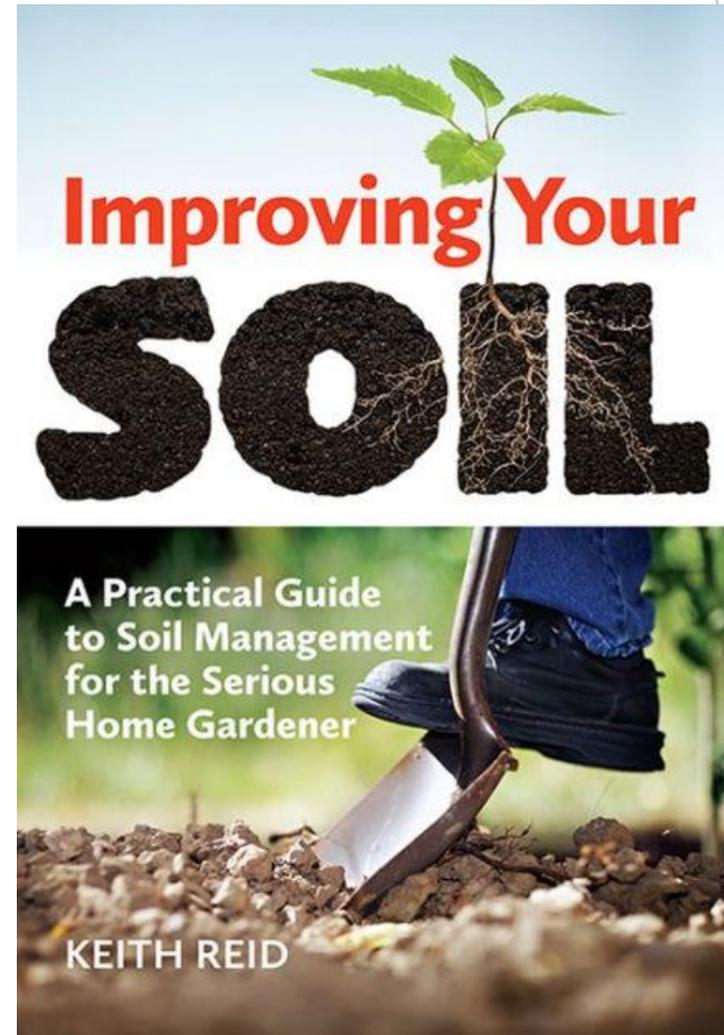


Soil & Compost in your Garden

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What makes up a healthy soil for gardening?

-Physical

pore space is very important.

- It should be split half air and half water

- clay soils: have finer pores that have less air, you want to manage the fine pores to hold water and large pores to hold the air

- biologically active soil is very important

- help to create large pores, you need food for the living organisms in the soil

- need some organic matter to hold things together

Soil pH in the right range

Adequate nutrients

- starting garden for the first time: usually there not much top soil in the back yard

- someone who has been gardening for a while: there are probably lots of nutrients in the soil. Be careful to add more. Excess salts can cause damage.

I have really sandy or heavy soil in my garden. What can I do?

Non-ideal soil:

Either too much clay, or too much sand

Sandy soils drain out quickly, nice for getting out in the spring early. They are more forgiving, but dry out more quickly. You want to improve the capacity of the soil to hold nutrients. Trick: add as much organic matter as possible. Compost, cover crops, yard waste (leaves, grass clippings, hay, straw)

- Manure is fine, but it does have lots of nutrients and can have excess nitrogen. It may also have weeds in it, so using composted manure is better because there will be less weeds.

Heavy soils:

- have more pore space, but they are fine pores, and it will hold more water than sandy soils.

- If you work the soil when it is wet, it will stick together, it is easily compacted and you can destroy the soil structure that is there—so it will drain slowly and it will take more time to dry out. Advantage: it will hold more water in the summer

- clay soils are typically more fertile, you do not need to add much potash (K)

- want to build soil structure- get more large pores to go along with small pores.

- adding organic matter helps, but it is the cover crops (roots growing through the soil) that will really help.

- taking a clay soil and planting a crop of clover and leaving it for a few year will give you a good soil structure (if you have the option)

- mulching the garden ontop is a great option.

- STAY OFF WHEN IT IS WET

Loam soils

- are more forgiving and has the greatest moisture holding capacity. The mix of small pores and large pores is great. A silt loam can be erodible, -- be conscious of not over applying nutrients

Do I need to import soil to my home garden to get started?

- Only in extreme cases. If you are putting soil in that is very different than the soil that is already there—get something that is similar in texture
- Raised beds & planting tree holes with great organic matter is ok, but as it breaks down over time your soil will revert back to what it was originally.
- if you are in a new subdivision: you may have 'builders loam' and you will probably want to build your soil over time.
- is there earthworm activity in your raised beds? This will help you determine if the earthworms are bringing nutrients down to the ground and the soil will break down quickly. The earthworms will also provide drainage

Where is the best place to get soil for my garden or raised beds?

