

Help for Asian Jumping Worms

The problem:

“Our” earthworms are not native; they arrived from Europe in the 1600s. While they are not good for Northern forests, they are beneficial in gardens and agricultural settings. But Asian Jumping Worms are *highly* destructive in all settings in the US. They destroy soil which results in plant death.

How to identify Asian Jumping Worms:

Video: Click [here](#)

	Asian Jumping Worm	Earthworm
Size	1 1/2” to 8” long	3” to 8” long
Behavior	Do not crawl smoothly. Thrash wildly and frantically like snakes when touched or disturbed. If picked up, jump out of the hand.	Slither more sluggishly.
Visual clues: band *juveniles don’t have this band yet	Smooth, milky white/grey or cream “collar” or band close to the top of the head and wrapping all the way around the body	Textured bumpy pinky peach or body-colored band further down body. It might be like a saddle that doesn’t go all the way around the body.
Color & texture	Dark grey to brown, with a metallic sheen. Smooth.	Pink, reddish brown or pale red. Moist & slimy.

Images:



How to test new compost, soil or a new potted plant given to see if it has Asian Jumping Worms:

The “mustard pour test” utilizes something found in mustard seeds to temporarily irritate worms' skin. (It won't kill worms, Asian Jumping or Earthworms)

It forces worms to flee to the surface quickly where you can see them, but is totally harmless to plants, roots, and soil.

1.Mix the solution:

Stir 1/3 cup of ground yellow mustard seed (the dry powder sold in the spice aisle) into 1 gallon of water.

2.Clear the surface:

Remove any heavy layers of mulch, dead leaves, or debris from the top of the compost pile or the plant so you have a clear view of the bare soil.

3.Pour slowly:

Don't do this quickly!

Slowly pour the liquid evenly over the soil. For a small potted plant, use enough to saturate the pot. For a compost pile, pour one gallon slowly over a 1-square-foot area roughly, letting it soak in.

4.Watch for thrashing:

Wait a few minutes. Any worms in that soil—good or bad-- will be driven to the surface. Asian jumping worms are crazy active—they violently thrash side-to-side like a snake when disturbed, rather than sluggishly crawling like normal earthworm

The ground mustard acts as a skin irritant—similar to how pepper spray affects humans. It creates an uncomfortable burning sensation that drives all worms (both invasive and beneficial) to the surface to escape the compound.

Once the worms are on the surface:

- **Remove the jumping worms and kill them:** See below.
- **Leave the good worms alone:** The native, sluggish earthworms can be left right where they are. As the mustard solution dilutes into the soil and breaks down over the next few days, the beneficial worms will simply burrow back down into the dirt unharmed.

What to do if you find Asian Jumping Worms:

You must kill them when you find them. Don't cut them in half. Instead: Pick the worm up with a trowel or your hands (it will thrash to escape) and drop directly into a bucket of soapy water. This will kill them instantly. You can also place them in a plastic bag and leave in the sun; this kills them less quickly. Once dead, throw them in the trash in a sealed plastic bag. Do NOT compost them. Cocoons within the worms can survive.

Note: it is believed that Asian Jumping Worms cannot typically survive New England winters. However, their eggs can.

Tips to prevent their spread:

1. In the late spring and summer, use the mustard pour method listed above to extract them, then kill all you find.

You can safely do this once a week or once every two weeks depending on how much rain you have recently received (the water is the problem; you do not want to waterlog your plants since a gallon per square foot is a massive amount of water).

2. Switch your mulch: replace hardwood mulch with organic pine needles or pine straw mulch.
3. Wait to apply organic mulch until late summer. This helps starve young worms.
4. Make sure to wash your boots and any mud on clothing off in a safe area: cocoons can be hitchhiking in the mud of an infected area.

Physical barriers to prevent spread:

These are affective but difficult on the South Shore of MA due to all of our rocks and ledge!!

Moat: You can install a “moat” to prevent further spread of the worms. This is very labor intensive but works well.

Dig a deep trench around the infected area (12” wide x 24”).

Line the trench with heavy duty plastic (6 mm). This is wider than standard weed blocking liner; you can find it at big box home stores.

Fill the trench with pumice rocks. Worms will hit the rocks and turn back to the infected area.



Rhizome barrier:

Install a 24” deep rhizome barrier around the infected area, leaving a 1” lip of it ABOVE ground.

Killing a massive infestation:

You can solarize the area. This is the “nuclear” option which pasteurizes/sterilizes the soil but also kills any plants and beneficial insects. Follow this process *in late spring or the peak of summer* as follows:

Clear all vegetation to the ground.

