UNUSUAL CROPS FOR SUPPRESSING ROOT-KNOT NEMATODE INFESTATIONS IN VEGETABLE CROPS IN FLORIDA.

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Crop rotation has long been recognized as a way to reduce population densities of plant-parasitic nematodes (Johnson, 1982). Recent interest in unusual crops with ability to suppress nemarodes (Rodríguez-Kábana *et* al., 1988) has stimulated research with both unusual and traditional rotation crops to reduce populations of root-knot nematodes (*Meloidogyne* spp.) before planting susceptible vegetable crops. Several candidate rotation crops were evaluated in microplots and in the field in north Florida for their ability to suppress root-knot nematodes and enhance yields of a subsequent crop of yellow squash (*Cucurbita pepo*) or eggplant (*Solanum melongena*).

The effects of 12 summer crop rotarion treatments on population densities of *Meloidogyne arenaria* race 1 and on yields of subsequent spring vegetable crops were determined in microplots (McSorley *et* al., 1994a). The crop sequence was as follows: (i) rotation crops during summer 1991; (ii) cover crop of rye (*Secale cereale*) during winter 199 l-92; (iii) squash during spring 1992; (iv) rotation crops during summer 1992; (v) rye during winter 1992-93; (vi) eggplant during spring 1993. The 12 rotation treatments were castor *(Ricinus communis*), cotton (*Gossypium hirsutum*), velvetbean (*Mucuna deeringiana),* crotalaria (*Crotalaria spectabilis*), fallow, hairy indigo *(Indigo/era hirsuta*), American jointvetch (*Aeschynomene americana),* sorghum-sudangrass *(Sorghum bicolor x S. sudanense),* soybean *(Glycine* mar). horsebean (*Canavalia ensiformis*), sesame (*Sesamum indicum*), and peanut *(Arachis hypogaea*). Compared to peanut, the first eight rotation treatments resulted in lower ($P \leq 0.05$) numbers of *M. arenaria* juveniles on most sampling dates. Soybean, horsebean. and sesame rotations were less effective in suppressing nematodes. Yield of squash was greater ($P \leq 0.05$) following castor, cotton, velvetbean, and crotalaria than following peanut. Compared to the peanut rotation, yield of eggplant was enhanced ($P \leq 0.10$) following castor, crotalaria. hairy indigo, American jointvetch, and sorghum-sudangrass.

The effects of eight summer rotation crops on nematode densities and yields of subsequent spring vegetable crops were determined in field studies conducted in north Florida from 1991 to 1993 (McSorley *et* al., 1994b). The crop sequence was as follows: (i) rotation crops during summer 1991; (ii) cover crop of rye during winter 1991-92; (iii) 'Lemondrop L' squash during spring 1992: (iv) rotation crops during summer 1992; (v) rye during winter 1992-93; (vi) 'Classic' eggplant during spring 1993. The eight summer crop treatments were as follows: 'Hale' castor, velvetbean, sesame, American jointvetch, weed fallow, 'SX-17' sorghum-sudangrass, 'Kirby' soybean, and 'Clemson Spineless' okra *(Hibiscus esculentus*) as a control. Rotations with castor, velvetbean, American jointvetch, and sorghum-sudangrass were most effective in maintaining the lowest population densities of *Meloidogyne* spp. (a mixture of *M. incognita* race 1 and *M. arenaria* race 1), but the stubby-root nematode (*Paratrichodorus minor)* built up in the sorghum-sudangrass rotation. Yield of squash was lower ($P \leq 0.05$) following sorghum-sudangrass than after any of the other treatments except fallow. Yield of eggplant was greater ($P \leq 0.05$) following castor, sesame, or American jointverch than following okra or fallow.

Several rotation crops evaluated here may be useful for managing nematode population densities on a short-term basis and improving yield of a single subsequent vegetable crop. Limitations are efficacy through only one vegetable crop, and lack of research information about effects of many other potential rotation crops and cultivars on all common plant-parasitic nematodes.

References

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