2025 Forest Health *highlights*

ILLINOIS

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FOREST HEALTH ISSUES FOR 2025: AN OVERVIEW

This year began with a somewhat wet and cool spring for most of Illinois which led to somewhat higher levels of foliar diseases such as apple scab, cedar apple rust, powdery mildew, anthracnose, needle tip blight of pines, junipers, and arborvitae, and needle cast diseases compared with previous years. Heavy spring precipitation led to flooding in parts of Illinois while the rest of the state remained dry. Beginning in July, abnormally dry to moderate drought conditions progressed well into the fall with the exception of southern Illinois. Most rain that was received came as heavy downpours with very limited infiltration into the soil due to dry and crusted soils.

As in 2024, ongoing statewide issues included herbicide injury to oaks and other hardwood tree species, decline of spruces and pines, and decline and rapid mortality of oaks. Throughout the field season, the Illinois Forest Health team was on the lookout for diseases such as Sudden Oak Death (SOD) and Laurel Wilt (LW); neither one was detected. However, several new spotted lanternfly (SLF) infestations were detected in Cook County adding to the one found in September, 2023. Additionally, a statewide invasive plant survey was expanded to determine the presence and environmental conditions favoring the establishment and spread of a number of herbaceous and woody invasive plants. The survey will continue for the next several years.

Note: This issue of *Illinois Forest Health Highlights* (IFHHs) will address ongoing forest health issues including herbicide drift damage, oak decline, extreme weather events, and new and emerging, exotic pests and diseases, such as the spotted lanternfly (SLF), elm zigzag sawfly (EZZSF), laurel wilt (LW), and box tree month (BTM). For details on additional chronic insect pests (i.e. EAB) and diseases (TCD, oak wilt, foliar and needle cast diseases, cankers), please refer to previous issues of IFHHs.

ABIOTIC AND BIOTIC PLANT DISEASES

HERBICIDE DRIFT DAMAGE

Herbicide drift damage to trees statewide continued to be reported in 2025, particularly on state and private lands bordering agricultural fields. Due to budget cuts and increased costs associated with leaf tissue chemical analysis and forest health budget reductions, leaf tissue samples were not collected or submitted for analysis for the 2025 field season. For a more recent comprehensive report of herbicide drift in Illinois, please refer to the 2024 publication by Prairie Rivers Network entitled ***Hidden in Plain Site: Herbicide Drift and Chemical Trespass: A Summary of 6 Years of Monitoring and Tissue Analysis by Kim Erndt-Pitcher & Martin Kemper.***

SUDDEN OAK DEATH (SOD)

Sudden oak death (SOD) is a disease of oaks caused by the pathogen *Phytophthora ramorum*, a water mold that also impacts over 100 other plant species throughout the world. The disease was originally detected in California in the 1990s and has since killed millions of oaks on the West Coast. The pathogen can spread through infected nursery stock and surface water. In 2020, it was detected in plants distributed to retail locations throughout Illinois. Beginning with the 2022 through 2025 field seasons, surface runoff water samples were taken and analyzed to monitor for the presence and potential spread of SOD (*P. ramorum*) into neighboring state natural areas, forests, and parks. **The ongoing SOD detection and monitoring survey was terminated in fall, 2025. To date, all test results have been returned negative with no symptomatic plants being detected.**

LAUREL WILT AND THE REDBAY AMBROSIA BEETLE

Another serious disease that we are monitoring for is Laurel Wilt. It is a fungal wilt disease caused by the pathogen *Raffaelea lauricola* which is spread primarily by the tiny redbay ambrosia beetle (*Xyleborus glabratus*) and several other beetle species. The disease has killed hundreds of millions of redbay (*Persea borbonia*) and swamp bay (*P. palustris*) trees, two important understory species, in the southeastern United States. The fungus also affects other members of the laurel family (Lauraceae) including sassafras (*Sassafras albidum*) and spicebush (*Lindera benzoin*). Like other wilt diseases, the fungus induces a reaction in the tree that restricts the flow of water, causing leaves and branches to wilt and turn brown, and eventually killing the entire tree **(Figure 1)**. The redbay ambrosia beetle is very small (about 2 mm long) and is rarely seen **(Figure 2)**, although signs including small exit holes, sawdust "noodles", or fine sawdust can indicate their presence. ***For noodle images refer to https://www.forestryimages.org/search/action.cfm?q=ambrosia+beetle+noodle.***

Although redbay trees do not grow in Illinois, sassafras and spicebush are an important part of ecosystems in the southern part of the state and are susceptible to the wilt. The pathogen was recently detected in western Kentucky, so the disease and the beetle vector have been monitored since 2020 in southern and central Illinois. **To date, no symptomatic trees or redbay ambrosia beetles have been detected in Illinois.** Monitoring for this destructive fungus and its insect vector are ongoing.

Figure 1. Signs of laurel wilt in sassafras: brown wilted leaves (L) and dark streaks under the bark (R). Photo courtesy of University of Kentucky College of Agriculture, Food and the Environment.

Figure 2. The redbay ambrosia beetle on a finger. Photo courtesy of USDA Forest Service.

IS IT OAK WILT OR ANTHRACNOSE?

Oak wilt is found in every Illinois county and has become a major urban and forest tree disease. Oak wilt levels for 2025 were comparable to previous years. This fungal disease is lethal to oaks, particularly oaks in the red oak group, and trees must be treated preventatively with fungicides to insure survival. Anthracnose may be confused with oak wilt later in the season. **(Figure 3)** Be sure to properly diagnose the problem before employing management options. Prevention is important, so remember not to prune between April and November, and consult with experts before removing an infected tree because the disease can spread through the root grafts. The only way to be absolutely sure of a diagnosis is to send in samples to a plant clinic to confirm which fungus is involved. Keep in mind that a tree could have both oak wilt and anthracnose at the same time.

For more detailed information about Oak Wilt, please consult previous issues of *Illinois Forest Health Highlights*.

Figure 3. Side by side comparison of oak wilt and anthracnose symptoms in oak. The bottom left photo shows the dark streaking under the bark in oak wilt.

OAK DECLINE AND RAPID OAK MORTALITY (ROM)

Multiple factors affect forest health, particularly exotic invasive plants, insects, and pathogens. Oak decline is fast becoming a prominent issue in Illinois and in the Midwest (**Figures 4 and 5**). In early 2023, the Illinois Forest Health program received U.S. Forest Service (USFS) funding to begin a study to better understand the factor(s) responsible for the decline and rapid death of oaks occurring in both urban and rural forests. Objectives of this study are to 1) obtain a broad picture of possible factors and their interactions contributing to oak decline, 2) conduct a statewide survey of rural and urban forests to better understand root-rot fungi and their role in oak decline, 3) create updated forest BMPs for rural landowners, natural resource managers, and urban foresters to assist in the management of existing oaks forests and future oak regeneration, and 4) conduct educational programs and workshops to assist residents of the natural resources and urban forest communities. The project prioritizes new and existing small tract private landowners, NGOs, parks and camps, and underserved municipalities and communities that desire and/or would benefit from assistance in developing forest management plans but lack adequate and effective forest management resources.

During the 2023, 2024, and 2025 field seasons, over 400 oak trees at 40 different rural forest sites were sampled statewide. At each site, tree diameter at breast height (DBH), tree species, slope, aspect, rooting depth, and any biotic and/or abiotic factors were noted and recorded. A composite soil sample was also taken to determine soil texture, soil pH and nutrient levels.

