



Southeastern
Pennsylvania

July-August 2026 Newsletter

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How To Manage Clay Soil

When you start a new planting bed, you're probably thinking about design, plant selection, and installation. Gardeners often don't think about the soil until they start to dig. In an area with a long history of development like southeastern Pennsylvania, the once-rich topsoil layer often has been exhausted or stripped off and sold. What's left is likely a thin layer of topsoil over clay subsoil.

What does this mean for native plants? Clay soil can be so compacted that you can't dig a planting hole, or so wet and sticky that you know the plants will just rot in the ground. What's a gardener to do?

First, embrace your clay. Water just runs through sandy soil, and the much larger particles don't hold as many nutrients. Clay is nutrient-rich because its particles are so small that each one has a lot of surface area to hold nutrients and water. Clay soil also provides excellent habitat for beneficial microbes that capture nutrients and help release them to your plants' roots.

Good soil is made up of loose aggregates of these smaller, nutrient-rich particles. Good soil also has enough spaces between the particles to allow air and water to circulate, and roots to penetrate. Clay soil has what it takes to be "good" soil; the trick is to manage clay soil so it can do its work.

Here are a couple of things you don't want to do with clay soil:

- ◆ Don't add sand to clay soil. Clay + sand = concrete. Adding sand to clay soil actually makes drainage worse.
- ◆ Don't work with clay soil when it's wet. To test the soil, squeeze a clump in your hand. If it crumbles when you poke it, it's ok to work. If it stays in a sticky ball, it's too wet; wait a day and

check again. The reason not to work with clay soil when it's wet is that any pressure, like digging or walking, presses the floating clay particles tightly together, creating hard-packed soil when it dries. Working in wet clay pushes out all the air that separates the particles and keeps soil friable. Clay particles that are packed together can't provide nutrients for plants.

- Avoid mechanically tilling clay soil. Rototilling does break up compacted soil clods, but it also destroys the fungal matrix that builds soil and breaks up the soil structure. Repeated tilling creates a hardpan below the tilling depth which water can't penetrate, leading to failed infiltration and flooding.

The most effective strategy for managing clay soil is to add a lot of organic matter. While this isn't an instant fix, it will produce good, nutrient-rich soil in just a few years and will have benefits even in the first year. You can start any time in the season by putting up to 4" of compost, fallen leaves, or wood chips (not commercial mulch) on top of the bare soil. The additional microbial activity in worm castings accelerates the formation of soil aggregates. Keep the material an inch or two away from any plant stems.

Resist the temptation to rototill this material into the soil. Tilling destroys soil structure. Leaving the material to decompose on top of the clay will allow the microorganisms involved in decomposition to incorporate naturally, improving the soil texture.

WO SEPA 2026 CALENDAR

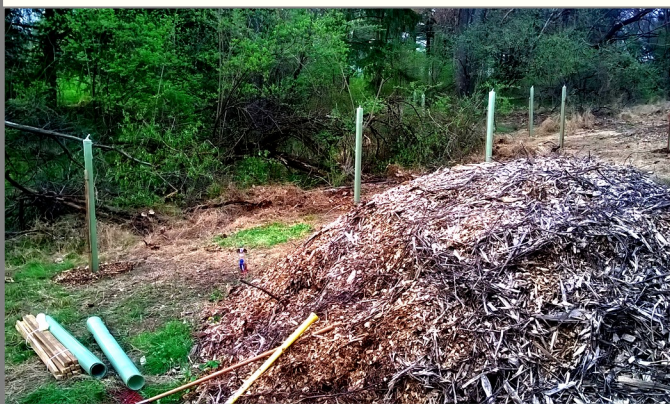
Sept. 17 Nanoforests. Webinar, 7 p.m.

Watch recordings of past programs on our
[YouTube channel](#).

The roots of many plants are able to grow into clay soil in search of nutrients. These root systems create channels in the soil. Organic material decomposing on the surface can move through these channels and be accessed by other plants. This is one reason for planting certain cover crops in vegetable gardens.

You can incorporate deep-rooted native plants into your design so their roots can open channels into clay soil, bring up nutrients to be used by other plants, and allow water to infiltrate. Deep-rooted perennials include black-eyed Susan (*Rudbeckia*), common ninebark (*Physocarpus opulifolius*), cone-flowers (*Echinacea*), milkweeds (*Asclepias*), compass plant (*Silphium laciniatum*), leadplant (*Amorpha canescens*), sunflowers (*Helianthus*), and prairie grasses such as big bluestem (*Andropogon gerardii*) little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), and prairie dropseed (*Sporobolus heterolepsis*).

