

# Crop Services International, Inc

## Biological Assessment

soil sample

SampleID Nickv1 Crop veggies Test Date Apr 3, 2013

**Bacteria** Expected levels of bacteria in a biologically rich soil will be in the range of 1500 to 3000. This will be in balance with a fungal density of 40%-50%.

count	diversity	activity
2200	moderate	moderate

There is a healthy bacterial biomass here, only a bit below optimal levels. This level should be easily maintained as the fungal component is improved.

**Fungi** Expected levels of beneficial fungi in a biologically rich soil will be in the range of 40%-50% in fungal density or higher. The average hyphal diameter ideally will be 3.00 $\mu$  or more.

fungal density	diversity	average hyphal diameter
40%	moderate	2.68 $\mu$

This level of beneficial fungi is in fair-to-good balance with the bacteria. It will be helpful to promote the growth of fungi throughout the year with the addition of fungal foods to the soil and foliage. This approach should get the fungal numbers up and diminish the presence of narrow diameter fungi

**Protozoa** Expected levels of protozoa in a biologically rich soil will be at least 40 in total protozoa with 80% of that total in flagellates and amoebae and less than 25% ciliates.

total protozoa	flagellates	amoebae	ciliates
27	20	0	7

The protozoa level is low; finding only 20 flagellates where there would ideally be twice that number plus some amoebae and at least a few ciliates. A compost/compost tea boost should help replenish this population and thereby ensure good nutrient cycling in the soil. Maintaining a mulch layer for your vegetables that contains a good bit of straw will help boost the protozoa populations.

**Nematodes** Expected levels of beneficial nematodes in a biologically rich soil will be in the range of 1 to 3 bacterial feeders, fungal feeders, and predatory nematodes with no root feeders.

bacterial feeders	fungal feeders	predatory nematodes	root feeders
0	0	0	

The fact that no nematodes were observed does not necessarily indicate a problem. More extensive testing can result in a true picture of this part of the soil foodweb. Beneficial bacteria and fungi feeding nematodes can greatly aid in efficient nutrient cycling for the plants. Their numbers can easily be increased with the addition of vermicompost or compost teas made with vermicompost.

## Recommendations

This soil has a decent biological base. There is a fair amount of fungi present and the diversity of species is good, but most are of narrow hyphal diameter. It should be relatively easy to boost the populations of more beneficial fungi with inoculations of composts, compost teas or other microbial products. Timely applications of fungal foods like fish and molasses will aid the fungi. Protozoa and nematode populations will probably increase as the weather warms; mulching helps stabilize these critters by maintaining even soil moisture.