Preliminary results for 2023 and 2024 have revealed that 85% of the roots samples taken from declining white oak, northern red, bur, black, swamp white, and shingle oaks tested positive for the presence of water mold fungi (Oomycetes). **Please note: this is a qualitative measure and does indicate that the entire root system is infected, but only indicates that these water molds are present in the rhizosphere where samples were taken.** Additionally, 56% of the trees that had roots testing positive were growing on flat sites (<5% slope). Overall, 62% of all of the 182 trees samples had rooting depths <10 inches and of those, 84% tested positive for evidence of Oomycete fungi.

A summary of Oomycete species (i.e. *Phytophthora, Pythium*, and *Phytopythium*) sequenced from root samples taken from both rural and urban forests (i.e. Adams and Resmen study) is presented in **Table 1.** A number of these Oomycetes taxa have been reported in the scientific literature to be associated with oak decline in Europe. Further studies are planned to determine which Oomycete species may be involved with oak decline locally.

Figure 4. "Stag-horning" and dieback in a declining oak tree.

Figure 5. Oak mortality in rural forests

Table 1. Summary of Oomycetes identified from oak root-rhizosphere samples

Oak Species	***Oomycetes Sequenced***
White Oak	***Phytophthora sp., Pythium sp. Isolate Pyt726, Pythium torulosum, Pythium vanterpoolii, Phytopythium vexans***
Bur Oak	***Phytopythium vexans, Pythium aff. diclinum***
Black Oak	***Phytopythium vexans***
Shingle Oak	***Pythium aff. diclinum***
Adams, Watson and Resmen Studies	***Phytophthora pini, Phytopythium plurivora, P. littorale, Pythium macrosporum,*** ***P. latarium, Globisporangium heterothallicum Elongisporangium anandrum***

THOUSAND CANKERS DISEASE (TCD) OF EASTERN BLACK WALNUT

To date, neither the walnut twig beetle (WTB) or the TCD fungus has been detected in eastern black walnut trees in Illinois, and no new finds have been reported for areas of the eastern U.S.

NEW INVASIVE PESTS

Spotted Lanternfly (SLF)

In September, 2023 and again in 2024, an active infestation of the spotted lanternfly (SLF) (*Lycorma delicatula*) was detected in the Chicago area in southern Cook County. In 2025, two new additional SLF populations were discovered in the same general area of Cook County.

The SLF is native to China and also found in India, Japan, Korea, and Vietnam. It is considered highly invasive due to its wide host range of more than 70 plant species and lack of natural enemies. The young nymphs are wingless and initially black but develop red patches as they mature, with white spots on their body and legs. Adults are large (1-inch-long and ½ inch wide) with black legs and head, yellow abdomen, and light brown-to-gray forewings **(Figures 6 and 7).** The hind wings are scarlet red with black spots. SLF females lay egg masses containing 30-50 eggs that are gray-brown and covered with a shiny grey waxy covering. The SLF has one generation per year with eggs hatching in the spring and early summer and adults appearing July through August. Egg-laying begins in September and continues through November (**Figure 8**).

Upon egg hatch, the young nymphs disperse and begin feeding on a wide range of hosts producing large amounts of honeydew. Adults are found on tree trunks, stems, and near leaf litter at the base of the tree. Adults are poor flyers, but strong jumpers. They favor Tree-of-Heaven (*Ailanthus altissima*), black walnut (*Juglans nigra*), and grapevine (*Vitis vinifera*) as host plants. In the fall, the adults seek out Tree-of-Heaven for feeding and egg laying. Adult females will tend to lay eggs on smooth-trunked trees or any vertical smooth natural and/or man-made surface. They are able to lay egg masses on trucks, train cars, RV's, etc. and can easily travel to new locations. Heavy feeding may lead to plant stress and plant death. Sooty mold typically develops in association with honeydew diminishing the plant's ability to produce food (photosynthates). The SLF has the potential to greatly impact the grape, orchard, logging, tree and wood-products, and green industries.

Since Tree-of-Heaven **(Figure 9),** also non-native and invasive plant, is a critical host for SLF for part of its life cycle, efforts to prepare for the potential spread of SLF have thus far included a statewide survey of locations of Tree-of-Heaven. Knowing the locations of populations of the tree will aid us in monitoring and responding to this pest threat.

Figure 6. Spotted lanternfly nymph (Left) and adult spotted lanternfly (Right)

Figure 7. Adult spotted lanternfly

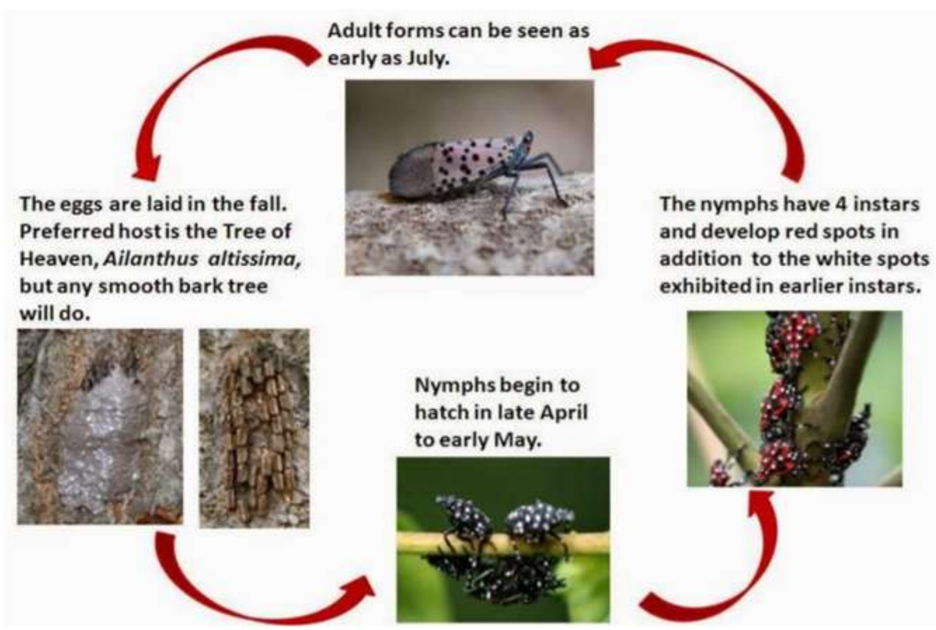


Figure 8. Life cycle of the spotted lanternfly

Figure 9. Photos of Tree-of-Heaven. Courtesy of USDA NRCS (L) and Northwest Michigan Invasive Species Network (R)

Elm Zigzag Sawfly (EZZSF)

In case of any of you are getting bored with the same old pests, I thought I would brighten your new year with a new exotic invasive pest, the elm zigzag sawfly (EZZSF) (*Aproceros leucopoda*) (Takeuchi, 1939). The EZZSF is a native of eastern Asia (i.e. Japan and China) and was originally found in Europe in 2003 feeding on *Ulmus* spp. in Austria, Hungary, Poland, Romania, Slovakia, Russia, and Ukraine (Blank et al., 2010; Shchurov et al., 2012). Since then, it has been found in Belgium and the Netherlands. In Europe, EZZSF larvae are capable of completely defoliating native and non-native elm (*Ulmus* spp.) trees resulting in at least partial dieback (**Figure 10**). It is likely that it will continue to spread throughout Europe as evidenced in its discovery in England in 2017, but to date has not been found in France.

In 2020, EZZSF was found in Canada (Quebec), and the United States in 12 eastern and central states including Minnesota, and Wisconsin. It was also found in several locations in Cook County Illinois in 2024 (**Figures 11 and 12**) (Martel et al., 2021). EZZSF defoliation was monitored in 2025, but larval populations and feeding damage never really developed. Adult EZZSF trapping surveys indicated two generations and a suggested potential 3rd generation. Ongoing surveys will continue in 2026.

