020)	94.94	5.06	0.00	0.00	0.00	0.00
3 Months Ago (07-07-2020)	27.80	72.20	54.54	32.19	0.00	0.00
Start of Calendar Year (12-31-2019)	63.82	36.18	10.86	0.00	0.00	0.00
Start of Water Year (09-29-2020)	94.94	5.06	0.00	0.00	0.00	0.00
One Year Ago (10-08-2019)	82.06	17.94	7.93	0.00	0.00	0.00

Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

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Brian Fuchs
National Drought Mitigation Center



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while severe drought expanded in the northeast.

South

Although most of the region received no precipitation during the week, cooler temperatures helped to reduce the amount of drought expansion this week as temperatures were generally 3-6 degrees below normal. Abnormally dry conditions and moderate drought were expanded over northern Oklahoma this week while extreme drought expanded over the southwest portions of the state. Abnormally dry conditions expanded over portions of southern Louisiana and eastern Mississippi while moderate drought and abnormally dry conditions expanded over northwest Arkansas. Texas continued to see conditions deteriorate over the panhandle and areas of the south Texas Plains and into the Hill Country.

West

Hot and dry continues to be the theme of the region and also the monsoon season that was minimal at best, all of which is providing the conduit for continued deterioration in the region. Over the last 6 months, Arizona and California have had their warmest April–September period ever in 126 years, with New Mexico and Nevada the 2nd warmest. During that same 6-month period, Utah and Arizona have also had their driest period ever, with New Mexico having their 2nd and Colorado their 3rd driest. In Arizona, the new established record for statewide precipitation was greater than 2 inches drier than the previous record. During the current week, temperatures were warmest along the coast, where departures were 5-10 degrees above normal for the week. Drought intensified and expanded over southeast Montana and into northwest Wyoming where moderate, severe, and extreme drought all increased in coverage. A new area of moderate drought was introduced in southwest Wyoming and into southeast Idaho. Western Colorado and eastern Utah had large expansions of excep-

tional drought, and this also went into northwest New Mexico. Extreme drought also expanded over north central Colorado. Western and northern New Mexico as well as northeast Arizona had severe and extreme drought expand while a new area of extreme drought was introduced in eastern portions of New Mexico. In southern Arizona, extreme and exceptional drought also expanded in coverage. In Idaho, abnormally dry conditions and moderate drought expanded over the southeast and southwest portions of the state as well as into southeast Oregon. Central and northeast Oregon also had expansion of severe and extreme drought this week.

Hawaii, Alaska and Puerto Rico

There were no changes in Hawaii and Puerto Rico this week. In northern Alaska, areas of abnormally dry conditions were reduced in response to well above normal precipitation during September.

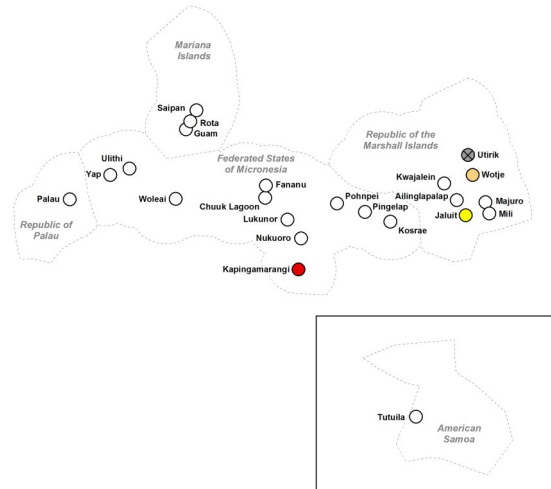
Pacific Islands

This week the Republic of Palau remained free of dryness and received ample rainfall with 5.49 inches at Palau's International Airport and 4.66 inches at the COOP station for the week ending Oct. 6. September precipitation totaled 7.28 inches at the airport.

The Mariana Islands also had a wet week, remaining free of dryness, with rainfall exceeding the 1 inch weekly minimum needed. Saipan received 1.64 inches for the week and 7.46 inches for the month of September. The ASOS station received 4.97 inches for the week, while the NPS station received 3.45 inches. Rainfall in Rota was 8.42 inches for the week after receiving 17.90 inches in September. Guam received 3.57 inches for the week and 10.96 inches in September.

