Agriculture / Horticulture

"Healthy Plant Life through the process of water treatment"

The three main areas of concern with feed water

1. pH:
    a. Required range: 6.5-7.5 SU
        I. Can be adjusted according to customer's needs
    b. Treatment:
        I. Pump
        II. pH analyzer
        III. Chemical: depends of pH range needs
            1. We can accommodate for all needs
    c. pH levels have Influences on several soil factors effecting plant growth such as:
        I. Soil bacterial
        II. Nutrient leaching
        III. Nutrient availability
        IV. Toxic elements
        V. Soil structure
2. Iron:
    a. Range stable for plant is 1ppm anything over and above that is detrimental to plant
    b. Acts as Micro nutrient that takes a part in:
        I. Respiration
        II. Photosynthesis
        III. Production of healthy green leaves
    c. High iron levels often cause manganese deficiency causing yellowing of leaves
    d. Treatment
        I. Potassium permanganate ("pot perm")
            1. Benefits of pot perm:
                a. Removes iron and manganese
                b. Prevents staining
                c. Attacks microorganisms (bacteria, fungi, viruses, algae)
                d. Increase storage period in fruits and veggies
                e. Potassium: increases protein production, improves efficiency of water use and resistance to diseases and insects
        II. Manganese Greensand
            1. Removes iron, manganese and hydrogen sulfide through oxidation/filtration
        III. Birm filters
            1. Removes dissolved iron and manganese compounds

2. Filters Total Dissolved Solids and solids in water

3. Advantages:
    a. No chemical for maintenance
    b. Regen not required
    c. Durable with long life and wide temp range

IV. Wide range of Filtration options
    1. Depending on customer needs

3. TDS (Total Dissolved Solids)
    a. "TDS measures various salts that have been dissolved in water. These dissolved minerals cannot be removed by traditional filtering, but only through membrane, reverse osmosis or distillation. The quantity of TDS in the soil or growing medium will move in the direction of the water. If you keep applying water that is high in pH and high in TDS to your soil, the root systems of the plants will eventually have trouble taking up many of the nutrients you have applied. If the water supplied is too acidic (the pH is too low), nutrient uptake can also be adversely affected." "If you are starting with water that has issues, it is a constant battle to adjust for this. For example, if you lived in Seattle, Washington, your influent water pH would likely be in the 7.5-7.8 range. Though the pH level for nutrient uptake for plants is optimized at around 6.5, this range is not too bad. The mineral and salt levels of Seattle's water supply are also low, with a TDS of around 50 ppm. However, if you lived in Las Vegas, Nevada, you would find that your influent water was quite different, with a pH in the range of 8.0-8.3 and a TDS in the range of 600-800 ppm. This is due to the high mineral content of water flowing through the Colorado River and the accompanying high pH (basic) aspect of that water." Source: *Maximum Yield*
    b. High TDS is high in salt
    c. High TDS levels can cause problems with water transport devices:
        I. Pumps
        II. Storage tanks
        III. Distribution lines
        IV. Spray nozzles
    d. Treatment
        I. Reverse Osmosis (RO) system
            1. Removes 90-99% of TDS
            2. Used in cleaning and rinsing of plants/vegetables/fruits not as much for use in the feed water to plants.
            3. For hydroponic growing or controlled environments to remove **all** TDS for specific management.
        II. Cartridge filtration
            1. Removes sediment out of water
            2. Helps for irrigation of greenhouses/nurseries
        III. Ultra filtration (most popular)
            1. Removes dissolved molecular compounds (TDS)
            2. Leaves behind plant nutrients