



Periodical Cicada

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Plants Attacked: In Virginia both the 17- and 13-year cicadas damage many ornamental and hardwood trees. Oaks are commonly attacked but the most seriously damaged are newly planted fruit and ornamental trees such as apple, dogwood, peach, hickory, cherry, and pear. Pines and other conifers are not commonly attacked.

Damage: Damage caused by nymphs feeding on plant roots is considered very minor. The adults do not feed on the upper portions of the tree after they emerge, but egg laying by the female cicadas causes significant damage to small twigs. The female places her saw-like egg laying tube, called an ovipositor, into small branches and twigs



From left to right: Adult Cicada, Cicada damage to grape vine, Emerging Cicada. Photo of adult and damage by Doug Pfeiffer, Virginia Tech. Photo of emerging cicada by Eric Day, Virginia Tech

that are about the diameter of a pencil. Twigs will die because the branch is split when the eggs are placed under the thin bark. This dead twig contrasts with the surrounding green foliage, a condition called "flagging". Young trees are the most severely damaged by flagging because they have more branches of the preferred size for egg laying by the nymph. The immature cicadas, called nymphs, do not feed on the twig where they hatch but drop to the ground and burrow to the root system below the tree. Once attached they stay on the root for 13 or 17 years until the next emergence. Cicadas are not poisonous and do not have a stinger. Communities and farms with large numbers of cicadas emerging from the ground often are beset with a substantial noise problem. Half of the population are males "singing" or calling for the females. The annoyance from the singing is tempered by the fact that the periodical cicadas are only out for 4-6 weeks once every 17 years, but they can occur more frequently where broods overlap. Non-woody plants sometimes will have cicadas resting on the foliage but rarely receive damage.

Identification: Most people are familiar with the dogday cicada that is prevalent annually in mid summer. The dogday cicada is a mottled, dark green color and can be distinguished from the periodical cicada, which is about 1 - 1/2 inches long, black, with red eyes and orange legs. Adults have clear wings with distinctive orange veins. When viewed from the front the wings form an inverted "V" and meet at the top like a roof. The periodical cicada,

Magicicada spp., is in the Family Cicadidae and order Homoptera. Immature cicadas are wingless, pale white to tan with a bulbous head and well-developed legs. Because they spend their entire life underground, they are rarely collected or observed. Periodical cicadas are also commonly called the 17-year cicada, 13-year cicada, or locusts. The name "locust" is misleading because it applies to migratory grasshoppers.

Life Cycle: In the common name, 13-and 17-year applies to the developmental period required for the nymphs to reach adulthood. Adults start appearing in Virginia in early May with numbers peaking in early June. Numbers decline by late June and most cicadas are gone by July. Periodical cicadas emerge in specific locations once every 17 years in most of Virginia. In some of the southern counties there are periodical cicadas that emerge once every 13 years. Most years periodical cicadas will emerge somewhere in the state. Some counties have several broods in different locations. Massive brood emergence is believed to overwhelm predators, which are mostly birds.

Immature periodical cicadas (nymphs) develop underground and feed on sap from plant roots. After 13 or 17 years below ground, mature nymphs construct a mud turret called a cicada hut and emerge from the soil and climb onto nearby vegetation or any vertical surface. They then molt to the winged adult stage. Their shed outer skins or "exoskeletons" are frequently found attached to tree trunks and twigs. The emergence is often tightly synchronized, with most adults appearing within a few nights. Adult cicadas live for only two to four weeks. During this short time, they feed relatively little and do not cause any severe damage as they feed. Male cicadas sing by vibrating membranes on the sides of the first abdominal segment. Male courtship songs attract females for mating. Females are silent. After mating, females lay their small eggs in twigs 1/4 to 1/2 inch in diameter. The female's ovipositor slices into the wood and deposits the eggs. One to several dozen eggs can be laid in one branch, with up to 400 eggs being laid by each female in 40 to 50 sites. Cicada eggs remain in the twigs for six to ten weeks before hatching. The nymphs do not feed on the twigs. The newly hatched, ant-like nymphs fall to the ground where they burrow 6 to 18 inches underground to feed.

