

PESTICIDE FREE YARD GUIDE



SLCgreen

Department of Sustainability



As part of the Healthy Babies Bright Futures initiative, Salt Lake City is working to reduce exposure to harmful chemicals that we come into contact with on a daily basis. One common source of exposure is through pesticides (including rodenticide, herbicides, insecticide, and fungicide). This guide was created to give residents a starting point for reducing and phasing out chemical pesticide use in their homes. If you are interested in more comprehensive resources, please check out the organizations' websites found throughout this guide.



Why be pesticide free?

Almost everyone wants a lush, green lawn and an attractive, pest-free garden. Unfortunately, in order to achieve this goal many people resort to using harsh chemical fertilizers and pesticides. While these products are effective in accomplishing their purposes, it is not without impact. Most fertilizers and pesticides currently on the market are made with harmful chemicals that, even when used properly, affect not only human health, but the health of our environment. Luckily, there are now great cost-effective and proven natural alternatives that can help you achieve a healthy and beautiful yard without chemicals. This is why Salt Lake City, partnered with Beyond Pesticides, is running a trial on a couple of local parks to incorporate best alternative practices in pesticide management and lawn care. We encourage city residents to join us in reducing the amount of chemical pesticides and fertilizer they use.

It's healthier for you and the environment!

Chemical pesticide use and exposure has been shown to have negative health effects on humans. Recent studies show that most homes in the United States are contaminated with pesticides. Health effects found to be caused by chemical pesticide exposure include birth defects, childhood cancer, acute poisoning, brain tumors, and asthma.

Children are particularly vulnerable to chemicals due to their exploratory nature and size. Children are more prone to place potentially contaminated household objects, as well as their hands, in their mouths. Because of their small size, children are closer to the ground and contaminated surfaces which exposes them to more chemicals. Additionally, compared to adults, children have a relatively higher intake of food, water, and air.

After learning about the great alternatives to chemicals in this guide, it is likely that you will want to cut-down or eliminate the use of pesticides and fertilizers in and around your home. Initially, this might mean more time spent in the garden doing manual labor. Luckily, gardening, promotes many health benefits.

Studies have shown that working in the garden improves both your mental and physical health. Gardening has shown to be more effective at reducing stress than other leisure activities. A Norwegian medical study showed that mice injected with *Mycobacterium vaccae*, a harmless bacteria commonly found in soil, had an increased release and metabolism of serotonin in parts of the brain that control cognitive function and mood. This acts similarly to serotonin boosting antidepressant drugs. The relation between humans and *Mycobacterium vaccae* is thought to be evolutionary—humans evolved alongside the bacteria and benefited from its positive, mood enhancing effects. However, we are not exposed to the bacteria as often as before, thus negatively impacting our immune systems. By exposing ourselves again to *Mycobacterium vaccae* regularly, we can help alleviate some of the health concerns caused in its absence, such as depression.

Gardening is also a good source of low-impact exercise, such as stretching and strengthening

10 tips for being pesticide free

1. Improve soil health to facilitate healthy lawns and reduce weed growth by adding $\frac{1}{4}$ inch compost in early Spring and early Fall.
2. Fertilize naturally by leaving grass clippings on lawn and mulching with leaves.
3. Aerate your lawn to avoid compaction.
4. Mow lawn to 3-4 inches high.
5. Don't over water your lawn and avoid watering during the heat of the day. Per week, an inch of water is needed in May/September and 1.5 inches in the summer.
6. Incorporate native plants in your landscape. Native plants are adapted to local conditions and aren't easily outcompeted by unwanted plants.
7. Use natural products like neem or peppermint oil as alternatives to chemical pesticides.
8. Incorporate Integrated Pest Management practices.
9. Declutter your yard and home to discourage pests
10. Remove standing water & open food sources



muscles. This physical activity is associated with a lower risk of developing dementia. Two studies were conducted in which people in their 60s and 70s were followed for up to 16 years. Those who gardened regularly had between a 36% and 47% lower risk of dementia than those participants who did not garden.

