centration of aldicarb in storage roots was sufficient to prevent development of the nematode on root slices from 6 of 8 plants, whereas only 2 nematodes developed on each of 3 out of 6 root slices obtained from 3 treated plants. Root slices from plants grown in untreated soil averaged 192 developing nematodes per slice 25 days after inoculation.

OTHER CONTRIBUTIONS -- OTRAS CONTRIBUCIONES

NEMATODES IN DISTILLED WATER [NEMATODOS EN AGUA DESTILADA].

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ABSTRACT

Large numbers of bacteriophagous nematodes *Rhabditis* sp. were found infesting a distilled water system. Five additional systems were examined to determine if nematode contamination was present in other systems. Two of 6 samples were bacteria infested. A sample from the original nematode-infested system yielded a single live *Rhabditis* sp. Fungi (one sample), algae (6 samples), and amoeba were also found in the samples.

INTRODUCTION

In April, 1969, a sample of discolored heat-distilled water submitted to the laboratory of the Bureau of Nematology was examined for contaminants. The water originated from a system which had been in operation for several months.

The examined water contained large numbers of a bacteriophagous nematode, *Rhabditis* sp. A survey of the distilled water storage tank yielded 359 of the nematodes from approximately 2 liters of water.

Inspection of the distilling system revealed several places where the system was open to the atmosphere and consequently to contamination by airborne and surface organisms.

In May, 1971, a second sample of discolored heat-distilled water was received for contamination analysis. Analysis revealed the following organisms in the water: *Aspergillus* sp., iron fixing bacteria, green algae filaments and unicells, blue green algae filaments and coccoid chains, one specimen of a bacteriophagous nematode (*Rhabditis* sp.) and some unidentified fungus spores.

An inspection of the distilling apparatus and storage system revealed considerable rust about the storage tank openings and fittings. This system was also found open to the atmosphere in three places.

In order to ascertain if other distilled water systems might be contaminated with living nematodes and/or other organisms, a survey was made of water from the original system evaluated and 5 other systems housed in 5 separate non-contiguous buildings.

All apparatus used in the collection and examination was autoclaved prior to using. One qt of distilled water was drawn from a dispensing tap in each system. A small volume was pipetted from each sample and transferred to a sterile nutrient

agar plate. One sample of boiled distilled water served as a control. Each sample was sieved through a clean autoclaved 3" diam 325-mesh sieve. The sieve was flushed with scalding water between samples. Sieve residues were washed into a centrifuge tube by flushing with water from the same sample which had already passed through the sieve. The centrifuge tubes were plugged with cotton. After 2 hrs the debris at the bottom of each centrifuge tube was pipetted out and examined on a precleaned, new slide. This procedure was repeated 12 hrs later. Two evaluations were made, one in 24 hrs and one in 72 hrs.

No bacterial or fungus colonies developed on agar plates inoculated from the control and 3 other samples. Two of the remaining samples produced an excess of 500 bacteria colonies in 24 hrs. The remainder produced 25. In 72 hrs all 3 infested plates had an excess of 500 colonies of bacteria. One culture had colonies with 2 color strains, a white and a pink. Another culture had colonies with 2 different growth characteristics. A single larval *Rhabditis* sp. was recovered from the system where the nematodes had previously been found. One sample contained 3 kinds of fungus spores. Two spores were attached to mycelia. In 6 of the 7 samples examined, short filaments of green algae were found which appeared to belong to the genus *Ulothrix*. Two pollen grains were found in 1 sample, and 1 amoeba was found in each of 2 samples.

Results of the two initial examinations revealed considerable contamination of the distilled water with many kinds of organisms, and two basic weaknesses in the distilled water systems. Contamination occurred in places where the apparatus was open to the atmosphere. All open places were correctable. The location of glass components in the presence of light could have contributed to algae growth within the system. Inorganic contamination resulted from fittings and components constructed of non corrosion-resistant materials. Such problems can easily be avoided by use of proper corrosion-resistant fittings.

It would seem justifiable for all research units using distilled water to periodically examine the effluent at its final outlet in order to preclude jeopardizing an experiment. For critical experiments heat treatment of distilled water might be advisable when not already a standard practice.

RESUMEN

Gran número de nematodos bacteriófagos *Rhabditis* sp. fueron hallados infestado un sistema de agua distilada. Cinco sistemas adicionales fueron examinados con el propósito de determinar contaminación en esos otros sistemas. Dos de 6 muestras se hallaron infestadas de bacterias. Una muestra extraida del primer sistema nemátodo infestado mostró solamente un *Rhabditis* sp. vivo. Hongos (un espécimen), algas (6 espécimenes), y amebas fueron hallados en las muestras.

A COMPARISON OF ANNUAL AND TRIENNIAL APPLICATIONS OF DBCP FOR CONTROL OF THE CITRUS NEMATODE [UNA COMPARACION DE APLICACION ANUAL Y TRIENAL DE DBCP PARA EL CONTROL DEL NEMATODO CITRICO]

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ABSTRACT

Annual application of DBCP (1,2-dibromo-3-chloropropane) (1.3 gal/A, 12.1 lb/gal ai, EC) to grapefruit trees infected with the citrus nematode resulted in more