

Million Dollar Study Targets Plant Disease Organism

By Lucy Coulbourn
Dr. Hedwig Hirschmann Triantaphyllou, professor of plant pathology at N.C. State University, has spent 28 years studying a barely visible, parasitic worm which attacks plants and limits food production the world over.

Her work is basic to research aimed at control of plant parasitic nematodes. She identifies and classifies the hundreds of kinds of this plant pest which is probably responsible for more damage to economically important crops than any other.

Dr. Triantaphyllou's study of root-knot and cyst nematodes provides an essential part of the foundation for State's international nematode research project, a five-year, million dollar project

sponsored by the Agency for International Development (AID).

Her taxonomic work has been ongoing for years and is funded principally by the N.C. Agricultural Experiment Station. Her work and the project mutually enhance each other in that they share resources and provide the means to share and compare findings.

Identification First

Dr. J.N. Sasser, coordinator of the international nematode project, said, "The importance of her work is that identification of the species we're working with is basic to their control."

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Dr. Triantaphyllou first selected the nematode for study when she was a university student in Germany. Then, she had little idea of the importance of potential growth of research in the field or that it would take her a continent away to live and work. In the meantime she has become a recognized world authority on the anatomy and morphology (form and structure) of plant parasitic nematodes.

Some species of nematodes, she explained, occur everywhere in the soil. Related to the hookworm, some attack animals and some are even beneficial. But the plant parasitic nematodes are by far the most significant ones from an economic point of view.

These species occur worldwide, yet do their principal damage in tropical and sub-tropical climates. With North Carolina's sub-tropical climate, nematodes have long been a problem to farmers in the state.

"My major responsibility is to clarify the relationship among the species and populations of certain plant parasitic nematodes which mainly include the root-knot and cyst nematodes," Dr. Triantaphyllou says.

Attack Roots

These nematodes attack the roots of plants and prevent them from efficiently using moisture and minerals in the soil, resulting in reduced crop yield and poor crop quality.

They may die with the host plant, but the eggs remain in the soil waiting to attack the next crop that is planted.

The most effective means of control found so far is that of crop rotation combined with soil fumigation and the use of resistant varieties of a crop in an infested field. Different crops appear to be susceptible to some species of nematodes and not to others. That is why it is so important to know exactly what species of nematodes cause which problems.

New Area Opened. Modern electron and scanning microscopes have opened up a whole new area for us," Dr. Triantaphyllou says. (Light microscopes of earlier years had magnification power of only about 1,000 times).

With magnification of up to 20,000 times on the new microscopes, it has now become possible to compare minute differences in anatomy. As a result, she is discovering new species

that were masquerading among other species.

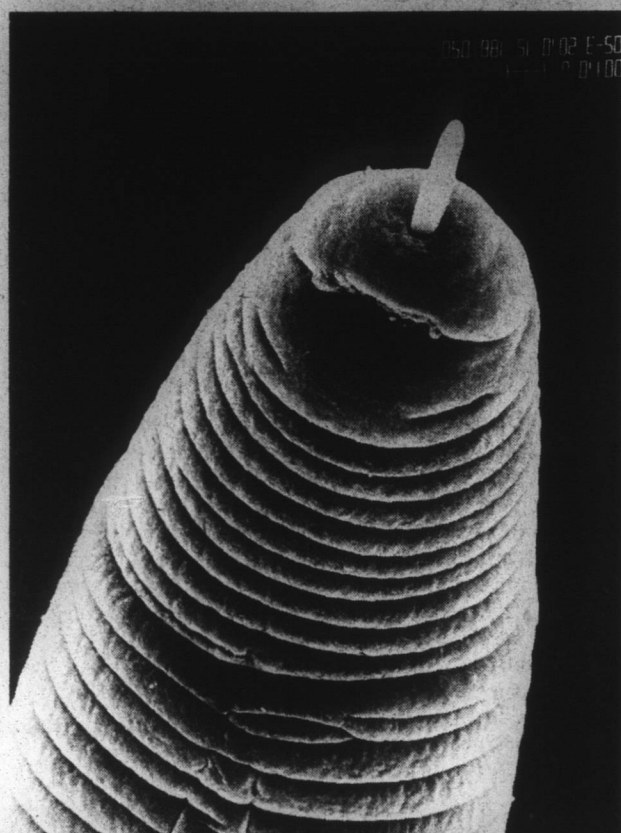
Her husband, Dr. Anastasios C. Triantaphyllou, professor of genetics, is making a cytogenetic study of nematodes in which he isolates species by the number of their chromosomes. She then looks for morphological differences and so far has been finding them. She also verifies these new species with the findings of other scientists in

areas such as the biochemical and the host plant differences of the nematodes.

Once she is certain of a species and what anatomical structures can be used as the most reliable means of identification, she must then write a detailed scientific description which other plant pathologists can use as a guideline for recognizing the species.

This taxonomy serves as a worldwide index for scientific research in nematology.

Dr. Triantaphyllou earned her Ph.D. at the University of Erlangen, Germany, in 1951. She came to N.C. State in 1954. Since that time she has published in major scientific journals and has served on the editorial board of "Nematologica, An International Journal of Nematological Research," and the "Journal of Nematology."



RARE 'PORTRAIT' — Magnified 7,000 times by an electron microscope at N.C. State University, this "portrait" of a microscopic plant disease organism — the root-knot nematode — is used in research on identifying species of the parasite.

Centralized School Menus

Centralized breakfast and lunch menus in Edenton-Chowan Schools for the next week include:

Friday — Juice, sausage links, buttered grits and milk. Tuna salad with lettuce and sliced tomatoes, green beans, pears, rolls and milk.

Monday — Apple sauce, cheese toast and milk. Cheeseburger with bun, french fries, ketchup, mustard, apple pie and milk.

Tuesday — Juice, cinnamon bun, bacon crisp, and milk. Pizza, carrot and celery strips, green beans, peanut clusters and milk.

Wednesday — Juice, scrambled eggs, buttered toast and milk. Baked ham, steamed cabbage, pickled beats, apple sauce, rolls and milk.

Thursday — Juice, sausage in a flap jack, syrup and milk. Sloppy joe with bun, french fries, tossed salad, cookies and milk.

THAT'S A FACT

IMPORT!

ALTHOUGH OVER TWO BILLION QUARTS OF ICE CREAM ARE CONSUMED EACH YEAR IN THE U.S., THE "INVENTION" OF THIS DELICIOUS TREAT TOOK PLACE IN THE ORIENT HUNDREDS OF YEARS AGO. IT WAS MARGO POLO (1254-1324) WHO BROUGHT BACK THE IDEA FROM CHINA.

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