Soil and Water Sciences Department
Graduate Student Exit Seminar

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Advisor: Dr. Rao Mylavarapu

Title: Soil Boron Determination Methods and Boron Uptake in Tomatoes

Date: Monday, June 4th
Time: 3:00 pm – 4:00 pm
Location: McCarty Hall A, Room G186

Several methods have been used for determining Boron (B) concentrations in soils over the years. Colorimetric, fluorimetric, and plasma-source methods that employed plasma source OES and MS, spectrophotometric, potentiometric, ionomeric methods, atomic spectrometric and nuclear reaction analytical principles were tested. However, soil properties such as pH, texture, organic matter, and mineralogy, were found to directly influence determination of B. Also, B may be complexed in the soil due to transformations through one or more of its several oxidative states. Therefore, there is an urgent need to identify a suitable and consistent method for routine laboratory analyses of soil B. So, in our study, soil test methods such as Mehlich-1, Mehlich-3 and Hot-water extractions were compared using standard and varying laboratory protocols for soil B determinations on ICP-OES and spectrophotometer to help screen for an optimal method. A summary of the data collected and conclusions will be presented.

A replicated greenhouse study was also conducted to determine the uptake of B by tomato plants grown in sandy soils. Fruit yields, tissue nutrient levels and plant growth parameters were measured in plants that received granular or foliar applications of B, at 1, 2 and 3 mg kg-1 of B and compared against a control.

For our off-campus students, off-campus faculty, and on-campus students who cannot attend, this seminar can be viewed via live or watched at a later date via this link: Gurcan Baysal. In addition, all seminars are archived for viewing on our SWSD Seminar Page.