How it has spread throughout Europe and now to North America is uncertain, but like most invasives (i.e. spongy moth, emerald ash borer, Asian longhorned beetle, and spotted lanternfly), it has probably resulted from human activity including the importation of elm trees for planting and reforestation, and transport on vehicles (Blank et al., 2010).

Figure 10. Defoliation by the elm zigzag sawfly

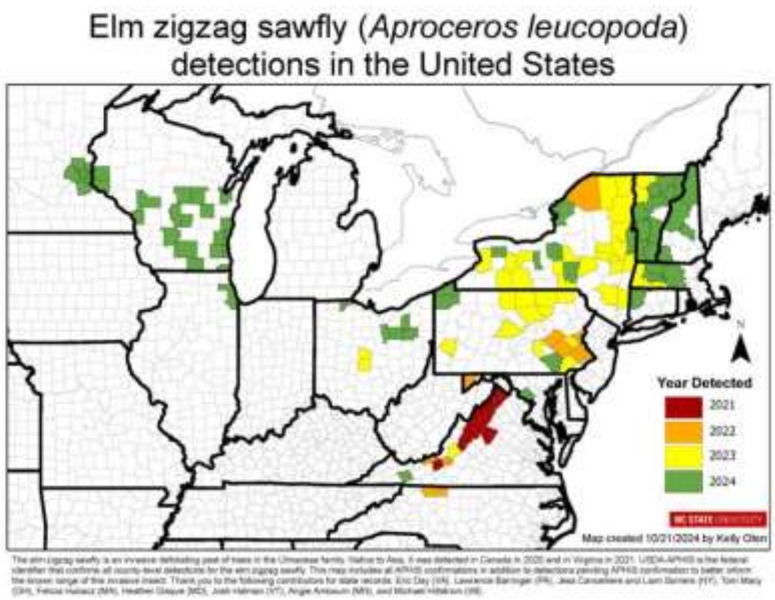


Figure 11. EZZSF Distibution in the U.S.

Figure 12. EZZSF Disstribution in Wisconsin

Why should we be concerned about the elm zigzag sawfly? The EZZSF has the potential to be a serious defoliator of elms (*Ulmus* spp.). Recent field observations and research studies suggest the EZZSF prefers Siberian elm (*U. pumila*) and American elm (*U. americana*) (Martel et al., 2022). In a recent study by Blank et al (2010), EZZSF was found to prefer Siberian elm (*U. pumila*), and *U. pumila* var. *arborea* in Hungary. Additionally, in Romania, infested branches of Scots elm were found in the upper canopy of forests; the top sections of the canopy were more severely damaged than the middle or bottom sections. The average defoliation of individual trees ranged from 74% to 98%, and the EZZSF did not show any preference for host trees by size class. (Blank et al., 2010). EZZSF is found commonly in its native habitat of Hokkaido, Japan. From 1991-1993, Siberian elm trees were severely defoliated by larval feeding, and then suffered dieback (Blank et al., 2010). Severe defoliation was documented in recent plantings of the Resista® cultivars of *U.* 'New Horizon', and *U.* 'Regal' (Blank et al., 2014). This same feeding preference for Siberian elm also has been observed in other studies for Siberian elm alone, as well as when it is incorporated into hybrids with other elm taxa where it appears to affect the susceptibility, preference, and suitability of elms for an extensive defoliating insect guild. This includes Japanese beetle (*Popillia japonica*), elm leaf beetle (*Xanthogaleruca luteola*), spring cankerworm (*Paleacrita vernata*), fall cankerworm (*Alsophila pometaria*), and elm leafminer (*Fenusa ulmi*) (Miller et al. 1999; Miller, 2000; Miller and Ware, 2001; Bosu et al. 2007; Condra et al. 2010; Miller and Ware, 2014; Griffin et al. 2017).

In North America, the jury is still out as to whether EZZSF will be a serious pest for landscape and urban forest trees currently being planted as replacements for elm and ash trees lost to Dutch elm disease (DED), and the emerald ash borer (EAB), respectively. Like most sawflies, the larvae consume all of the host leaf tissue and heavy populations can result in complete defoliation of the tree. With the potential for 2 to 3 generations per year in Illinois, this can result in season-long defoliation putting the host tree under tremendous stress and making it vulnerable to lethal wood-boring insects and pathogens as well as loss of aesthetic and ecosystem services.

Identification and Life History of the EZZSF

Like all sawflies, the EZZSF belongs to the taxonomic order, Hymenoptera, which also includes bees, wasps, hornets, ants, and some leafminers. Sawfly larvae resemble the larvae of Lepidopteran (moths and butterflies), but have six or more sets of abdominal prolegs (fleshy extensions of the abdominal wall) and lack crotches (i.e. hooks or "insect Velcro") on the prolegs. In contrast, Lepidopteran larvae have five or fewer pairs of prolegs, with crotchets present on the prolegs. If you have every tried to pull a tomato hornworm off of a tomato plant, you know all about the crotchets. For a good reference for distinguishing between pestiferous larvae and harmless ones, refer to Raupp (1990).

The EZZSF is a tiny green caterpillar-like larva that attaches itself to the inside edge of the leaf as it feeds (**Figure 13**). Young EZZSFs are a uniform green while older larvae will have a lateral stripe on each side of their head capsule which crosses their eyes. Their second and third thoracic (or "true legs") are brown and have a T-shaped mark (info@invasivespeciescentre.ca).

Figure 13. Elm zigzag sawfly larva and feeding damage.

The larvae hatch from eggs after 4–8 days, and begin feeding on leaves in mid-to-late May. Feeding by young larvae shows the characteristic zigzag pattern (**Figure 13**). There are usually multiple larvae feeding on the same leaf. As the larvae mature, they completely consume the entire leaf except for the midrib making it hard to determine if the damage is due to the EZZSF or other leaf-consuming caterpillars such as cankerworms (info@invasivespeciescentre.ca).

When full-grown the larva leaves the feeding area and travels a short distance to pupate. The distinctive lattice-like cocoon is a very reliable feature (**Figure 14**). The sawfly may have 4-7 larval instars and completes development within 15-18 days. Late instar larvae have been observed from late June to late September (Blank et al., 2010). To date, observations in Wisconsin suggest 2-4 generations per year.

Upon completing larval development the pupa constructs either a loosely spun, lightly-colored cocoon with a net-like structure consisting of a grid of silk strands fixed to the cocoon surface and attached to the lower leaf surface on woody parts of host plants, but rarely on twigs or the ground; or a more compact, solid-walled cocoon, the former being formed during the summer and the latter in preparation for overwintering (Blank et al., 2010; Pappet al., 2018) (**Figure 14**). Pupation occurs within the cocoons after 2–3 days and adults emerge 4–7 days after the cocoons are produced. The overwintering, solid-double-walled brown parchment –like cocoon is barrel-shaped and is about 7–8 mm long and 4 mm wide. They are typically found in the field in the litter or soil, and contain soil and organic particles (Wu, 2006;Blanket al., 2010; Lengesova, 2012; Martynov & Nikulina,2017, Vétek, personal observation). Overwintering individuals are produced from spring to autumn; both types of cocoons have been found in the field from early June through late September. (Wu, 2006; Blanket al., 2010; Mol & Vonk, 2015; Mol, 2017; Pappet al., 2018).

