Over the past several years, Sindhu Jagadamma has traveled across the world and through different areas of soil science. She began her career in applied soil science as a soil survey officer in India but transitioned to fundamental research as a graduate student with Dr. Ratan Lal at Ohio State University (OSU).

Jagadamma now works as a postdoctoral researcher at Oak Ridge National Laboratory (ORNL). She uses neutron beams to study how soil and carbon interact at the nanometer scale and conducts lab-scale microcosm experiments to understand the major factors controlling soil organic carbon decomposition. By understanding the stability of soil organic carbon at different scales, she hopes to improve the accuracy of terrestrial ecosystem models. While soil carbon used to be a “black box,” Jagadamma says the techniques and skills needed to open that box and look inside are now available.

Soil Horizons: Where are you from and where did you go to school?

Jagadamma: I grew up in an agricultural community in Kerala, India—a very beautiful “green” state with the Arabian Sea in the west, the Western Ghats mountain ranges in the east, and a network of rivers and backwaters. After attending Kerala Agricultural University and working as an agricultural extension officer and county-level soil survey officer for six years, I received the prestigious Ford Foundation’s International Fellowship. This allowed me to pursue graduate studies at the Carbon Management and Sequestration Center with Dr. Ratan Lal. I completed a master’s and a Ph.D. degree in soil science and established myself as an expert in soil carbon sequestration in terrestrial ecosystems.

Soil Horizons: How did you become interested in studying soil science?

Jagadamma: My state of Kerala is blessed with two long rainy seasons. While these long rainy seasons are a joy for farmers, it was disruptive for my family because my father was a construction worker who generally didn’t work during the monsoon season. To make ends meet, my mother maintained a home garden. The yams and tapioca from her garden were a stable supply of food for us. I was always amazed with my mother’s skills in maximizing the yields from the small piece of land and maintaining the soil fertility by adding wood ashes and turning in some cover crops.

Soil Horizons: How did you transition from working in applied aspects of soil science to the more fundamental research that you’re doing now at ORNL?

Jagadamma: I was very enthusiastic after performing experiments on farms in my master’s research, so for six years, I worked directly with farmers to develop and implement sustainable farming prac-