Rootzone Construction

A desirable rootzone has a high infiltration rate, adequate water holding capacity and pore space, sufficient CEC, and is resistant to compaction.

Soil Particle Distribution

Clay is a very fine soil particle with high surface area. This high surface area allows it to hold high amounts of water.

Silt, fine sand and organic matter are all medium sized soil particles with optimum surface area.

Sand is a coarse soil particle with low surface area. Lower surface area holds smaller amounts of water compared to clay.

Fine Textured Soil

Soils with a finer texture are generally high in clay. These soils have a higher amount of micropores, which are very small soil pores that hold only water. The water in these spaces is mostly adhesive water, which means the water is held tightly to the soil particle making it unavailable to the plant. Although a clay soil may be holding a high amount of water, the plants may not have access to it. A large part of that water is unavailable due to the adhesive properties of the water relative to the surface area of the clay.

Coarse Textured Soil

Soils with a coarse texture are generally high in sand. These soils have a higher amount of macropores, which are large soil pores that hold both water and air. The water in these spaces can be adhesive, cohesive, or gravitational water. Cohesive water is bound to other water molecules in the soil and is available to the plant. Gravitational water is unavailable to the plant because it moves through the rootzone too quickly. The low surface area of a coarse rootzone prevents it from having a high water holding capacity.

A rootzone that has the correct particle size distribution will perform well as a field. There are varying opinions and research about the best rootzone composition. The key is to find the right balance so your field has enough water holding capacity to support plant growth as well as the ability to drain so it is not constantly wet.