FUNGICIDE

Pyriofenone

Selective fungicide for Powdery mildew

Pyriofenone is a selective Powdery mildew fungicide discovered and developed by ISK.

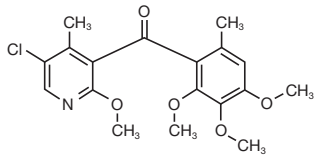
Pyriofenone has a unique mode of action, which disrupts actin function (FRAC code 50). Thanks to this MOA, Pyriofenone strongly inhibits conidia formation to prevent secondary infection and halts all steps of the infection process including hyphal growth and appressoria formation.

Pyriofenone has excellent rainfastness and residual activity and also controls Powdery mildew through vapor action and translaminar movement.

Pyriofenone has outstanding crop safety with little to no impact on beneficial organisms making it an excellent choice as a rotation product for your spray program.

Physico-Chemical Properties

Chemical structure



Class : Aryl-phenyl-ketones
IUPAC name : (5-chloro-2-methoxy-4-methyl-3-pyridyl) (4,5,6-trimethoxy-o-tolyl)methanone
Molecular weight : 365.8
Molecular formula : $C_{18}H_{20}ClNO_5$
Vapour pressure : 1.9 x 10^{-6} Pa (25°C)
Water solubility : 1.56 mg/L (20°C)
Form : White Solid (Powder)
Development code : IKF-309

Toxicology & Ecotoxicology

Rat LD_{50} (oral) : > 2,000 mg/kg (m/f)
Rat LD_{50} (dermal) : > 2,000 mg/kg (m/f)
Rat LC_{50} (inhalation) : > 5.18 mg/L (m/f)

Skin irritation : non irritant (rabbit)
Eye irritation : non irritant (rabbit)
Skin sensitization : sensitizing to skin (guinea pig, Buehler test) negative (LLNA test)

Avian LD_{50} (acute oral) : > 2,000 mg/kg (quail, m/f)
Avian LD_{50} (subacute oral) : > 5,000 ppm in feed (quail)

Fish LC_{50} : > 1.36 mg/L (carp, 96 h)

Bees LD_{50} (acute oral) : > 100 µg a.i./bee (48 h)
Bees LD_{50} (acute contact) : > 100 µg a.i./bee (48 h)

Daphnia magna EC_{50} : > 1.96 mg/L (48 h)

Product

Trade Names	PROPERTY, PROLIVO, KUSABI, UNCICUT, etc.	
Formulations	30%SC, 18%SC	
Registered Countries	Asia	Japan, Korea, etc.
	Europe	Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, France, Finland, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden, UK, etc.
	Oceania	Australia, New Zealand
	Americas	Canada, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Peru, USA, etc.

Always read and follow the product label instructions in your country.

Characteristics

- Specialized in Powdery mildew control
- Unique mode of action (FRAC code 50)
- Inhibits disease at every step of the infection process
- Good vapor action
- Decreases secondary infections by inhibiting conidia formation
- Excellent rainfastness and residual activity
- Outstanding crop safety with little or no impact on beneficial organisms

ISK
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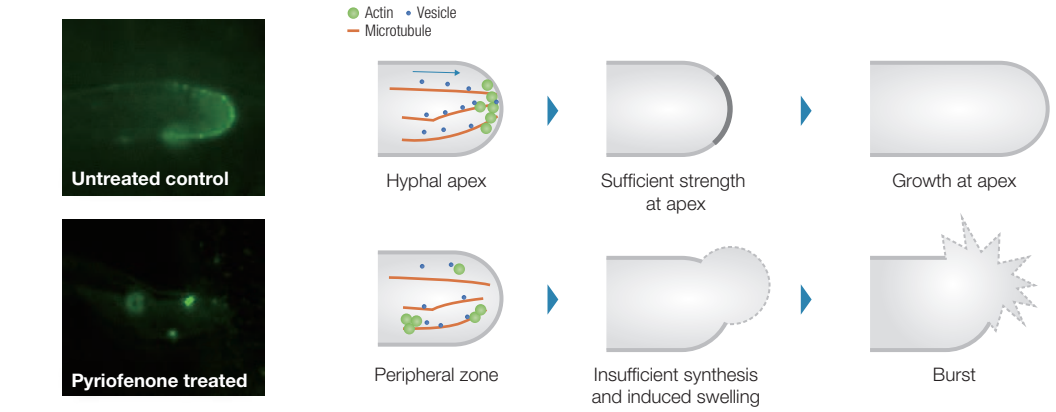
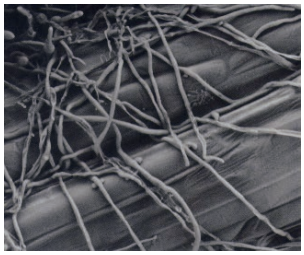
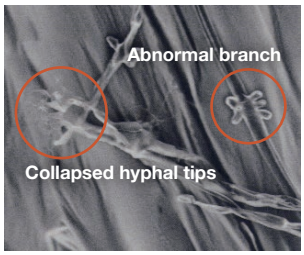
Mode of Action

