

*step 4*

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Soil Prep  
& Planting

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# The Dirt On Colorado Soil

Good soil is the basis of any successful water-wise landscape but here in Colorado, most of it is sandy or full of clay. Luckily you can whip your subpar soil into shape with the help of organic amendments.



The best relationships blossom organically.

## Adding Organic Amendments

Mixing organic amendments into your soil can help build better soil structure, increase water holding capacity and promote deep roots for water-wise landscaping success.

**Combine forces.** Amendment materials like grass clippings, leaves and manure decompose rapidly and yield quick results. Wood chips decompose slowly and provide longer lasting outcomes. Use a combination of both to help your landscape thrive.

**Easy does it.** Over-composting can lead to high concentrations of nitrogen, too much water retention and over-salinization. Use a mixture of 50 percent compost and 50 percent topsoil for plant gardens.

**Healthy soil = happy plants.** Make sure to use weed-free, disease-free organic matter. Look for well-aged compost with non-feedlot manure.

**Rototill once (or twice) in a lifetime.** Only use a rototiller one to two times throughout the entire lifetime of your garden to avoid damaging your soil's natural structure.

### Locals vs. Transplants

**Native plants** usually only need the soil to be loosened up before planting.

**Non-native plants** will most likely require soil amendments.

### Perennials vs. Annuals

**Perennial gardens** and soil surrounding perennial plants should only be amended one time, prior to planting.

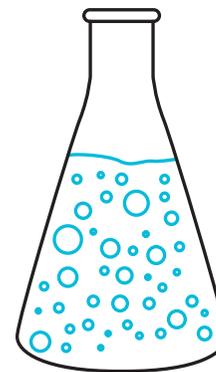
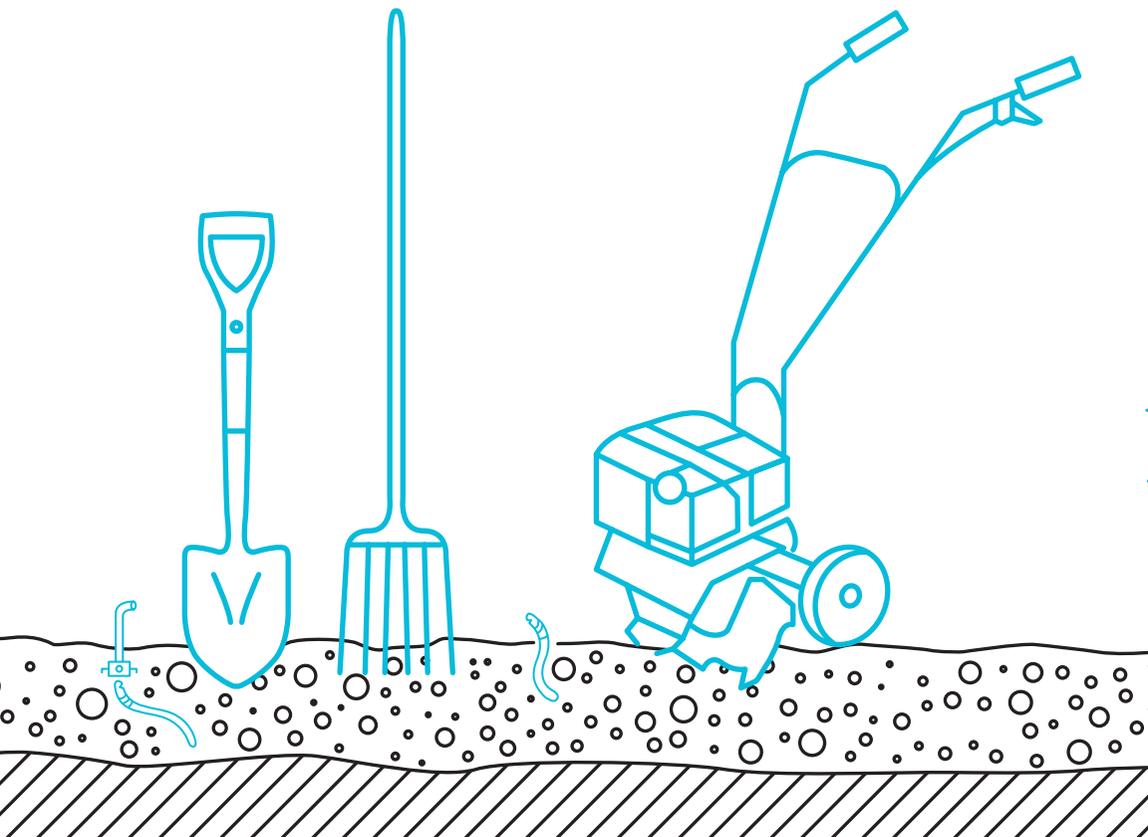
**Annual vegetable and flower gardens** should be amended every year with organic materials to improve the water and nutrient holding capacity.

