



Nebraska Forest Health Highlights 2025



Nebraska Forest Service & University of Nebraska-Lincoln

The Forest Resource

Nebraska has 1.5 million acres of forestland and an additional 1.3 million acres of non-forestland with trees. Ponderosa pine forests dominate the west and represent the eastern-most range of this species in the U.S (figure 1). Central hardwood forests typical of the eastern U.S. are found in the eastern part of the state, and the birch/aspen forests in northern Nebraska are representative of northern boreal forests. These forest types, combined with elm-ash-cottonwood riparian forests, mixed conifer forests, conservation tree plantings and urban forests, create a highly diverse and unique array of tree and forest resources growing within an agricultural and range landscape.

The dominant species of Nebraska's non-forestland with trees (defined as less than one acre, less than 120 feet wide and less than 10% stocked) are eastern redcedar, Siberian elm, hackberry, red mulberry and ash; although by cubic volume, cottonwood/poplar species dominate. Trees on non-forestland provide unique benefits such as wind protection, snow drift management, energy savings, livestock protection, crop protection and yield increases, water quality and soil protection, wildlife habitat and other ecosystem services, as well as aesthetic benefits and make communities more livable. Although not large units individually, these areas are important components in Nebraska's urban and rural landscapes.



Figure 1: Ponderosa pine in western Nebraska. (Laurie Stepanek, Nebraska Forest Service).

Forest Pests and Problems of Note in 2025

Oak Mortality

Media coverage of widespread oak (*Quercus* spp.) mortality occurred in 2025, however most of the mortality had occurred in the prior years due in large part to drought and *Biscogniauxia* canker. The death of an iconic bur oak (*Q. macrocarpa*) estimated at nearly 400 years old was a feature of the news coverage (figure 2). Oaks in urban areas, particularly in the red oak group, continued to decline, fail and die. In addition to *Biscogniauxia* and drought, decay fungi are often associated with oak mortality, including *Armillaria*, *Ganoderma*, and *Inonotus* (figure 3).



Figure 2: A centuries-old bur oak in Ponca State Park exhibited severe decline in 2023 due to drought and *Biscogniauxia* canker. The death of this iconic tree made the news in 2025. (Laurie Stepanek, Nebraska Forest Service).



Figure 3: Limb failure of decayed urban oak in 2025. Fruiting structure of *Inonotus andersonii* clearly visible on decayed wood surface along with bright yellow spores deposited on the inner bark surface. (Kendall Weyers, Nebraska Forest Service).

Herbicide Injury

Herbicide injury to trees is a widespread perennial problem in Nebraska in both rural and urban areas. Many herbicides are volatile and can move long distances, but improper application practices are also often responsible for damage to non-target vegetation. Short-term tree damage is often apparent, but repeated exposure to even low herbicide levels likely limits their lifespan. Examples of herbicide injury in 2025 where tissue tests were conducted include the following:

Bur oak leaf testing: Several bur oak trees in various locations in eastern Nebraska showing varying levels of distorted foliage typical of herbicide damage were tested for the presence of plant growth regulator-type herbicides (17 active ingredients tested). Nearly all of the trees showed detectable levels of both 2,4-D and dicamba. One sample also showed detectable levels of clopyralid.

Bur oak leaf testing: In another case, three bur oaks in a small Nebraska community showing severe leaf distortion (figure 4) were tested for a wider range of herbicides. The tests included 17 plant growth regulator-type herbicides, nine pre-emergence herbicides and two organophosphate herbicides. The following were detected in the trees: 2,4-D, dicamba, acetochlor, atrazine, and metolachlor, plus glyphosate in two of the trees and glufosinate in the third tree.



Figure 4: Distorted foliage of bur oak. The following herbicides were detected in leaf samples collected from this tree: 2,4-D, dicamba, acetochlor, atrazine, metolachlor, and glyphosate. (Justin Evertson, Nebraska Forest Service).

Bur oak leaf and acorn testing: Additional tests conducted in 2025 on bur oaks looked at herbicide levels in late summer in both leaf and acorn nut meat tissues. The oaks were located in three rural sites in eastern Nebraska. At two of the sites, both 2,4-D and dicamba were detected in the nut meat of the acorns, while the leaf tissues had 2,4-D, acetochlor, and glufosinate in one site, and 2,4-D, triclopyr, atrazine, glufosinate and glyphosate at the other. No herbicides were detected in the nut meat at the third site, although the leaves did have some detectable herbicides.

Black walnut: A stand of young black walnut (*Juglans nigra*) was defoliated following herbicide application to a nearby pasture in late spring. Overspray of the trees likely occurred. Symptoms included foliar yellowing followed by defoliation (figure 5). Partial refoliation

occurred by August, however some of the new growth was distorted. Tissue tests showed greater than 5,000 ppb 2,4-D plus small amounts of aminopyralid and metsulfuron-methyl.



Figure 5: Herbicide damage symptoms of black walnut in June (left) and August (right). Tissues tests showed >5,000 ppb 2,4-D plus aminopyralid and metsulfuron-methyl. (images courtesy of landowner and Laurie Stepanek, Nebraska Forest Service).

Vole Damage

Young windbreaks sometimes are damaged by voles, especially windbreaks where landscape fabric is used for weed control, which provides protection for the rodents' tunnels. Extensive tree and branch mortality to eastern redcedar (*Juniperus virginiana*) was noted in 2025 where voles had stripped bark (figure 6). Small, irregular tooth marks on the wood where the bark is missing and tunnels below the soil near the trunk help diagnose the problem.