Creating a natural environment and promoting biodiversity around our homes can reduce chronic illnesses, including allergies, in both children and adults. Recent studies show that the health of our soil is directly related to the microbial life on our skin and in our gut. This is yet another reason to keep our environment healthy and diverse by eliminating the use of chemical pesticides and fertilizers.

Steps to be pesticide free



Reduce overall lawn area

There are many great alternatives to traditional turf grass. Reducing the amount of lawn space in your yard is an effective strategy in reducing reliance on chemical pesticides and fertilizers. Determine how much lawn you really need based on your personal use of the yard, including whether or not you have children or pets that utilize the grassy space. Wherever possible, minimize the amount of turf grass in your yard.

Find an alternative to grass

If you don't want to replace your lawn with garden beds, and prefer a low-maintenance ground cover, plant the following alternatives.



Creeping thyme

- o Supports frequent foot traffic
- o Should be kept moist, but not wet
- o Tolerates sun to light shade



Roman Chamomile

- o Supports normal foot traffic once established



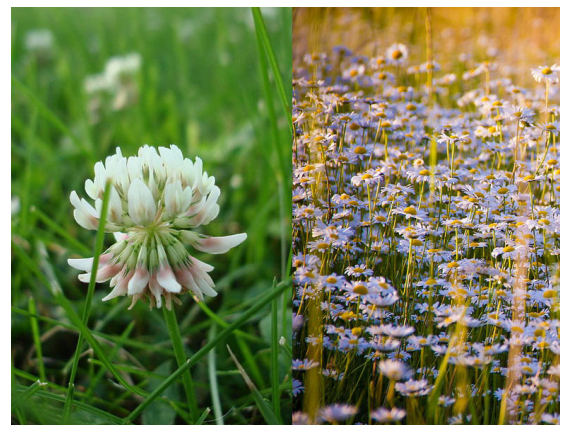
Moss

- o Withstands moderate foot traffic
- o Requires moisture and shady areas

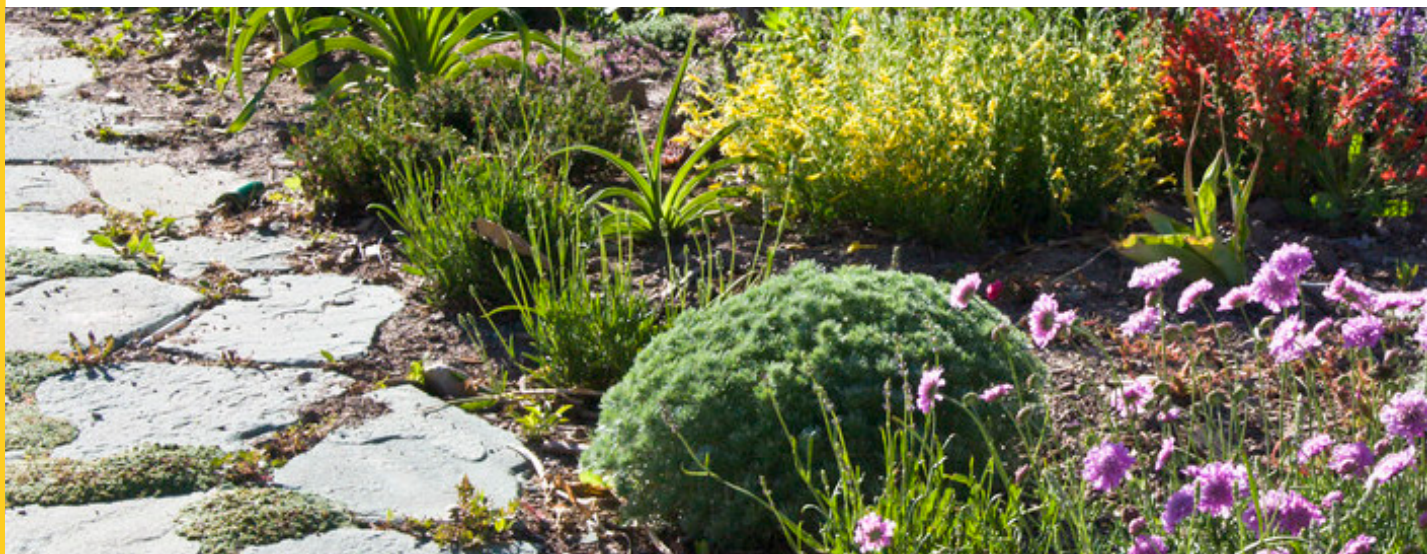


White clover

- o Drought resistant once established
- o Nitrogen fixing
- o Stays relatively short (4-8 inches)
- o Not suitable for repeat high traffic areas (dogs, children, lots of walking, etc.)
- o Can be mixed with high traffic grass



Xeriscape with native plants



Native plants have adapted to local physical and biological conditions without the need for human intervention. This means that native plants don't require many soil amendments. They will resist damage from freezing, drought, common diseases, and herbivores, and require less frequent watering.

Additionally, native plants will increase the biodiversity found in your garden. Native plants attract other native species, including pollinators, which will keep your garden healthy and flowering year after year.

Due to their deep root system, native plants also help manage rain water runoff and maintain healthy soil. This can help to mitigate floods (including flash floods) and prevent soil compaction.

Resources for starting a native garden:

SLC Landscape Best Management Practices for Water Resource Efficiency and Protection
<http://bit.ly/2j7knOC>

Seven Principles of Xeriscaping™

1. Plan and design landscaping comprehensively.
2. Evaluate soil and improve, if necessary.
3. Create practical turf areas.
4. Use appropriate plants and group according to their water needs.
5. Water efficiently with a properly designed irrigation system.
6. Use organic mulches to reduce surface evaporation and weeds.
7. Practice appropriate landscape maintenance.

