

IT'S ALL ABOUT THE ROOTS CONTINUED

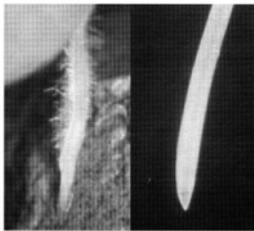
When thinking about plant roots, oxygen is rarely the first thing that comes to mind. But oxygen is crucial to root health. Oxygen is absorbed by roots and then utilized for growth, and in return, the roots give off Carbon Dioxide. The absence of oxygen in the root zone will cause asphyxiation, which in turn will damage the roots and will adversely affect the top of the plant as well. Stagnation of water in the root zone also causes asphyxiation, in addition to root rot. Once plant roots die, or they become dehydrated, death of the organism is usually imminent. Many studies have proven that oxygenation to the root zone is a major factor in determining a plant's growth potential. In fact, the practice of "Aeroponics" as a growing method has been developed to maximize growth one step beyond that conventionally believed to be possible with hydroponics. Plants grown aeroponically actually have

their roots suspended midair!

Aeroponics teaches us that plants can function normally with their roots exposed to light, provided they are always at 100% relative humidity. However, exposure to light also promotes the growth of algae.. Algae appears as a green or brown slime

Air roots vs. water roots

Plants that are grown in soil and granular or fibrous growing mediums that maintain a high percentage of air to water develop air roots (below left). The tiny root hairs serve to steer growth in the direction of water and food. Note that plants grown with their roots completely submerged in water develop "water roots: (shown below right). Observe the absence of root hairs, which are unnecessary in this situation. While air rooted plants can easily be transplanted to a hydroponic system, water roots usually will not survive the move to soil or a drier medium.



on roots, plumbing, and containers. Some studies have suggested that plants suffer when their roots are exposed to light, however this is probably mostly due to the resulting algae growth on the surface of the root. Algae will compete for both water and nutrients, as well as oxygen. To be on the safe side, I recommend using opaque containers and avoid the use of transparent materials for tubing and reservoirs, for any hydroponic system. Dark colors such as deep green, deep blue, and black work best at blocking stray light. You should also note that plant roots are extremely delicate

and should not be handled.

Next week: Roots Continued

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