Science Societies

Member Helps Provide On-Site Training for Haitian Agronomy Students

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Haitian agronomists working with portable X-ray fluorescence spectrometry to make elemental determinations in field and laboratory settings.

For more than 20 years, Association Zanmi Agrikol (AZA) has worked to help Haitian agriculture evolve on the Central Plateau by introducing innovative farming practices in support of increased crop yields and enhanced land stewardship. In doing so, AZA empowers smallholder farmers to generate additional income that ensures a healthy livelihood and education of their families. The primary foci of AZA are threefold:

agribusiness, education, and community economic development. Through such activities, AZA works to achieve its mission to promote a prosperous future for rural Haitian households. Among its many endeavors, AZA has supported several organizations, both local and multinational, in the implementation of community development programs, agronomic development, soil and water testing services, farm planning, and implementation.

Association Zanmi Agrikol has received assistance from Rotary International, the Kellogg Foundation, the Chanel Foundation, Christ Church Episcopal, and numerous other organizations to develop its soil and water testing lab. However, it recently benefitted from a grant by the Chanel Foundation to purchase a Vanta series portable X ray fluorescence (PXRF) spectrometer and NixPro color sensor. These technologies are the first of their kind in the entire country and represent a monumental step forward for the analytical capabilities of Haiti.

In January 2023, AZA's Executive Director Reginald Cean coordinated with ASA and SSSA member Dr. David C. Weindorf (Central Michigan University) and Dr. Somsubhra Chakraborty (Indian Institute of Technology Kharagpur) to provide on site and remote training in the use of proximal sensors and associated spatial analysis. Weindorf traveled to Cap Haitien, Haiti and then proceeded to AZA facilities in Mirebalais and Boucan Carré, Haiti for on site training. Weindorf worked to teach a team of 10 agronomy students and Cean about the operational theory and practical use of the PXRF spectrometer and the NixPro sensor for soil, water, and vegetative analysis. They collected data across several active farm fields (both surface scans as well as soil scans with depth in hand excavated soil pits) and in the laboratory using specific films, mounts, and sample preparation techniques that bolster analytical accuracy. All collected data was georeferenced via handheld global positioning system (GPS) receivers. Following data acquisition, Chakraborty provided the team with fundamental

training in R Studio as a precursor to a larger initiative to train the team in spatial statistics.

Game‐Changing Technology

“PXRF is a game‐changing technology for us,” Cean says. “Since 2013, we have been looking for options to provide complete soil, water, and plant tissue testing to our farmers because we know to a great degree, food security and sustainable economic development depend on the quality of the soil. But despite the obvious correlation among soil health, yield increase, and income, complete soil testing is not available—nor even accessible—for smallholder farmers in Haiti.”

At the completion of the course, the agronomists offered thanks not only for the training, but for support of their country.

“These fine young scientists are hungry to learn and bring new technological capabilities to Haiti,” Weindorf says. “It was such an honor to work with them over the past six months.”

Weindorf has helped provide the team with a litany of methods, research papers, and techniques that will augment the power of the technology now in their hands. Cean looks forward to expanding the training to even more students and applying the technology throughout agricultural fields in Eastern Haiti for precision application of soil amendments, assistance in remediation, and enhanced agronomic production.
