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EVALUATION OF ALYCECLOVER FOR RESISTANCE TO ROOT-KNOT NEMATODES

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Background. Alyceclover (*Alysicarpus* spp.) is a tropical legume with potential for increased use as a forage and pasture crop in the southern U.S. This self-pollinated, annual legume produces high quality grazing and hay, is a valuable supplemental forage for wildlife, tolerates grazing, and can be managed for reseeding. Root-knot nematodes reproduce freely on Florida Common alyceclover, limiting alyceclover establishment, forage production and utility as a component of crop rotations. This study was conducted to identify alyceclover germplasm with resistance to *Meloidgyne hapla* and *M. incognita*. Alyceclover germplasm with multiple root-knot nematode resistance would be highly desirable for use as a reseeding summer forage crop or green manure crop in soils infested with these pathogens.

Research Findings. Alyceclover seedlings were inoculated with at least 2,300 eggs of *M. hapla* or *M. incognita* and grown for 77 days under glasshouse conditions at Overton, TX. Twenty-six alyceclover lines were evaluated in 1990 and 5 lines were re-evaluated in 1991. Four alyceclover germplasm groups were identified according to their relative galling responses to *M. hapla* and *M. incognita*. Two of these groups were heavily galled by both nematodes but one group was nongalling with *M. incognita* and variable in response to *M. hapla*. Another group was galled by *M. incognita* and variable in galling response to *M. hapla*. Nematode egg production was often not related to gall response. Individual plants of breeding line FL-3 with no visually detectable galls produced from 9,000 to 62,000 nematode eggs/g of root fresh weight.

The plant responses of FL-3, FL-5, FL-7, FL-9, and Florida Common to both nematodes are summarized in Table 1. Both FL-5 and FL-7 appear to contain individual plants with nearly complete resistance to *M. incognita*, characterized by no detectable gall response and very low reproduction. FL-5 and FL-7 were susceptible to *M. hapla*.

In contrast, FL-3 had relatively low mean gall scores but even nongalling individual plants allowed high reproduction levels of both *M. incognita* or *M. hapla*. High nematode reproduction on nongalling alyceclover plants indicates independence of nematode egg production and root galling. FL-3 could be defined as tolerant to *M. incognita* due to very low galling response and low root damage. FL-3 was classified as susceptible to both nematodes based on nematode reproduction. FL-3 has been released by the Florida Agricultural Experiment Station as an alyceclover cultivar resistance to *M. javanica* and *M. arenaria*, but susceptible to *M. incognita*

race 3.

FL-9 was partially resistant to *M. hapla*. Reproduction of *M. hapla* was reduced on FL-9 compared to any other alyceclover line evaluated in these experiments. Partial resistance is defined as the support of intermediate levels of nematode reproduction. FL-9 was susceptible to *M. incognita*, as reported in earlier studies.

Application. Breeding lines of alyceclover were identified that contained individual plants resistant to either nematode species. No one alyceclover line was noted with resistance to both nematodes. Variation for galling response and root-knot nematode egg production exists in alyceclover and egg production is not dependent on galling.

A hybridization program could combine *M. hapla* partial resistance from FL-9 with *M. incognita* race 3 resistance from FL-5 or FL-7. Both FL-9 and FL-7 have very poor seedling vigor. Development of a nematode resistant alyceclover cultivar using FL-7 or FL-9 as parents would require a concurrent effort to improve seedling vigor.

Table 1. Alyceclover response to root-knot nematodes.

Alyceclover Line	<i>M. incognita</i>	<i>M. hapla</i>
Florida Common	susceptible ¹	susceptible
FL-3	susceptible	susceptible
FL-5	partially resistant	susceptible
FL-7	resistant	susceptible
FL-9	susceptible	partially resistant

¹Terms based on nematode reproduction.