



# How C20 Soil Builder Works

**The purpose of C20 Soil Builder is to “build soil”**, both biologically and physically. To do this C20 provides two primary sources of biological carbon that are labile and recalcitrant. The labile, biologically active carbon, is easily digested from components found in the grain by-products. These forms of biological carbon stimulate soil microbes to feed and reproduce for approximately two weeks, depending on application rates and activation with adequate watering. As the populations of these microbes increase exponentially, their structures and waste products create pore spaces in the soil that reduces the bulk density and allows for better water penetration, oxygen penetration, and root penetration. In sandy soil types those same biological structures and wastes, produced by microbes feeding on C20, bind together sand particles and increase water holding capacity. The microbial restructuring of the soil in the first two weeks occurs because of the labile carbon that is provided through the grain by-products.

We include recalcitrant sources of carbon to extend the microbial benefits of restructuring beyond the initial buildup of the population by the labile carbon. Once the easily digestible components of the grain byproducts are used up, the microbes begin digesting the more complex carbons. These carbon sources provide a long-term food source for soil microbes thus enabling them to remain active for over nine months in most clay soils and two to three months in sandier soils. This long-term feeding preserves a population of microbes to benefit root growth and development long after the soil structure has been modified.

As the initial population of soil microbes begins to run out of labile carbon sources, their populations begin to decrease. As they die, they are consumed by other microbes. When this process of “microbial carnage” begins, the contents of the microbes that aren’t consumed, or that are released as waste products, are leaked back into the soil water matrix as “dissolved organic compounds”. These compounds are comprised of cytoplasm, amino acids and proteins that were created by the microbes during their initial two-week feeding frenzy. These dissolved organic compounds are further mineralized (decomposed) by the remaining soil microbes into plant available forms of nutrients.

Often, industry professionals will compare C20 to organic fertilizers. While the nutrient value of most organic matter can be measured, the NPK and micronutrient values in C20 are minimal and insignificant to the purpose and performance of the product. The action of C20 is not to provide nutrients to the soil for plants to uptake, but to restore the soil microbe populations to assist in the conversion of soil nutrients and applied nutrients to forms that are available to plant roots.

In summary, C20 is not a fertilizer. C20 has a direct impact on soil biology that impacts soil structure. C20 has an indirect effect on the mineralization of nutrients from the cellular contents of dying microbes, but it is the microbes that are responsible for the long-term nutrient release. The primary effect of C20 is “soil building”.

If you build the soil using C20 Soil Builder, all other treatments will be more effective, due to the increased opportunity for root penetration and uptake. C20 is a stand-alone solution to building healthy, living soils from poor, carbon depleted soils with insufficient microbial activity found in much of the urban environment. Utilizing C20 to build soil in combination with other biological and nutritional products ensures that these landscape programs will be successful.