# Ready To Dig In?

Grab your tools, roll up your sleeves and get to work. Here's how:

**1** Add a 2 inch layer of organic material to the surface of your soil (about 4 cubic yards of organic material per 1,000 square foot).

**2** Use a spade, pitch fork or rototiller and thoroughly mix in the material until it is at least 6 inches deep.



## Test It Out

Testing your soil isn't necessary, but it can provide a detailed profile of its structure, organic content and pH levels. You can do it yourself with a testing kit or have it done by professionals at CSU. Learn more at [soiltestinglab.colostate.edu](http://soiltestinglab.colostate.edu).

Oh, dirt is sooooo interesting.

## You Worked Hard To Amend That Yard!

**Follow these do's and don'ts to avoid harmful soil compaction:**



### Do

- Aerate turf and tree areas
- Add organic matter annually with a shovel or pitchfork
- Create pathways to limit foot traffic in gardens
- Add mulch
- Plant in raised beds

### Don't

- Over-till your soil
- Till, plant or mow while soil is excessively wet



# Soil & Amendment Material Guide

Get the dirty details on soil and how to successfully amend it.

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## Soil Types

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### Clay Soil



#### The dirt

Clay soil holds water and is naturally fertile but tends to compact, which can hinder plant growth.

#### How to amend it

Add organic materials to loosen tightly packed clay particles and make space for air, which is critical to plant root growth. This will also allow roots to grow deeper into the soil, giving plants access to a larger supply of water and nutrients. Plus, organic materials will react chemically with clay particles and release extra nutrients to plant roots.

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### Sandy Soil



#### The dirt

Sandy soil drains freely, eliminating plant growth problems caused by too much water, but it can actually prevent plants from getting enough water.

#### How to amend it

Add organic amendments to sandy or rocky soil and till it in to help it retain water enough water for plants to grow. Bonus: organic materials will also add fertilizer nutrients, another item often lacking in sandy soils.

## Soil Amendments



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### Manure & Manure-Based Compost



#### The dirt

The bagged manure at your local garden stores is usually mixed in with other composted matter and “aged” for at least six months to lower ammonia nitrogen levels.

Readily available due to Colorado’s large livestock industry. Often high in salts, which can cause over-salinization.

#### How to use it

Use manure with caution.

Watch out for “hot compost” or unaged/immature animal-based compost that has not had time to mature. This can be dangerous for plants.

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### Plant-Based Composts



#### The dirt

Compost is made of decomposed organic material like leaves, shredded twigs and kitchen scraps.

The composting process involves four main components: organic matter, moisture, oxygen and bacteria.

#### How to use it

Apply at higher application rates to improve the soil.

A wide variety of compost products are available in bagged and bulk products. These also may be a combination of plant-based compost, manure-based composts and other agricultural by-products.

*Note: Colorado Mountain Peat is not recommended.*

## Worm Castings



### The dirt

The bagged manure at your local garden stores is usually mixed in with an extremely beneficial source of material for your soil amendments.

Worm castings can be costly but can be extremely effective when added to a garden in small amounts.

### How to use it

Castings can be used as a top dressing or tilled into a garden at 1 gallon per 13 square feet or 7.5 gallons (1 cubic foot) per 100 square feet.

To increase earthworm activity in your garden, transplant dirt from an area that's already full of worms.

## Expanded Shale



### The dirt

Inorganic fertilizer mined in Golden, CO, this material can be used to improve your alkaline clay-based soil. Baked to dry out water, expanded shale is lighter than sand, adds aeration and space for roots and microorganisms, acts as a rodent deterrent and attracts beneficial organisms like earthworms.

### How to use it

Start by adding 3 inches of expanded shale (¾ inches diameter particle size) into the top 6 inches of your soil.

Then, add 3 inches of compost and work it in with your soil and expanded shale mix.

## Bio-Comp\*

### The dirt

A wood-based compost that's already broken down, Bio-Comp has more plant-based organic material than mulch, so it adds more nutrients to soil.

### How to use it

This amendment can be used as a top dressing or soil amendment any time of the year, in any type of soil—especially clay soils.

