

## AGGREGATE STABILITY



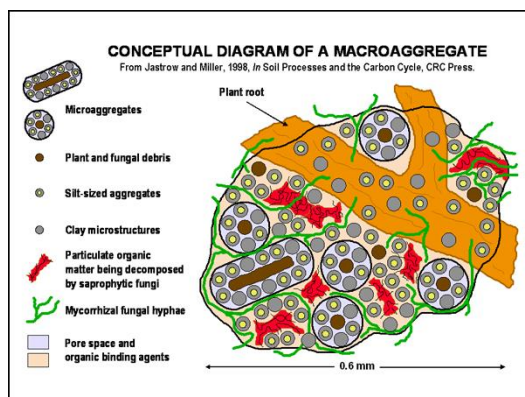
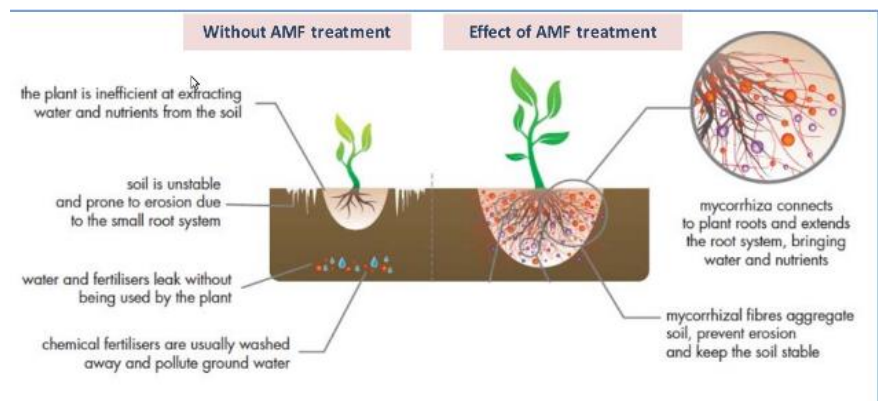
The stability of soil particles, or aggregates, affects movement of water, plant root growth, soil erosion, and resistance to compaction. The importance of this can be seen in fields where water ponds after a significant rain. Aggregates that break down in water or disintegrate when raindrops hit them cause soil particles to dislodge, causing sealing of soil surface and clogging of pores. This in turn causes a restriction of water infiltration and

oxygen into the soil.

## Role of Fungi in Plant Growth and Aggregate Stability

Fungi, in particular Arbuscular Mycorrhiza Fungi (AMF), play a critical role in plant nutrient availability and aggregate stability. AMF help plants to capture nutrients such as phosphorus, sulfur and nitrogen, as well as micronutrients, through a

symbiotic relationship in which they incorporate themselves into a plant root and into soil. A dense network of hyphae (a long, branching filamentous structure of a fungus) has the ability to extract nutrients from the soil and transport them to the plant. Another important function of AM fungi is the enhancement of soil aggregation through the production of a protein known as glomalin. Glomalin acts as a glue that holds soil particles together, thus improving aggregate water stability and decreasing soil erosion.



Modern agronomic practices are disruptive to mycorrhizal growth in soils. Conventional practices such as tillage, heavy fertilization, particularly with phosphorus, fungicides, limited crop rotations, and the selection of plants that survive these conditions hinder the ability of plants to form a symbiosis with arbuscular mycorrhizal fungi. Of all the conventional practices that affect AMF colonization, tillage has the greatest impact. It tends to break apart the hyphal network and destroy the symbiotic relationship between plant roots and AMF.

Restoring native AMF in soils has been shown to rapidly improve soil quality, thus enhancing plant growth and reducing soil erosion.