



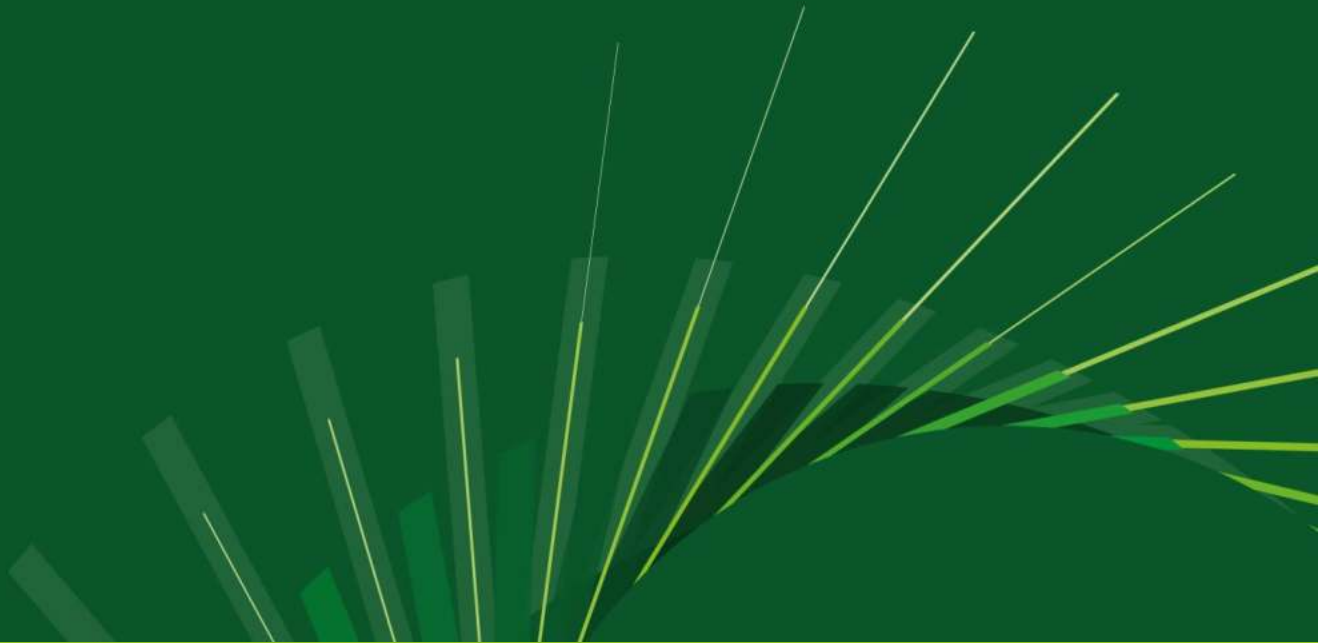
ORONDIS™ Ultra

Adapted from:
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August 2020



syngenta.

1. ORONDIS™ Ultra



Introduction of ORONDIS™ Ultra

- **ORONDIS™ Ultra** is composed of **oxathiapiprolin** and proven **mandipropamid** at 280 gai/Lt (30 + 250 g) as an SC formulation. The target rates are 0.4 Lt/ha – 0.67 Lt/ha for downy mildew and late blight control on Vegetable & Speciality crops (without potatoes).
- **Key technical features** of the formulation include:
 - Outstanding potency against oomycete pathogens
 - New mode of action for oomycete control thanks to OXTP
 - Broad spectrum against oomycetes on a wide range of crops
 - Long-lasting disease control, saving sprays
 - Excellent biokinetic properties including quantitative rainfastness thanks to the penetration of both mixture components
 - Built-in anti-resistance strategy.
- **ORONDIS™ Ultra** will always be recommended as a **preventative** application for better and fully dependable efficacy and for resistance management.

Introduction of ORONDIS™ Ultra (2/2)

What makes ORONDIS™ stand out?

