



## Welcome to Ground Work

Dear J.P.,

Here's some information we first published in the Summer of 2008. It is both timeless and timely...

### National Soil Tilth Lab data shows value of nutrient recycling

Research by USDA's National Soil Tilth Laboratory reveals ***three major scientific reasons*** why biologically active soils make more effective use of nutrients and water.

**1. Almost half the carbon required to grow a 200-bu. corn crop comes from respiration of soil organisms.** "Really big plant growth comes when large amounts of CO<sub>2</sub> are given off by organisms in the soil," says Dr. Jerry Hatfield, Director of the Tilth Lab. Atmospheric CO<sub>2</sub> averages about 385 parts per million. Leaf stomata pull this below 300, which is inadequate for best growth. But just above the surface of a living soil, the CO<sub>2</sub> concentration rises to around 1,000 parts per million. In a full-canopy corn or soybean crop, says Hatfield, leaf stomata absorb this rich supply of CO<sub>2</sub> so quickly that it doesn't even escape into the atmosphere.

**2. A healthy root system, enhanced with a microbially robust rhizosphere and good humus levels, delivers abundant soil moisture to leaves.** National Tilth Lab field sensors have found that the more water

vapor a leaf can exude, the more CO<sub>2</sub> it can absorb via leaf stomata because gas exchange is more active. Much of this exchange occurs early in the morning of each day. Hatfield says Tilth Lab fields have produced 300-bu. corn on just 108 pounds of added nitrogen where the corn respired large amounts of water vapor and absorbed abundant CO<sub>2</sub> from soil life.

**3. Biologically active soils with good humus content show much less yield variation across fields** which have varying soils, nutrient tests and moisture levels. Hatfield cites an Iowa field where soil biology has been built up for years: Average corn yields are often near 225 bu., and variation across the field is typically less than 30 bu. per acre.

Scientific data validates what we routinely witness in the fields. Where biologicals are applied, we commonly see more consistent fields, and higher yields produced with fewer purchased inputs.

**Being in the business of promoting biologicals with good support packages is very timely!**

It's as simple as 1, 2, 3 ...

1. Break down crop residues with Residue.
2. Inoculate those rhizospheres with MST and SP-1.
3. Enjoy the benefits with your customers as their fields become more productive with fewer purchased fertilizers.