Root vs. Shoot Contributions to SCN Resistance. (C02-westgate162601-Poster)

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Abstract:

Soybean cyst nematodes (SCN) are thought to affect root function by forming feeding sites (syncytia) within the root. The physiological mechanisms regulating syncytia formation are not completely understood, but could involve root to shoot communication within the plant. We tested this possibility by reciprocal shoot grafting of resistant and susceptible varieties. Reciprocal and self grafts were made at the seedling stage using a modified wedge grafting technique. Grafted plants were grown in SCN infested soil for 30 days in a controlled environment, and evaluated in terms of shoot and root biomass accumulation and cyst formation. Roots of resistant varieties supported a minimal number of cysts while those of susceptible varieties supported large numbers of cysts, regardless of the shoot stock. Cyst number was positively correlated with plant growth ($r^2 = 0.67$). These results indicate that resistance to cyst production is primarily a root controlled characteristic. SCN susceptible cultivars have similar growth potential to resistant cultivars. Conditions that favor rapid root growth, however, also promote nematode reproduction and greater cyst production.

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