- **ORONDIS™ is rainfast after maximum 1 hour**, protecting the plant from disease even after rain.
- **ORONDIS™ moves slowly through the plant**; this, combined with its **exceptional potency**, gives **long-lasting control** and protection of **new growth** as well as crop safety.
- **ORONDIS™ is outstanding as a preventive treatment.**

ORONDIS™ Ultra – Features, functional and emotional benefits

Features	Functional benefits	Emotional benefits
High potency	Low dose rates for optimal disease control	I use the best product, reassurance
Best efficacy on target diseases	Excellent efficacy Better saleable yield Higher profits	Right choice I have the best ROI
Long lasting effect	Good protection during critical phases Fewer treatments	Efficiency I have time for other activities I save money – more profits
Excellent rainfastness	No need to re-spray after rain Less cost	Reliability I use the best product
High accumulation in wax layer (mandipropamid), systemic distribution (OXTP)	Long lasting activity	Reliability
Safe to crops	Can be used on all varieties	No fear, relaxed

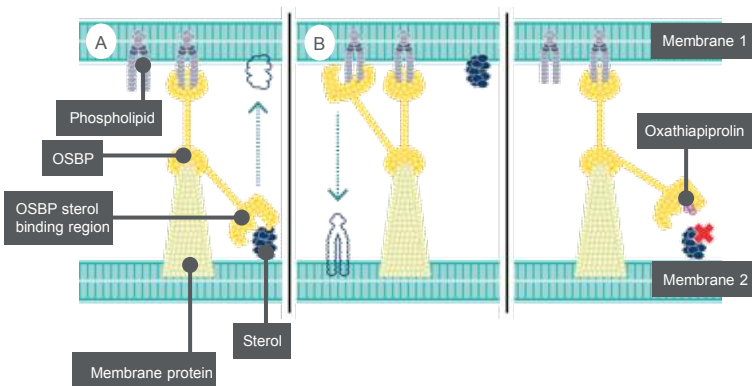
ORONDIS™ Ultra – Features, functional and emotional benefits

More benefits

- New mode of action to incorporate in their fungicide programmes.
- A new tool for oomycete control and resistance management.
- Consistent disease control.
- Long lasting field performance.
- Protection of new growth.
- Low load of active ingredient per hectare.

Technical profile of ORONDIS™

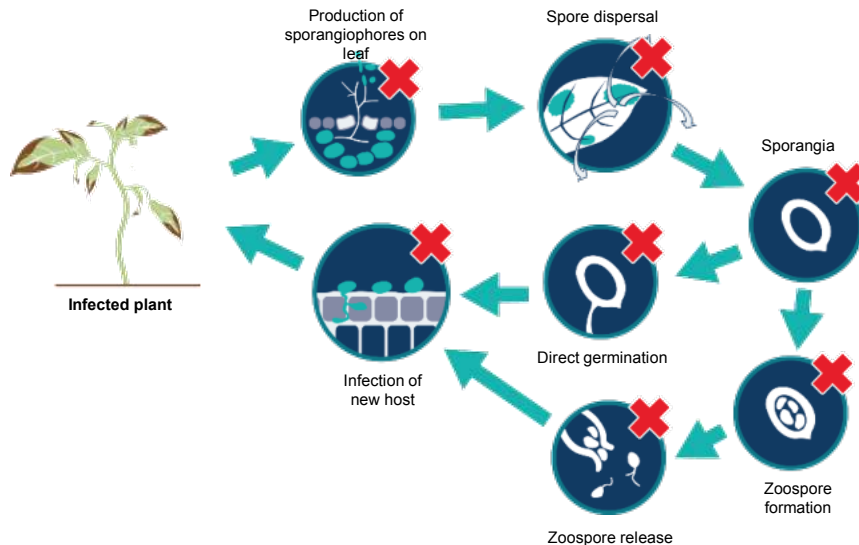
New mode of action



- **ORONDIS™** has an **entirely new mode of action** that works in a different way to other fungicides (mandipropamid, mefenoxam, AMISTAR® technology, chlorothalonil). This is essential for resistance management.
- It **inhibits the oxysterol binding protein (OSBP)**, which is involved in the movement of fats between membranes.

