

# FUNGICIDE

## CYAZOFAMID

### Selective Oomycete fungicide

Cyazofamid is a selective Oomycete fungicide discovered and developed – on a global basis – by ISK. After the first launch in 2001, ISK has started its commercialization in various crops in many countries.

Cyazofamid, with its unique mode of action, is highly effective against Oomycete diseases. Cyazofamid also has good persistence and offers excellent rain fastness in many crops at low rates.

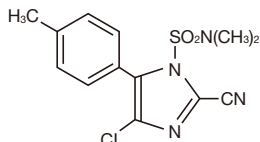
Cyazofamid has no negative impact on beneficial insects and mites, and thus, it will be surely added to integrated pest management programs.

Cyazofamid has good toxicological, environmental and ecotoxicological profiles.



#### Physico-Chemical Properties

Chemical structure



Class : cyanoimidazole

IUPAC name : 4-chloro-2-cyano-*N,N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide

Molecular weight : 324.8

Molecular formula : C<sub>13</sub>H<sub>13</sub>ClN<sub>4</sub>O<sub>2</sub>S

Vapour pressure : < 1.33x10<sup>-2</sup> mPa (35°C)

Water solubility : 0.107 mg/L (pH 7, 20°C)

Form : Ivory, odourless powder

Development code : IKF-916

#### Toxicology & Ecotoxicology

Rat LD<sub>50</sub> (oral) : > 5,000 mg/kg (m/f)

Rat LD<sub>50</sub> (dermal) : > 2,000 mg/kg (m/f)

Rat LC<sub>50</sub> (inhalation) : > 5.5 mg/L (4h) (m/f)

Skin irritation : slight irritant (rabbit)

Eye irritation : slight irritant (rabbit)

Skin sensitization : not a sensitizer (guinea pig)

Avian LD<sub>50</sub> (acute oral) : > 2,000 mg/kg (quail, m/f)

Avian LD<sub>50</sub> (acute oral) : > 2,000 mg/kg (mallard duck, m/f)

Fish LC<sub>50</sub> : > 100 mg/L (trout, 96 h)

Fish LC<sub>50</sub> : > 69.6 mg/L (carp, 96 h)

Bees (oral and contact) : very low toxicity

*Daphnia magna* EC<sub>50</sub> : > 0.198 mg/L (48 h)

#### Application

Cyazofamid is applied at 80-100 g a.i./ha with foliar spray just before first disease symptoms are observed to control Oomycete diseases, such as late blight in potatoes, tomatoes, pepper and other vegetables, and downy mildew in grapevine, cucumber, melon and others.

#### Mode of Action

Cyazofamid has proven to control Oomycetes by respiratory inhibition specifically at Complex III in the mitochondria of Oomycetes. Cyazofamid inhibits Qi (Quinone inside reducing site) of Complex III of the said oomycetes, which has not been so far reported for other fungicides. It is classified to FRAC code 21.

#### Product

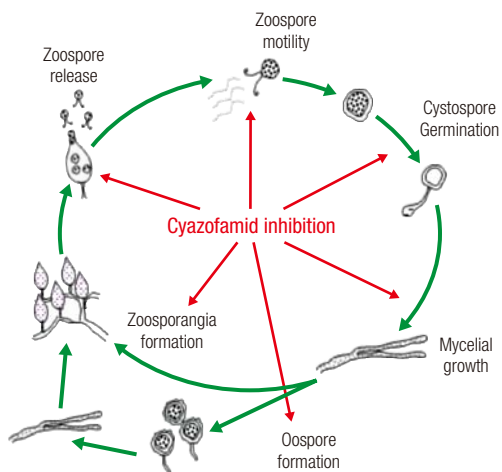
<b>Trade Names</b>	RANMAN TOP, RANMAN, SEGWAY, TORRENT, ランマン, 科佳, MILDICUT, VIDERYO, ドーシャス, グリーンワーク, etc.	
<b>Formulations</b>	16%SC, 10%SC, 40%SC, 27.5%SC (Premixture), 44%SC (Premixture), 29%WP (Premixture)	
<b>Registered Countries</b>	Asia	China, Japan, South Korea, Taiwan, Vietnam, etc.
	Europe	Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, UK, etc.
	Americas	Argentina, Brazil, Canada, Chile, Mexico, USA, etc.
	Oceania	Australia, New Zealand
<b>Crops</b>	Potatoes, Grapes, Vegetables, Turf, etc.	



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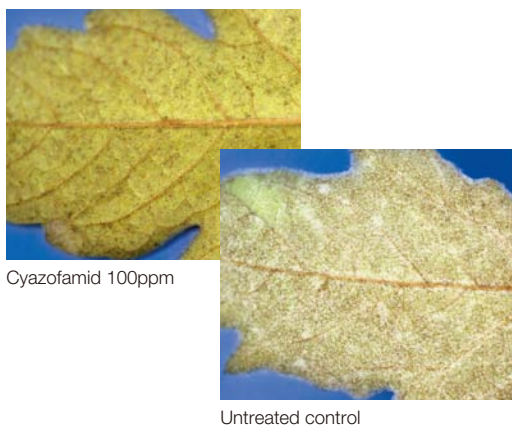
### Biological mode of action



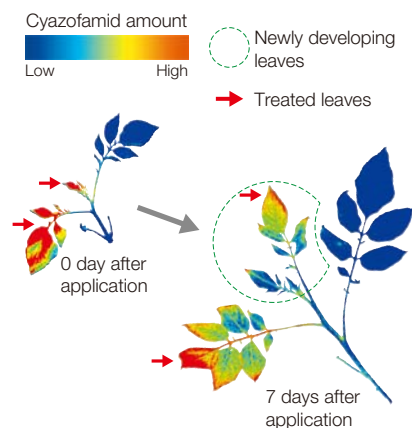
### Characteristics

- Inhibits all stages in fungus life cycle (in vitro)
- Low fungi application rate: 80-100 g a.i./ha or 50-100 ppm conc
- Effective on fungi resistant to other chemical classes
- Strong control activity against potato tuber blight
- Strong rainfastness
- Distribution on newly developing leaves
- Inhibition of zoospore formation on leaves
- No phytotoxicity concerns
- No adverse effects on yeast or microbial activity of fermentation system
- Very active against the following Oomycetes:
  - *Phytophthora*
  - *Pseudoperonospora*
  - *Plasmopara*
  - *Albugo*
  - *Blemia*

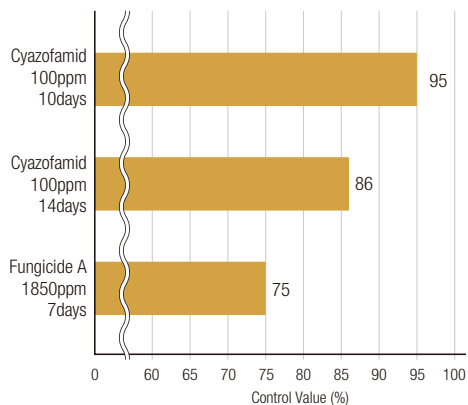
### Inhibition of Zoospore formation on tomato leaves



### Distribution on newly developing potato leaves



### Control of Potato Late Blight by long spray interval period



### Control of Potato Tuber Blight