Figure 6: Bark girdling by voles resulting in eastern redcedar mortality. (Laurie Stepanek, Nebraska Forest Service).

Drought

Drought is the greatest weather-related problem for trees in Nebraska, stressing trees and making them more susceptible to insect pests and diseases. Most of Nebraska was quite dry in fall of

2024, which became even more severe in early spring of 2025, especially in the north and west. By late summer there was some moderation (figure 7). Pine (*Pinus*) mortality and pests (especially bark beetles, borers, and Diplodia) were reported frequently in western Nebraska in 2025, likely due to underlying drought conditions.

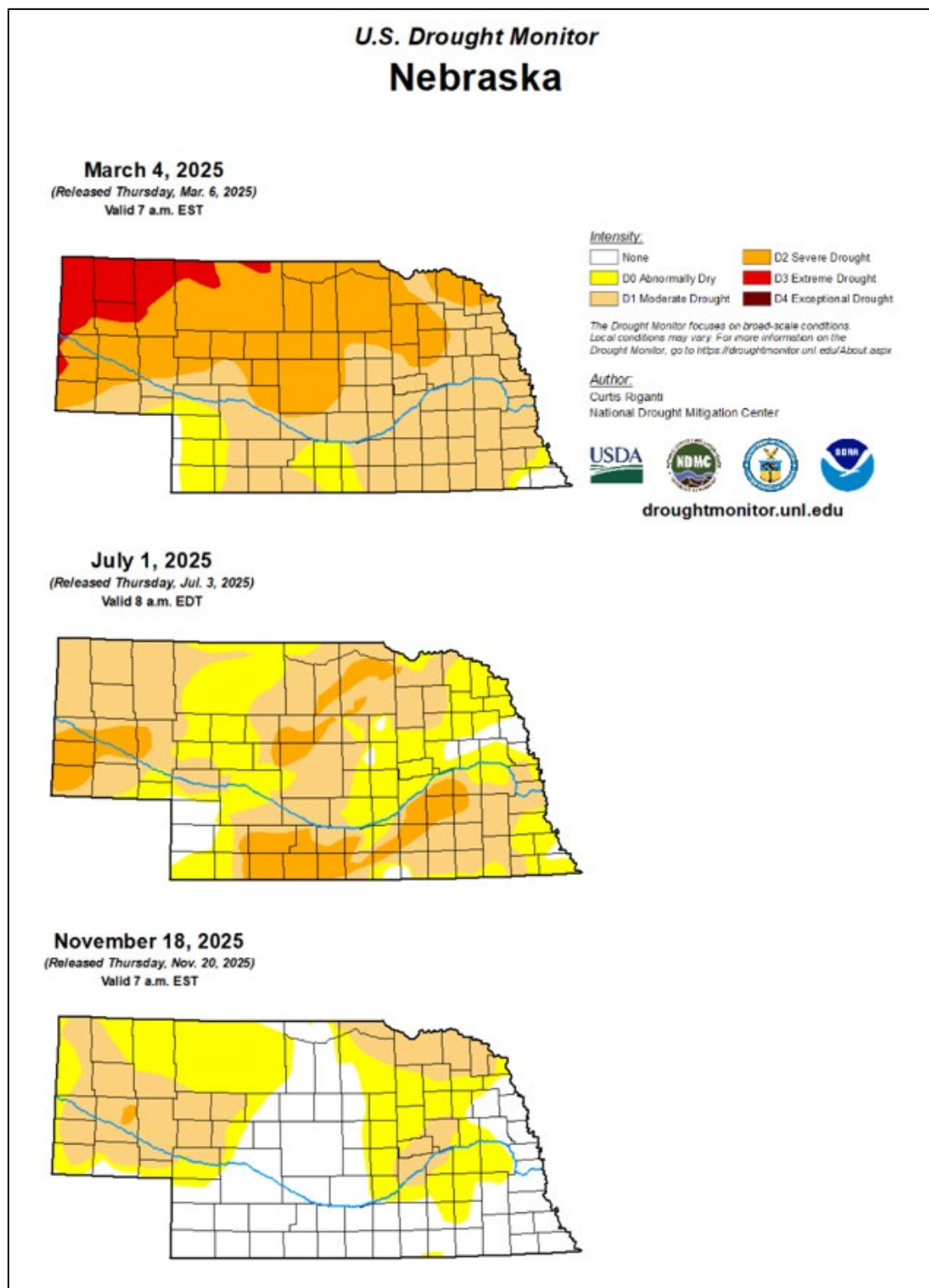


Figure 7: Drought conditions in Nebraska in 2025. (from Curtis Riganti, National Drought Mitigation Center).

More Information

Nebraska Forest Service mission: To enrich the lives of all Nebraskans by protecting, restoring and utilizing Nebraska's tree and forest resources.

For more information on forest health in Nebraska, please visit the Nebraska Forest Service:
www.nfs.unl.edu

For more information on the U.S. Forest Service Forest Health Monitoring program visit:
<https://www.fs.usda.gov/science-technology/forest-health-protection/monitoring>

The Nebraska Forest Service is part of the University of Nebraska-Lincoln Institute of Agriculture and Natural Resources. Information in this report was collected from pest calls and site visits addressed by Nebraska Forest Service personnel.