Technical profile of ORONDIS™

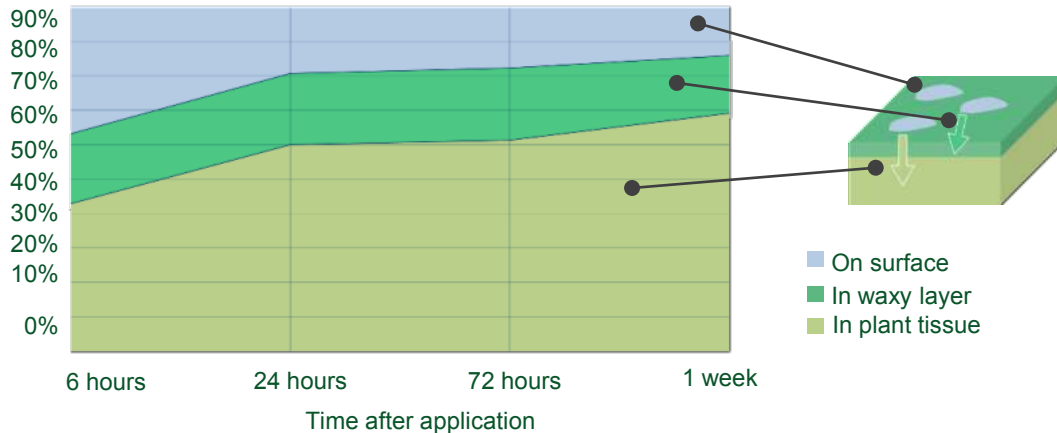
Effective on key life cycle stages of the pathogen



- **ORONDIS™** targets oomycetes at several stages in the life cycle and is most effective at key stages of sporulation, germination and initial infection.
- Stopping the pathogen at these points reduces the opportunity for disease cycles to develop.

Technical profile of ORONDIS™

Movement of active ingredient into the plant



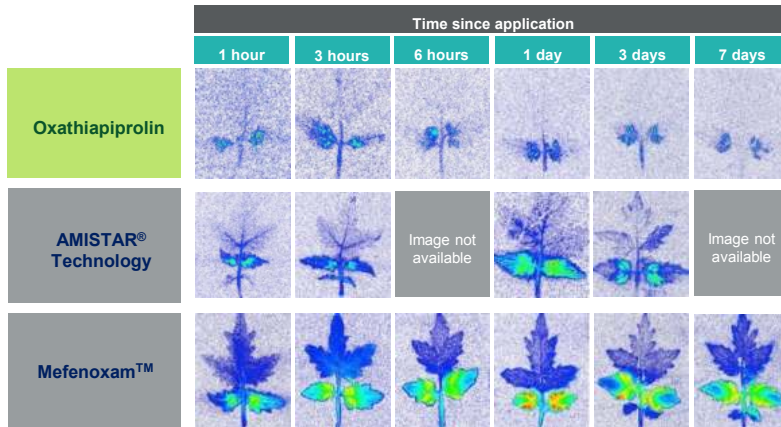
- After foliar application, a large proportion of **ORONDIS™** moves quickly into the tissue of the leaf (~60% after 24 hours), with some retained in the waxy layer.
- The proportion of **ORONDIS™** accumulating in leaf tissue grows slowly after this initial uptake.

Source: Greenhouse and laboratory trials, Stein, 2010

Technical profile of ORONDIS™

Movement - tomato

Phospor-imaging of **tomato leaves** treated by **droplet application**



Radioactivity concentration
High Low



Treated area

Some **ORONDIS™** moves in the plant, but more slowly and in lower quantities than the other active ingredients.

