

practice there is no point in applying more water than is required to attain field capacity. More than that is a waste of water and may result in loss of soluble plant food by leaching. It takes less water on sandy soils to attain field capacity, but sands and light sandy loams must be watered more often due to their low water holding capacity.

Soil Isn't Just Dirt

Instead of being just dirt, soil is a mixture of a solid, a liquid, and a gas. A productive dry soil is half solids and half voids by volume, but in the field the voids are occupied by water and air. The volume relationship in an ideal soil is 50 per cent solids, 25 per cent water, and 25 per cent air. Soil air receives scant notice, yet it is highly important in the scheme of plant growth. Roots die when deprived of soil air. They need the free oxygen it contains. Deep extensive root systems are associated with a well ventilated soil. Shallow roots are commonly found in water-logged and in tight compact soils. They do not contain enough free oxygen.

The notion that capillary movement will provide moisture during times of heavy demand is not based on fact or practical experience. Upward movement is too slow. The sensible approach is to create a deep

and extensive root system. Instead of being dependent on the top inch or two of soil, deep roots secure moisture and food at depths of 10 to 12 inches or more. Their forage area is increased five to tenfold. Deep roots reduce or eliminate the possibility of windburn damage in winter, and wilting in summer, because the deeper soil contains usable water long after the surface soil becomes dry. The best way to create a deep root system is to provide a well aerated soil and after doing that, not to clog all the pore spaces by overwatering.

Damages of Overly Wet Soil

The evil effects of overly wet soil are many. Excessive wetness may result from overwatering or continuous rains during hot, humid weather. High humidity tends to keep the grass and soil wet because it checks evaporation. Effects include a thinning of the turf with subsequent weed and clover invasion, shallow roots, more severe and more frequent attacks of disease, especially pythium and brown patch. Leaf spot and algae are fostered by over wetness — along with iron chlorosis, which is a nutritional disturbance. The sudden collapse of turf on large irregular areas is associated with overwatering or drenching rains in hot weather. The cause is ob-



Tom Mascaro photo

MASTERS OF SOUTHERN TURF AT MASTERS' COURSE

Superintendents from many southern courses attended the Georgia Turf Assn. meeting at the Augusta (Ga.) National Golf Club May 11. Hugh Luke, National supt., had the course in magnificent condition, and was host for the day. Principal speaker was Tom Mascaro of West Point on "Soil Structure and Texture." B. P. Robinson of USGA Green Section handled a "Question and Answer" session. Joe Burnam of East Lake CC, Atlanta, Ga., is pres., Georgia Turf Assn.