Bio-Comp is one of the few composts that can be safely used as mulch to protect flower beds.

*\*From A1 Organics.*

## Compost Tea



### The dirt

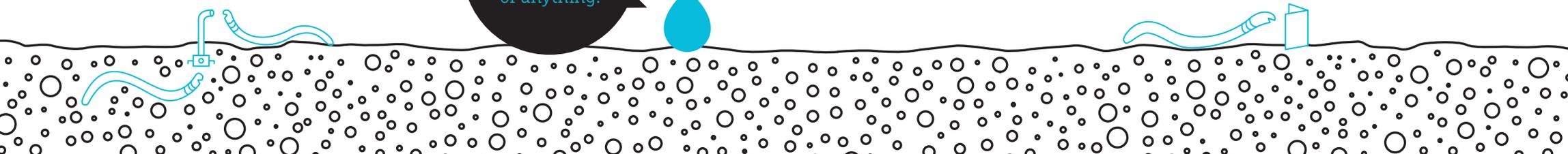
Biologically active compost tea can be bought at a garden store or created by steeping your compost in water for several weeks.

Use compost tea to increase the nutritional quality and improve the flavor of vegetables.

### How to use it

Spray it on plant leaves to suppress diseases, increase the amount of nutrients available to plants and speeds up the breakdown of toxins in the soil.

I can pretty much worm my way out of anything.



# Putting Your Plants In The Ground

Planting can be tricky. Follow these steps to help your new water-wise additions thrive.

- 1 Grab your landscape design and use it as your planting guide.
- 2 Make a list of tools and materials needed. Collect them and put them in an easily accessible place.
- 3 Plan to plant in the morning or late afternoon to reduce stress caused by the sun. Keep in mind that most perennials need to be planted when the soil temperature is at least 35 degrees.
- 4 Put your potted plants on top of the soil according to your landscape design to determine proper spacing and adjust if needed.
- 5 Dig your holes to match the depth and diameter of the plant. Careful not to dig too deep though, it can suffocate plant roots.

6 Don't pull your plants by the stem when you remove them from the container. Instead, loosen the roots and release the plant by squeezing the base of the container.

7 Gently loosen root balls and free most of the roots, keeping them intact. If entangled with masses of roots around the outer edge, carefully make several shallow cuts (½ inch or less) along the outside of the root ball. This will encourage root growth in the surrounding soil.

## Expert Tip:

Many gardeners suggest “Bare Rooting” your plants, which is done by removing all soil from the roots before planting to help acclimate to the new soil.

8 Place plants in holes and fill them in about one third of the way up with planting mix. Top with water and repeat until the soil is up to base of the plant. It may seem like you've added too much water, but a lot of extra water is needed to help relieve the stress of being introduced to a new environment.



Some like to hit the ground running. I prefer to slowly soak in.

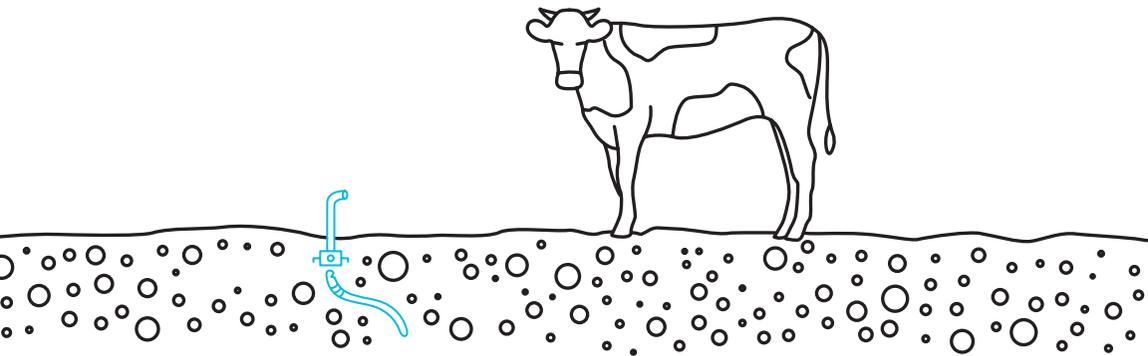


# Additional Resources

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Visit **[ThorntonWater.com/H2Overhaul](https://ThorntonWater.com/H2Overhaul)** for additional ideas to help you plan.

You'll find links to resources such as local recommendations for addressing clay soil, demonstrations on how to dig in and creative ideas for composting.



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[ThorntonWater.com/H2Overhaul](https://ThorntonWater.com/H2Overhaul)