Figure 14. Elm zigzag sawfly pupa

The adult EZZSF is a tiny black, wasp-like sawfly, less than 1 cm long, with whitish legs, but is rarely seen (**Figure 15**). Upon emergence, the adult female begins laying her eggs by inserting them into the leaf edge of young elm leaf tissue (Vetek et al., 2020). Adults may be found from mid-May to early September. In laboratory studies, adult females lived from one to six days with most living two days, and began ovipositing soon after emergence. Female EZZSFs may lay a total of 7–49 eggs singly into the tips of consecutive indentations around the leaf margin (Blank et al., 2010). The adults are strong flyers and can disperse 27 to 54 miles per year. Total insect development for one generation (i.e. egg to adult) has been found to be between 24–29 days (Blank, et al., 2010).

Figure 15. Adult elm zigzag sawfly.

Management of the EZZSF

Early detection and monitoring of the EZZSF is essential in preventing extensive feeding damage to host trees. Intermittent or periodic defoliation is usually not a serious problem for healthy trees, but due to its shorter development time leading to multiple generations, EZZSF larval feeding will occur all season long and the effects on tree health could be much more severe. While not desirable from an energy standpoint, most trees can re-foliate. However, with continuous defoliation the tree will not be able to produce or replace photosynthates that its needs to properly function and thrive.

Human transport of EZZSF life stages from countries of pest origin is a major means for passive long- distance dispersal and spread. Careful and thorough inspection of host plant material for eggs, larvae and pupal cocoons will be vital in limiting the spread of the EZZSF throughout Europe and North America. (Blank et al., 2010; Wu, 2006).

Insecticidal sprays have shown to be effective (Blank et al., 2010), however, in view of the wide distribution of this species in Europe and now in North America, as well as the ability of its adults to quickly re-invade a treated area, the local application of insecticides is unlikely to prove an effective and sustainable method of controlling this pest . Like all leaf-feeding larvae, the older or more mature they are, the harder they are to kill, and the more feeding damage that occurs.

PLEASE NOTE, microbial treatments of *Bacillus thuringiensis* will not be effective against sawfly larvae including the EZZSF.

A tachinid parasitoid *Blondelia nigripes* (Fallén, 1810) (Diptera: Tachinidae), is a widely distributed Palearctic species, and is the only parasitoid that has been reared from the EZZSF (Shima, 1984, 2006). The distribution of *B. nigripes* within Europe includes the countries where *A. leucopoda* is currently recorded (Tschorsnig, 2007). This tachinid fly parasitizes larvae of numerous species belonging to three families of sawflies (Hymenoptera: Symphyta) and five families of moths (Lepidoptera). The wide host range of *B. nigripes* reduces its efficient control of the EZZSF. The introduction of natural and more specialized parasitoids in Europe and potentially in North America, accompanied by extensive monitoring of the future spread of the EZZSF may lead to possible sustainable control in the future (Pschorn-Walcher, 1977).

Will our winter temperatures impact overwintering survival of the EZZSF?
A common question that is asked is "can severe winter temperatures reduce overwintering insect pest populations?" The short answer is probably not. In a study by Vetek et al. (2020), was found that the supercooling point (SCP) of overwintering EZZSF individuals varied geographically, monthly and inter-annually, ranging between 10ºF and -10ºF. Since none of the overwintering pupae survived once the SCP had been reached, the EZZSF is classified as a freeze-avoidant insect (Vetek, et al., 2020). It appears that low winter temperatures may not be an important limiting factor in the ability of the EZZSF to overwinter in temperate climates particularly with current trends of milder winters associated with climate change. Further, EZZSF might experience buffered temperature conditions in nature (i.e. under leaf litter and snow cover) that remain above the SCP. These factors, as well as the effects of periods of prolonged cold will likely determine the overwintering success of this species (Vetek et al., 2020).

In summary, further studies are needed to determine long-term sustainable management practices such as effective and efficient host plant inspections, monitoring of pest populations, biological control, host plant resistance, and environmentally safe chemical treatments to help mitigate and prevent the spread and associated feeding damage of the EZZSF.

Box Tree Moth (BTM)

In July 2021, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) confirmed the presence of box tree moth (BTM) (*Cydalima perspectalis)* in Niagara County, New York and probably originated from a nearby infestation in Canada (**Figures 16A, B**). BTM is moving south and west, and was later found by APHIS in Lenawee County, Michigan in November 2022. Presently, APHIS and the Michigan Department of Agriculture and Rural Development (MDARD) are determining the extent of the infestation in Michigan. More recently, BTM was confirmed by APHIS in Hamilton County, Ohio June 2023.

The BTM is an invasive pest, native to areas of East and North Asia including Japan, China, the Russian Far East, Korea, and India. It arrived in Germany in 2006 and has continued to spread throughout Europe (**Figure 17**). BTM can significantly damage and potentially kill boxwood (*Buxus* spp.) plants if not managed. Boxwoods are a popular ornamental evergreen shrub common to almost all landscape environments in the temperate United States.

Figure 16A. Box tree moth

Figure 16B. Box tree moth

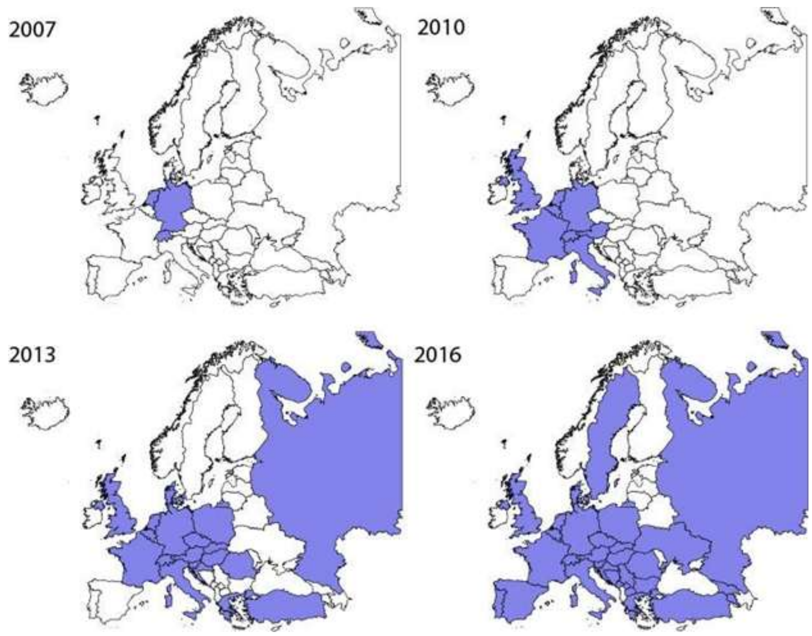


Figure 17. Box tree moth invasion of Europe. Modified from Bras et al. (2019) and EBTS (2020)

Box tree moth larvae feed exclusively on boxwoods (**see Table 2 for a listing of potential plant hosts**) with young larvae feeding on the undersides of leaves, which give them a "peeled" appearance from the top. Young pupae are green with brown stripes. Older larvae consume the entire leaf except for the midrib. In addition to feeding damage, caterpillars web together leaves and construct silken retreats. Once the leaves have been eaten, the larvae begin to consume the bark which leads to girdling and even plant death. Extensive feeding may kill individual plants and entire plantings (**Figures 18A,B, and Figure 19**).