- get bulk soil from a local supplier—don't make the common mistake of buying too many bags of triple mix: they will be too high in salts
- local soil supplier is best and will be relatively similar to what you have in your local soil series is
- Ask if your friends if the soil is weed free

What types of soil amendments should I be adding?

- Start with: something high in carbon: (composting stuff that is brown, cheap and maybe free) -- leaves, lawn clippings, residues from what you have grown in the garden are all great sources.
- more expensive, but great resource: mulches/ wood chips - they hold up well, allow for exchange of air to the soil, are weed-free and suppress weeds in the ground. They help to retain moisture.
- commercial bulk mulches also work well, but the finer they are, the more they can create a barrier to the soil for air exchange
- hay and straw - can have weeds, but you should be able to find a place that has wheat straw, or old grassy hay
- lower nutrient carbon needs are great and any soil will benefit and help to open up the soil structure

Second: Test soil pH

- you can add manure, fertilizer or lime based on your soil tests
- should you lime a soil? If the soil is acidic, it will raise the pH for a length of time. If the soil is alkaline, it will be very difficult to drop the pH.

Best to add compost in the spring and work it in, or spread on the surface. - Just before the growing season starts

Putting a mulch on the garden: anytime. But when the plants are growing, it is a pain to spread it around the plants. It is easier to do it in the fall when there is little growing in the soil.

What are some economical ways to build my soil quality?

- adding carbon
- getting plant roots growing in the soil-- a lot of garden crops have poor root systems and are not contributing to the soil.
- cover crops are great to build soil quality - clover, cereal rye are excellent living covers to build the health of the soil

Compost

- will help to add carbon
- will add nutrients
- real advantage: getting rid of pathogens and weed seeds
- the carbon is stabilized and will not break down quickly
- fresh compost will release nutrients/carbon quickly --

If you have weeds gone to seed: possibly think about not putting it into the compost bin if it is not going to get hot enough to kill weed seeds

- Woodchips: probably having very little impact on the nitrogen in the soil. However, working in saw dust or woodchip into the soil causes a lot more interaction in the soil.
- working in woodchip from one year to the next? - they are probably coarse enough that they are not tying up a lot of nitrogen in the soil, scraping them off before you rototill may be a good solution
- pine wood chips? Low acidity? The needles carry the acidity, so you will be fine
- Black walnut leaves: you can put into the compost, but let it sit for a few years before using again
- should my compost bin be where the black walnut trees are: the juglone should not affect the compost pile

What types of composts should I use?

Can I use fresh manure?

What are you trying to do with your soil?

- 1) build soil structure or
- 2) Add more nutrients

- Fresh manure is great if you can get it, downside: farmers can use too much, and gardeners are worse. -- you can get into trouble by adding too much.
- the risk of the nutrients being 'too hot' can burn plants, especially seedlings
- chicken manure is very hot
- pig manure is a little safer
- horse manure has the least and is the safest to add

Soil test is a great way to know what is in your soil

- pH: should be above 6, if below add lime (except for blueberries)
- Electrical conductivity below 0.5 (indication to how salty the soil is) -- be careful to add more nutrients because you can damage the plants
- Phosphorus - between 15 to 30

What should I be using in my garden?

- ▶ Mulches -- yes
- ▶ Compost-- yes
- ▶ Manure-- yes
- ▶ Un-composted Compost - know what went into the compost is important
- ▶ Living Mulches-- yes
- ▶ Green Manure-- yes
- ▶ Peat Moss—it is a non-renewable resource, you can find other alternatives
- ▶ Straw and Hay Mulches—yes. Soybean straw you would need more than wheat straw
- ▶ Wood Chips and Bark Chip -- yes
- ▶ Plastic- use wisely

How do I know when my Soil is ready to plant?

- is it dry enough?
 - compaction, slow germination and cool soil cause issues for plants
 - if you take a handful of soil and squeeze it and it ends up in a 'ball' then it is too wet
- some crops tolerate low temperatures, wait for the soil to be dry enough
 - non-frost tolerant crops, you want to be more careful and have warmer soil
- if you can sit on the soil, it is warm enough to plant
- seeds without seed 'treatment' cannot be planted until the soil is warm enough - mid-may, to end of may if the seed does not have any special coating

Compost not working well?

- ▶ You want to create an environment where the compost pile can heat
- ▶ You need the right amount of air, moisture, carbon and nitrogen
- ▶ The bacteria is important for breaking down the compost
- ▶ The right mixture of green and brown materials is important (Carbon to Nitrogen ratio) Leaves = brown, grass clippings = nitrogen.
- ▶ Limiting factors: tend to get materials that are too fine and they pack down—not enough air gets through the compost. Woodchips can help get more airspace
- ▶ - anerobic composts stink and do not break down as fast
- ▶ Having heat in the pile will help things break down faster, but not necessary if you are not worried about having a slower process
- ▶ Quick compost: be more hands-on: turning the pile more often, checking for adequate moisture to get the biological activity going.
- ▶ If you have mostly kitchen waste- make sure you add something with more structure to get air into the pile: straw, woodchip

Can I put meat in my composter?

- Without enough heat will not break down well, and risks of pathogens
 - Best to stay away from it
 - Will attract vermin