

SILICON NUTRITION FOR PLANT DISEASE MANAGEMENT

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The reduction in the intensities of a number of plant diseases caused by biotrophic, hemibiotrophic, and necrotrophic pathogens is one of the most notable plant effects of silicon. The intensities of several rice diseases (bacterial blight, brown spot, grain discoloration, leaf scald, leaf and panicle blast, stem rot and sheath blight) were reduced by silicon due to its effect on latent period, lesion size, lesion number and inoculum production per infection site. Although both foliar and root applied silicon have proven effective in reducing a number of foliar diseases, root applied has been demonstrated to be more efficient because the element helps mediate the plant's defense responses. The supply of silicon also has been demonstrated to decrease certain diseases to the same level of intensity as a fungicide, as well as enhance the resistance of susceptible cultivars to almost the same level as those that have complete genetic resistance. The application of silicon undoubtedly would be well-suited for inclusion in an integrated disease management strategy and would permit possible reductions in the use of fungicides while enhancing host plant resistance.