

Here's The Dirt On Improving Your Soil With Organic Material

UNIVERSITY PARK (Centre Co.)—Soil types range from clays as impenetrable as concrete to loams richer than Donald Trump, but a gardening expert in Penn State's College of Agricultural Sciences said all soils can be improved by mixing in organic matter.

"Organic matter, also known as humus, is what's left after plant and animal matter has died and decayed," said Robert Nuss, professor of ornamental horticulture. "Mixing humus into a garden or flower bed gives the soil a spongy quality."

Adding humus also:

- Increases the soil's ability to hold water.
- Creates pores in the soil to let in air.
- Prevents clay particles from forming into a solid mass, making root growth easier.
- Helps control soil temperature.
- Provides a better environment for the growth of microorganisms that can help enrich the soil.
- Releases small amounts of nitrogen and other nutrients through continued decay.

Nuss said gardeners should regularly apply humus and fertilizers to garden soils that are planted every year. "Organic matter rarely will give you adequate plant nutrients," Nuss said. "Most materials are low in phosphorus, and the process of decay can temporarily lower the amount of available nitrogen in the soil."

Nuss said gardeners can use any type of organic matter, although some types might be better suited for specific situations.

Cover Crops

Also called "green manure," cover crops are grown to be plowed under in vegetable gardens. Annual rye, annual ryegrass, and spring oats are commonly used as fall cover crops. Gardeners should seed after the final fall cultivation.

"The thick growth will smother weeds," Nuss said. "However, don't use cover crops in flower or landscape beds because you would damage root systems if you tried to incorpo-

rate the growth into the soil."

Nuss recommends seeding about four ounces of annual ryegrass or spring oats, or eight ounces of annual rye per 100 square feet of garden. In Pennsylvania, seeding should be done by Sept. 15, although rye can be planted later. "Do not seed a cover crop after Oct. 1," Nuss says. "In the spring, turn it under before its growth is knee-high."

Manures

Dried animal manure supplies nutrients to plants and microorganisms and helps aerate soils. Any garden supply store will stock various manure types with application rates posted on the bag.

Nuss said fresh cattle manure should be applied in fall or winter. "Use 50 to 100 pounds per 100 square feet and add a phosphorus fertilizer and lime to better balance nutrients," he said. "Work the manure in right after spreading, which helps decompose the manure and lessens odors."

Nuss cautions that fresh poultry and sheep manure can damage roots if used excessively. Mix 1 pound of triple or concentrated superphosphate with 10 pounds of manure and apply at a rate of 10 pounds per 100 square feet of garden.

Sawdust

"Sawdust can be used as a mulch or it can be tilled into the soil," Nuss said. "If the sawdust is not decomposed, it should be composted or used as mulch."

Three or four bushels of decomposed sawdust should be applied and tilled into every 100 square feet of soil. Sawdust can raise acidity levels, so Nuss recommends mixing 12 ounces of ground limestone into each bushel of sawdust.

Using fresh sawdust can cause nitrogen deficiencies because microorganisms use nitrogen in soils to decompose the sawdust. "No matter how sawdust is used, you should apply some nitrogen to the soil," Nuss said.

Peat Moss

Peat moss is generally acidic and can be used for soils where acid-tolerant crops are grown.

Peat moss decays slowly and holds more water than other organic materials. The slower decay rate of peat moss also eliminates the need to add fertilizer during application. "Observe the plants as they grow to make sure no nutritional problems develop," Nuss said.

"Peat moss is best for landscape plantings because it is effective in soil for a long time," Nuss said. "It is more expensive than other amendments, so it is typically used only in smaller areas."

Peat applications should be 3 to 4 bushels per every 100 square feet.

Composts

Compost can be spread and incorporated like animal manure. Use 50 to 100 pounds

per each 100 square feet in landscape plantings. In gardens, compost can be used as mulch and tilled under before the next growing season.

"Spent mushroom compost is a great source of organic matter," Nuss said. "Aged mushroom compost is much better because fresh material is

very high in salts, which can injure young plants."

Mushroom compost is usually high in phosphorus and low in nitrogen, so gardeners may have to add some nitrogen fertilizer. Nuss recommends incorporating a 2- to 4-inch layer into the soil before planting.



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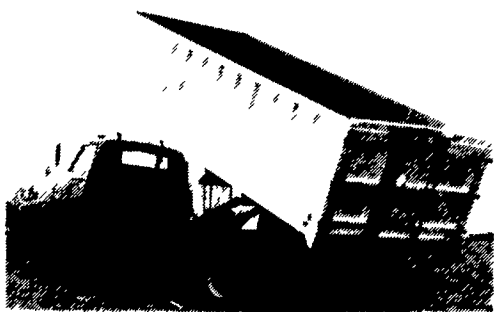
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