

PESTICIDE TYPE	FUNGICIDE
CHEMICAL CLASS FRAC Code	U15 (proposed as an inhibitor of oxysterol binding proteins)
COMMON TRADE NAMES	Segovis™
MAJOR DEGRADATE	IN-P3X26 (near major degradates include: IN-E8S72, IN-RDT31, IN-RAB06, and IN-QPS10)
APPLICATION RATE (lbs a.i./A)	Single: 0.0260 – 0.2503 Max Annual: 0.1245 – 0.5006
REGISTRATION STATUS	EPA: August 2015 Minnesota: October 2015
TOXICITY PROFILE FOR APPLICATORS	Signal word: Caution IV (oral, dermal, and inhalation)
BASIC MANUFACTURER	DuPont (agricultural) & Syngenta (turf / ornamental)
MDA LABORATORY CAPABILITIES	In discussion

HUMAN HEALTH

NON-CANCER	Acute PAD = N/A Chronic PAD = N/A
CANCER	Not likely to be carcinogenic to humans

Acute and chronic PADs are doses that include all relevant uncertainty and safety factors

ENVIRONMENTAL AQUATIC TOXICITY

FISH	Acute: >345 ppb Chronic: >460 ppb
INVERTEBRATE	Acute: N/A Chronic: 750 ppb
AQUATIC PLANTS	Vascular: 58 ppb Non-vascular: 140 ppb

POLLINATOR TOXICITY

HONEY BEE	Acute Contact: >41.6 µg a.i./bee Acute Oral: >16.8 µg a.i./bee
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Level of Concern (LOC) has been applied to all values.

Values above indicate toxicity (EC₅₀/LD₅₀) from the technical grade active ingredient (TGA).

Introduction

Oxathiapiprolin is currently classified as a U15 fungicide by the Fungicide Resistance Action Committee (FRAC). The active ingredient is considered to inhibit oxysterol binding proteins. The USEPA has unconditionally registered oxathiapiprolin for controlling a broad range of fungal diseases including downy mildew and late blight for a range of crops (vegetables, ornamentals, and turf). Oxathiapiprolin will be marketed as a variety of end use products including: Segovis, Zorvec etc. Oxathiapiprolin can be applied through foliar sprays (ground, aerial, and chemigation), soil applications (in-furrow and banded) and soil drench applications. Application rates range from 0.026 to 0.2503 lb a.i./A at 3 and 14 day intervals. The approved maximum yearly application rate is 0.1245 (foliar) to 0.5006 (soil) a.i./A.

Projected Use in Minnesota

In Minnesota, oxathiapiprolin is approved for use on plants grown in greenhouses, shade houses, nurseries, outdoor ornamentals, and turf. Oxathiapiprolin did not appear in Minnesota extension trials, however, it was found effective in controlling downy mildew of sunflower in trials carried out in North Dakota. In Minnesota this new active ingredient has the potential to help Minnesota farmers in controlling broad range of oomycete diseases including downy mildews and *Phytophthora* spp. In addition to helping manage fungicide resistance through its novel mode of action.

Oxathiapiprolin is marketed as Oil Dispersion (OD) or Suspension Concentrate (SC) end-use products and can be applied using a variety methods including foliar spray, soil, drip, transplant water, and tank-mix application, etc. In Minnesota the following products are registered for use:

- **Segovis™** (EPA Reg. No. 100-1533) – A water based suspension concentrate (SC) foliar spray product containing 18.7% oxathiapiprolin. The USEPA has approved this product for controlling fungal diseases on ornamentals and turf.
- **Orondis™** (EPA Reg. No. 100-1572) – An oil dispersion formulations containing 10.2% oxathiapiprolin. The USEPA has approved this product for controlling fungal diseases on vegetable crops.

Label Environmental Hazards

Water Quality:

- Oxathiapiprolin does not have any major water quality concerns related to transportation. Oxathiapiprolin based product labels carry the statement: do not apply directly to water, or to areas where surface water is present. Do not contaminate water when disposing of washwater or rinsate.

Other:

- The product labels advise to wear long sleeved shirt and pants, shoes and socks.



Toxicology and Exposure

EPA's screening models generate high-end, conservative exposure estimates for active ingredients and toxicologically significant degradates. Model inputs include annual usage at maximum use rates, maximum treated acres, maximum food residues, peak runoff and drift scenarios, etc. Some proposed products, application rates and use scenarios are not relevant to Minnesota. EPA's estimates, therefore, may not reflect future use and impacts in Minnesota.

Human Health

- **Carcinogenic Effects**- Classified as "not likely to be carcinogenic to humans." Based on data, quantification of cancer potential was not required.
- **Drinking Water Guidance**- Oxathiapiprolin is classified as low to moderately mobile based on the adsorption coefficient (K_{oc}) = 12,810 (mL/g). While dietary exposure to oxathiapiprolin may occur through drinking water, no risks of concern are anticipated due to the lack of toxicity at anticipated human exposure levels.
- **Occupational Exposure**- Occupational risks did not exceed EPA's levels of concern.

Environment- Non-target Species

- **Stressor of concern** – Because of highly persistent properties in soil and water, oxathiapiprolin may move from the treated field to surface water through drift, run-off and/or erosion.
- **Aquatic Life Exposure** – Estimates of proposed uses of oxathiapiprolin indicated potential risks to fresh water fish, aquatic invertebrates and plants. The label language is intended to mitigate these risks.
- **Pollinators** – Oxathiapiprolin is practically nontoxic to adult honey bees for acute contact and oral exposure.

Environmental Fate

The fate of oxathiapiprolin in the environment is highly persistent in soil and aquatic environments. Environmental fate characteristics are listed for parent only because of small level of degradate formation (<10%).

Soil

- **Half-life**- Aerobic: 59 to 217 days (moderately persistent).
Anaerobic: 1,505 days (highly persistent).
- **Adsorption**- Oxathiapiprolin has a low to moderate mobility depending upon the soil type. K_{oc} =12,810 (mL/g); water solubility =210 ppm.

Water

- **Surface water**- Because of low solubility in water and high persistence in soil and aquatic environments oxathiapiprolin can move to surface water through run-off, erosion, and spray drift and persist in water with a potential for both short-term and long-term exposure to fish and aquatic invertebrates. Oxathiapiprolin dissipation is very slow in water with half-life of 2,920 days.
- **Groundwater**- While oxathiapiprolin has a low to moderate mobility, it has the potential to reach and persist in groundwater due to its persistence properties.
- **Half-life via hydrolysis**- Stable.
- **Sediment**- Oxathiapiprolin is expected to be relatively persistent in sediment systems.

Air

- **Volatilization**- Low potential for volatilization. Vapor pressure = 8.6×10^{-9} Torr; Henry's Law Constant = 3.5×10^{-8} atm m³ mole⁻¹.

Degradates

Oxathiapiprolin will have a high persistence, while most degradates are expected to form at low concentrations or decline to low concentrations in the environment.