FERTBIO 2016
"RUMO AOS NOVOS DESAFIOS"
16 a 20 de Outubro
Centro de Convenções de Goiânia - GO

CONTRIBUTION OF MINERAL NUTRITION TO PLANT DISEASE RESISTANCE

Lawrence E. Datnoff[1] and Wade H. Elmer[2]

[1]Department of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, 302 Life Sciences, Baton Rouge, LA 70803 USA. E-mail: ldatnoff@agcenter.lsu.edu

[2]Department of Plant Pathology and Ecology, The Connecticut Agricultural Experiment Station, New Haven, CT 06054 USA. E-mail: wade.elmer@ct.gov

One of the fundamental strategies for maintaining plant health is to manage the mineral nutrition of the plant. Nutrition can often regulate the fragile balance between a crop's susceptibility and resistance to a plant disease. A complete and balanced mineral nutrition ought to be the first line of defense against a plant disease occurrence. One major problem in providing appropriate nutrition is that many agronomic and horticultural crops vary in their nutritional requirements and different nutrients may affect different plant diseases in different ways. Moreover, the recommended fertility requirements for optimum plant development may differ for maximizing plant resistance against an infecting pathogen. In many cases, the amount of a nutrient needed to reduce a plant disease may far exceed a healthy plant's nutritional requirement for that nutrient, signifying that many nutrients may participate in multiple mechanisms for plant disease resistance. Both essential and beneficial elements can directly and indirectly affect plant disease defense mechanisms. These nutrients play important roles in metabolic pathways that lead to the production of lignin, phenols, phytoalexins, and other defense-related products. Many of these pathways use enzymes that require the micronutrients as cofactors or activators. Other elements will influence osmotic relations, water cycling, and root exudation, which, in turn, influence beneficial microbes. Indirect mechanisms include effects on soil medium nitrification, root medium pH, and chemical transformation of micronutrients. This presentation will provide an overview of the principal role of mineral nutrition on crop health and subsequently plant disease resistance.

Key-words: disease resistance, disease management, fertilizers, plant health