In the spring of 2021, re-wilding of the area below started with the removal of invasive bush honeysuckle and wineberry. Native saplings (redbud, silky dogwood, and sweet gum) were planted in protective tubes, and the entire area was covered with a thick layer of wood chips from the pile delivered by a helpful arborist.



During the fall and the following spring, shrubs (buttonbush and St. Johns wort) were added, along with deep-rooted perennials (goldenrod, milkweed, obedient plant, aster, and little blue-stem).



The trees arrived in sleeves that were only 9" tall, but each planting hole had to be hacked out of shale bedrock. The perennial plugs were only a little easier to transplant into the heavy clay soil using a 6" soil knife. Five years later, several of the trees are 10 feet tall, and natives like wood sedge, violet, Canada germander, and honeysuckle are volunteering in soil that's now several inches deep.



Keeping the soil surface covered with organic material, whether you use plants, wood chips, or fallen leaves, is critical to maintaining clay soil in good condition. A 2- to 3-inch layer protects the soil surface from rain impact and crusting, maintains moisture so the soil microbes stay active, moderates soil temperature, and adds organic matter from the top down as it decomposes, exactly as nature does.

Avoiding soil compaction is also important with clay soil, because the smaller particles are more prone to being squeezed into an impenetrable mass if they're repeatedly subjected to foot or vehicle traffic. You can mow or weed-whack paths through your clay-soil areas to keep soil compaction to a minimum.

Increase Habitat Fast

Many native plants take several years to become established. Whether you raise them from seed or use first-year plugs, the standard advice is sleep/creep/leap. Their first year in the ground, they concentrate on growing a strong root system and don't look like much above ground. The second year, they start to put out some top growth, and you might get some flowers. The third year, they're finally mature enough to set flowers and fruits or seeds.

It's hard to wait so long for your gardens to fill in and start producing flowers and seeds for wildlife. You can jump-start things by incorporating plants that reseed easily and those that spread quickly. These aren't substitutes for your slower-growing plants. Instead, use them to fill in gaps between slower-growing plants, and also to make transplants that can be moved to other areas.

Reseeders

Plants that reseed easily include beardtongue (*Penstemon* spp), anise hyssop (*Agastache foeniculum*), sedges, partridge pea (*Chamaecrista fasciculata*), blue mist flower (*Conoclinium coelestinum*), black-eyed Susan (*Rudbeckia*), spiderwort (*Tradescantia*), celandine poppy (*Stylophorum diphyllum*), blanket flower (*Gaillardia*), and some goldenrods (*Solidago*). These plants have evolved to produce a lot of seed that germinates easily if allowed to mature on the plant. Some scatter their seeds relatively widely (anise hyssop and blanket flower), while others create large clumps by reseeding near the parent plant (*Penstemon*, *Rudbeckia*, sedges, celandine poppy, and partridge pea).

Spreaders

Plants that can quickly create large clumps via root shoots or rhizomes include asters (*Symphiotrichum* spp), blue mist flower (*Conoclinium coelestinum*; also a reseed), Virginia creeper (*Parthenocissus quinquefolium*), wild ginger (*Asarum canadense*), sedges, blue mist flower (*Conoclinium coelestinum*), bee-balm (*Monarda* spp), some goldenrods (*Solidago* spp), mountain mint (*Pycnanthemum* spp), obedient plant (*Physostegia virginiana*), golden ragwort (*Packera* spp), ostrich fern (*Matteuccia struthiopteris*), sensitive fern (*Onoclea sensibilis*) and coralberry (*Symphoricarpos orbiculatus*).

Either way, volunteers from the parent plants are

relatively easy to dig and move to a new location to fill gaps until slower-growing natives mature.

It's important to remember that once these volunteer plants are transplanted to their new locations, they won't stop spreading. Most of them will need to be controlled (yes, this means pulled out) so they don't overreach their new area. The extra plants can be transplanted in a different location (what a great excuse to create a new bed!) or shared with gardening friends.



Above, *Packera aurea* and ostrich fern grow well together and can take over large areas in shaded woods, crowding out most invasives like garlic mustard and Japanese stiltgrass. In hot, dry years, these plants can go dormant until rain returns. Sensitive fern will also cover a shady area nicely, but in drought conditions it quickly goes dormant.

Below, the young sedge plants clustered in front of the parent plant can be dug and transplanted in spring. Pennsylvania sedge (*Carex pennsylvanica*), blue wood sedge (*C. flaccosperma*), common wood sedge (*C. blanda*), creeping sedge (*C. laxiculmis*), and fox sedge (*C. vulpinoides*) are all good spreaders.



