

## Be prepared to protect your grapevines from 17-year periodical cicadas emerging in May

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A natural wonder will occur in 15 states this year: the emergence of the Brood X, 17-year periodical cicadas! Also known as “17-year or 13-year locusts” the last mass emergence of these insects occurred in 2004. Now, 17 years later, the immature cicadas will emerge from the ground, molt one last time to gain wings, and “sing” loudly to find mates and lay eggs in trees and woody shrubs.

### Periodical cicadas: where and when?

Many of you likely remember when the Brood V, 17-year periodical cicadas emerged in Ohio in 2016 (Fig. 1, purple shading on map). That emergence occurred in key grape-growing counties in northeastern Ohio. **However in 2021, activity of the Brood X, 17-year cicadas will be heaviest in west-central and south-west Ohio (Fig. 1, yellow shading on map), with emergence taking place late May through June.**

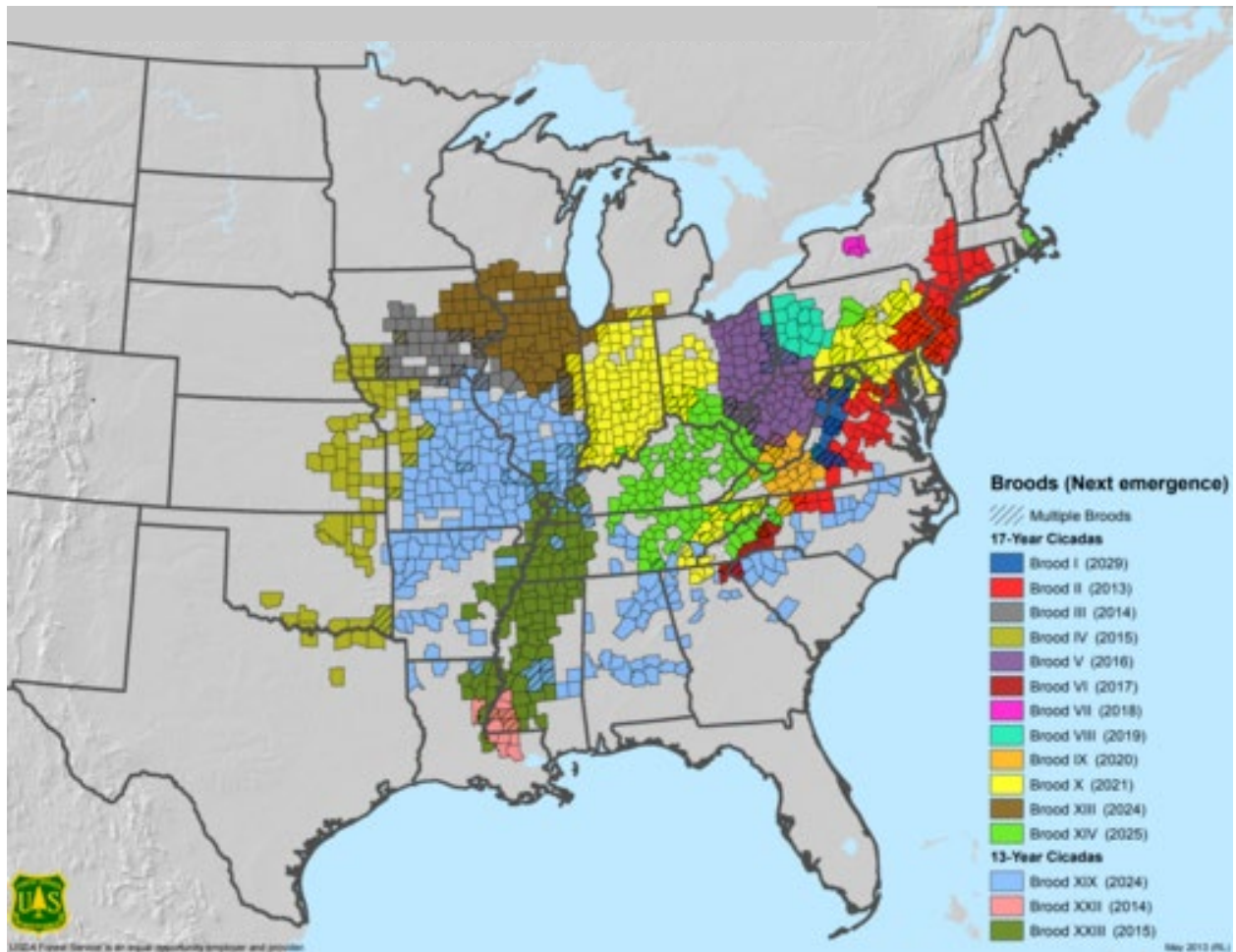


Figure 1. Active periodical cicada broods of the United States. Yellow-colored counties indicate areas where 17-year cicadas are predicted to emerge in 2021. Image credit: AM Liebhold, [www.fs.fed.us](http://www.fs.fed.us)

**You will see two distinct life stages of these charismatic insects: the nymphs and the adults.**

Although there is no single degree-day model to predict the emergence perfectly across regions, it's generally agreed that when soil temperatures warm up to 65 °F or so, the nymphs will begin to emerge from the soil. The nymphs are wingless, *just a bit creepy*, and dark golden-brown in color (Figure 2). After emerging from the ground, nymphs crawl up tree trunks and items like patio furniture, to molt - leaving behind their cast skin (exoskeleton).



