



# Building Better Soil to Boost Productivity

Take good care of your garden soil, and it will take care of you! If this is your first year growing in a particular plot in the community garden, you might not know too much about its history, but there are some characteristics to look for as you assess the health of your soil.

Ideally, the soil in your plot should be dark, crumbly, and relatively easy to turn over. It should also contain plenty of organic matter and lots of earthworms. Plants grow best in this kind of soil, because their roots can easily penetrate its layers and access the macro- and micro-nutrients needed to produce healthy vegetation, flowers, and fruit. This soil texture also allows for better drainage.

On the other hand, if your soil seems clay-heavy, very compacted, or hard to turn, your plants may not grow as well as they could. Not only do roots have more difficulty penetrating compacted soil, but plants may not have access to all of the nutrients they need for a couple of reasons. Unhealthy soil may lack certain nutrients altogether or, more likely, its pH may be out of balance. An imbalance in soil pH can cause certain nutrients to be unavailable to plants.

Fortunately, it's easy to give your soil—and whatever you choose to grow in it!—a boost this season. In fact, many community gardeners continually work to improve their soil. As a result, they often choose to retain the same garden plot year after year.



*Earthworm*  
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## Best Practices

Although chemical fertilizers give plants a quick boost, they do not improve the long-term quality of your soil. In fact, if you rely on chemical fertilizers year after year, the mineral salts they contain can alter soil pH and drive away earthworms and other beneficial soil dwellers. This, in turn, can negatively affect the structure of your soil.

By using organic, slow-release soil amendments instead of quick-release chemical fertilizers, you feed both your plants and the soil. This can help improve drainage, balance soil pH, and encourage beneficial organisms to thrive in your garden plot.

Not sure if a product you're considering is chemically derived or comes from a more natural source? Take a look at the N-P-K ratio on the label. The letters represent the amounts of nitrogen, phosphorus, and potassium contained in the product, respectively. The N-P-K ratios of artificial fertilizers often add up to the number 30 or even higher. (For instance, an all-purpose, water-soluble plant food might have an N-P-K ratio of 24-8-16.)

By contrast, the typical N-P-K ratios for natural, slow-release soil amendments will be much, much smaller; however, they still provide big benefits. Here's a list of some common soil amendments and what they can do for your garden:

**Compost**—“Finished” compost looks dark, uniform, and crumbly. It's N-P-K ratio depends on the types of matter originally included, but it can be as high as 4-4-4. Use only compost which has fully decomposed. If you can still identify some of the matter that originally went into the compost pile, it needs more time to break down. (Compost that contains organic matter that is still being broken down can leach nutrients out of your soil!) Also, if weed seed heads were included in the compost pile and the pile doesn't get sufficiently hot, seeds can survive—and sprout—in your garden bed.

**Decaying leaves**—In autumn, fallen leaves are very rich in mineral content. They are also especially good for aerating the soil and improving drainage in beds containing heavy clay.

# Best Practices (continued)

**Aged manure**—As with compost, you only want to use properly aged manure. Manure that is too fresh can burn plants and may still contain viable weed seeds. The N-P-K ratio for horse manure is about 0.7-0.3-0.6. Aged manure from chickens and rabbits is another good slow-release soil amendment.

**Bat guano**—There are many different kinds of bat guano commercially available, each with its own N-P-K ratio. Bat guano is also rich in micro-nutrients and can be worked dry into soil or watered in as a liquid fertilizer.

**Coffee grounds**—Add too many coffee grounds and you can acidify your soil, so, ideally, they should be mixed with other organic matter, fully composted, and then added into the garden. Coffee grounds are a good source of nitrogen, with an N-P-K ratio of roughly 2-0.3-0.2.

**Worm castings**—Known in gardening circles as “black gold,” worm castings (1-0-0) are rich in essential trace elements as well as beneficial microbes and bacteria. They also help naturally balance the pH in your soil, making nutrients more readily available to your plants.

**Kelp meal**—Derived from mulched seaweed, kelp meal (1-0.1-2) contains many essential vitamins, minerals, and soil conditioners.

No matter what amendments you choose, when working them into your soil, be sure the ground isn't too wet. Digging in wet soil can damage its structure. In the beginning of the season, before you plant, you can sprinkle soil amendments on top of your garden bed and then use a hoe to work them into the top 5 or 6 inches of soil. You can also safely add most of the amendments in the list above around plants that are already growing in your garden. Unlike their artificial fertilizer counterparts, slow-release soil amendments won't burn plants, but see notes about manure and coffee grounds.

**Need some extra advice or have questions about your responsibilities as a community gardener?  
Contact the Community Garden Supervisor at [communitygardens@bloomington.in.gov](mailto:communitygardens@bloomington.in.gov).**