Water the soil to be covered thoroughly

Lay a clear plastic tarp over the entire area.

Seal the edges by burying or securing with heavy rocks or landscape pins

Leave plastic in place for 2-4 weeks (or less! Your goal is for top 6" of soil to reach temperatures of minimum 104 degrees for at least 3 days; you can use a compost thermometer to test and remove tarps accordingly).

Repairing soil that's been impacted by the worms:

Asian Jumping Worms eat organic matter so aggressively that they dramatically alter the physical structure of your soil. They leave behind dry coarse casings that are often described as being like coffee grounds. The new soil fails to hold water or nutrients.

Biochar is an amazing, lightweight black carbon material (invented by indigenous tribes in the rain forests of South America) that is highly beneficial to soil. Research shows it helps repair Asian Jumping Worm soil damage by providing a stable form of carbon that the worms cannot digest, by increasing moisture retention and by acting as a physical irritant that deters them from the area. Some research says it might even kill them, but that has not been proven.

Why Biochar Helps Repair the Damage

- **It restores water retention:** The porous structure of biochar acts like a sponge, counteracting nature of jumping worm castings.
- **It holds onto nutrients:** Jumping worms accelerate nutrient leaching by stripping the topsoil of leaf litter. Biochar binds with essential nutrients and keeps them available to plants at the root level.
- **Worms can't eat it:** Unlike compost, leaf mulch, or wood chips—which just feed the jumping worm population and speed up their breeding—biochar is inedible to them. It remains in the soil.
- **It irritates them:** The sharp, dry, abrasive edges of biochar physically irritate the worms' skin, creating an inhospitable barrier.

Exactly How to Apply Biochar to Help Your Soil Recover

You'll be using a 5% concentration of biochar and treating the top 4" of soil.

Please follow this process exactly. Too high a concentration of biochar can actually kill all worms, and biochar must be 'charged' first as described.

1. **Determine amount needed.** You are going to make a mix of biochar and compost using a 1 to 1 ratio. Our example here is for a 200 square foot (or 10 x20) garden bed. In this case, we'd use 3.5 cubic feet of raw biochar and 3.5 cubic feet of compost. ***Please adjust according to the size of the area you are treating.***

2.Mix and moisten: This is critical in order to prevent nutrient lock-up. Empty the bags of biochar and compost into a large pile on a tarp, in a kiddie pool, or in a compost bin. Stir them together thoroughly with a shovel. Spray the pile with a hose until the mixture is damp like a wrung-out sponge, but not dripping wet.

3.Wait one to two weeks: This lets the biology in the mixture activate. Cover the pile with a tarp to keep it from drying out or washing away in the rain. Let it sit undisturbed for at least 7 to 14 days. During this time, the porous biochar absorbs the water, microbes, and nutrients from the compost. You now have **7 cubic feet of charged mixture**.

4.Spread evenly over the bed: it will form a 1/2-inch layer. Wheelbarrow the mixture to your garden bed. Dump it in piles and use a rake to smooth it out evenly across the entire affected surface. Because of the volume, this will create a layer roughly **1/2-inch deep** sitting on top of your existing soil.

5.Incorporate into the topsoil: Make sure to target the worm damage zone, where soil has become like coffee grounds or where you observed most worms. Use a heavy bow rake, a digging fork, or a hand tiller to churn that 1/2-inch layer down into the top 4 inches of your damaged garden soil.

Once mixed in, the biochar is permanently installed. You will not need to apply biochar to this garden bed again, though you should continue adding normal compost annually.

Where to purchase supplies

Pine straw, pumice rocks and rhizome barriers:

-Pine needles or pine straw mulch is commonly available at many landscape suppliers, garden stores or big box stores like Lowes or Home Depot

6 mm plastic sheeting:

In the paint tarp and supply aisle of big box stores like Lowes or Home Depot

Biochar:

-North River Biochar: email: ybucca@comcast.net, 781-659-2038, Norwell, MA

-AR Plante in West Bridgewater: www.arplantematerials.com sells organic compost that has biochar premixed in it; we recommend contacting them to learn the ratio of biochar to compost as you'll need a 1 to 1 ratio to repair soil!

-Read Custom Soils: www.ReadCustomSoils.com locations in Carver, Wareham or Acton, MA This company specializes in large scale projects; it can supply biochar for major installations or restoration projects.

Sources:

Purdue University & Cornell University Cooperative Extensions

Penn State Extension

University of Minnesota Extension & Great Worm Watch

University of Wisconsin, Madison Arboretum