

Pesticide Free - The Yard by Yard Commitment

Participants in the Yard by Yard: Community Resiliency Project commit to managing their property in a pesticide-free manner. This means no use of synthetic herbicides (including pre-emergent applications) and no use of synthetic insecticides (such as mosquito fogging). While we recognize that homeowners have the freedom to manage their yards according to their needs and context, the Yard by Yard team believes strongly in the value of alternative approaches and has decided to limit participation to yards that are committed to being free of synthetic pesticides.

There are several reasons for this stance. For starters, the use (and overuse) of synthetic pesticides directly contributes to the loss of animal and plant species around the globe. For example, a [recent study](#) found that pollution from pesticides and fertilizers was one of the main causes of the massive declines in butterflies, bees, dragonflies, and other insect groups (second only to habitat loss). Pesticides can also hurt human health, through misuse or through chronic exposure to lower doses.

In residential settings, the person applying the pesticide is rarely adequately trained, leading to unintended consequences. Herbicides sprayed to kill unwanted plants in the lawn often "drift" to unintended locations, killing native plants in natural settings as well as the garden plants of unlucky neighbors. Similarly, mosquito fogs and other widely-applied insecticides also kill many non-target insects, leading to the decline of important pollinators as well as birds and other animals that rely on insects for food.

Beyond these first-hand impacts of pesticide misuse, reliance on pesticides can negatively shape our perception of the natural world. Pesticides rely on a black-and-white view of nature, that "pest" species are inherently bad/harmful/unwanted and need to be completely removed. They create a "management by destruction" approach to property management that blinds us to the holistic land stewardship options that are available to us - options that are often better, more beautiful, more resilient and long-lasting, and even cheaper than the synthetic alternatives.

Many "pest" species are not nearly as destructive as they are made out to be. Most of the ones that are more problematic can be better controlled by adopting a sustainable management system and understanding what factors contribute to their success in the first place. And even when pesticide use may be called for, there are often organic, naturally-derived alternatives available with fewer potential negative effects.

For instance, sand burs, the bane of children (and child-like adults) everywhere who like to run barefoot through the lawn, can be eliminated without relying on destructive herbicides. Like many "pest" species, sand burs are adapted to take advantage of the open spaces in unhealthy lawns growing on nutrient-poor soils. But the catch is that sand burs have a hard time competing with healthy plants. Letting your grass grow a little taller, nourishing it with compost that also builds a healthy soil, and allowing other beneficial plants to grow in your lawn (like clover) can eliminate the openings that sand burs need to thrive, all without relying on harmful chemicals.

Pesticides are not the best way, and certainly not the only way, to steward your land well. And we believe that people who commit to going pesticide-free are people worth celebrating.

...but!

The one (potential) exception to this rule is the use of pesticides to control non-native invasive species. Some invasive species, like Johnsongrass and fire ants, can cause more damage to the ecosystem than the pesticides used to control them. These are species that humans have removed from their natural role and introduced into new ecosystems where they wreak havoc and destroy the native environment. When restoring native habitat for conservation purposes it is necessary to first completely remove these destructive invasive species, and occasionally the only practical way to do so is synthetic pesticides.

With this in mind, we invite you to apply for Yard by Yard even if you are not yet 100% pesticide-free. In cases where the use of pesticides is 1) well justified (such as to eliminate highly destructive invasive species), 2) only done occasionally, 3) performed in a responsible manner, and 4) done in a targeted manner, our staff will discuss the topic with you and carefully consider your application. We can also discuss alternative options with you and may help you develop a path to certification as you move away from pesticide use.

What About Sand Burs?

The most common objection to Yard by Yard's pesticide-free stance is "how can I be pesticide free if I have sand burs in my yard?" Great questions! For most of us, the only solution to the dreaded sand bur problem we've ever been told about is the use of herbicides. But even this "quick and easy" solution is not as easy as it sounds. Aside from the health and environmental impacts of this approach, it takes diligence, patience, and years of adherence to see complete results -- just like the alternative methods do.

