

THE INFLUENCE OF NANOMAGNETIC PARTICLES ON *Trichogramma* sp SEX RATIO AND PROLIFICACY

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Abstract. *Trichogramma* is one of the most significant egg parasitoid in the biological and unpolluted pest control.

Key words: *Trichogramma* sp; Nano Magnetic Particles (NMPs), Sex Ratio, Prolificacy;

Introduction

The extension of pest biological control represents one of the perspective trends in plant protection. Different species of *Trichogramma* are released to control more than 25 different caterpillar pests attacking corn, vegetables, sugar beets, fruit and forest trees, spruce and rice, sugarcane, cotton, pine tree (in Romania as well as all over the world respectively; Ryvkin, 1959). *Trichogramma* wasps occur naturally in almost every terrestrial and some aquatic habitats (Kehail et al., 2007). Their distribution is done according to the cultivated area, crops, pest attack and species. In some Europe Countries (France, Germany, Republic of Moldavia and Switzerland) an important corn areas were treated with *Trichogramma* against European corn borer (Hassan, 1994). In Romania research programs (BIOTECH and PNII) were initiated which led to developing models that can improve the wasp biological parameters for field delivery.

To increase the biological efficiency of the parasite different measures can be used (Consoli & Parra, 1997). Among them we introduced Magnetic Fluids (MFs), mixtures of Nano-Magnetic Particles (NMPs) as active part. The use of NMFs was desired as an alternative method to increase wasp's biological parameters with a low production costs.

Magnetic Fluids are any kind of fluid with magnetic properties, representing an appart material, pointing out and inducing new phenomena. Ferro Fluids / Magnetic Fluids or Nano Magnetic Fluids are ultrastable colloids of magnetic nanoparticles in water and organic carriers (O'Connor, 1962; Papell, 1965). Electrical conductivity ($\sigma = 0$) and magnetic permeability ($\mu \geq \mu_0$) are important parameters on hydrodynamics of ferrofluids (magnetic fluids) under the action of an applied magnetic field (Neuringer&Rosensweig 1964).

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