Control Tactics: Periodical cicadas are most damaging to small young trees that have the most desirable branch size for egg laying. Large, established trees can often have large amounts of flagging but rarely suffer severe damage. Consult a Cicada map available from a county Extension office and avoid planting new fruit and ornamental trees in the same year as a predicted cicada emergence. The cicada map in the current Spray Bulletin for Commercial Tree Fruit Growers (VCE Publication 456-419) or the table that is provided on the next page, provides this necessary information. Newly planted trees can be covered with fine netting to keep the cicadas from reaching the small tender twigs. Secure the netting around the trunk to stop them from climbing up into the tree. Remove the netting at the end of June. Remove flagging damage within 6 weeks and destroy the clippings to reduce the number of nymphs that will establish on the roots of that tree. Spraying will give limited control in commercial nurseries, as new cicadas will fly in to replace the individuals killed by the spray. Scout trees every 2-3 days to check for egg laying activity and treat as soon as it starts. Consult the current Virginia Pest Management Guide or the Spray Bulletin for Commercial Tree Fruit Growers for current chemical recommended for control. Insecticides in backyard plantings will give limited control, but often the sprays will cause worse problems. Blooming trees and plants should not be treated as this may kill pollinating insects. Caution should be used, as populations of spider mites will often increase after application of Sevin or a pyrethroid insecticide.

Remarks: The dogday cicada is also called the annual cicada or harvestfly. Dogday cicadas are related to the periodical cicada and are usually associated with oaks, maples, and other mature well-established trees. The dogday cicadas appear during the long, summer days of July and August. These cicadas have two- to five-year life cycles, but their brood's overlap and some appear every summer. Dog-day cicadas are larger than periodical cicadas and have brown- black bodies with whitish highlights and green wing margins. Annual cicadas do not ordinarily cause much damage.

Table 1. Timetable of expected appearances of the periodical cicada in Pennsylvania.

<u>Year(s)</u>	<u>Brood No.</u>	<u>Counties in Which They May Emerge</u>
2004 (2021)	X	Adams, Bedford, Berks, Blair, Bucks, Cambria, Carbon, Centre, Chester, Clinton, Columbia, Cumberland, Dauphin, Delaware, Elk, Franklin, Fulton, Huntingdon, Juniata, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Lycoming, McKean, Mercer, Mifflin, Monroe, Montgomery, Montour, Northampton, Northumberland, Perry, Philadelphia, Schuylkill, Snyder, Somerset, Union, and York Counties; last emerged in 1987
2008 (2025)	XIV	Adams, Bedford, Berks, Blair, Centre, Clearfield, Clinton, Cumberland, Franklin, Huntingdon, Lackawanna, Lehigh, Luzerne, Lycoming, Mifflin, Montour, Northumberland, Perry, Potter, Schuylkill, Snyder, Tioga, Union, and York Counties; last emerged in 1991
2012 (2029)	I	Adams, Cumberland, and Franklin Counties; last emerged in 1995
2013 (2030)	II	Berks, Bucks, Carbon, Chester, Dauphin, Delaware, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Montgomery, Northampton, Philadelphia, Pike, Potter, Schuylkill, and Wyoming Counties; last emerged in 1996
2016 (2033)	V	Fayette, Greene, Somerset, Washington, and Westmoreland Counties; last emerged in 1999
2017 (2034)	VI	Bucks, Dauphin, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, and Westmoreland Counties; last emerged in 2000
2018 (2035)	VII	Allegheny, Butler, Washington, and Westmoreland Counties; last emerged in 2001
2019 (2036)	VIII	Allegheny, Armstrong, Beaver, Butler, Cambria, Clarion, Crawford, Fayette, Forest, Huntingdon, Indiana, Lawrence, Mercer, Venango, Washington, and Westmoreland Counties; last emerged in 2002