

Opinion

Nematicides in Egypt

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Abstract

Plant-parasitic nematodes (PPNs) are famous aggressive pests that attack several crops worldwide. A lot of farmers are suffering from nematode diseases which cause critical crop losses. At the same time, the most of available solutions for this problem are depending on synthetic nematicides. These chemical nematicides not only cause environmental and health problems but also may cause resistance in nematodes. Despite the occurrence of resistance in nematodes under field conditions still less clear. Therefore, this note is about the registered nematicides in Egypt which may help those who are interested in nematicides. Also, the chemical group and mode of action of nematicides were mentioned according to the insecticide resistance action committee (IRAC) [1] and fungicide resistance action committee (FRAC).

Introduction

Globally, the production of nematicides in pesticide markets was estimated at 1.3 billion U.S. dollars in 2020 [2]. Moreover, the demand for nematicides is expected to increase gradually in markets to reach 1.6 billion U.S. dollars by 2025 [2].

In Egypt, diffusion and the aggressiveness of plant-parasitic diseases were noticed during the last five years, therefore, it has expected that the demand for nematicides will be increase during the next decade. But unfortunately, synthetic nematicides may have a lot of environmental and medical defects. So, this may create more interest in the probable alternatives to synthetic nematicides in the nearest future.

Indeed, nematicides were originally considered insecticides and acaricides, but lately, a member of the fungicides group was joined to the nematicides family namely; fluopyram [3]. Moreover, different synthetic nematicides belong to several groups of pesticides. The following two sections clarified the registered nematicides in Egypt [4].

Registered nematicides in Egypt

1. Non-fumigant nematicides

Organophosphate group

- Cadusafos (20% CS and 10% G)
- Ethoprophos (40% EC, 20% EC and 10% G)
- Fenamiphos (40% EC and 10% G)

- Fosthiazate (10% G, 30% CS and 75% EC)
- Imicyafos (30% SL)

Carbamate group

- Oxamyl (24% SL, 10% G)

Avermectins group

- Abamectin (2% and 5% SC)

TriTerpinoides group

- Azadirachtin (3.2% EC)

Pyridinl-ethyl-benzamides group

- Fluopyram (40% SC)

2. Fumigant nematicides (soil sterilizes)

Compounds in this section are mostly used in protected cultivations (under greenhouse conditions). Most organosulfur compounds are considered methyl isothiocyanate (MITC) generators [5-8].

Organosulfur group

- Dazomet (96% MG)
- Dimethyl disulfide (94.8% EC)
- Metam potassium (69% SL)
- Metam sodium (51% SL)

More Information

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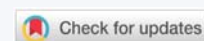
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Organochlorine group

- 1, 3 Dichloropropene (60.8%) + Chloropicrin (33.3%) (94.1% EC)

- Table 1

Nematicide formulations

All registered nematicides in Egypt included certain formulations such as EC, G, SL, SC, CS and MG. The abbreviation of these formulations was explained in Table 2 [9-11].

Table 1: The nematicide groups and their mode of action.

Nematicide groups	Mode of action
Organophosphate	Acetylcholinesterase (AChE) inhibitors
Carbamate	
Avermectin	Glutamate-gate chloride channel allosteric modulators
TriTerpinoides	Unknown mode of action
Pyridinl-ethyl-benzamides	Succinate dehydrogenase inhibitors (SDHI)- complex II
Organosulfur	non-specific (multi-site) inhibitors
Organochlorine	GABA-gate chloride channel blockers

Table 2: The types of nematicide formulations.

Formulation	Mean of abbreviation
EC	Emulsifiable concentrate
SC	Suspension concentrate
CS	Capsule suspensions
G	Granules
MG	Microgranules
SL	Soluble (liquid) concentrate

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