RENIFORM NEMATODE - OVERALL MANAGEMENT

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Abstract

Management strategies that are useful in reducing yield losses due to reniform nematode (*Rotylenchulus reniformis*) include exclusion/sanitation, crop rotation, and nematicides. All of these practices may be employed simultaneously on a single farm. The basis for any nematode management program relies on knowing what level of each (any) nematode species is present in each individual field. Rarely is every field on a farm infested with the same number or species of nematodes. In many fields nematodes are either present at such low levels that they will not cause yield losses or are absent altogether. Only regular fall sampling for nematodes can allow a producer to choose the appropriate nematode management practice for each field. Reniform nematode is definitely still spreading across a wide geographic area. Often it is brought onto a farm or spreads from field to field within a farm or county on contaminated equipment. Every effort should be made to exclude reniform nematode from fields which are not already infested. Newly purchased, used equipment should be thoroughly steam cleaned before being used. Equipment should be thoroughly washed before taking it from a reniform nematode-infested field to a field free of reniform nematode.

At the present time management of reniform nematode relies heavily on the use of crop rotation and nematicides (see Gazaway, "Managing reniform nematode with crop rotation" in this symposium). Corn and peanut both are nonhosts for reniform nematode. Many cultivars of soybean are also highly resistant to reniform nematode. Typically one year of rotation to a nonhost crop or a resistant soybean cultivar reduces reniform nematode populations to a level where there is no benefit to a second consecutive year out of cotton. However, one year back into cotton or a susceptible soybean cultivar will restore the reniform populations to the pre-rotation level. In most instances moderate rates of Temik 15G or Telone II will provide cost effective control of reniform nematode for a single growing season. The use of a post-emergence application of Vydate C-LV has also shown to be cost effective in controlling reniform nematode (see Lawrence, "Managing reniform nematode with nematicides" in this symposium).

Currently, no cultivars of upland cotton are available which are highly resistant to reniform nematode. However, management practices in the future may include the use of tolerant and/or resistant cotton cultivars. Cook et al. (1997) have identified and are developing several high-yielding breeding lines that are tolerant to reniform nematode. Four lines with low levels of resistance have been developed by Jones et al. (1988) in Louisiana which were released for commercial development. The possibility of having both resistance and tolerance to reniform nematode offers some interesting decisions. Continuous use of resistance may lead to the development of pathotypes or races of the nematode which can overcome the resistance and render it ineffective. There is already concern that "races" of reniform nematode may already be present (see McGawley, "Variability in reniform nematode" in this symposium"). These races may already be pathogenic on the resistance genes being used. Tolerance is the ability of a plant to sustain yields when infected by a pathogen. Generally tolerance is thought to be less effective in reducing yield losses than resistance. However, since tolerance should be effective across races of a pathogen (i.e. reniform nematode) and exerts no selection pressure on the pathogen for pathotype, it may be as desirable as resistance as a management tool. The most likely scenario for the near future is that the levels of tolerance and resistance available in commercial cultivars will not be sufficient to limit yield losses to acceptable levels and will need to be augmented with nematicides or crop rotation to allow cost effective cotton production in fields infested with reniform nematode. A more extensive review of the biology and management of reniform nematode was recently published by Robinson et al. (1997).

References

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