



## Horticulture/Grower Aeration

Placing dissolved oxygen into irrigation water for greenhouses, fruit trees, or plants/shrubs can pay huge dividends for growers. The reason is simple and straightforward, and it is based upon the phenomena of nutrient absorption. Nutrient absorption occurs in the root zone of the plant, and it cannot occur unless oxygen is present.

At the center of every new cell in a plant is an atom of carbon which the plant obtains from carbon dioxide (CO<sub>2</sub>) in the air which surrounds it. As it processes the CO<sub>2</sub>, the plant releases water vapor and oxygen from the plant stomata as waste. Though oxygen is released as a waste product, it is still critical to plant growth.

Nutrient absorption occurs at the cellular level where oxygen aids the transmission of nutrients across the cell wall and into the roots. In this respect oxygen is needed to keep the plant from starving. As you increase the oxygen levels around the roots, the absorption level continues to increase. This fact remains true as long as the values of all other growth factors remain in their proper ranges.

The benefits of higher concentrations of dissolved oxygen in the root zone are impressive. Most importantly, the addition of oxygen to the irrigation water can directly affect the bottom financial line. For example, some immediate benefits that can be visually observed are:

1. An increase in root activity as seen by more numerous root hairs.
2. An increase in root growth and strength.
3. An increase in the root-to-shoot ratio as evidenced by more aerial branching.
4. A shorter growing time.
5. An improvement in propagation.



To be effective, the dissolved oxygen must be injected into the irrigation water at a rate equal to or in excess of the rate at which water is drawn into the soil or other media. Stated differently, the aeration device must be able to charge the water with atmospheric air (oxygen) with a minimum of contact time. Otherwise, not all of the water going to the plants will contain the maximum amount of oxygen.

VaraCorp's turbine aerator, which operates on the engineering principal of precession, is uniquely able to saturate the surrounding water almost immediately with miniscule bubbles of dissolved oxygen. By placing the turbine aerator in your irrigation water tank or pond at a point near the intake pipes, you can saturate the irrigation water with large amounts of dissolved oxygen.

The benefits of dissolved oxygen go beyond mere root growth. The increased oxygen can reduce root problems such as those associated with pythium and phytophthora and can reduce secondary infections. Furthermore, the plants can expect to see an increase in beneficial mycorrhizal activity. By employing VaraCorp's turbine aerator, the grower likely will find that the increase in plant growth will reduce the need for fertilizer, with the side benefit of less salt burn. Plus, with higher levels of dissolved oxygen in the irrigation water the grower probably can expect to see a reduction in its fungicide use.

While root activity is important, it is the result of such activity that gets the attention of the grower. The most significant results are listed as follows:

1. Quicker sales.
2. Increased sales.
3. Higher saleable percentage.
4. Increased visual presentation.
5. Increase sales within stores.
6. Less in-store dumpage.

Because VaraCorp's turbine aerator is a self-aspirating aerator, meaning it draws in atmospheric air via a self-generating low pressure zone, it requires no air compressor or expensive canister of oxygen. And, since the turbine can operate with a motor as small as five horsepower, its operating costs are minimal compared to other aeration devices. Most important of all, the turbine provides an eco-friendly way for growers to improve their bottom line while reducing their carbon footprint. With all of these benefits it is easy to see that VaraCorp's turbine aerator can pay for itself in a very short time. Call us today to learn more about the benefits offered by the turbine aerator for your plant business.

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