Host Plants -- Plant It and They Will Come

More gardeners than ever are planting native plants to support wildlife, including the insects that pollinate these plants and depend on them for their own survival. While many adult insects will feed on the nectar and pollen from a variety of plants, some depend on just one or two species to provide the food necessary to raise their young.

Adult butterflies and moths lay their eggs on specific host plants because their caterpillars have evolved to eat those particular leaves. Some plants develop chemical defenses to protect their leaves from defoliation by hungry caterpillars. In response, the caterpillars of some species of moths and butterflies have developed the ability to eat those leaves despite the chemical toxins. As a result of this specialization, these insects often lose their ability to digest on the leaves of other plants. They need their own particular poison to survive.

The monarch caterpillar's ability to survive on milkweed leaves that are toxic to most other insects is well known. Plant some milkweed, and you're likely to have monarch caterpillars. It's fascinating to watch the tiny caterpillars grow as they munch their way up and down the stems of their host plant.



The satisfaction that your garden has helped monarch butterflies survive another year might lead you to wonder what other moths and butterflies rely on a particular host plant. If you plant it, will they come?

Pussytoes (*Antennaria plantaginifolia*) is an attractive groundcover at the front of a sunny border. Tiny white puffs of flowers wave above the gray-green leaves in spring, and as soon as they appear, so does

the American lady butterfly. Every year, she's too fast for me to get a photo, but the young don't move as quickly as they feed on the leaves, below.

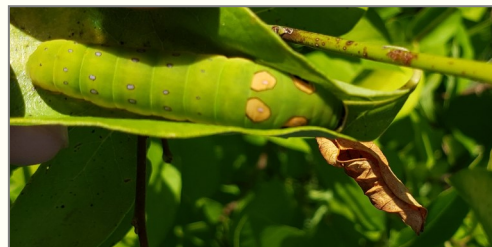


In case you're wondering, the damage to the leaves disappears as the caterpillars mature and the plants put out new leaves during the summer.

Swallowtail butterflies are well known because the colorful adults are very visible in summer, nectaring on many different native and nonnative flowers. The caterpillars are more particular about which leaves they can eat. Each species of swallowtail feeds on a different family of host plants. The more host plants you have, the more kinds of swallowtails you might attract. The eastern tiger swallowtail (below) lays its eggs on the leaves of tulip tree, wild black cherry, and willow.



The spicebush swallowtail caterpillar (right) feeds on the leaves of spicebush (*Lindera benzoin*) and sassafras.



Black swallowtail caterpillars likely will show up if you grow parsley or celery in the vegetable garden. Their native hosts in the same plant family include golden alexander (*Zizia aurea*), immediately below, and honewort (*Cryptotaenia canadensis*), bottom. Honewort often appears along roadsides and in old agricultural fields along with common wood sedge.



The snowberry clearwing caterpillar (below) feeds on the leaves of plants in the honeysuckle family, including coral honeysuckle, bush honeysuckle (*Diervilla lonicera*), and snowberry (*Symphoricarpos* spp.).



These are just a few of the species that need specific host plants in order to produce caterpillars that will become the next generation of pollinators.

The flowers of sassafras (right) and spicebush are small and not particularly showy, but the spicebush swallowtail needs those leaves to survive. Host plants play a critical role in supporting caterpillars, moths, specialist bees, and other insects.



If your landscape doesn't include a variety of host plants, you're not providing everything pollinators need to survive. A common assumption in garden design is that attracting pollinators is the same as creating habitat. High-quality habitat includes plants that produce pollen and nectar to support adult insects, but it also requires the host plants whose leaves feed caterpillars to produce the next generation. Without host plants, there won't be any more butterflies, moths, or birds.

The best way to make sure you incorporate host plants in your gardening is to include a variety of keystone plants native to your ecoregion. Keystone plants include host plants that feed the caterpillars of approximately 90% of native butterflies and moths, and plants whose pollen feeds specialist native bees.

You can find a list of keystone native plants for your ecoregion [here](#). Broadly speaking, southeastern Pennsylvania is in the eastern temperate forest ecoregion. The top five host plant families in this region are oak, cherry, birch, cottonwood, and maple.

These are all trees, some of them large. If you have space, even planting just one will provide generous host habitat. Cherry and birch trees can be kept smaller by pruning. Dwarf chinquapin oak (*Quercus prinoides*) grows just 10 to 15 feet tall. Bear oak (*Q. ilicifolia*) and blackjack oak (*Q. marilandica*) can both be maintained as shrubs or small trees. Grey birch (*Betula populifolia*) grows to less than 30 feet -- no taller than a two-story house. Chokecherry (*Prunus virginiana*) can grow to 20 feet but can be maintained as a lower multi-stem shrub.