Figure 18A. Boxwood tree moth larva and feeding damage

Figure 18B. Boxwood tree moth larva and feeding damage

Figure 19. Box tree moth larval feeding damage

Table 2. List of *Buxus* spp. and alternate hosts of the boxwood tree moth

Family	**Scientific name**	**Common Name**	**Confidence**
Buxaceae	*Buxus microphylla*	Littleleaf boxwood	Host status certain
Buxaceae	*Buxus microphylla* var. *japonica*	Japanese boxwood	Host status certain
Buxaceae	*Buxus sempervirens*	Common boxwood	Host status certain
Buxaceae	*Buxus sinica* var. *insularis* (=*Buxus microphylla* var. *insularis*	Korean boxwood	Host status certain
Rutaceae	*Murraya paniculata*	Mock orange	Host status certain
Celastraceae	*Euonymus alatus*	Burning bush	Host status uncertain
Celastraceae	*Euonymus japonicus*	Japanese spindletree	Host status uncertain

Box tree moth eggs are pale yellow (**Figure 20**), laid in groups of 5–20 and overlap like shingles. Eggs take three days to develop. Box tree moth larvae are green and yellow with white, yellow, and black stripes, and black spots. They are the only caterpillars that feed on boxwood, so identification is relatively easy. The larvae take about 14 days to mature. Pupae are found in the webbing and damaged leaves, and take about 14 days to develop (**Figure 21**). Most adult box tree moths are white with a brown border. Adult box tree moths can survive for about a month. They are strong fliers and can disperse 4–6 miles.

Figure 20. Box tree moth eggs

Box tree moths have 1–5 generations per year depending on the latitude and local climate. BTMs overwinter as 2nd to 5th instar larvae and can survive temperatures down to at least -22°F (-30°C). Overwintering larvae have a minimum development threshold of 46–53°F and will begin feeding in early to mid-spring (i.e. late May to early June) in the Midwest (**Figure 22**). BTM larvae have an obligatory diapause (period when caterpillars stop eating and rest) of 6–8 weeks when day lengths reach 13.5 hours; this typically occurs between 15–20 April with feeding beginning again in late May to early June.

Figure 21. Box tree moth pupae

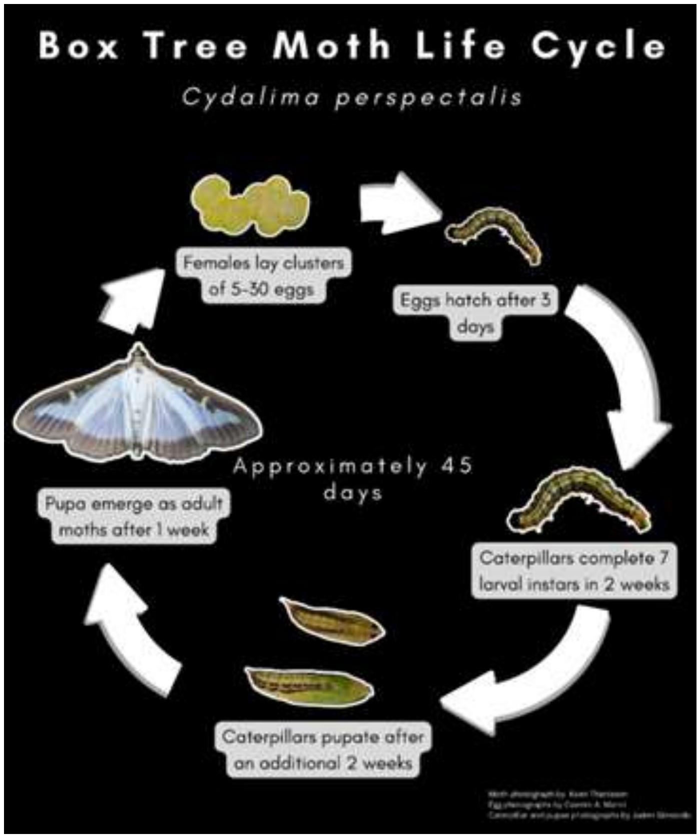


Figure 22. Box tree moth life cycle

Management of BTM may be accomplished when infestations are small by **hand-picking** caterpillars and disposing of them in soapy water or by using high pressure water jets to knock them off plants. This will prove to be lethal and will not enable the larvae to climb back up the plant before starving. There are commercially available sex pheromone and pheromone traps which can be used for **monitoring of BTM.**

Biological control (BC) is possible including a variety of parasitoid wasps and flies from the BTM's native range. Unfortunately, all of these natural enemies are generalists and will probably not provide adequate control of BTM.

Chemical management using horticultural oil and insecticidal soaps can be effective against young caterpillars, but requires complete coverage. Biopesticides, such as *Bt* and Spinosad, as well as broad spectrum pesticides, may be effective, but care should be taken not to impact natural enemies and pollinators. It should be noted that adequate coverage can be difficult to achieve as the young caterpillars feed only on the undersides of leaves and older caterpillars are protected by silken webs.

2025 WEATHER AND ABIOTIC EVENTS: (*Information provided by the Illinois State Climatologist and Illinois Co-Coordinator Trent Ford*)

The winter of 2025 began quite dry for most of the state with total **February** precipitation ranging from less than a quarter of an inch in parts of far western Illinois to just over 7 inches in far southern Illinois. Most of the state north of Interstate 64 was 1 to 3 inches drier than normal, while most of southern Illinois was 1 to 3 inches wetter than normal (**Figures 22A, B**).

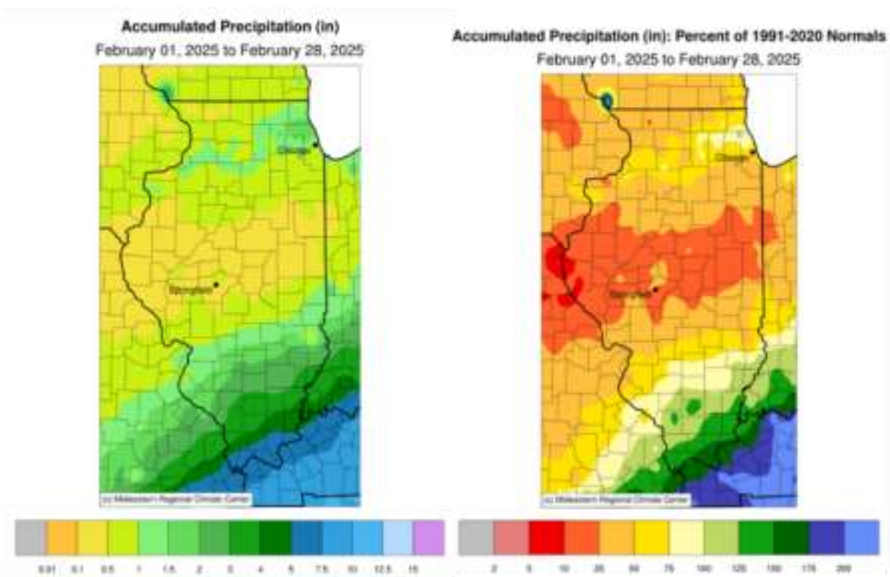
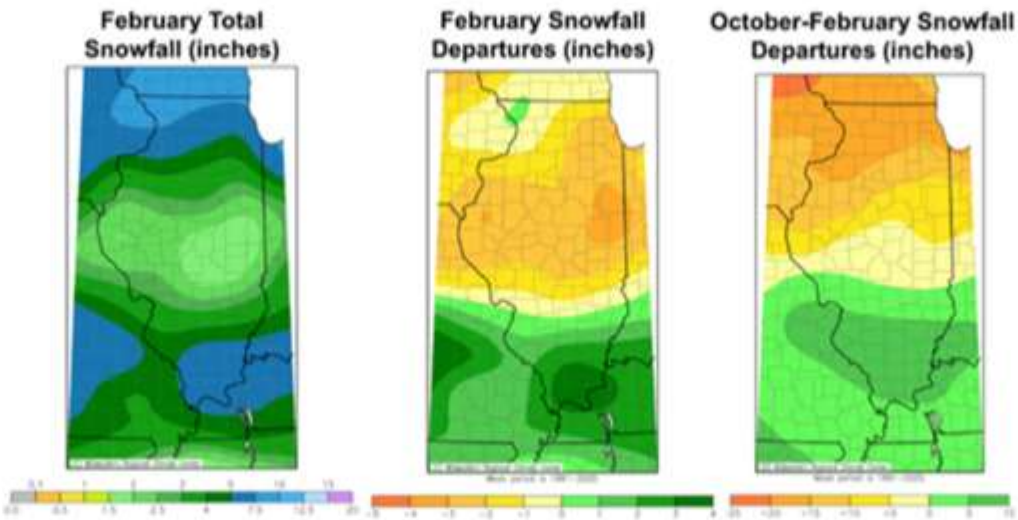


