CAES
The Connecticut Agricultural Experiment Station
Putting Science to Work for Society
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PRESS RELEASE

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FFAR Awards the Connecticut Agricultural Experiment Station $449,989 to Advance Nematode Control Solutions

New Haven, CT - The Foundation for Food & Agriculture Research (FFAR) has awarded the New Innovator in Food & Agriculture Research Award to Dr. Raquel Rocha, a plant pathology scientist at the Connecticut Agricultural Experiment Station (CAES). This three-year, $449,989 grant will fund cutting-edge research into the molecular genetics of plant-nematode interactions, with the goal of developing crops that utilize RNA-based strategies to disable nematode proteins and block the parasite's development in plant roots.

Nematode infections cause an estimated $173 billion in crop losses worldwide each year, with root-knot nematodes (*Meloidogyne* spp.) being one of the most damaging soilborne pests in U.S. agriculture. These nematodes induce large galls—known as "knots"— in plant root systems, disrupting the flow of water and nutrients, reducing crop yields, and sometimes causing total crop failure. "Root-knot nematode infestations remain a formidable challenge, with current management strategies relying heavily on plant resistance," said Dr. Rocha. In her recent work, Dr. Rocha has pioneered techniques to identify and analyze proteins secreted by nematodes into plants by purifying nematode secretion glands and examining their gene expression. Her innovative approach has enabled the discovery of new virulence proteins, which are key to both disease development and plant resistance. "Targeting these proteins paves the way for breeding or engineering crops with broad-spectrum, long-lasting resistance to nematodes."

Dr. Jason C. White, Director of the CAES, states that "this award will enable critical advances in plant pathology, allowing Dr. Rocha and her team to further investigate these recently discovered virulence proteins, using advanced molecular technologies to pinpoint weaknesses in the parasite and refine strategies to prevent infection." The team will also advance the use of RNA interference (RNAi) to develop crops that express specific RNA molecules to block nematode infection at the molecular level. These breakthroughs are expected to yield new nematicide targets and guide the selection of resistant traits in crop breeding programs, providing farmers with more innovative and sustainable solutions to combat nematode threats.

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