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Essential oils as ecosmart biorational Pesticides: potentials and limitations

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Abstract

Conventional insecticides induce toxicities that endanger the health of the farm operators, consumers and environment. Essential oils (EOs) could be suitable alternative products for controlling pests of medical, veterinary, and agriculture importance. EOs are extracted from various aromatic plants generally localized in Mediterranean and tropical countries. Plant essential oils (EOs) are produced commercially from several botanical sources, mainly form members of the mint family by steam or hydro-distillation. Although plant essential oils have a long history of human uses as fragrances, flavorings, condiments or spices, as well as medicinal uses, development of plant essential oils as commercial insecticides has only occurred within the past decade.EOs adversely affect pests though alteration of their growth and development as well as feeding, mating, and oviposition behaviors. EOs are advantageous due to their low mammalian toxicity, eco-safety, low chances of acquiring resistance, low cost of the active ingredients, reduced number of applications, higher popularity with organic growers and environmentally conscious consumers, and suitability for urban areas, homes and other sensitive areas such as schools, restaurants and hospitals. EO- based pesticides find their way to the market and considered to be an alternative means of controlling many harmful insects and their rapid degradation in the environment have increased specificity that favors beneficial insects. EOsare best suited for use in organic food production in industrialized countries. In addition, they can play a much greater role in developing countries as a new class of ecofriendly products for controlling pests and stability of EOs can be influenced through microencapsulation or nanoencapsulation.

Biography

Hanem Fathy Khater made several international scientific publications (papers and chapters). His researches mainly focused on (contemporary medicine) natural control of several insects of medical and veterinary importance such as mosquitoes, house flies, lice, ticks, and green bottle flies to avoid environmental pollution with insecticides as well as control of several parasites using safe and natural materials to avoid disinfectant and drug resistances and environmental pollution. He completed his doctoral degree in USA, at the department of Entomology, College of Agriculture, food and Natural resources, University of Missouri- Columbia, USA. In addition, his articles are published at “Al Watan”, the 1st Kuwaiti newspaper, for medical and environmental awareness for the public.