Growing Leafy Greens in a Hydroponic System

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BACKGROUND

Hydroponics is a technology for growing plants in a nutrient solution with or without the use of artificial medium, such as natural and man-made fiber coir and rockwool, gravel, perlite, vermiculite, sawdust, etc., to provide mechanical support. Hydroponic growing system are often installed in greenhouses, high tunnels, or indoor structures. That is, crops are grown hydroponically under controlled environment. Hydroponics has many advantages over conventional field production method such as elimination or reduction of soil-borne diseases, significant water saving (more than 90%), potential of year-round production with high yield and quality and reduced waste of nutrients to environment. High quality water is often used in hydroponic systems because recirculation concentrates ions plants do not absorb; however, high quality water is not always accessible to growers. For example, water quality of groundwater varies largely with location.

OBJECTIVES

- Develop methods and best management practices for hydroponic systems using marginal water for growing leafy greens and herbs.
- Evaluate the impact of salinity of base water on leafy green growth and quality.

EXPECTED RESULTS AND BENEFITS

We will determine/develop the following:

- The threshold of salinity of marginal water to be used in a recirculating hydroponic system;
- Impact of base water with high salinity on leafy green growth and quality;
- Nutrient management guidelines for hydroponic systems when using water with high salts such as groundwater and municipal water; and
- Suitable species and cultivars of leafy greens including Asian greens.

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