U.S. Drought Monitor U.S. Affiliated Pacific Islands

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Intensity:

- No Data
- No Drought or Dryness
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

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Author:

Denise Gutzmer
National Drought Mitigation Center



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U.S. Drought Monitor U.S. Virgin Islands

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Intensity:

- No Data
- No Drought or Dryness
- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

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Most islands in the Federal States of Micronesia received more than 2 inches for the week, including Chuuk with 5.77 inches, Kosrae with 4.22 inches, Nukuoro with 5.02 inches, Pingelap with 2.59 inches, Pohnpei with 4.49 inches and Ulithi with 2.97 inches. Woleai, Yap, Lukunor and Fananu were drier, each receiving less than an inch, but received enough rain in previous weeks to remain free of dryness. Kapingamarangi remained at D3 and received just 0.43 inches for the week and only 0.86 inches for September, with 0.40 falling on Sept. 2. Three and a half of Kapingamarangi's water reserve community tanks had been used, leaving two and a half tanks of water, enough for just over a month. Vegetation withered with most coconut trees turning yellow and containing less coconut juice in the fruits. Most other vegetation, including banana trees and taros, have turned brown, and taro patches have dried up. A relief requested was submitted by the Chief Magistrate office of Kapingamarangi to the Pohnpei State Disaster Office, requesting drinking water supplies and other food products.

Most locations in the Marshall Islands exceeded the weekly minimum of 2 inches of precipitation to meet most water needs. Ailinglaplap, Kwajalein, Majuro and Mili all received more than 2 inches and remained free of dryness. Jaluit remained in D0, having received 1.53 inches for the week. Wotje was at D2, but was improved to D1 after 4.70" fell during the week.

Locations in American Samoa remained free of dryness as Pago Pago received 3.19 inches and Toa Ridge received 2.00 inches.

Virgin Islands

Radar-based estimates of rainfall for the 7 days ending at 12z on Tuesday in the U.S. Virgin Islands indicated rainfall of at least 2 inches across nearly all of St. Thomas and St. John, while St. Croix received at least an inch on the western two-thirds of the island, while the eastern third was drier.

St. Thomas became free of abnormal dryness. Precipitation at Cyril E. King AP was 1.64 inches, or

above normal. The CoCoRaHS stations reported rainfall ranging from 0.53 to 2.06 inches for the week. SPI values indicated drought-free conditions at 1 and 3 months, but abnormal dryness at 6, 9 and 12 months.

Adequate rainfall allowed St. John to emerge from abnormal dryness this week. The CoCoRaHS stations reported 1.51 to 2.24 inches. SPI values for Wind-swept Beach at 1 and 3 months were nearing that of abnormal dryness, but pointed toward abnormal dryness to moderate drought at 6, 9 and 12 months.

St. Croix went from D0 to drought-free this week as rainfall at Henry Rohlsen AP amounted to 1.10 inches, which was about normal. The CoCoRaHS stations reported rainfall ranging from 0.81 to 2.74 inches. SPI values for the airport were drought-free at 1 and 3 months, but indicated near abnormal dryness to moderate drought at 6, 9 and 12 months.

Looking Ahead

Over the next 5-7 days, it is anticipated that precipitation chances will be greatest in the East and Southeast, with the greatest precipitation associated with Hurricane Delta. A more active pattern over the Pacific Northwest will likely bring precipitation into that area and into the northern Rocky Mountains. Areas of the northern Plains are also anticipating less than an inch of precipitation. Temperatures will be above normal for almost the entire country, with portions of the Plains having departures of up to 12 degrees above normal. The 6-10 day outlooks show the greatest probabilities to record above-normal temperatures are along both the West and East coasts as well as the Northeast, with below-normal chances of above-normal temperatures in Alaska. The precipitation outlook has above-normal chances of below-normal precipitation over the western half of the United States and above-normal chances of above-normal precipitation over much of the South, Midwest, and Mid-Atlantic and into the Northeast.