Figure 22A. February, 2025 precipitation totals

February total snowfall was more variable ranging from less than 2 inches in east-central Illinois to over 12 inches in far northwest Illinois. Most of the state south of I-70 had 1 to 4 inches above normal snowfall, while the rest of the state had snowfall deficits of 1 to 5 inches. Southern Illinois has had 5 to 12 inches above average snowfall, while northern Illinois experienced a 10 to 20-inch snowfall deficit..



Maps show (left) total February snowfall, (middle) February snowfall departure from normal, and (right) season-to-date snowfall departure from normal.

Figure 22B. February, 2025 snowfall totals

April 2025 had a very active storm track with multiple rounds of heavy precipitation, especially in southern Illinois. April total precipitation ranged from approximately 2.5 inches in northwest Illinois to over 15 inches in southern Illinois. Most of central and northern Illinois were within 1 inch of normal precipitation with the exception of areas round the Wisconsin border, which were closer to 2 inches drier than normal. Meanwhile, virtually all places south of I-70 were 4 to 8 inches wetter than normal.

Exceptionally intense rainfall occurred in the first week of April producing 6-10 inches of rain in just four days resulting in moderate to major flooding on many streams and rivers in southern Illinois, as well as dangerous flash flooding in several places in east central Illinois (i.e. Salem). Precipitation ranged from 14.92 inches in Salem, to only 1.16 inches in Bryant, Illinois (Fulton County).

No measurable snow came to Illinois in April with many stations in central and northern Illinois recording only a trace in the first week of the month, but no accumulation. Snowfall totals in Illinois ranged from approximately 3 inches in far southern Illinois to nearly 25 inches in parts of southeast Illinois. An active winter storm track across the Interstate 70 corridor in January and **February** kept south-central Illinois 1 to 10 inches snowier than normal. Meanwhile, most of central and northern Illinois had between 3 and 25 inches below normal snowfall, with the largest negative departures in northeast Illinois (**Figures 22B and 23 B**).

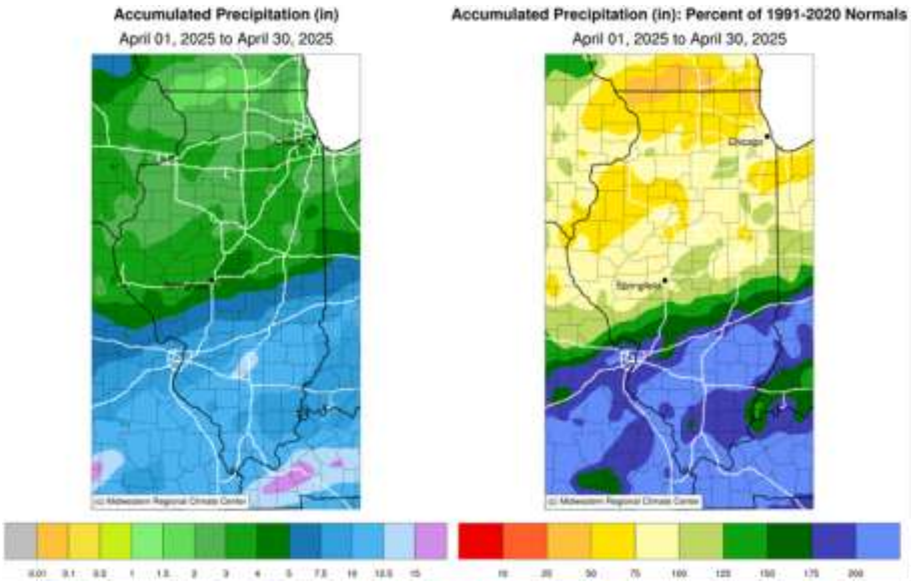


Figure 23A. April, 2025 precipitation totals

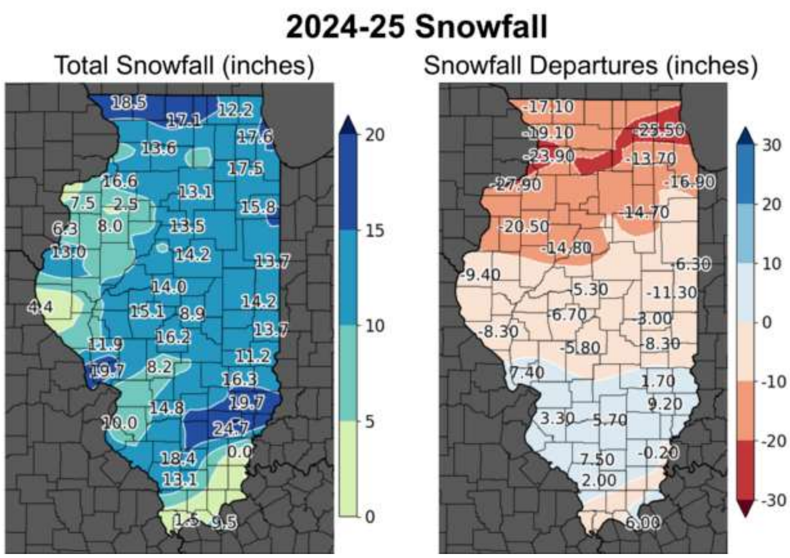


Figure 23B. 2024-2025 snowfall totals

May, climatologically, is the third wettest month in Illinois, and the wettest in parts of southern Illinois. While last month's precipitation was typically variable across Illinois, May was overall drier in most places. Specifically, total May precipitation ranged from around 2 inches in the Chicagoland area to nearly 8 inches far southern Illinois. Most areas south of I-70 were near to slightly wetter than normal, while most of northern and central Illinois were 1 to 3 inches drier than normal. Precipitation in May ranged from 8.21 inches at Harrisburg in Saline County, to only 1.01 inches at Joliet in Will County. Additionally, May was a very active severe weather month. NOAA listed 23 tornado reports, 92 severe wind reports, and 61 severe hail reports for Illinois in May, 2025. An EF-4 tornado was reported in Williamson County resulting in a band of extensive tree damage just south of Marion, Illinois, and 2-inch hail in Morgan and Sangamon Counties. Overall, precipitation ranged from 6 inches in far northern Illinois to over 20 inches in southern Illinois. The northern half of Illinois was 1 to 2 inches drier than normal while southern Illinois was 2 to 8 inches wetter than normal (**Figure 24**).

