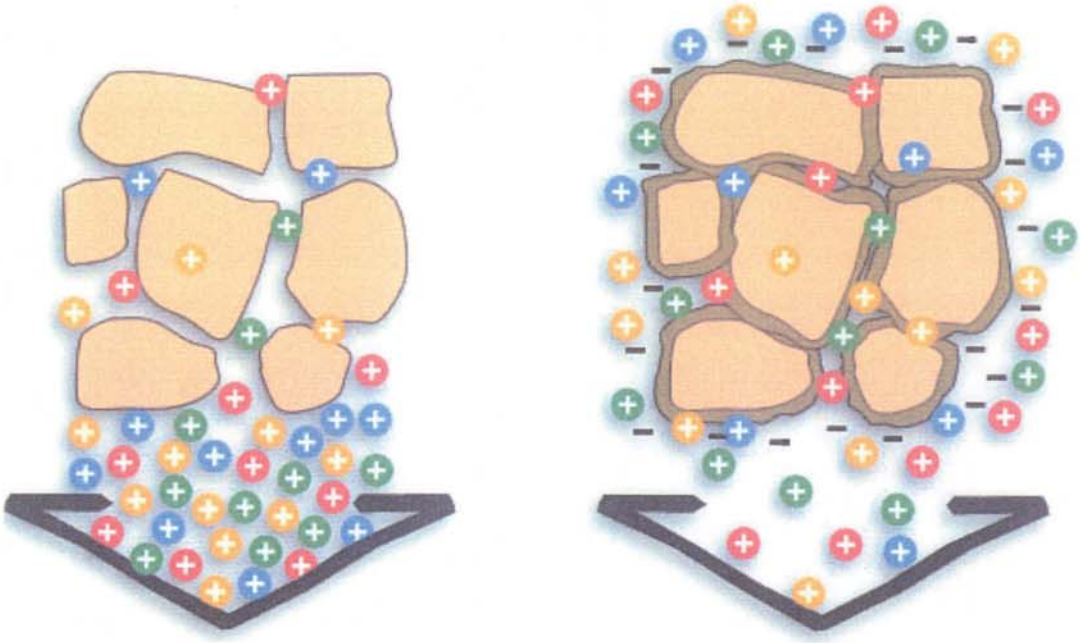
The Benefits of Using Humic Acids in Sandy Soils



Biovin

In sandy soils or soil in poor humus, the unchanged surface of soil particles cannot hold nutrients and lose large amounts to leaching. Humic acids provide a charged surface to hold nutrients in the soil and prevent their leaching

Humic acids give the sandy soil a negative charge, thus creating molcular attraction between the negative (-) sandy soil and positive (+) nutrients (fertilizer), opposite's attract. What we have created retention of nutrients in the soil, promoting a food source for the newly forming root system.

fton Physical Soil Testing Laboratory, Inc.
12 MURRAY AVENUE
TON, GEORGIA 31794
one: (912) 382-7292

(USGA LABOR)

Date: June 13, 1994

Sample Number: L244-94

For: QUARZWERKE GESELLSCHAFT m.b.H.

Therefore, based on the particle size and physical analysis of the three sands, the SG31T Sand was selected to develop the greensmix using the 3 peat samples. However, all three sands could be used. If one sand is much less expensive or more convenient and you would rather use it, let us know and we n mix it with the peat of your choice, but we would recommend using either the Biosan or the Biovin Peat, because they have a higher water holding capacity than the Torf Peat.

All three sands are silica (quartz) sands with pH's around 7.4-7.5.

The SG31T Sand had a water permeability rate of 45.4 in/hr. when compacted by USGA procedures to simulate a golf green. Amending this sand with 10, 15, and 20% compressed Torf Peat reduced the rate to 29.6, 27.5, and 25.1 in./hr., respectively. Our lab recommends initial rates of 14 to 17 in/hr for developing bentgrass greens and 10 to 14 in/hr. for developing bermudagrass greens. The initial rate is the rate of the greensmix before grass is established. Once grass is established the rate should decrease and slowly decline over the years as organic matter accumulates due to root and thatch decomposition. Our lab recommends rates of 8 to 12 in/hr. for maintaining established bentgrass greens and 4 to 8 in/hr. for maintaining established

commendations derived from these results are based on the materials supplied. The procedures and hniques employed in the analysis are USGA Green Section Procedures (USGA Green Section Record,