Fortunately, there are alternatives to using harsh herbicides. To understand how to use these alternatives, we need to know a little more about sand burs themselves. Sand burs (*Cenchrus spp.*) are a type of grass adapted to sandy, nutrient-poor soils that have been disturbed. They are great at taking over bare dirt or unhealthy lawns, but they can't compete with most other plants when soil nutrients become more abundant. They can't tolerate shade, so growing tall, vigorous plants will eventually kill them. While they are a frustrating problem to deal with, these facts about their biology offer several reliable solutions to eliminating them. The key is to remember that many of these methods take time (especially since dormant seeds can last 5 – 10 years in the soil), so don't give up if it takes a few years to completely eliminate the problem.

For Grassy Areas:

Because sand bur seeds can lay dormant in the ground for many years, one of the best ways to eliminate them are "cultural controls"—establishing a set of practices to consistently follow as you manage your land. For areas that you want to keep as grassy lawns, the best way to get rid of sand burs is to invest in a strong, healthy lawn. Follow a reliable fertilization plan (compost and organic fertilizers work just as well for lawns as for vegetable gardens—talk to your OSU extension office or a reputable turf grass company for specific recommendations). Don't mow your grass short since this opens up space for sand burs to germinate. Instead, let it grow at least 3in high and form a dense, healthy lawn. Also try to avoid frequent shallow/light watering since this only wets the soil surface, where most weed seeds are. It is better to do infrequent deep waterings that encourage your grass to grow a deeper root system. This way even when the soil surface is dry, your grass can access the water stored deeper in the soil. Mixing clover in your lawn may offer additional protection from the gaps/bare areas that would allow sand burs to grow.

For Garden Areas:

You have several options for controlling sand burs in cultivated garden areas. A few key things to remember are that sand burs can't compete with dense, vigorous vegetation grown on healthy soils, and because they are a shallow-rooted annual plant, they won't regrow after being cut at the root. There are a couple ways you can act on this information. First, keeping bare ground covered with a healthy cover crop will shade out sandburs and make it less likely they will take over. For areas that you need to remain bare, regular cultivation will kill the young sand bur plants before they have a chance to produce seeds. Collecting and removing any killed plants that have set seed will ensure those plants don't contribute to future infestations. Alternatively, covering bare areas with a thick layer of straw or mulch will prevent the seedlings from emerging and growing in the first place.

For areas that have not yet been cultivated, much of the problem should be helped through cultivation and planting, with occasional spot treatment as you notice sand burs starting to grow. An additional method to reduce the number of sand burs you will have in the future is controlled burning **(DISCLAIMER: always consult with your local fire department and city regulations before burning, and seek guidance and support from experienced experts. Controlled burns are usually not an option in residential areas)**. If you burn in the winter, when there is a higher load of dead plant material, your fire may get hot enough to even kill seeds in the top layers of the soil. Conversely, if you burn in the late spring (around May), the fire won't kill the seeds in the soil, but it will open up space and encourage them to germinate. This makes it easy to target the young sand bur plants, either with an herbicide, with cultivation, or with another fire. Consider reaching out to a prescribed burn association for help planning and implementing a burn.

Additional Resources:

Oklahoma County prescribed burn association:

Land Run Burn Association

OSU Extension Oklahoma County Office - 405-713-1125

<https://www.ok-pba.org/>

OSU Extension factsheet on sand bur control:

<https://extension.okstate.edu/fact-sheets/sandbur-control-in-bermudagrass-pasture.html>

Sand bur factsheet from SARE (Sustainable Agriculture Research and Education)

<https://www.sare.org/publications/manage-weeds-on-your-farm/sandburs/>

What About Mosquitoes?

Perhaps the next most common objection to a pesticide-free approach is the question of controlling mosquitos. Just as with sand burs, the control methods we see most often (for example, mosquito fogging) are not the most effective options, and also can be incredibly destructive. We'll break down why chemical control methods are ineffective below, but let's start with what *does* work.

Mosquitoes are much easier to control as larvae than as adults. The **best way to control mosquitoes is to eliminate standing and stagnant water**. Mosquitoes have to have these water sources to breed: no water, no mosquitoes. Eliminate as many sources of standing water as you can find (clogged gutters, plastic containers, etc.) and make it habit to walk your property regularly and dump out any stagnant water sources you find. For those water sources that you can't or don't want to eliminate (like ponds and fountains) there are several steps you can take to make them unattractive to mosquitoes.