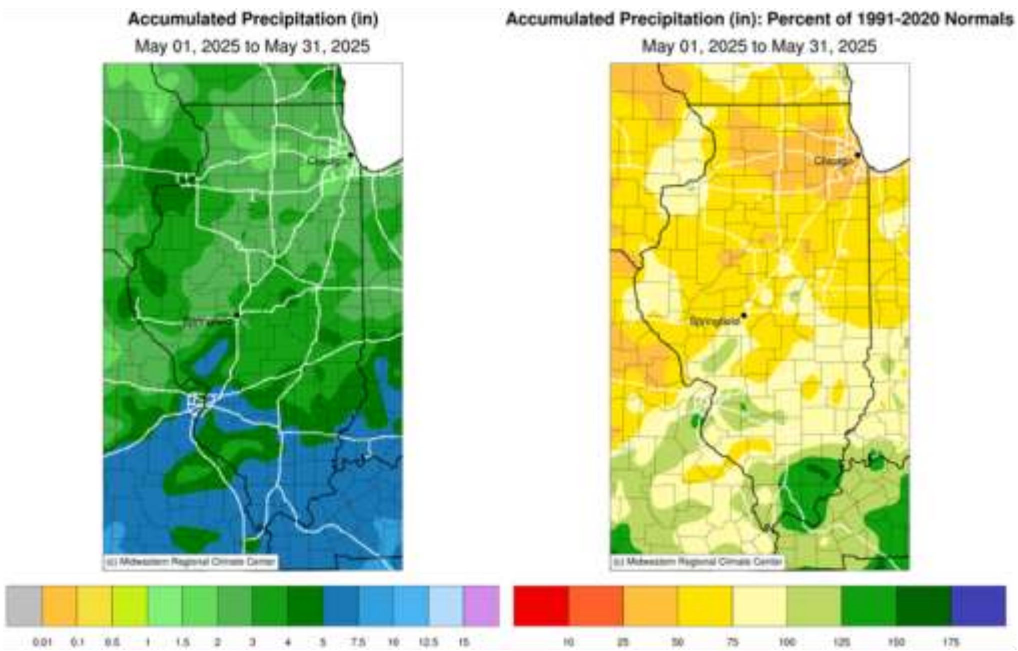


Figure 24. May, 2025 precipitation totals

June is typically one of the wettest months of the year in Illinois and is fairly consistent across the state however that was not the case for June, 2025. An active storm track across southern Illinois persisted from May into the first two weeks of June, bringing wet weather to much of far southern Illinois. Isolated thunderstorms and showers were common in northern Illinois during the last week of the month, but most of central and southern Illinois remained dry (**Figure 25**).

This resulted in variable precipitation with a wide range in totals, from less than 3 inches in parts of south-central and east-central Illinois to over 10 inches in southeast Illinois. Most of the state north of highway 13 was near to 2-3 inches drier than normal in June, with the largest departures in the upper Kaskaskia River watershed. Meanwhile, most of far southern Illinois was 1 to 6 inches wetter than normal, with the largest departures along the Ohio River. For example, Metropolis in far southern Illinois had received over 43 inches of rainfall compared with areas in eastern Illinois. Overall, preliminary statewide total June precipitation was 4.15 inches, 0.50 inches below normal and the 52nd wettest June on record statewide

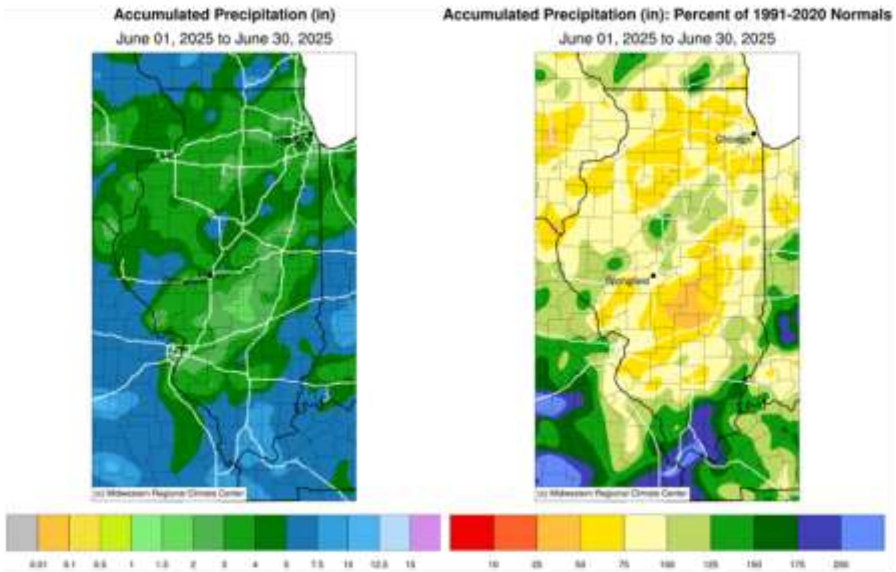


Figure 25. June, 2025 precipitation totals

Typically, **September** is not usually a very wet month across Illinois, but September precipitation is still important for trees and woody plants going into winter. Unfortunately, very dry conditions continued from August. Total September precipitation ranged from less than a quarter of an inch in northwest Illinois to over 5 inches in parts of southern Illinois. Only the south seven counties were wetter than normal last month, while a large swath of central and northern Illinois were 2 to 4 inches drier than normal (**Figure 26**).

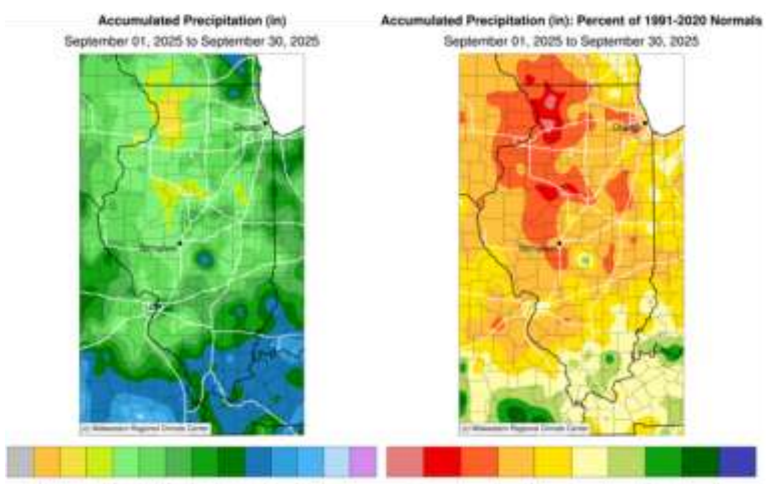


Figure 26. September, 2025 precipitation totals

The preliminary statewide total September precipitation was 2.60 inches, which is 0.75 inches below the 1991–2020 average and the 41st driest on record.

Very dry weather in **August and September** caused a significant expansion and intensification of drought across the state. The September 30th edition of the U.S. Drought Monitor (**Figure 26**) had moderate drought in 74% of the state and severe drought in nearly 28% of the state,.

The dry transition from summer to fall was a substantial pattern change from the extremely wet conditions in spring in southern Illinois. In fact, some areas of the south-central part of the state were having a top-5 wettest year as recently as mid-July, but only had 10-25% of normal rainfall since. Meanwhile, the recent dryness has only added to what has been a very dry calendar year and water year (October 1 – September 30) in parts of central and northern Illinois. Conditions have continued to worsen since the end of September (**Figure 26**).

