S2-2

Soil Microbial Response to Environmental Stresses - does being indigenous help?

○Michael Sadowsky

University of Minnesota

E-mail: sadowsky@umn.edu

Rhizobia have been used for a long time to improve plant growth and information on medicinal use of legumes was recorded by Hippocrates in 4th century B.C. the Romans knew of the benefits of soil movement to improve crops. Rhizobia were first isolated in the 1800's and the Nitragin Company was founded in 1898 after a Milwaukee entrepreneur purchased rights to a commercial process for the production of nitrogen-fixing rhizobia. Despite the use of rhizobial inoculants for more than 200 years, we know very little about their ecosphysiology in natural soils. This broad genetic and physiological diversity of the rhizobia makes generalization difficult and does not allow for a "Unified General Theory" concerning their ecology. Moreover, our lack of understanding is due to the heterogeneity of rhizobia and soils, changing environmental conditions, and false assumptions from lab studies. It has always been assumed that the competitiveness of strains infecting legumes is dependent upon environmental conditions, and presuming that they are indigenous, they are likely more fit to interact with host plants than more recent bacterial additions to soils. However, there is no easy definition of indigenous and bacterial survival is influenced by a variety of stress factors. To address these questions, we started out by looking at what it means to be indigenous. Here we report the on the extra long-term saprophytic survival of rhizobia and show that we still know little about being indigenous.