USDA
United States Department of Agriculture

NATURAL RESOURCES CONSERVATION SERVICE

7A

SOIL TECH NOTES

Fungi

PROBLEM: "I always thought fungus meant a wet soil or nasty soil. I guess I need them in the soil too? I know my residue doesn't seem to get broken down!"

LOW FUNGI PROBLEM CAUSED BY:

- Fungi are one of the important soil microbes in the soil that reduce and decompose more resistant residues.
- Low numbers can be caused by excessive tillage which compacts and seals the soil from air and water.
- Monoculture farming, such as corn on corn, is not conducive to microbial diversity.
- **Excessive** farm chemical use can reduce the number of fungi and all soil microbes.
- Very low residue amounts on cultivated fields can allow the soil surface to heat up and dry out too much, thus lowering fungi numbers.

WHAT DAMAGE IS PREVENTED WITH INCREASED FUNGAL ACTIVITY:

- Fungi are the "workhorses" of the microbes. They break down the more resistant residue such as those composed of chitin, cellulose, and hemi-cellulose. These compounds contain highly complex carbon chains.
- They can physically penetrate soil particles with fungal hyphae or long filamentous strands and help break up compacted areas.
- They stabilize soil particles and increase the aeration and porosity of soils, often times improving drainage.
- Produce an organic exudate called Glomalin, which acts as a very important "glue" in the soil to hold and bind micro-aggregates together in soil structure.
- And like other microbes, extract and hold organic nutrients in the soil for use by growing plants and by other food web creatures.