

P-140

Effect of seed treatment with *Bradyrhizobium japonicum* on soybean sudden death syndrome (*Fusarium virguliforme*) in irrigated and natural fields

*Tra Huynh\**, Department of Plant Pathology and Microbiology, Iowa State University, Iowa, USA

*Shrishail Navi*, Department of Plant Pathology and Microbiology, Iowa State University, Iowa, USA

*X.B. Yang*, Department of Plant Pathology and Microbiology,

*Xun Li*, Department of Plant Pathology and Microbiology, Iowa State University, Iowa, USA

Our greenhouse studies had showed seed treatment with *Bradyrhizobium japonicum* isolates can suppress soybean sudden death syndrome (SDS). In natural condition, soil moisture and temperature in mid-July are ones of the factors leading high soybean sudden death syndrome incidence and severity in Iowa. However, the frequency and amount of irrigation can improve potential yield under field condition. Field studies were conducted from 2014 to 2016 to assess the efficacy of seed treatment using *B. japonicum* (BJ) in both irrigated and non-irrigated fields. Seeds were treated with BJ at 6mL/kg seed and planted in randomized block design. Overhead sprinkler were run from R1 to R6. Results showed higher nodules and higher shoot and root weights per plant at V5 in BJ treated plots compared with untreated plots in both systems. Also, SDS foliar symptoms incidence was reduced from 8% to 15 % in irrigated and from 3 % to 23% in non- irrigated fields. An increase of yield was recorded for sprinkler irrigation at 0.06 metric ton/ha on average and either for natural system at 0.024 metric ton/ha. Three year field studies and two greenhouse experiments clearly indicated that BJ seed treatment has plant health benefits and yield advantages over untreated controls. More studies on using different inoculant types and effect comparison with other commercial products have been conducting.