

P.33 - Effects of soil and foliar silicon fertilization on Asian soybean rust development

Lemes, E., Mackowiak, C., Datnoff, L., Blount, A., Marois, J.

Asian soybean rust (ASR), caused by *Phakopsora pachyrhizi* Syd., is one of the most destructive fungal diseases of traditional and organic soybean production world-wide. Fertilization with silicon (Si) might be an alternative against ASR since this element has suppressed plant diseases in numerous other host-pathogen systems. The efficacy of Si against ASR was tested under field conditions at NFREC-Quincy, FL. Wollastonite (CaSiO_3 , 24% Si), a naturally occurring mineral ore, was used as a source of Si in soil Si treatments at rates of 0, 480, 960 and 1920 kg Si/ha. Potassium silicate (K_2SiO_3) as AgSil® 25 (9.72% Si) was used for foliar treatments at rates of 0, 500, 1000, and 2000 ppm Si. Each plot was split and planted with a Roundup Ready maturity group V (DP5634RR) or a forage soybean (Hinson). Initial plant-available Si concentration in the soil (loamy sand - Typic Paleudult) was 32 mg Si/kg but increased to 148 mg Si/kg at 1920 kg Si/ha. Leaf Si concentrations for soil and foliar Si treatments were significantly different from the non-treated control and ranged from 0.12 to 0.31%. An average a three day delay in ASR disease onset was observed for both soil and foliar Si treatments in comparison to the control. AUDPC values were reduced between 5.9 to 46.6% and 4.8 to 41.6% for soil and foliar applied Si, respectively. Based on these preliminary results, Si may be a viable choice for organic growers to manage ASR in soybean production systems.