

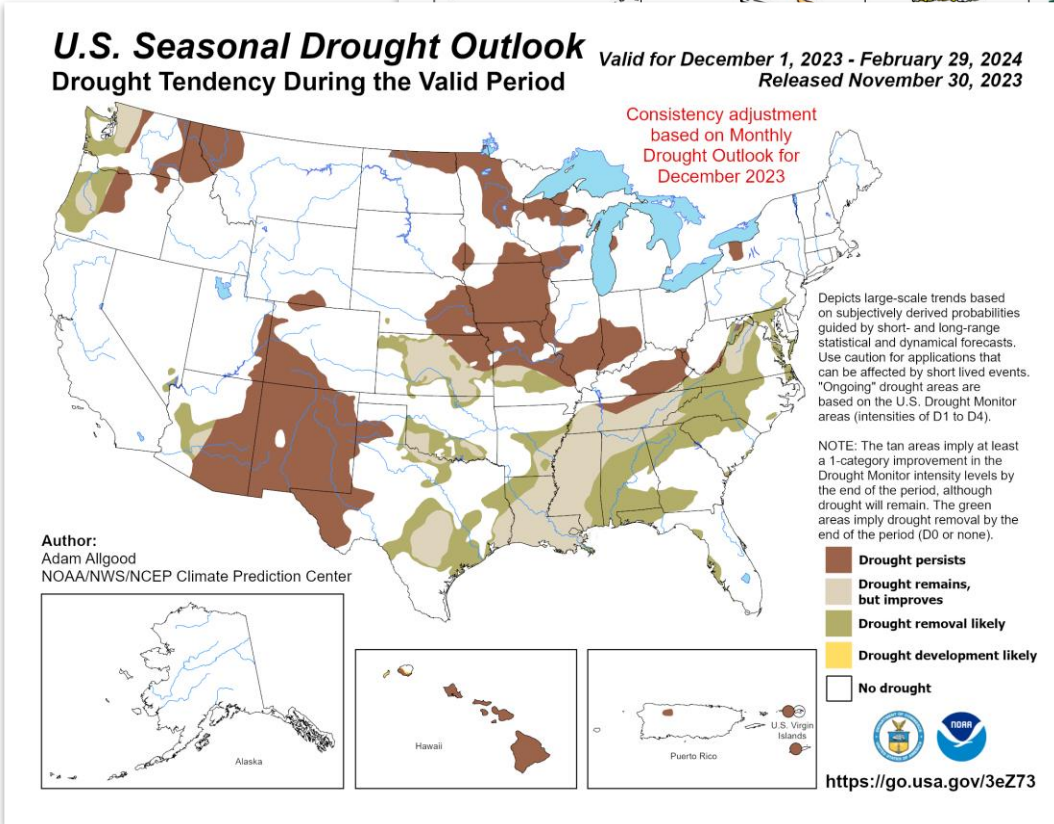
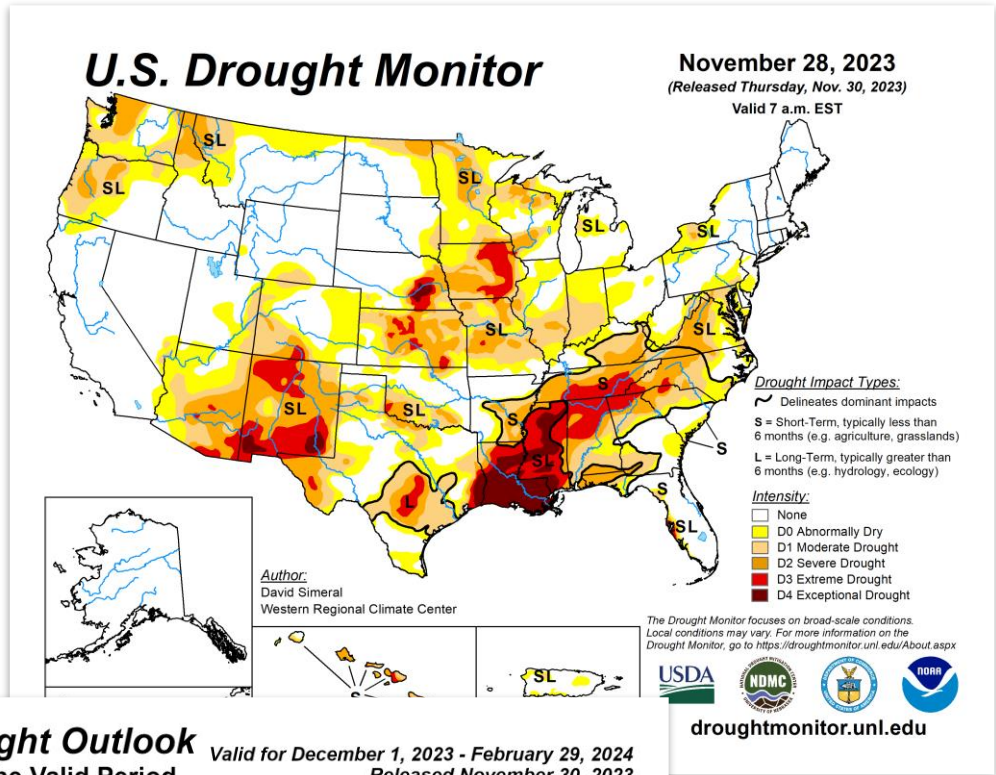