5.3 Technical profile of ORONDIS™

Systemicity - biological activity outside of the treated area

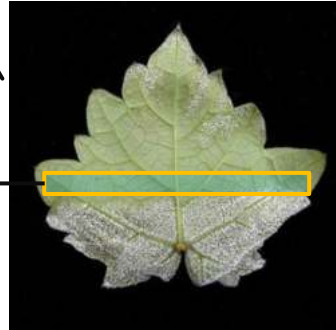


Untreated

Acropetal
movement
and
protection



Application
area



Oxathiapiprolin applied as droplets
across a band in the middle of the leaf

Even with the low amount of movement within the plant, **ORONDIS™ controls pathogens outside the treated area** in both foliar and seed treatment/drench applications.

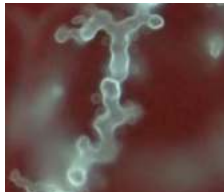
Technical profile of ORONDIS™

Most effective as a preventive treatment

Development of *P. viticola* following oxathiapiprolin treatment

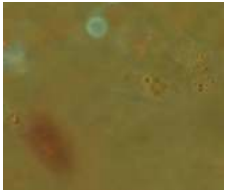


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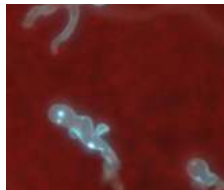
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1 day **preventive** application



6.4 parts per billion

1 day **curative** application



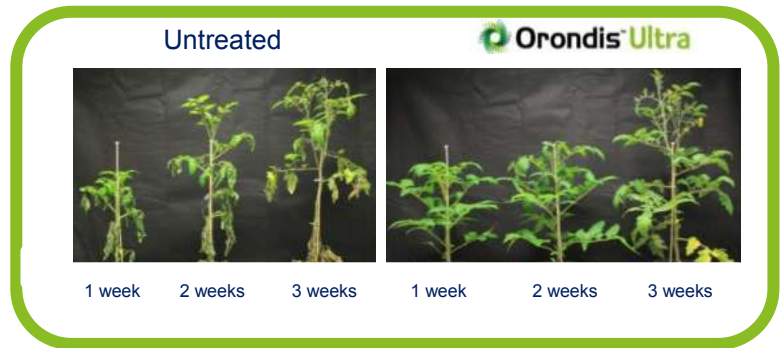
20,000 parts per billion

- When applied **preventively**, **ORONDIS™** is more potent than other active ingredients.
 - Curative activity is relatively weak with much higher doses needed to see an effect.
 - Activity is very limited from applications at more than 1 day post-infection
 - Increases the pressure for development of resistance
- ORONDIS™ should not be recommended or marketed as a curative treatment.**

Technical profile of ORONDIS™

Longer lasting control

- **ORONDIS™** provides extended periods of protection against disease compared to current standards.



Source: Greenhouse and laboratory trials, Stein, 2014

Technical profile of ORONDIS™

Summary

- **ORONDIS™** is a new fungicide containing oxathiapiprolin, an **exceptionally potent** compound with an **entirely new mode of action**, targeting **Oomycetes** (downy mildews and *Phytophthora* blights) on **vegetables, cocoa and grapes**.
- Oxathiapiprolin is most effective against **sporulation, germination and initial infection** by the pathogen.
- **ORONDIS™** is **rainfast**, and the high potency combined with slow movement through the plant tissue offers **systemic, long-lasting control and protection of new growth**.
- **ORONDIS™** is **most effective as a preventative treatment**.
- **ORONDIS™** has much less effect as a curative treatment; this use should be avoided.
- Numerous field trials in multiple locations and crops show overwhelming evidence of **ORONDIS™ Ultra**, combining oxathiapiprolin and proven **mandipropamid** as best mixing partner, **efficacy and superior performance compared to the best competitors on the market** right now, even at much lower rates.

8.2 Promotion and Communication

External product descriptor

ORONDIS™ is a step change fungicide for oomycete control in vegetables and specialty crops. Based on its unique high performing technology delivering powerful and flexible control, **ORONDIS™** is pivotal in the disease management programme.