Tree of the Month -- Dogwoods

Native dogwoods are important components of natural landscapes in the eastern United States. These understory species play an important role in enhancing biodiversity and restoring ecosystems from upland forests to wetlands.

The dogwood's fibrous root system, particularly in shrubby species like silky and red osier dogwood, helps anchor soils prone to erosion, reducing sedimentation in waterways and protecting water quality and aquatic habitat. Reintroducing dogwoods into degraded wetlands creates habitat for a diverse range of insects, birds, and small mammals.

Dogwoods also play a key role in the calcium cycle of the forest. Calcium is an essential nutrient for both plants and animals. Dogwoods, unlike most other plants, have the ability to absorb calcium from soil and rocks. The trees concentrate the mineral in their leaves and wood. When the leaves fall in autumn, this calcium becomes available to the rest of the plants and animals in the forest.

Pagoda Dogwood, *Cornus alternifolia*

Pagoda dogwood is deciduous shrub or small understory tree that prefers partial sun and moist, rich, somewhat acidic well-drained soil in a sheltered location. As an understory tree, pagoda dogwood needs groundcover plants to keep its soil cool and moist. This is a tree that needs to be protected from hot sun and drought. With its tiered branches and bright white flowers, pagoda dogwood is a beautiful specimen tree, but be prepared to pamper it if you have less than ideal conditions.

Identification

Leaves are the classic dogwood shape -- oval with a sharp point, smooth edges, and prominent veins. This is the only dogwood with alternate rather than opposite leaves, hence its Latin name. The dark green foliage turns burgundy red in fall.



Pagoda dogwood's unique horizontal, upturned branching pattern gives the tree a distinct tiered look that is the source of its common name.

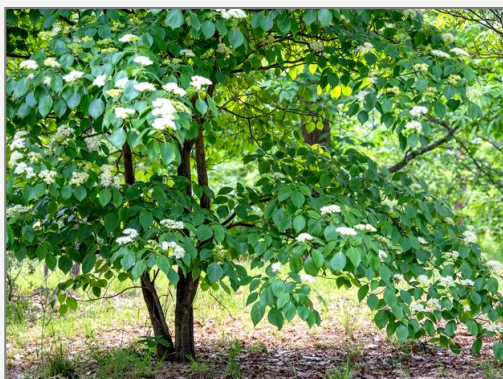


Photo: The Spruce / Evgeniya Vlasova

Clusters of fragrant white flowers in spring form blue-black berries on red stems in late summer which attract

birds. The dark green foliage turns burgundy red in fall.

Habitat Value

The dry, bitter fruits are not edible, but they provide food for grouse, pheasants, wild turkeys, and squirrels.

Dogwoods are a host plant for the spring and summer azure butterflies (below right). Eggs are laid on flower buds. The caterpillars feed on the flowers and fruits and are tended by ants.

White-tail deer will browse the foliage, so trees must be protected up to the browse line.



Photo: The Spruce / Evgeniya Vlasova



Quick Facts -- Pagoda Dogwood

Size	10-25 feet tall, 10-20 feet wide
Sun	Part sun; prefers afternoon shade
Soil	Prefers acidic, moist, well-drained soil
Water	Does not tolerate drought
Habitat Value	Host plant for spring and summer azure butterflies. Berries feed birds in fall.

Invasive Species -- Japanese Stiltgrass

Sometimes gardeners forget, from one year to the next, just how completely an invasive species can overtake an area. In April, I was clearing out invasive bush honeysuckle, garlic mustard, and wineberry from my woods. Before midsummer, the paths into those woods were covered with Japanese stiltgrass and had become impassible.

Impacts on Habitat

Japanese stiltgrass (*Microstegium vimineum*) replaces native vegetation in a wide range of ecosystems, including forested floodplains, forest edges, stream banks, fields, trails, and ditches. It thrives as a weed in lawns and gardens. Japanese stiltgrass grows well in many light conditions, from deeply shaded forests to sunny open fields). Its rapid growth enables it to quickly take over recently disturbed areas, including eroded streambanks, mowed roadsides, forest openings, construction sites, and trails. Each plant produces hundreds of seeds that are dispersed by water, soil (on vehicle tires), and animal and human feet.

Japanese stiltgrass creates dense stands that prevent desirable vegetation from growing. In addition to the early-season plants that are typically crowded out by invasive species, late-season grasses, sedges, and herbs are also affected.

