

**ROOT-ZONE MICROBIAL POPULATIONS OF COTTON PLANTS
TREATED WITH HELENA SYSTEM3 SEED TREATMENT**

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Abstract

A two-year field study was conducted to determine the effects of the seed treatment product System3® on root surface bacteria populations. System3 is a hopper-box seed treatment composed of Apron® (metalaxyl), Terraclor® (PCNB) and Kodiak® (*Bacillus subtilis*). In 2001, one-meter plots of treated (12oz./cwt.) and untreated acid-delinted cottonseed (cv Americot 4207) were planted in Brownfield fine sand on an irrigated farm in western Gaines County, Texas. There were six replications. Planting dates were staggered to allow root sampling at the same time. Plants were sampled at 10, 20 and 40 days after planting (DAP). Total rhizoplane bacteria populations were significantly higher on System3 seed treated plants at 10 and 20 DAP. There no significant differences between treated and untreated plants at 40 DAP. Fresh root weights were significantly higher on treated plants at 20 and 40 DAP. In 2002, the experiment was repeated to determine total rhizoplane bacteria and rhizoplane *Bacillus subtilis* populations. Experimental design was the same as the 2001 study except for plant ages. Plants were sampled at 72 hours after planting and at the forth true-leaf stage. Total rhizoplane bacteria and rhizoplane *B. subtilis* numbers were significantly higher on plants from treated seed at both plant ages. Fresh root weights were higher on the 72 hour old seedlings but not on the forth true-leaf plants.