Looking back and looking ahead: Southeast Region

BARTLETT TREE RESEARCH LABORATORIES

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The past few seasons have generally seen cycles of intermittent droughts in many parts of the Southeast Region, especially in the early spring and fall months. Droughts have continued and strengthened this fall, peaking in November with record drought in some areas. But with the shift from La Niña to El Niño, changes are underway and we must remember to react accordingly for plant health care.



On the positive side, El Niño conditions typically bring heavier precipitation over the winter months. Drought conditions are forecasted to rapidly lessen or be removed altogether.

However, rapid swings from excessively dry conditions to excessively wet conditions can be very stressful on plants.

Of particular concern is **Phytophthora root rot, which is known to be most severe when rainy periods follow periods of severe water stress.**

Drought-weakened and stressed roots subjected to flooding stress and excessive soil moisture for long periods allow diseases like *Phytophthora* to spread, infect, and proliferate.

When looking ahead to a potentially wet winter and spring, the best solutions are preventative and cultural in nature and may include the following:

- Mulching trees to reduce drought stress and moderate soil moisture over dry months
- Ensuring good drainage to prevent standing water and especially flooding stress
- Soil care such as root invigoration to increase organic matter and soil aeration
- Products to limit spread of the pathogen

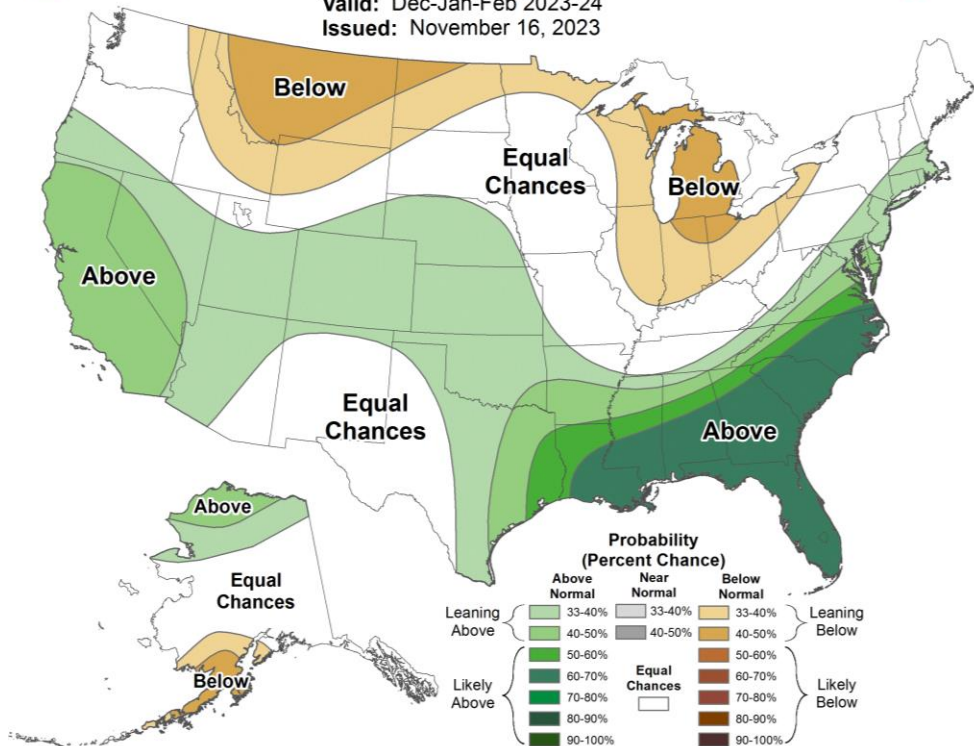
See the Bartlett Tree Experts Technical Reports on *Phytophthora* Diseases for more information.



Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2023-24
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RESEARCH LABORATORY TECHNICAL REPORT

Phytophthora Root and Collar Disease Drew Zwart, PhD, Plant Physiology

Phytophthora root disease is a widespread but often overlooked disease of landscape plants. There are many species in this genus that attack woody ornamentals. These fungus-like organisms grow in the fine roots, cambium, and sapwood causing death of the tissue. Loss of water and nutrient absorbing capacity and stored carbohydrate reserves...

RESEARCH LABORATORY TECHNICAL REPORT

Diagnosing Phytophthora Diseases On Landscape Ornamentals

By the Bartlett Lab Staff
 Directed by Kelby Fite, PhD

Phytophthora spp. is an aggressive plant pathogen that affects many landscape ornamental plants. In fact, the word *Phytophthora* is derived from Greek, meaning "plant destroyer." Root rot, root collar rot, and stem cankers are the most common problems caused by this pathogen; however, leaves, petioles, and fruit can also be infected on certain ornamental hosts.

Phytophthora is a fungus-like organism that infects plant tissue under high-moisture conditions. Ornamentals planted in poorly drained, water-logged soils are most susceptible to infection as *Phytophthora* spreads via motile zoospores that are able to swim through films of water in the soil. In some cases, these zoospores can also splash onto and infect above ground plant parts causing stem cankers, shoot blighting, and leaf spots (Figure 4). When zoospores come in contact with a susceptible host, they germinate and invade the plant tissue.

Figure 1: Phytophthora root rot on Taxus

Figure 2: Close-ups of Phytophthora root rot on Taxus

are poorly drained or receive excessive irrigation and also in from planting diseased stock. *Phytophthora* is a soil-borne forms resting spores that can survive long periods without a favor disease development. *Phytophthora* can increase rapidly

twig and branch dieback and eventually death (Figure 1). Diseased roots are discolored, lack fine roots, and are pulled apart easily (Figure 2). Rapid wilting (Figure 3) and death of the entire plant characterize the acute form of the disease. *Phytophthora* lesions may extend into the root collar, which causes girdling of the stem and rapid collapse of the crown.

Figure 1: Fine root death caused by Phytophthora may lead to symptoms of nutrient deficiency due to reduced uptake capability



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This is also the perfect time to evaluate and adjust irrigation systems. Landscape beds and trees that may have needed supplemental watering over the La Niña cycle dry periods could rapidly become overwatered over the next few months if irrigation is not adjusted based on soil moisture and plant requirements. In some cases, irrigation can do more harm than good when it comes to root health!

You may want to consider other aspects of your environment as well, such as the recently announced changes in plant hardiness zones and opportunities for expanded plant selection.

Finally, remember that adaptation is the norm when it comes to landscape care. With good cultural practices and overall plant health care, we aim to help trees and shrubs be resilient to changing conditions.

Talk with your Bartlett arborist representative about the needs of your particular landscape and microclimate.

