

# Soil Amendments

AMENDMENT NAME	Descriptions for use recommendations or concerns
Alfalfa meal	Great all-purpose fertilizer and amendment with 2 percent to 3 percent nitrogen and a range of other nutrients; pelleted form is less dusty.
Azomite®	Provides a broad array of trace minerals.
Blood meal	About 12 percent nitrogen; use carefully to prevent overfertilization or runoff.
Bone meal	Use as a phosphorus source (about 12 percent).
Coir (coconut fiber)	Improves drainage; great worm bin bedding; replaces peat moss in potting mixes.
Compost	Best all-around soil conditioner; adds beneficial soil organisms that generate plant nutrients long after application; improves drainage and water-holding capacity; provides varying amounts of all plant nutrients – amounts depend on what materials compost is made from and how it is handled; buffers soil pH so effects of acid and alkaline conditions are reduced; improves nutrient exchange capacity.
Compost tea	Aerated compost tea is used as a soil drench or foliar application to add beneficial organisms and some soluble nutrients without the schlepping required with actual compost; compost extracts are simple cold infusions of compost without aeration and can provide some of the benefits of compost tea.
Corn gluten meal	Contains about 10 percent nitrogen; also used as a pre-emergent weed killer, but moisture reduces its herbicide effect.
Cottonseed meal	Contains about 7 percent nitrogen but is not recommended because of the likelihood of pesticide residues.
Crushed rock (quarter-ten)	Crushed rock of a size ranging from a quarter to a tenth of an inch without the powdery fines; folded into clay soil, it improves drainage; spread thinly over lawns, it makes great top-dressing.
Fish meal (or pellets)	Contains about 10 percent nitrogen and 6 percent phosphorus.
Glacial rock dust	Great source of trace minerals.
Green manures (cover crops)	Legumes and grasses grown and then tilled into the soil to add nutrients and organic matter; fava beans, vetch, rye and clover are common.
Greensand	Great potassium and trace mineral source from mined marine deposits.
Gypsum	Good source of calcium for soils that are alkaline or neutral in pH; also provides sulfur; helps improve drainage only in soils uncommonly high in sodium.
Humic acid	One of the key components of finished compost and an excellent enhancer of soil nutrient exchange, biological activity and structure.
Hydrogels (soil crystals)	Gels or crystals made from polyacrylamide are not recommended for garden uses because they can degrade into toxic acrylamide; cornstarch-based gels are fine; compost and mulch are great alternatives.
Iron	Though common in synthetic fertilizers, soluble iron is typically not needed and can permanently stain cement walkways.
Kelp meal	Great source of trace minerals and potassium; contains natural growth stimulating hormones.

Legume inoculants	Added to soil or seed before planting beans and peas; live bacteria form nodules on roots and capture nitrogen from the air to reduce or replace fertilizer needs.
Lime	Used to increase pH of acid soils; avoid lime described as “quick,” “slaked” or “hydrated,” for it can harm soil organisms; ground limestone, agricultural lime and oyster shell lime are more gentle and equally effective; provides calcium for acid soils.
Manures	Barnyard manures including horse, cow, goat, chicken and rabbit provide macro- and micronutrients and are a good source of bulk soil conditioner; be sure they are well composted first, for weed seeds and human pathogens may otherwise be present; nutrient content varies by source, bedding materials and treatment during composting; avoid pet manures, which commonly contain human pathogens.
Mycorrhizal inoculants	Applied to the soil as powders or solutions to inoculate roots of trees, shrubs and other plants; effectively extend root systems for improved nutrient and water absorption.
Peat moss	Used as amendment to improve drainage and as a component of potting mix; harvested from nonrenewable ancient deposits in sensitive bog ecosystems; compost or coir are great alternatives.
Perlite	White expanded volcanic rock used to improve drainage, especially in potting mixes.
Pumice	Used as a bulk soil amendment to improve drainage in heavy clay soils.
Sand	Used as a bulk soil amendment to improve drainage in heavy clay soils; used to top-dress lawns; avoid beach sand, which could add soil-damaging salts.
Sulfur	Elemental sulfur is sometimes used to lower pH in relatively rare cases of alkaline soil or sulfur deficiency; sometimes used in synthetic fertilizers as a coating for making material more slow-release; also contained in gypsum.
Vermiculite	Absorbent material made from expanded mica; used in some potting mixes and may contain asbestos; use compost instead, or be sure to avoid inhaling the dust by keeping it moist, using in a well-ventilated area or wearing a dust mask.
Wood ash	Contains potassium (about 6 percent) and phosphorus (about 25 percent), but use sparingly – it typically contains harmful salts and increases pH.
Worm castings	Compared to compost, they are more like a fertilizer than a bulk soil amendment, because they typically contain more macronutrients; also typically a good source of trace minerals; nutrient content varies by materials composted, bedding and handling.