

Water Quality for High Tunnels

Bryan Swistock; Penn State Extension

Data for Pennsylvania alone show that over 15,000 acres of irrigation occurs in micro-irrigation systems commonly found in high-tunnels and other greenhouses. Water quality plays a critical role in determining successful production of nursery and greenhouse crops since the amount of growth media is small. Greenhouse and high tunnel growth environments also increase the importance of water quality because irrigation is the only source of water. Crops grown outside are less affected by irrigation water sources because they experience dilution from natural rainfall. Unfortunately, water quality is too often overlooked as a potential source of plant growth issues in high tunnel environments.

A complete water analysis by an accredited laboratory for pH, alkalinity, conductivity, hardness, chloride, and sodium (at a minimum) is recommended for any water supply used in a high tunnel growth environment. A more thorough test is ideal and should also include total dissolved solids, boron, calcium, magnesium, sodium adsorption ratio (SAR), nitrate-nitrogen, ammonium-nitrogen, phosphorus, potassium, sulfur, iron, manganese, copper, molybdenum, and zinc. In addition to periodic testing at a lab, it is a good idea to have a water quality testing toolkit on hand to test for some common problems on a regular basis, including pH, alkalinity, hardness and electrical conductivity (EC). Keep records of your test results in a notebook or binder so that you can detect changes over time.

Various publications are available to help with the interpretation of any water quality results. In some cases, interpretation can vary depending on what plants are grown in the high tunnel. Growers are urged to research the specific water quality tolerances of their crops, especially if they are noticing growth or health problems in response to irrigation.

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Photo: Penn State Extension

Additional Resources

Interpreting Irrigation Water Tests

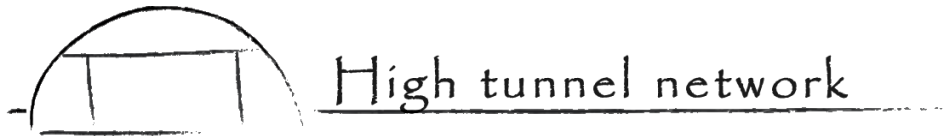
This online article provides information about the parameters assessed in the Penn State Agricultural Analytical Services Laboratory irrigation test kit, as well as a table noting levels of concern and additional notes.

<https://extension.psu.edu/interpreting-irrigation-water-tests>

A Water Quality Toolkit for Greenhouse and Nursery Production

The toolkit shares an overview of four parameters that can be tested on-site in between or in addition to laboratory testing using a basic water quality testing kit.

<https://extension.psu.edu/a-water-quality-toolkit-for-greenhouse-and-nursery-production>



Visit www.hightunnelnetwork.org for additional resources specifically for high tunnel growers.