Figure 2. Periodical cicada nymph (cast 'skin'). Photo: John Obermeyer

The adults are 1.5 to 2-inches long, with black bodies and reddish-colored legs, wing margins, and eyes (Figure 3). Newly emerged adults may appear pale or white in color until the exoskeleton has hardened and darkened (Figure 4). Adult periodical cicadas live for ~1 month, and during this time the males produce shrill "songs" to attract females using vibrating organs called tymbals - *how romantic!* Females cut slits into twigs of woody plants to lay eggs that hatch in 6-7 weeks. After hatching, the next generation of 17-year cicada nymphs drop to the ground and dig down into the soil, where they will remain for another 17 years feeding on sap from tree roots.



Figure 3. An adult periodical cicada on my arm.



Figure 4. A newly emerged adult periodical cicada, before its exoskeleton has hardened and darkened. Photo: Jane Chandler

**Why the mass emergence?** This is a life history strategy to satiate predators (Figure 5, they can't eat them all!) and maximize the chances that the majority of periodical cicadas will survive to mate and lay eggs.



Figure 5. Periodical cicadas have many predators, including chipmunks. Photo: Emily Keith

## Damage

- The good news is **periodical cicadas do not bite or sting people, or pets.**
- The bad news is **females lay eggs in 200+ woody tree species and can cause severe damage to young trees and grapevines** (Figure 6).



Figure 6. Cutting/slitting egg laying damage caused by female periodical cicadas on grapevines. Photo: E. Y. Long

Apples, cherries, peaches, plums, and grapevines are at high risk, because these hosts are preferred for egg laying by female cicadas. **However, any young trees and grapevines with main branches, stems, and canes between 3/16-inch and 7/16-inch in diameter are susceptible to damage and should be the main focus of protective efforts.**

Egg laying physically weakens and damages branches and canes, which may turn brown, die, and break off (“flagging”). Under heavy attack, the loss of branches and canes can cause serious damage or death to young trees and grapevines. It is also possible that nymphs feeding on roots reduces vigor.

## Management

### Step #1: Cultural control

- Delay new plantings in 2021, either until the emergence has ended, or next spring.
- Plan accordingly for future emergence of periodical cicadas broods in Ohio: (Table 1, below).

**Table 1. When and where 17-year periodical cicadas will emerge in Ohio in the future.**

Brood number	Race	Year to appear	Where they will appear
XIV (14)	17-year	2025	South-west/south-central Ohio.



Step #2: Mechanical control (recommended for small orchards/vineyards, backyard fruit trees/grapevines, and organic production)

**1. Net grapevines with mesh screening (no larger than 1/2-inch openings), when first males begin singing (before egg laying begins),** to prevent females from accessing the plant to deposit eggs. *Cover grapevines and secure the netting to/near the trunk, the ground, or lower trellis wire (Figure 7). Remove after adult periodical cicada activity ends.*



Figure 7. Example of netting grapevines to exclude female periodical cicadas. Photo: Wikimedia.org

**2. Prune canes after egg laying ends,** to remove damaged wood and infested canes from the vineyard. *Remove pruned, infested canes 4-6 weeks after egg laying to prevent nymphs from entering soil and feeding on grapevine roots.*

Step #3: Chemical control (recommended for settings where netting is not feasible, like large/commercial vineyards)

**IMPORTANT:** Chemical control is not as effective as netting. While netting is applied once to exclude egg-laying females, insecticides must be applied repeatedly against “waves of cicadas” during the ~1-month activity period of adults to prevent or reduce injury to grapevines.

Insecticides are not recommended to protect mature grapevines, because these vines can tolerate egg laying damage. **However, insecticide applications can reduce periodical cicada injury to young grapevines:**

**1. Once egg laying begins,** insecticides may be applied:

- **Every 3-4 days,** to help prevent injury, or
- **Every 7-10 days,** to help reduce injury
- Soil-applied, systemic insecticides are not effective against periodical cicadas.

Scout vineyards every 2-3 days during egg laying to evaluate how well insecticide applications are protecting young grapevines.

Pyrethroid insecticides are recommended against periodical cicadas because they have fast knock down and good residual activity; however, commercial producers should beware flare-ups of spider mites when using pyrethroid insecticides like Baythroid XL (active ingredient: cyfluthrin), and Mustang Maxx (active ingredient: zeta-cypermethrin) against periodical cicadas, because they also kill beneficial, predatory mites that typically keep spider mites at bay. Pyrethroids like Danitol (active ingredient: Fenpropathrin) and Brigade (active ingredient: Bifenthrin) are unlikely to cause spider mite flare-ups when used below the maximum rate.

Commercial producers can refer to the [2021-2022 Midwest Fruit Pest Management Guide](#) for insecticide recommendations.

Homeowners can use products with active ingredients permethrin (Bonide Eight), zeta-cypermethrin (GardenTech Sevin), or gamma-cyhalothrin (Spectracide Triazicide Concentrate for Lawns and Landscapes) against periodical cicada on backyard fruit and ornamental trees and shrubs.

**For your safety, always read and follow the instructions on pesticide labels.**

In summary, here are some quick “take home messages:”

- 17-year cicada emergence will occur in west-central and south-west Ohio late May through June.
- Female cicadas damage twigs, branches, and canes 3/16-inch to 7/16-inch in diameter by cutting into them to lay eggs.
- If you have an orchard, vineyard, or backyard fruit trees/vines: prepare to take action when you hear the first males begin to “sing.”
- Focus protective efforts (netting, insecticide applications) on young trees and grapevines, because they are most vulnerable.
- Select and use insecticides judiciously to reduce flare-ups of secondary pests, like spider mites.