SLC Landscape BMPs for Water Resource Efficiency and Protection



Use organic lawn care methods

Maintaining a traditional lawn is challenging in an arid, desert climate like Utah. Our harsh climate can put a significant amount of stress on the grass and create a dependence on frequent watering, fertilizing, and pesticide use. Reducing the amount of fertilizer and pesticides we apply, though it might seem contradictory, actually improves soil and plant health.

The following suggestions are sustainable practices that can be implemented to maintain a healthy lawn.

Mimic a natural ecosystem

The best way to have a chemical free lawn is to create a yard that mimics a natural ecosystem. This is done by allowing organic materials, such as grass clippings, leaves, and other dead plants, to remain on the lawn or in the garden. This material suppresses disease, decreases thatch (which prevents healthy grass from growing), and discourages the growth of crabgrass. Most importantly, however, as these plant materials decay they naturally add nutrients back into the soil. As this cycle continues, the soil does not require much, if any, additional fertilizer. If your yard doesn't have much organic matter, or if you find that you do need extra fertilizer, sprinkle a $\frac{1}{4}$ inch of compost over your lawn in early spring and fall.

Don't sweat white clover

White clover is extremely beneficial to a lawn's health but is, unfortunately, often unwanted. White clover has a leguminous root system which supplies nitrogen to the soil, an essential element for plant growth. Additionally, it is easily managed, and will not overcrowd desired grass. White clover is drought resistant, and will maintain a green color even during times of water shortage when traditional grass wilts and loses color. There are also no serious pests



that are attracted to white clover, meaning no additional pests will visit your lawn.

Choose a site-adapted grass

To reduce the amount of maintenance a lawn requires, it is important to select a type of grass that is well suited to the environment. In northern and central Utah's climate, cool season grasses are most appropriate.

A few recommended species of grass include:

Fine Fescue

- o Shade tolerant
- o Slow growth
- o Low fertilizer needs
- o Drought tolerant

Tall Fescue

- o Shade tolerant
- o Deep rooting requires less irrigation

Kentucky Bluegrass

- o Recovers quickly from frequent use (ideal for heavily used yards)
- o Requires full sun to partial shade

Buffalo Grass (most suitable types: Bison, Bowie, Cody, Plains, and Topgun)

- o Tolerates moderate foot traffic
- o Only needs occasional mowing; never mow below 3 inches
- o Fertilizer needs are minimal
- o Requires 1-2 inches of rain or irrigation every 2-4 weeks in summer

Set proper mower height

The ideal mower height be kept at 3-4 inches. Keeping grass at this height will reduce weeds by allowing grass to block sunlight, preventing it from reaching weed seeds on the soil surface.

