WEED MANAGEMENT CONSIDERATIONS FOR CONTROL OF THE SOUTHERN ROOT-KNOT NEMATODE IN COTTON

M. R. Manuchehri
Texas Tech University
Lubbock, TX
J. E. Woodward
Texas Tech University & Texas A&M AgriLife Research & Extension
Lubbock, TX
T. A. Wheeler
Texas A&M AgriLife Research
Lubbock, TX
P. A. Dotray
Texas Tech University & Texas A&M AgriLife Research & Extension
Lubbock, TX
J. W. Keeling
Texas A&M AgriLife Research
Lubbock, TX

Abstract

The southern root-knot nematode (*Meloidogyne incognita*) is an economically important pest across the Cotton Belt. There are several chemical options that can be implemented to control southern root-knot nematode; however, they are limited and can be costly and erratic. Other strategies include the use of nematode-resistant varieties, crop rotation to a non-host, and use of effective weed management systems as the southern root-knot nematode is capable of surviving on a number of weed species. However, Russian thistle (*Salsola tragus* L.) has not been documented as a weed host. Although, galling similar to that caused by *M. incognita* has been observed on 2 to 4 week old Russian thistle plants in west Texas. Results from a survey conducted from 2011 to 2014 found that 58% of plants sampled exhibited galling. In order to determine the suitability of *S. tragus* as a host for *M. incognita*, two greenhouse trials were conducted in 2014 at the Texas A&M AgriLife Research and Extension Center in Lubbock, TX. In addition to Russian thistle, two cotton varieties [Fibermax 9160B2F (susceptible) and Stoneville 5458B2F (partially resistant)] were planted in 0.95 L styrofoam cups containing autoclaved soil. Plants were inoculated at planting with 1600-1800 *M. incognita* eggs and fertilized and watered for 60 days, at which time nematode eggs were extracted from infected roots. Root and shoot weights, as well as gall ratings were also used to compare hosts. In the first trial, gall ratings for Russian-thistle were similar to those for Fibermax 9160B2F while ratings for Stoneville 5458B2F were less. In the second trial, gall ratings were greatest for Fibermax 9160B2F and similar for Russian thistle and Stoneville 5458B2F. Nematode reproduction (eggs/gram of root) was greatest for Russian thistle (41,629 eggs/gram of root) in trial 1 and similar for Fibermax 9160B2F and Stoneville 5458B2F (approximately 8009 eggs/gram of root). Reproduction of the nematode on Russian thistle was also greater in trial 2 (21,987 eggs/gram of root) while reproduction was reduced for Fibermax 9160B2F (4847 eggs/gram of root) and lowest for Stoneville 5458B2F (974 eggs/gram of root). Results from these studies indicate that Russian thistle is a suitable host for *M. incognita*. Control of Russian thistle will not only improve weed-crop competition, but also may improve southern root-knot nematode management. However, sustainable control of both pests likely will result from a systems approach that involves multiple management strategies.