October precipitation can be strange in Illinois. While our soils and streams usually need a good dose of water coming out of the summer, too much rain can make field work challenging. This year, though, October rain was mostly not an issue because the first half of October was quite dry and extended drought conditions statewide from September. Overall, total precipitation ranged from around 0.90 inches in western Illinois to over 6 inches in parts of southern and south-central Illinois. Most of the state south of Interstate 70 was 1 to 4 inches wetter than normal in October, while most of central and northern Illinois were 1 to 3 inches drier than normal. **Overall, the preliminary statewide total October precipitation was 2.61 inches, 0.65 inches below the 1991-2020 average and the 67th driest on record.**

Most of central Illinois has been 5 to 10 inches drier than normal since August 1st, less than 50% of normal over that time. The dry weather created some challenges with dry vegetation and high fire risk. Dozens of field fires were reported across the state in the first two weeks of October, including one that burned over 1,000 acres in north-central Illinois. Many rivers and streams remain at or near low-flow, including extremely low levels on the Sangamon and Vermilion Rivers (**Figure 26**).

In contrast, drought was eased or altogether broken in much of southern Illinois, thanks to abundant rainfall in October. The U.S. Drought Monitor released on October 28th (**Figure 27**) showed significant drought improvement in southern Illinois, including many places that went from severe drought (D2) in the beginning of the month to abnormal dryness (D0) at month's end (**Figure 27**).

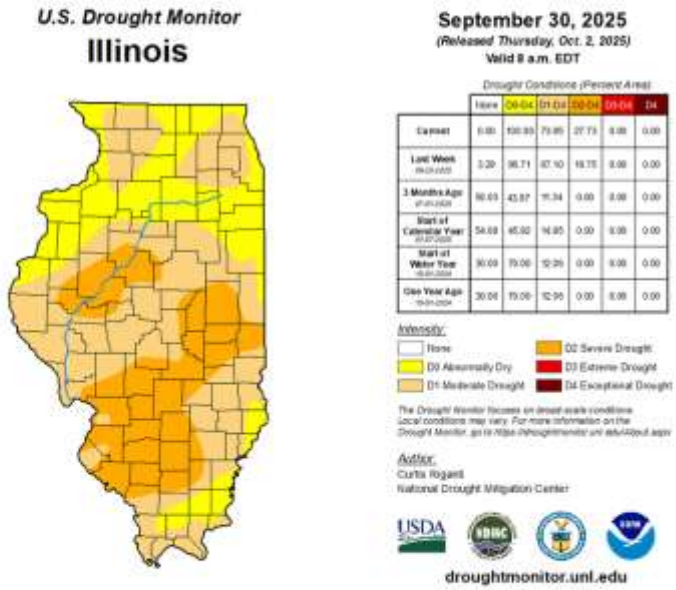


Figure 26. September 30, 2025 drought monitor map

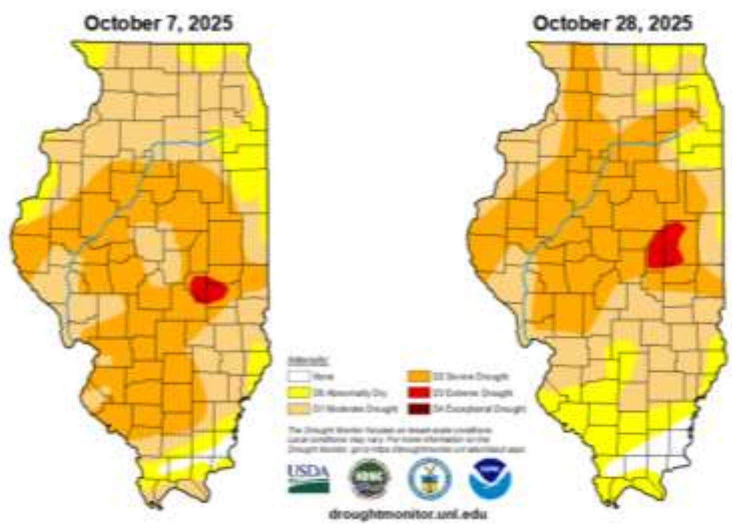


Figure 27. October, 2025 drought monitor map

At the time of this publication in **mid-December, 2025**, dry to moderate conditions continue for much of the state except for portions of southern Illinois (**Figures 28 and 29**). A good portion of the state is still in a drought and areas of east central Illinois are experiencing severe drought conditions. Depending on winter snowfall and early spring rains, we could be in for another dry growing season in 2026. This will not bode well for the overall health of our woody plants. Stay tuned!

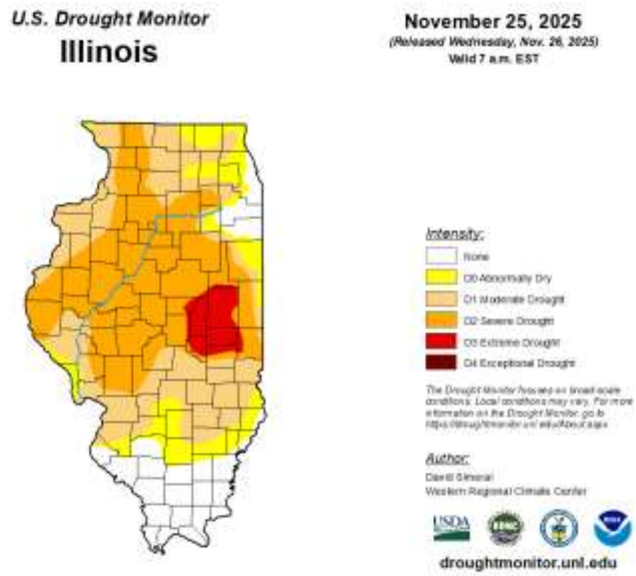


Figure 28. Late November, 2025 drought monitor map

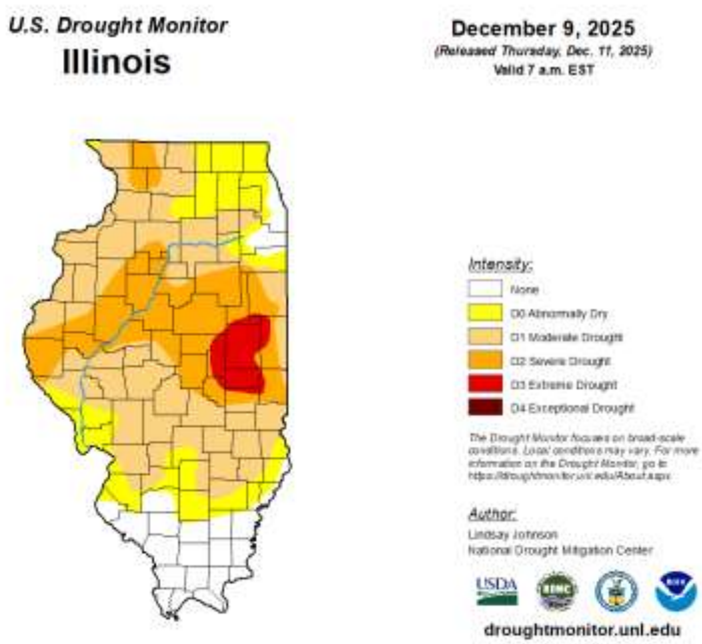


Figure 29. Mid-December, 2025 drought monitor map

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PLEASE NOTE: *The information presented in this summary is not to be considered comprehensive or all inclusive. Information presented here is based on visual and observational surveys and reports by Fredric Miller, Ph.D., IDNR Forest Health Specialist, and The Morton Arboretum, Research Interns., IDNR Forest Health field technicians, IDNR district foresters, private landowners, homeowners, The Morton Arboretum Plant Diagnostic Clinic, and members of the green industry.*

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