

Plant-parasitic nematodes are a group of diverse microscopic worms that feed on living plant cells and are very serious agricultural pests. Soybean cyst nematode (SCN), an obligate parasite, is the most damaging pathogen of soybean causing \$460 to \$818 million in soybean yield losses annually in the United States. The primary means to control this nematode is to plant nematode resistant soybean cultivars. Improved resistance to SCN represents the most cost-effective and environmentally friendly approach for SCN management. To achieve this goal, a more thorough understanding of the SCN-soybean interaction including the molecular mechanisms utilized by the plant to resist infection by SCN is needed. The results presented in this study detail functional analyses conducted to test a candidate gene for resistance to SCN at the *Rhg4* locus, a major gene region controlling soybean resistance against SCN. In addition, experiments designed to test whether salicylic acid, a key signaling molecule in plant resistance against pathogens, plays a role in resistance to SCN are described. A better understanding of the underlying mechanism of soybean resistance could provide insights that ultimately lead to more durable approaches for SCN management.