

# ASA, CSSA, and SSSA 2010 International Annual Meetings

Oct. 31-Nov. 3 | Long Beach, CA

*Green Revolution 2.0: Food+Energy and Environmental Security*

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## Success!

- The 2010 Annual Meetings, "Green Revolution 2.0: Food + Energy and Environmental Security," was a success. Thank you to all of the attendees, exhibitors, sponsors, donors, vendors, and volunteers.
- Save the date for next year: Oct. 16-19, 2011, San Antonio, TX.

## News

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*American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America will host 3,000 scientists, professionals, educators, and students to the 2010 International Annual Meetings, Oct. 31-Nov. 3 in Long Beach, CA.*

## Dates & Deadlines

Nov 2 [ASA Awards Program & Plenary Address](#)

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## ASA, CSSA, and SSSA 2010 International Annual Meetings

Oct. 31-Nov. 4 | Long Beach, CA



### Green Revolution 2.0: Food+Energy and Environmental Security

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220-9 Comparison Between Unvaried and Multivariate Methods for Soil Carbon Determination by Laser Induced Breakdown Spectroscopy.

See more from this Division: S02 Soil Chemistry

See more from this Session: Advances in Tools and Techniques for Soil Chemical Investigation/Div. S02 Business Meeting

Tuesday, November 2, 2010: 3:10 PM

Long Beach Convention Center, Room 202B, Second Floor

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Precise and accurate methods for soil carbon determination are essential to evaluate mitigation programs of the anthropogenic carbon dioxide content of the atmosphere. The studies about carbon sequestration by soils demands economic and fast analytical methods for carbon determination, able to perform in situ measurements. Laser Induced Breakdown Spectroscopy (LIBS) is a kind of atomic emission spectroscopy, which uses high energetic laser pulse to perform sampling and convert the material in hot micro plasma, where atomization/ionization and excitation processes take place in few seconds. The LIBS spectrum report emission lines of all sample constituents elements. Due to the simple measurement process, LIBS has great potential to perform analysis *in situ*. However, a single LIBS measurement can provide immediate qualitative information, quantitative analysis requires a trustable analytical calibration procedure. Thus, the present study aimed to evaluate and compare two kinds of calibration proposal for soil carbon quantification by using LIBS. The mathematical models experimented for calibration were based on univariate and multivariate strategies. The two LIBS calibrations models evaluated presented similar performance for carbon determination in the soil set used. While the model based on least-squares regression presented smaller LOD, the MultiLayer Percept.ion (MLP) presented better fitting calibration model and smaller prediction errors. It is important to highlight, that due to this feature of MLP to overcome matrix effects and spectral interferences, it can be trained with different soils, constituting a calibration database independent of soil origin. The LIBS spectra of soil pellets were captured by using the system model LIBS2500, from Ocean Optics. Soils from tropical areas of Brazil, with very low carbon content, ranging from 0.36 to 0.79 %, were analyzed by LIBS and compared with conventional Total Organic Carbon (TOC) measurements, which make yet more valuable observations made.

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