

RESEARCH NOTES

IMMUNITY OF SUGARCANE TO THE RENIFORM NEMATODE

The reniform nematode, *Rotylenchulus reniformis* Linford and Oliveira, 1940, is one of the plant-parasitic nematodes most frequently found in Puerto Rican soils. This nematode, as well as all other plant-parasitic forms, is very difficult to control by soil fumigation in the heavy clay soils of Puerto Rico. Recent studies on host relationship have demonstrated that *Rotylenchulus reniformis* has a very wide host range, but that there are plants that are immune to it.

Early in 1960 the author, in his inoculation tests, demonstrated that the reniform nematode could not live in sugarcane roots. Ayala,¹ in 1962, studying the pathogenicity of *Rotylenchulus* to various host plants, found sugarcane to be completely free of this nematode after 4 months of inoculation. The same year Birchfield and Brister,^{2,3} in the State of Louisiana, came to the conclusion that sugarcane is immune to this nematode.

A greenhouse experiment was conducted in which naturally infested field soil, having an average of 600 reniform nematodes per 600 cc. of soil, was planted to the following plants: Marigolds, pigeonpeas, *Crotalaria*, sugarcane, Pangola, Merker, and Para grasses. After a 1-year study it was found that sugarcane, *Crotalaria*, Pangola, Merker, and Para grasses gradually reduced the reniform nematode population to complete eradication. Both marigolds and pigeonpeas increased *Rotylenchulus reniformis* to high numbers, with pigeonpeas producing the highest population.

Since soil samples from fields planted to sugarcane in most cases contain reniform nematodes, the question arises as to whether this nematode lives on the weeds growing in sugarcane fields. However, the results obtained in the greenhouse were verified in a sugarcane field experiment, with an average reniform nematode population of 800 per 600 cc. of soil. In this case the weeds were eliminated as soon as they germinated. A gradual reduction of the reniform nematode was observed until after 26 months, when its presence could not be detected in the soil samples.

There is the possibility that sugarcane could be used in crop rotation where the reniform nematode is a serious pest. Ayala,⁴ in 1961, reported

¹ Ayala, Alejandro, Pathogenicity of the reniform nematode to various hosts, *J. Agr. Univ. P.R.* 46 (2) 73-82, 1962.

² Birchfield, Wray, and Brister, Luther R., New hosts and crop plants resistant to the reniform nematode, *Phytopath.* 52 (8) 725 (abs.), 1962.

³ ———, New hosts and nonhosts of reniform nematode, *Plant Dis. Rptr.* 46 (9) 683-5, 1962.

⁴ Ayala, Alejandro, An analysis of the quantitative and qualitative composition of the nematode population in pineapple fields in Puerto Rico, *J. Agr. Univ. P.R.*, 45 (4) 265-99, 1961.

that this nematode is the most abundant parasitic form found in pineapple fields in the Island. In view of this fact an experiment is underway in which sugarcane and Pangola grass are rotated with pineapple.