

Water Quality and Turf Growth

by Dr. A. E. Dudeck
University of Florida

What is water (H₂O) that it is so important to all life on earth? Often we only think of the quantity of water needed for lawns and sports turf. But quality of water is often of critical importance. Dr. Al Dudeck has reviewed this topic of water quality and believes that we all should be aware of the following:

- Water is:
 - the most abundant compound on earth;
 - a constituent of life;
 - used in all industrial processes;
 - there is no substitute for water.
- Young people are 90 percent water; old people are 75 percent water. Turf is composed of 75 to 80 percent water.
- Water is used in/as:
 - photosynthesis;
 - a solvent;
 - transport systems;
 - a catalyst;
 - creating turgidity;
 - soil microbial systems.
- Evapotranspiration is loss of moisture from soil and plants.
- One pound of plant dry matter takes 1000 pounds of water to produce.
- One ton of steel takes 30,000 gallons of water to produce.
- Our water consumption is the highest in the world — up to 300 gallons of water a day per person.
- From water use, we are experiencing:
 - salt water intrusion;
 - land settlement;
 - loss of atmosphere.
- A lack of water may be the most critical national problem in the years ahead.
- The amount of water on earth is fixed. But, the demand on its use increases.
- Water uses vary from rural to residential urban to steam generation to agricultural. In the southwest the problem is quantitative. In the rest of the United States, the problem is qualitative.
- Seeding clouds is practiced in an attempt to obtain more rainfall.
- As fossil fuels are used as a source of energy, there is concern that use of oxygen and release of carbon dioxide and other gasses will create a “greenhouse effect” that will result in the world getting warmer.
- Acid rain is also of concern. Normal rain has a pH of about 5.6; acid rain has a lower pH - about 4.0.
- Ninety-seven percent of the earth’s water is in the oceans.
- Three percent of the earth’s water is fresh. Of that, 75 percent is in the form of ice and snow and 25 percent in rivers and lakes. 1.2 percent is surface water and 98.8 percent is groundwater. Overall, we are overpumping available water, and polluting surface and groundwater.
- The cost is still very high to get salt out of sea water.
- Contaminants in water include:
 - salt;
 - SAR;
 - sediments;
 - nutrients;

pesticides;
element hazards;
radionuclides;
miscellaneous — gasoline.

- Highest quality comes from wells.
- Rivers and streams have lower quality water. Springs and small streams are a very limited source.
- Now consider use of waste water for growing plants. Some of this could be food processing waste water.
- Effluent could be liquid gold for the turf industry. There could be 70 to 100 gallons of waste water a day available per dwelling unit. Turf is a natural for effluent water. It is a perennial. It has a high water requirement. The turf can be used to clean the water and put it back in the subsoil.
- Waste water comes from:
 - toilet — 40 percent;
 - shower — 30 percent;
 - laundry — 15 percent;
 - kitchen — 10 percent;
 - other home areas — 5 percent.

60 percent of this is gray water. The 40 percent from toilet needs to go to the treatment plant.

- Why should drinking water be used to flush the toilet?
- The Clean Water Act could change much in the United States, but politics gets in the way. State and local government involves a complex political system.
- There must be a great appreciation of water resources management.

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