European Commission

Renewal Assessment Report of the Inclusion of the Active Substance in Annex I of the Regulation (EC) 1107/2009

Oxamyl

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ANNEX B.3
Data on application and efficacy

Rapporteur Member State: Italy
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B.3 DATA ON APPLICATION

Unless specifically indicated, all reports in this section are submitted to address mandatory data requirements for the approval of active substance.

B.3.1 Use of the active substance

Oxamyl manufactured by DuPont is used for the formulation of plant protection products. Oxamyl is used to control a wide range of important plant parasitic nematodes in a range of crops including, but not exclusively, fruiting vegetables, root vegetables, and tobacco.

Oxamyl 10GR, containing oxamyl, on potato is intended to be applied once at planting (BBCH 00). On tobacco, Oxamyl 10GR is intended to be applied once at transplanting (BBCH 00) or one application at pre-planting stage (BBCH 00) of the product evenly soil incorporated to a depth of 5–10 cm.

Oxamyl 10SL is applied on tomato *via* drip irrigation and recommended to be used immediately after transplant; followed by up to three applications each starting with BBCH 11,(10 to 14 days after transplant application), and up to 42 days after transplanting at planting. Considering the solarisation use, Oxamyl 10SL is applied *via* drip irrigation with transparent plastic foil covering soil or before transplant on bare soil (approximately between June and September) with the application to bare soil covered with plastic foil to control soil nematodes before transplant.

B.3.2 Function

Oxamyl acts as a non-fumigant nematicide for the control of a range of plant parasitic nematodes.

Oxamyl is systemic in plants. Uptake by plants also occurs when the substance (product) is applied to the soil system. In this case, oxamyl is absorbed by the root of plants and translocated to leaves. Direct activity on nematode control occurs in this case as well as control of pests on above-ground plant material.

B.3.3 Effects on harmful organisms

Oxamyl belongs to the chemical class of carbamate pesticides. It extends its control on harmful organisms by a neurotoxic mechanism. Toxic effects are fairly rapid, leading to paralysis in nematodes.

Oxamyl is neurotoxic and affects the normal functioning of the central nervous system (CNS) of the pest species. Nervous system functioning is disrupted by the action of oxamyl on the acetylcholinesterase system at the synapse of the nerve axons. Inhibition of the enzyme acetylcholinesterase by oxamyl results in the blockage of nerve signals resulting in paralysis and death. Entry of oxamyl to the target site is through the cuticle (contact) or by ingestion.

The symptoms of plant damage, namely reduced nutrient uptake leading to poor growth and poor physiological conditions, are prevented.

B.3.4 Field of use envisaged

Oxamyl-containing products are used in agriculture *via* broadcast or in-furrow application and soil incorporation prior to or at (trans) planting or sowing, and *via* drip irrigation in fruiting vegetables and various field crops.

Detailed information on these uses is provided in the Oxamyl EU Renewal Dossier, Document D, Part 1, DuPont-40925 EU (GAP table).

B.3.5 Harmful organisms controlled and crops or products protected or treated

Oxamyl is used to control a wide range of important plant parasitic nematodes in a range of crops. Nematode pests that are controlled include *Meloidogyne* sp. (rootknot nematodes), *Globodera* and *Heterodera* sp. (cyst nematodes), *Trichodorus* and *Paratrichodorus* sp. (stubby root nematodes), *Radopholus similis* (burrowing nematode), *Belonalaimus longicaudatus* (sting nematode), *Hiplolaimus galeatus* (lance nematode), *Ditylenchus* sp. (stem and bulb nematodes), and *Pratylenchus penetrans* (root lesion nematode).

B.3.6 Mode of action

Oxamyl inhibits the acetylcholinesterase enzyme in insect synapses. Thus, the conductance of the nerve impulse, which requires acetylcholinesterase functioning from pre- to post-synapse, is disrupted.

Plant parasitic nematodes are generally found free in the soil at some stage in their development. Once the host crop is planted, root exudates attract the nematodes to the root system where they begin feeding. Feeding can reduce root growth, affect availability of water and nutrients, produce galling, and allow infection by plant pathogens and viruses, all of which can significantly reduce yield. Oxamyl controls nematodes by inhibiting the enzyme acetylcholinesterase *via* contact and ingestion routes, thus acting directly on the nervous system of the target pest. Oxamyl binds preferentially to the acetylcholinesterase enzyme, causing continual electrical discharging of the nervous system. This persistent firing eventually leads to fatigued, non-functioning nerves, uncoordinated control of life systems, and death.

The enzyme inhibition results in paralysis of the nematode (nematostatic activity) when applied at the recommended dose rate for the crop, preventing feeding and disrupting the nematode life cycle. Oxamyl also inhibits egg or cyst hatch in many nematode species. The type of nematicidal activity observed depends on the concentration of oxamyl in the soil.

No evidence of resistance to the studied nematodes is pointed out.

B.3.7 Information on the occurrence or possible occurrence of the development of resistance and appropriate management strategies

Oxamyl is classified as an IRAC Group 1A Nematicide and Insecticide (acetylcholine esterase inhibitor). For more information please visit the Insecticide Resistance Action Committee (IRAC) on the web at http://www.irac-online.org. Based on historical use data, it is expected that the risk of development of resistance in plant parasitic nematodes is low.

No evidence of resistance to the studied nematodes is pointed out on the web site http://www.pesticideresistance.org

B.3.8 References relied on

No new studies submitted.