Japanese stiltgrass is a tough invasive to control. It matures extremely quickly, overtaking most natives and even other invasives, and it sets an enormous number of seeds to continue its takeover in future years. Management is most effective when coordinated with the life cycle of the plant.

Control

To minimize the chances of infestation, limit disturbing areas and remediate disturbed soils quickly. Stiltgrass seedlings will often appear where you've transplanted plugs or potted plants. Stiltgrass can also invade areas with established natives (below).



This plant has a small, shallow root system, so it's easy to hand-pull. Early detection and removal are critical. Pulled seedlings can be left on site, but it's better to collect them in a weeding bucket as you pull them. Small quantities can be added to the compost pile if they don't have seed heads. Larger quantities of plants without seed heads can be piled separately to decompose (so they don't smother the compost pile) before being composted. Any plants with seed heads should be bagged and trashed.

Mowing at any life stage has been shown to dramatically reduce the plant's biomass in subsequent years by reducing seed production. Mowing in late summer, after flowering but before plants set seed, had the most effect on seed production. If you mow after seeds have set, clippings must be bagged and trashed to avoid spreading seed.

Stiltgrass growth patterns differ from sunny to shady sites. In shade, plants are shorter and spread laterally (tillering), resembling a carpet. In sun, plants grow taller and produce fewer side shoots but more seeds. Shade populations don't produce enough seed to sustain their population, but sunny sites produce enough seed to sustain their own population plus nearby shade populations. This means that if gardeners need to prioritize stiltgrass control, mowing sunny sites is the best choice to control seed production.

Mowing can be done with a lawnmower at its lowest setting or with a weed whacker. String trimmers can be angled to cut stiltgrass at the soil level. String trimmers also allow more targeted control when stiltgrass is growing in among native plants.

Smothering with 4 to 6 inches of compost or wood chips can be effective on early-season monoculture populations. Follow-up planting or seeding with competitive natives can prevent stiltgrass from returning. Natives that can be over-seeded include jewelweed (*Impatiens capensis*), side oats gramma (*Bouteloua curtipendula*), and Virginia rye (*Elymus virginicus*). Shade-loving natives that can be over-planted include golden ragwort (*Packera aurea*), wild ginger (*Asarum canadense*), and Virginia creeper (*Parthenocissus quinquefolia*). Volunteer natives that might be able to outcompete Japanese stiltgrass include enchanter's nightshade (*Circaea lute-tiana*) and snakeroot (*Ageratina altissima*).

Events and Educational Opportunities

- July 10** [Take-Home Hummingbird Garden](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- July 11** [Gardening for Ecological Resilience Tour](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:30 a.m.
- July 21** [Plant Health Care](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- July 25** [Gardening for Ecological Resilience Tour](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:30 a.m.
- Aug. 6** [Enhancing Life in the Soil](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 9:00 a.m.
- Aug. 7** [Exploring Caterpillar Ecology and How To Support Them in Your Landscape](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 9:00 a.m..
- Aug. 8** [Gardening for Ecological Resilience Tour](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:30 a.m.
- Aug. 12** [Heroes of the Night: Highlights from Mt Cuba's Moth Study](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 6:00 p.m.
- Aug. 20** [Trial Garden Highlights: Pycnanthemum \(Mountain Mint\)](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- Aug. 21** [Create an Ecological Garden Design for Homeowners](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- Aug. 21** [Gardening for Ecological Resilience Tour](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:30 a.m.
- Aug. 23** [Late Season Garden Care](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 1:00 p.m.
- Aug. 26** [Inviting Wildlife into the Garden](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- Aug. 27 & 28** [Botany for Gardeners](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- Aug. 27** [Why Fall Leaves Add Value to Your Garden](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 4:00 p.m.
- Aug. 29** [Introduction to Water-Wise Gardening](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.
- Sept. 2** [Native Plants of Fall](#). Mt Cuba Center, 3120 Barley Mill Rd, Hockessin, DE. 10:00 a.m.

Native Landscaping Legislation Moves Forward

Legislation to support pollinators by promoting the use of native plants on Commonwealth-owned property was approved by the state House of Representatives in June and is now on its way to the state Senate. The bill saw strong bipartisan support in the House (198 yes votes out of 202 state representatives).

The Commonwealth's office buildings are often surrounded by lawn or non-native landscaping, contributing to the decline of pollinators and birds via habitat loss. HB 426 would require Commonwealth agencies to prioritize the use of native plants, especially those grown without systemic insecticides, in construction or maintenance projects involving landscaping at state-owned facilities. The Department of Conservation and Natural Resources (DCNR) is tasked with providing guidance to other agencies on using native plants.