

Manipulation of Bio-nanotechnology in Agri-Sector for Pest Control with Special Emphasis to Nematode Problems in Egypt

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Abstract

A Soil nematode infecting plants are one of the most destructive parasites worldwide, it attacking plant root system and feed on the plant nutrients causing lose in the crop yield even plant death by developing galls and necrosis in the root system, lose its ability of absorb nutrients, water and die. The major issue concerning nematode damage to plants is the lack of effective chemical treatment methods, Public concern over the chemical Nematicides is not only their toxicity for health and environmental but also their loss of efficiency after prolonged use. Several control strategies alternative to chemical control that develops recently is production of natural Bio-Nano Nematicides as (green chemical) which act as inhibitors against nematodes population in soil. The Advantages of using bionanocide, its safe organic compound extracted from the plant, it has no residual effect, It gives high ability to reach within the roots to combat nematodes in their phases, and the ability of the compound to rapidly spread in irrigation water which also gives the strength to spread and stay in the soil for a long time. Causing direct death to nematodes after few minutes also has a repellent effect due to the presence of nanoparticles around the roots.

There are more than 800 products as fertilizers worldwide with their effective as nanomaterials, which benefit the plant faster by Increasing photodynamic activity, increasing leaf content of chlorophyll, also product Increase crop capacity to withstand different stress conditions

So Nanomaterials help protect the environment and human health, Increases farm profitability due to reduced fertilizer and spraying costs.

Finally Advantage of using Bio-nanotechnology application in agriculture contributes effectively to increase the productivity of crops, its competitiveness by reducing the residues of fertilizers that economically reflected on farmer field cost, increase export opportunities, more over the development of the new generation of highly specialized save Biocide

Keywords— Green chemistry – Root knot nematode – Bio-Nematicides



Biography:

Sanaa Haroon, Molecular Nematologist MS. PhD Florida University, USA. Director of Nematology and Biotechnology lab, Fayoum University, Egypt. The Egyptian Representative in the International Federation of Nematology till now. Published 76 papers. She has awarded by the Prime Minister in the Global Environmental (Biocontrol), the Excellence prize 2007 in Molecular nematology area and National Promotion for Science from the academy of science in Egypt. Participated in 23 international conferences. Grant coordinator of 20 projects through her scientific life (for USA, Germany, Holland, Sweden, and European Union). Member in 9 scientific organizations. Has international link to (Germany, Holland, USA, Sweden, Australia, Italy, and South Africa). her name listed in the third Edition of leading intellectuals of the world by American Biographical institute.

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