Subcellular localization of actin at hyphal apex is necessary for polar growth of hypha. Vesicles carrying the material for hyphal growth are transported toward localized actin. It is hypothesized that the mode of action of Pyriofenone is the induction of mislocalization of actin from the apex, resulting in disrupted apical transport, induced swelling, collapse and abnormal branching of hyphal tips.



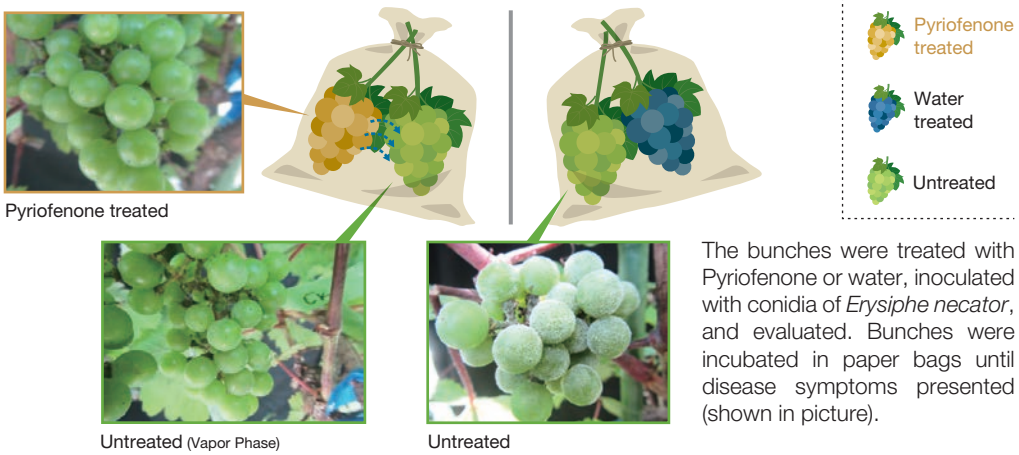

Untreated control



Pyriofenone treated

Vapor action

Pyriofenone moves into the gaseous phase and re-distributes locally. This vapor action allows Pyriofenone to mitigate gaps in spray coverage and control Powdery mildew on nearby untreated plant tissue.



The bunches were treated with Pyriofenone or water, inoculated with conidia of *Erysiphe necator*, and evaluated. Bunches were incubated in paper bags until disease symptoms presented (shown in picture).

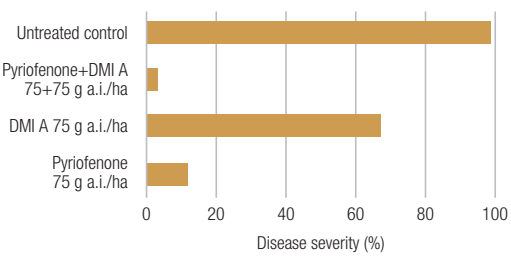
Registered Crops

Apple	Green Pepper
Asian Pear	Tomato
Mango	Spinach Beet
Persimmon	Podded Pea
Grape	Cucurbits
Strawberry	Ornamentals
Berries	Cereals
Eggplant	etc.

Always read and follow the product label instructions in your country.

Cucumber trials (Field trial and Sensitivity test for different MOA fungicides)

Cucumber field trial against Powdery mildew*



Isolate sensitivity test to fungicides with different MOA**

	MIC (ppm)		
	Pyriofenone	QoI	DMI
Isolate 1	0.4	>100	10
Isolate 2	0.4	>100	1

Pyriofenone shows no cross resistance with different MOA fungicides.

MIC (minimum inhibitory concentration) values were evaluated on *Podosphaera* sp.-infected leaf disks floating on solutions containing each fungicide at concentrations ranging from 0.05 to 100 ppm.

Trials were conducted by ISK
*Field trial (2014) **Sensitivity test (2013)

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