

Biological Control Agents of Mites

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Abstract

One of the methods used to reduce their negative effects in pest control with synthetic pesticides is biological control. Phytoseiid mites are used as biological control agents for management of pest mites of agricultural and horticultural plants. These mites are efficient predators able to control plant parasitic mites and small arthropods. This review provides overview biological control and using predatory mites.

Introduction

Initially, during the centuries development of agriculture, the use of all kinds of technical and technological tools to meet the needs of people was very important. Therefore, the use of chemical pesticides in traditional agriculture has been used frequently and intensively during pest and disease management. These pesticides, which are used to control pests in industrial agriculture, have caused damage to humans and the environment over time. Up to now (presently thorough out the globe) approximately more than two million tons of synthetic pesticides are used, of which 47.5% herbicides, 29.5% insecticides, 17.5% fungicides [1]. Pesticides use is estimated to reach 3.5 million tons, in 2020 [2]. Nowadays, applications that are precision to human and environmental health have started to attract increasing attention. The European Union states that the use of pesticides should be reduced by 50% until 2030 for the sustainability of Farm to Fork (F2F) and Biodiversity (BDS) [3].

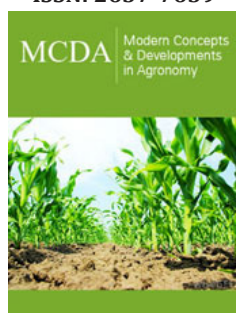
Biological control applications, in which the control of pests and benefits included in the integrated control management (IPM), are used all over the world. Living organism live in harmony with each other in nature. Biological control includes predators, parasitoids and entomopathogens used in the control of pests such as insects, mites, fungi, viruses and weeds that cause damage in cultivated plants [4].

Biological control against insects and mites is part of Integrated Pest Management (IPM), in many parts of the world and it's very important to IPM [5]. There are many pests in the greenhouse and open field. One of the important groups is mites. Mites are small arthropods, and most of them are tiny less than 1mm length. They have been seen for the first time Robert Hook [6]. Plant parasitic mites are consisting of about 55.00 species and an estimate 1 million more species await discover [7]. Plant pest mites so called Spider mites (Tetranychidae-Acari) are polyphagous herbivores. Phytoseiid mites play role control to phytophagous mites, especially eriophyid and tetranychid mites [8,9]. Two of the natural enemies used in the biological control of red spiders, *Phytoseilus persimilis* and *Amblyseius californicus*.

Phytoseilus persimilis is the natural enemy of the red spider and its origin is the Mediterranean, it reproduces faster than prey and they find prey easily. It is produced commercially in Turkey and Europe [10]. *Amblyseius californicus* is also known as *Neoseiulus californicus*. Although the origin of this mite is in California and Florida, it is also common in the Mediterranean [11-13].

Both predator mites are applied against harmful red spider [14] in ornamental plants, agriculture and horticulture plants, very successfully. Phytoseiid mites that are able to reduce the population of spider mites. Biological control is not based on the production of beneficial and natural enemies, but on the protection of those present in nature. Lastly, in the control of pests, less use of chemicals will increase the success of biological control in the future. In addition the biological control is sustainable and has no negative effects on the environment, it makes it more advantageous than other control methods.

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