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RESISTANCE IN SOYBEANS TO ROOT-KNOT NEMATODES

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RESISTANCE IN SOYBEANS TO ROOT-KNOT NEMATODES

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SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
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ABSTRACT

Rodil, Avelina, P., University of the Philippines at Los Baños,
March, 1978. Resistance in Soybeans to Root-Knot Nematodes.

Major Professor: Dr. Manolo B. Castillo

Twenty-eight soybean varieties were found resistant to mixed cultures of M. incognita, M. acrita, M. arenaria, and M. javanica. The resistance of Strain #12, Strain #15, Strain #78, Strain #99, Tainung #3, Tainung #4, K 475, L 114, and TK #5 to each of M. incognita, M. arenaria and M. javanica was manifested at the 25- and 50- egg mass inoculum levels/pot. Resistance generally consisted of reduced gall formations, numbers of nematode recoveries from roots and soil and numbers of eggs/egg mass. Percentage yield reductions were also lower in resistant varieties than in susceptible Clark 63, although not necessarily shown by statistical analyses. Root and top weights of resistant varieties were either not affected, reduced or increased by nematode inoculations, depending on nematode species and soybean varieties.

Based on susceptibility ratings, determined from infection, reproduction and yield reduction indices, rankings in terms of resistance generally varied with inoculum level and nematode species.

This suggested the differences in critical levels among resistant varieties and in host specificities among nematode species. Unlike in Clark 63, infection, reproduction and yield reduction indices were not directly related in resistant varieties, indicating that the varieties were not necessarily resistant to particular nematode species for the same reason.

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INTRODUCTION

The current supply of soybeans in the country cannot cope with the ever-increasing domestic demand particularly for feeds. Thus, annual importations amounting to P70 million in foreign exchange are made annually (Cagampang, Lantican, Ballon and Legaspi, 1974).

Limited hectarage devoted to the crop and low yields are among the major factors responsible for the present sad state of the soybean industry. The situation is aggravated by diseases including root-knot. A nationwide survey revealed the prevalence of root-knot nematodes (Meloidogyne spp.) in soils grown to soybeans (Castillo, 1975). These nematodes are believed to play a significant role in soybean production in the country.

This study was designed to search for resistance in soybeans to the commonly occurring root-knot nematode species, to determine the nature of resistance in terms of plant reactions, and nematode infection and reproduction, and to compare the degrees of resistance of selected varieties.