Mosquitoes prefer shallow, stagnant water so keeping your water running and making sure your pond has deep, sheer sides (at least two feet deep) will make your pond less appealing to mosquitoes. Replace the water in bird baths frequently and be sure there are no other sources of standing water on your property. Providing adequate habitat for predatory aquatic insects (like dragonfly larvae and backswimmers) will encourage these beneficial insects to feed on mosquitoes. You can also stock your pond with mosquito-eating fish. Just make sure to never release non-native fish into the wild! Finally, consider using "mosquito dunks" to kill the developing larvae. These dunks contain a bacteria that infects the digestive systems of aquatic fly larvae (such as mosquitoes) and kills them before they can become adults. They contain no harmful chemicals and won't impact other animals or insects (besides flies).

Once you start managing the problem of mosquito larvae, the best way to control the remaining adults is quite simple: **set up a fan on your back patio!** Adult mosquitoes are very weak flyers, so even the slight breeze from an outdoor fan can be enough to deter them (not to mention keep you cool during summer BBQs!). Strategically placing a few fans in the areas where people will congregate can reduce the likelihood of a mosquito bite without any of the harmful side effects of other options.

Now, onto the traditional control methods. All of the most commonly suggested options for controlling mosquitoes on residential property are either ineffective or carry huge negative side effects (or both!). We'll discuss mosquito fogging, barrier treatments, bug zappers, traps, and candles/torches.

Mosquito fogging: This method is much less effective than it is made out to be. A mosquito fog insecticide only kills the mosquitoes that it comes into direct contact with. These fogs break down within a few hours in sunlight, so they provide no lasting benefits. Additionally, unless conditions are ideal then sunlight or wind will rapidly break down or dissipate the fog. After the fog dissipates, mosquitoes from

neighboring areas, or even those that sheltered on your property, will be flying around ready to bite very shortly after the fog application. Worse still, in the few hours that the fog is effective it will kill many other beneficial insects that it comes into contact with. Pollinators like butterflies and bees are especially vulnerable, but mosquito-predators like dragonflies may also be killed. This control method therefore gets three strikes: ineffective, negative side effects, *and* expensive.

Barrier treatments: The goal of this method is to poison areas where mosquitoes might land, with the hopes of reducing the mosquito population. There are several problems with this approach. While the poison does kill mosquitoes that touch it, any other insect that touches a poisoned surface will also die. You'll lose many more beneficial insects than you'll kill mosquitoes. Additionally, mosquitoes that fly onto your property without touching the barrier, or that were sheltered in untouched areas of your yard, will still be able to fly around and bite people. Even if you reduce the number of mosquitoes in the area, it's typically not enough to completely eliminate bites.

Bug zappers: The stereotypical mosquito control method is probably the least effective option on this list. The UV light from these devices is supposed to attract mosquitoes but has been shown to be ineffective at reducing mosquito bites. While they are very bad at killing mosquitoes, they can be very good at killing beneficial insects: studies have estimated that as low as 0.13% of the insects killed by bug zappers are biting mosquitoes (in other words, for every 10,000 insects killed, only 13 were mosquitoes); similarly, these devices may kill up to 350 billion beneficial insects every year ([source](#)).

Traps: Like bug zappers, traps (supposedly) work by attracting mosquitoes to something that will kill them. They use CO₂ or chemical attractants to lure mosquitoes to an electrical current that will kill them. While these may be effective in enclosed spaces, there is little evidence that they can actually prevent mosquito bites outdoors. Similarly, **sonic repellants** (that mimic the sounds of male mosquitoes or predatory dragonflies) and **ultrasonic repellants** (that mimic the sound of bats) have also been shown to be ineffective at reducing bites when tested outdoors. None of these methods are as likely to cause harm to beneficial insects, but they are also very unlikely to help solve your mosquito problem.

Candles/Torches: Like the sonic repellants discussed above, citronella candles and tiki torches are purported to keep mosquitoes away but have little evidence to support the claims. There's probably no harm in using these (especially if you like the ambiance), but it's more likely that any effect on mosquitoes is from the smoke itself, not the repellent compound. You'd likely get the same effect from regular candles and torches.

Additional Resources:

[Tips on managing mosquitoes in ponds, fountains, and bird baths](#)

[Discussion of different mosquito control methods](#)

[Perspective of a Tulsa homeowner on the effectiveness of different control methods](#)