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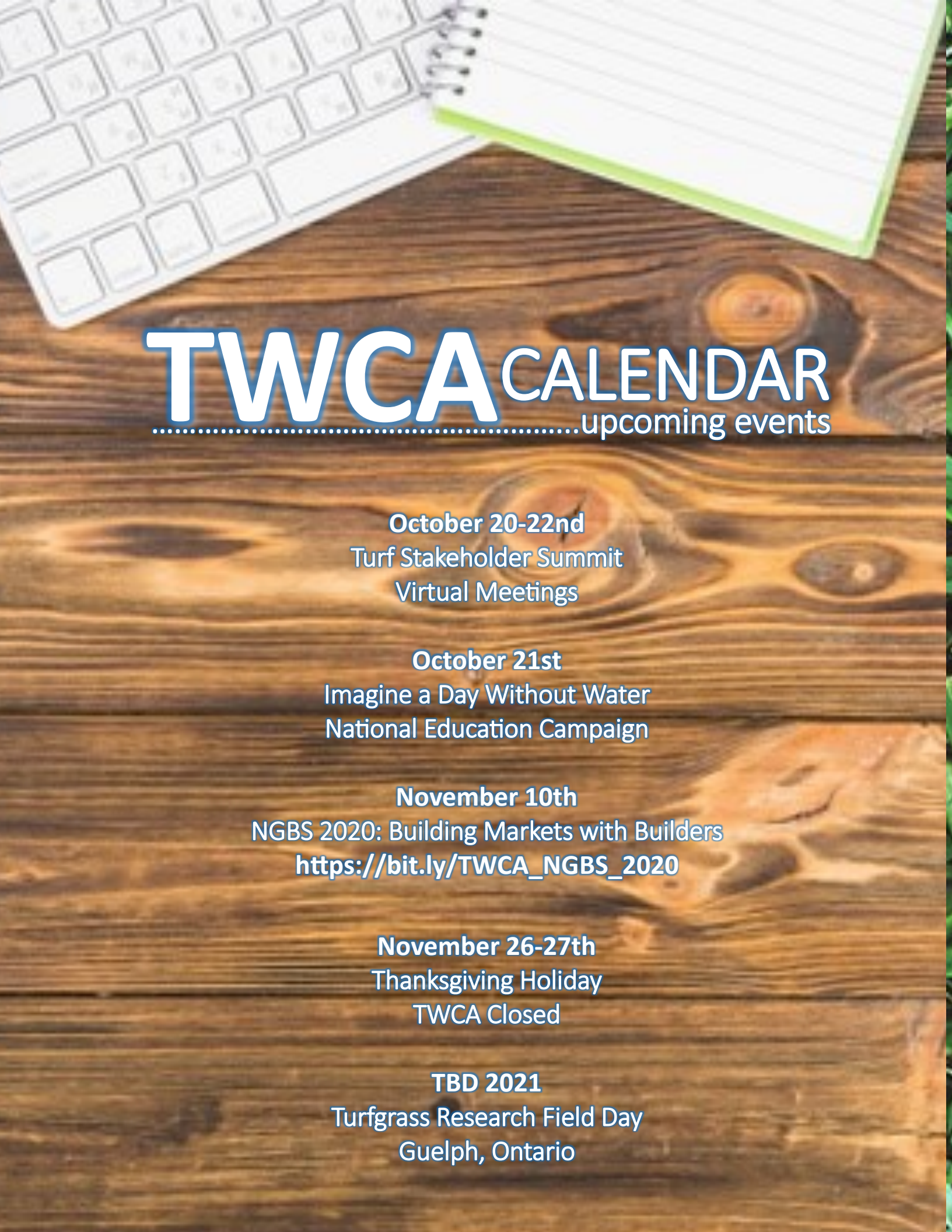
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TWCA CALENDAR

.....upcoming events

October 20-22nd
Turf Stakeholder Summit
Virtual Meetings

October 21st
Imagine a Day Without Water
National Education Campaign

November 10th
NGBS 2020: Building Markets with Builders
https://bit.ly/TWCA_NGBS_2020

November 26-27th
Thanksgiving Holiday
TWCA Closed

TBD 2021
Turfgrass Research Field Day
Guelph, Ontario



DROUGHT TOLERANCE TRIALING

Evaluation by the Numbers

21k PHOTOS

TWCA Cooperators will
have taken over 21000
images this year

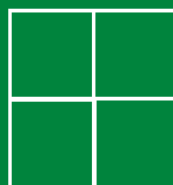


134 CULTIVARS

qualified in every major
seeded species over 10
Years trialing

1500 PLOTS

In the 2020 Tall Fescue
trial across North America



13 LOCATIONS

running TWCA trials this year to
collect objective drought
tolerance and turf quality data

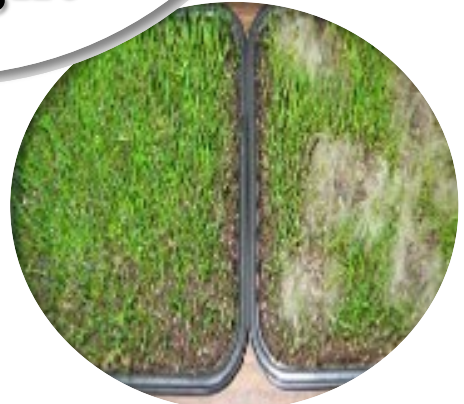
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Drought



Disease



Traffic

**Better Turf
By Design**