Detection and Population Estimation of Reniform Nematode on Cotton

Mississippi State University currently seeks companies interested in commercializing a detection and population estimation of reniform nematode on cotton. The current method of nematode detection in cotton is a very labor intensive and expensive process. Researchers at Mississippi State University have developed and patented (US Patent 7,271,386) a technology that uses equipment to detect nematode presence in cotton. This breakthrough allows individuals to detect nematode presence in cotton through a method that is less labor intensive than current methods. Users of this technology would be cotton farmers in the Southeastern United States.

Uses/Applications
The method would primarily be used to detect nematode presence in cotton, but potential to expand to other plants is present.

Advantages
- Less labor intensive than other nematode detection methods
- More cost effective than other nematode detection methods

Technology
A new R. reniformis detection technique had been developed using remote sensing. With the development of a hand-held spectroradiometer data analysis toolkit, sixteen wavelengths of the visible and near-infrared ranges of the electromagnetic spectrum have been identified for R. reniformis detection on infested cotton plants. Each of the identified wavelengths, combined as a whole, is pertinent to R. reniformis population estimation on infested cotton plants. These wavelengths (451-949 nm) are the best spectral characteristics used in R. reniformis recognition on cotton. The best spectral bands extracted (using the toolkit) developed reflectance patterns for each nematode population range. Wavelength were quantified by the magnify and point tool available with the toolkit software.

Inventors

Dr. Gary Lawrence is an associate professor in the department of entomology and plant pathology at MSU. Dr. Lawrence is a member of the American Phytopathological Society, Gamma Sigma Delta, Sigma Xi, Mississippi Association of Plant Pathologists and Nematologists, Organization of Tropical American Nematologists, Southern Soybean Disease Workers, Society of Nematologists, and Southern Region Nematology Project S-253. Dr. Roger King is the director of the Center for Advanced Vehicular Systems. Amber Kelley was a graduate research assistant at the time of invention. John Vickery was employed in the department of electrical and computer engineering at the time of invention.