

## Recent agricultural and natural products applications of CESI-MS

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### Abstract

Dr. Walse is a research chemist at the United States Department of Agriculture - Agricultural Research Service and serves as an adjunct Professor of Environmental Toxicology at the University of California, Davis. The overall research goal of the team is to ensure protection and quality of foodstuffs in global distribution channels. CESI-MS/MS has revolutionized the spectrometric analysis of highly polar small molecules of agricultural and environmental significance which is shown in this presentation. The need to quantify residues of highly polar pesticides is of great interest for several reasons including, highly publicized concerns about health effects (such as, glyphosate and sulfite), required pesticide registrations and method validations and MRL violations caused by biogenic and anthropogenic interferences (for example, phosphate vs. phosphite and chlorate). Moreover, this work addresses the need to characterize polar (such as, sugars and terpenoid) signaling molecules used by agricultural pests with as little sample handling and manipulation as possible. Often, the analytical processing of natural products changes the chemical signal form, which complicates any investigation of the signaling mechanism and function.

This presentation will focus on highly polar and small molecule targets, specifically highlighting the ability of CESI-MS to remove matrix interferences that are relative to other LC- and IC-MS techniques. We will also focus on the loss of water during the fragmentation of the polar compounds, noting parallels with the hydrolysis chemistry that accompanies its environmental fate and transport.