Weed prevention

An effective way to maintain your lawn is simply to keep weed growth under control. Some ways to do this are

- o Hand pull weed seedlings early—remove before they flower and produce seed
- o Mow infrequently
- o Keep grass long (between 3-4 inches)
- o Decrease soil compaction and aerate if your lawn is compacted
- o Water sparingly - only water about 1-1.5 inches per week (including rainfall)
- o Carefully manage fertilizer application

It is important to accept that there will be some undesired species mixed in with your grass. An increased number of species, however, indicates higher biodiversity, which is beneficial for overall environmental and human health.

More resources for lawn care found at Beyond Pesticides, www.beyondpesticides.org.



Alternative Pest Management

Need to take more drastic pest management measures? Do so naturally without turning to harsh chemicals. Try these alternatives to pesticides that are effective in deterring pests without negatively affecting our health or the ecosystem's health.

Outdoors:

Diatomaceous earth

- o Available at garden centers
- o Affects crawling insects, such as snails and slugs
- o Dust ground around plants with powdered diatomaceous earth (can also sprinkle directly on affected leaves)
- o Needs to be reapplied after rain (or heavy watering)

Neem oil

- o Available at many garden centers
- o Disrupts the life cycle of insects in any stage (egg, larvae, or adult)
- o Biodegradable, nontoxic to pets, birds, fish, and other wildlife
- o Won't pollute ground water or runoff
- o Won't harm bees, butterflies, and lady bugs
- o Effective against many common insect pests
- o Effective against powdery mildew and other fungal infections
- o To prepare for use, mix 2 teaspoons neem oil with 1 quart of water (option to mix 1 teaspoon mild liquid soap)
- o To use, spray on affected plant foliage
- o Spray early in the morning or in the evening. Avoid spraying during the heat of the day when the combination of sun and oil can burn foliage.

Peppermint, thyme, and rosemary oil repellent

- o Mix equal parts (about 10 drops) peppermint, thyme, and rosemary essential oil in a spray bottle filled with water
- o Spray around garden
- o Repels (doesn't kill) flies, fleas, mosquitoes, cabbage looper caterpillars, aphids, squash bugs, white flies, ants, beetles, spiders, chiggers, ticks, and roaches



Homemade Insecticidal soaps

- o Spray directly on affected foliage (avoiding heat of the day)
- o Affects many common garden pests

Oil spray

- Mix 1 cup vegetable oil with 1 tablespoon liquid soap (such as castile soap)
- To apply, mix 2 teaspoons of oil and soap mix with 1 quart of water. Shake, and spray directly on affected plants
- Avoid spraying during heat of the day
- Works on aphids, mites, thrips, etc.

Soap spray

- Mix 1 ½ teaspoons mild liquid soap (castile) with 1 quart of water
- Spray directly on infected plants
- Apply early in morning or in evening, not during the heat of the day
- Works on mites, aphids, whiteflies, beetles, etc.



For wasps or hornets nests:

Peppermint or Tea Tree Oil Castile Soap Spray

- o Add one cup of tea tree oil or peppermint liquid castile soap to a hose end sprayer
- o Attach to hose and spray directly at nest until it disintegrates or falls down
- o The soap suffocates the wasps or hornets and the peppermint or tea tree scent prevents them from coming back and rebuilding nests

Weed Management:

Vinegar

- o Effective weed killer. Will kill all plants—don't spray on anything you want to keep
- o Add a couple of drops of liquid soap to white vinegar to help it adhere to the plant
- o Spray on a dry, sunny day
- o Optional: add salt to prevent weeds from coming back (this will also inhibit other plants from growing, so only add salt where you know you never want anything to grow(ex: walkway, crack in sidewalk, etc.)

