IDENTIFICATION, PATHOGENICITY, SUSCEPT RANGE AND LIFE CYCLE OF *TYLENCHORHYNCHUS* SPECIES ASSOCIATED WITH SUGARCANE (*SACCHARUM OFFICINARUM* L.) IN THE PHILIPPINES

MULYADI

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ABSTRACT

MULYADI, University of the Philippines at Los Baños, July, 1984. Identification, Pathogenicity, Suscept Range and Life Cycle of Tylenchorhynchus Species Associated with Sugarcane (Saccharum officinarum L.) in the Philippines.

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Two species of Tylenchorhynchus, T. annulatus (= T. martini) and T. cylindricus, were found associated with sugarcane in the provinces of Laguna, Batangas, Pampanga and Tarlac, Philippines. T. annulatus was recorded in samples collected in Laguna, Batangas, Pampanga and Tarlac, whereas T. cylindricus was found only in Tarlac.

T. annulatus was pathogenic to potted sugarcane var. Phil. 56226. Height of sugarcane at 400, 600 and 1000 inoculum level/pot, was significantly lower than the control, by 10.44%, 11.41% and 11.79%, respectively, 20 weeks after inoculation. Top weight reduction at 400, 600 and 1000 inoculum level/pot were 29.99%, 33.48% and 39.29%, respectively, as compared with the control. With 400, 600

and 1000 inoculum levels/pot, fresh root weights were reduced by 46.55%, 47.14% and 48.90%, respectively, as compared with the control. The average nematode population at 50, 100, 200, 400, 600 and 1000 inoculum level/pot, increased by 493, 2248, 2616, 5828, 6039 and 7184 or 9.86, 22.48, 13.08, 14.57, 10.06 and 7.18 folds, respectively.

T. annulatus reproduced on several plant species. Based on reproduction indices corn and sorghum were considered as excellent hosts, rice as intermediate host, purple nutsedge and Bermuda grass very poor hosts, and soybean, tomato, cotton, tobacco, peanut, mungbean, itch grass, spiny amaranth and wire grass as nonhosts.

The life cycle of T. annulatus on rice seedling in 1% plated sterile water agar was completed in 20-22 days. The egg stage lasted from 4-5 days; the second stage larvae, 3-4 days; the third stage larvae, 5-6 days; the fourth stage larvae, 3-4 days. The developmental stages of T. annulatus required four molts. A female can lay 6-9 eggs in 4-6 days, sometimes two eggs are laid in one day.

T. annulatus fed only on epidermal cells in the region cell elongation, never invading the roots, hence they are regarded as ectoparasitic nematodes.

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INTRODUCTION

Sugarcane (Saccharum officinarum L.) is an important export crop of the Philippines (Hernandez, 1976). It is planted to more than half a million hectares of land or roughly 4% of the total arable land of 11.5 million hectares. Of these area 60% are in Negros and Panay Island, 24% in Luzon and the other 16% in Eastern Visayas and Mindanao (Mendoza, 1982).

As an export product, sugar provides an average of 20% of foreign exchange earnings during the past years. As an industry, it has provided employment to some 550,000 agricultural workers, representing 4% of the total agricultural labor force. The industrial sector has over 2% of the total manufacturing labor force in 1976. More than five million Filipinos are directly or indirectly dependent on the sugar industry (Mendoza, 1982).

Like other crops, sugarcane is plagued by numerous pests and diseases. One of the most important diseases is caused by plant parasitic nematodes. In the tropics sugarcane grows best, more or less continuously and