Compost Use in Agriculture

Environmental Benefits of Using Compost:

- Supplies beneficial microorganisms to the soil
- Feeds existing soil biology
- Improves soil structure, porosity, and bulk density
- Water Conservation: Improves both water holding capacity and infiltration
- Enables nutrient cycling in soils
- Supplies a variety of macro and micronutrients
- Improves cation exchange capacity and nutrient retention
- Plant disease suppression
- Stabilizes soil pH

Recycling organic matter and utilizing it on agricultural land is not a new idea. However, it’s an idea that has gained renewed attention as a means to both regenerate and conserve our agricultural soils. The US is experiencing an expansion in its composting infrastructure, and as a result, our country can supply high volumes of compost to the agricultural sector. The environmental benefits of compost use will aid in addressing key agricultural issues such as our country’s food security and resilience to extreme weather.

Compost - Organic Matter, and its Role in Soil Health and Plant Vigor

One of the primary benefits of compost application is that it adds decomposed organic matter to the soil. Organic matter conditions the soil, builds soil structure, provides an available carbon and energy source for beneficial microbiology, and plays host to plant nutrition made available by biological processes.

Compost’s Role in Suppressing Plant Diseases and Soil-borne Pathogens

Compost naturally suppresses many of our most common soil-borne pathogens. Soil-borne pathogens produce specific enzymes to obtain nutrition and compete for resources. Not only does compost supply organic matter that rebuilds soil structure – it also supplies a host of beneficial microorganisms that will outcompete pathogens for resources in aerobic soil conditions.

Compost’s Role in Providing Plant Nutrition

Nutrients provided by compost are less soluble than those contained in commercial fertilizers. As a result, these nutrients are less likely to be lost through leaching. The beneficial microbiology either provided directly by or stewarded through the application of compost, can convert organically bound plant nutrition to inorganic forms that are then plant available.

Composts Role in Water Conservation

Compost application adds organic matter and beneficial microbiology that work together in improving soil infiltration and water-holding capacity. Organic matter physically provides structure while beneficial microorganisms secrete glues that help to bind soil particles, allowing for increased water-holding capacity. Improving both water infiltration and holding capacity, increases drought tolerance and decreases land’s dependence on irrigation.