Boiling water

- o Pour boiling water on weeds you want to get rid of (will kill other plants if poured on them)

Indoors:

Spider and ant repellent

- o Mix about 5-7 drops of peppermint oil and a few drops of dish soap in a spray bottle filled with warm water, shake well
- o Spray along windows, doors, and other places you might find spiders

Mosquito repellent

- o Place a few drops of peppermint oil in a shallow dish of water
- o Place in the room where you want to deter mosquitoes

Rodent repellent

- o Dip cotton balls or rags in peppermint oil and place around home (inside or outside) wherever the pest problem occurs to repel mice, rats, squirrels, and rabbits



Alternative Uses for Weeds

Though we often eradicate weeds from our lawns and gardens, they are actually a useful and underutilized resource. Many weeds are edible and can be used to diversify our diet, while other weeds have medicinal properties. Instead of spraying them, we can take advantage of finding weeds in our yards and put them to good use.

**Warning: some people may have allergic reactions to consuming and/or touching weeds. Be cautious with handling weeds, and only start eating them in small amounts.*

Purslane

A succulent-like weed that is edible. It is believed to have more omega-3 fatty acids



than any other leafy green vegetable. It adds a peppery flavor to dishes, and can be eaten raw or cooked. It can also be used to thicken soups or stews.

Plantain

A broad leafed weed, is both edible and medicinal. The young leaves can be eaten raw,



steamed, boiled, sautéed, or made into a tea. The leaves can be crushed and applied topically for insect bites or minor burn relief.

Mallow

A weed with edible leaves that can be cooked or eaten raw. The leaves aren't very flavorful on their own, but bring out the flavor in other dishes. Mallow flowers, fruits, stems, and roots are also edible.



Clover

An important food source for bees and other pollinators. Clover flowers, both red and white, can be dried to make tea. Additionally, clover leaves are edible and can be added to salads.



Dandelions



Both the leaves and flowers of dandelions are edible. The greens, though slightly bitter, can be eaten raw, added to a salad, or steamed. Dandelion flowers are sweeter than the leaves, and can be eaten raw or cooked. Dandelions are not just a potential food source for humans, but an essential one for bees and other pollinators. When we remove dandelions, we are eliminating a valuable food source for pollinators, whose populations are rapidly diminishing.





Buy Organic!

In addition to eliminating chemical pesticide use in and around the home, it is important to limit our exposure to pesticides through the food we eat. Studies show that pesticide residue on produce is a common route of exposure to harmful chemicals. Fruits and vegetables that are grown conventionally have often been exposed to many pesticides before they are shipped to our local grocery stores. If we aren't careful, this produce could introduce harmful chemicals into our homes and bodies.

To avoid or at least limit exposure to pesticides through fruits and vegetables, you can opt to purchase organic produce. An alternative to buying certified organic produce at the grocery store is to seek out local farmers markets. At such venues you can talk directly with the farmer or with someone who is closely involved with the crop production. You can ask about their cultivation practices and choose to purchase fresh produce from those farmers who avoid pesticides. In addition to reducing the amount of pesticide residues on your produce, you will also be purchasing fresher produce.

If it is not feasible for you to purchase organic or local produce, you can still reduce the pesticide residue you ingest by thoroughly washing your fruits and vegetables. The best, and most natural, way to clean your produce is simply with water and white vinegar. You can fill a bowl with water and add a cup of white vinegar and allow fruits and vegetables to soak, or you can mix about two cups of water and three tablespoons of white vinegar in a spray bottle and spray, scrub and rinse your produce.

Avoid the Dirty Dozen!

Prioritize buying organic for the following fruits and veggies which test have shown to have the highest pesticide residue.

- 1. Strawberries**
- 2. Spinach**
- 3. Nectarines**
- 4. Apples**
- 5. Peaches**
- 6. Pears**
- 7. Cherries**
- 8. Grapes**
- 9. Celery**
- 10. Tomatoes**
- 11. Sweet bell peppers**
- 12. Potatoes**





Salt Lake City Sustainability Department
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