

Soil Amendments & Soil Productivity

Science Facts and Analysis from Science for Georgia

Efforts to make Georgia soil more productive may be curtailed by confusion over what a soil amendment is.

A soil amendment, sometimes [referred to as soil conditioner](#), is anything put into soil to make it better suited for growing. A soil amendment is chosen based on characteristics of the soil in question. For example, if soil acidity (pH level) levels are suboptimal for plant growth, a soil amendment works to *amend*, balance, or restore these critical properties. They are most effective when tilled into the original soil bed to a depth of about 6-8 inches and are a favored method to [restore eroded](#), damaged, or otherwise unproductive topsoil.

Soil amendments may sound a lot like fertilizers, but there are key differences. [Fertilizers](#) work by supplying missing nutrients that either the soil or plant lacks and is used for the express purpose of the plant using these nutrients. Fertilizer must be added each time a crop is sown. On the other hand, soil amendments make long-term change in the soil by improving or balancing the qualities of the soil itself. Soil quality improvements can include pH levels, water retention, permeability, texture, hardness, nutrient density, and carbon storage.

Qualities of a Beneficial Soil Amendment

Quality soil amendments are tailored to individual soils. These amendments work with the soil to enhance and restore its natural productivity.

Examples of successful amendments can look like the ones that [Food Well Alliance](#) and [Georgia Organics](#) include as part of their community education resources on fostering productive soils. Both organizations have resources available for all— from the average gardener to the established farmer. These resources emphasize the need to understand the specific soil being amended and guide individuals to pick appropriate soil amendments based on that soil profile's needs.

One specific [method](#) of improving soil is using composted material. According to the [US Composting Council](#), compost can balance soil density, enrich the soil, and suppress pests and disease after correct soil treatment.

Composition of Harmful Soil Amendments

A soil amendment, when applied improperly and without targeting the soil's needs can have a negative impact. It follows then, that disregarding these factors can have a negative impact. In general, poor tillage or misinformed choice of a soil amendment may [prevent root growth](#) by interfering with air and water movement, [supply unused nutrients in excess](#) that contribute to run-off pollution, and [decrease the soil's capacity](#) to retain water.

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Georgia Specific Amendment Controversy

Unfortunately, confusion over the definition of the term “soil amendment” has led to instances of misinformation and misuse, often at the expense of rural communities. For example, in Oglethorpe County, companies [are being sued for their alleged dumping of poultry processing waste and calling it a “soil amendment”](#)— thousands of tons a week. This [“chicken sludge” is a reportedly](#) off-putting mix of chicken beaks, feet, egg shells, and sometimes, baby chicks.

To humans, the smell alone is headache-inducing, but there are other ways in which this harmful soil amendment is an environmental and health hazard. To the surrounding ecosystem, dumping untreated waste on the topmost layer of soil can cause excess release of nitrogen and phosphorus that can negatively [impact air quality](#), create [low-oxygen, hypoxic zones in water](#) (also called dead zones), and may [even release airborne diseases](#).

Despite these negative effects, [dumping of untreated poultry processing waste](#) is sometimes classified a legitimate soil amendment.

When addressing beneficial vs. harmful amendments, it is important to note that byproducts of the poultry industry can be beneficial – *after appropriate pre-treatment*. [Studies have shown](#) that applying properly pre-treated chicken excrement, or chicken litter, can positively [effect permeability, decrease compaction, and supply nutrients to soil](#), all while productively getting rid of unwanted chicken droppings. These positive benefits to the soil are not seen with the application of chicken sludge, which is the untreated byproduct of poultry processing.

Learn More about Soil Amendments and Georgia Soil

[Video Series on the Healthy Soils Movement](#)

[Soil in Georgia](#) ~ Georgia Soil and Water Conservation Commission

Learn about [composting](#)

Learn about [soil health and land management](#)

Learn about [CAFOs](#)

[What is in Chicken Litter](#)

Take Action

Properly amend your own soil using resources from [UGA](#) or the [USDA](#)



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Soil Amendment Policy Suggestions

[Illinois](#), [New Mexico](#), and [Hawaii](#) have policies that define the characteristics of a beneficial soil amendment. Generally, these policies aim to restore or otherwise improve the soil's rates of erosion, water retention, maintenance of its root systems, organic matter, and ultimately care for the "health, yield, and profitability of soils throughout the state."

Policy Examples			
State	Bill Number	How it Helps Soil	Specific Language Used
IL	HB2737 (2019)	Calls for the maintenance of soil health, especially by means of preventing soil erosion	"Improvement of soil health... for the control and prevention of soil erosion..."
NM	HB204 (2019)	Establishes soil health principles, scientifically backed supported methods, encourages "champions" of land management to promote stewardship	"The ... program promote(s) and support(s) farming and... other forms of land management that increase soil organic matter, aggregate stability, microbiology, and water retention to improve the health, yield, and profitability of the soils of the state."
HI	HB861 (2021)	Implements artisan-scale composting program to reduce landfill waste and improve soil health	"Compost stores macro- and micro-nutrients that improve the health of all soils in ways that protect and enhance natural systems..."

About Science for Georgia

Science for Georgia is a 501c3 dedicated to bridging the gap between scientists and the public through training, outreach opportunities, and direct contact with the public, policymakers, and the press. Science for Georgia highlights how science can impact people's lives and advocates for the responsible use of science in public policy.

Please reach out with any questions or comments info@sci4ga.org