ORONDIS™ is **pivotal** in oomycete (e.g. late blight and downy mildew) control programmes for vegetables and specialty crops.





ORONDIS™ contains an active ingredient from a new class of chemistry. Its innovative science brings **new mode of action** to oomycete control that shows no cross- resistance to existing oomycete fungicides.

Due to its highly intrinsic activity **ORONDIS™** is a **step change** in disease control. It provides effective long lasting field performance, protection of new growth in the plants and consistent disease control.

ORONDIS™ features:

- ✓ Systemic, translaminar movement in the plant to protect developing leaves
- ✓ Excellent preventive fungicidal activity, controlling all pathogen life cycle stages
- ✓ Rainfastness
- ✓ Efficacy and crop safety at very low rates of AI per ha.

Oomycete market – main Syngenta brands

Key brands	Lead Active Ingredient	Usage	Key market
 Orondis™	Oxathiapiprolin	Foliar, Soil, Seed treatment	Speciality Crops and vegetables
 RidomilGold[®] <small>MZ</small>	MEFENOXAM™	Foliar, Soil, Seed treatment	Speciality Crops and vegetables
 Revus[®]	Mandipropamid	Foliar	Speciality Crops and vegetables
 Bravo[®]	Chlorothalonil	Foliar	Speciality Crops and vegetables



Bringing plant potential to life

Active ingredients:	Oxathiapiprolin	Chemical group	Piperidinyl-thiazole-isoxazoline
		Mode of action	Oxysterol binding protein homologue inhibitor (OSBPI)
		FRAC code	49
	Mandipropamid	Chemical group	Mandelic acid amide
		Mode of action	Cellulose synthase (CAA)
		FRAC code	40
Formulation:	Suspension Concentrate (SC)	280 gai/L	(30 gai/L oxathiapiprolin + 250 gai/L mandipropamid)

Crop Program (example)

Lettuce downy mildew management

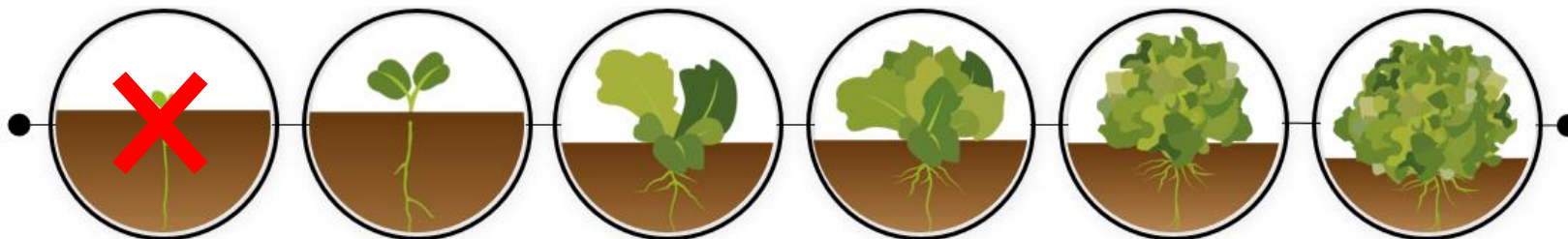
ORONDIS® Ultra can be applied in a **block or alternated** with another mode of action, depending on the specific **FRAC recommendations by crop**.

ORONDIS® Ultra should be applied **prior to the onset of disease**.

Target **foliar applications** during **rapid growth period** for optimal control of leaf blights and downy mildew.

Do not apply oxathiapiprolin during the **nursery production of transplants**

 **Orondis® Ultra**
 **Orondis® Ultra**



Use	Crop	Target	Product/ha	Minimum application interval	Maximum no. of applications
Foliar	Grapevine	Downy mildew (<i>Plasmopara viticola</i>)	0.67 L	10 days	2
Foliar	Cucumber, melon, watermelon, zucchini, squash, pumpkin	Downy mildew (<i>Pseudoperonospora cubensis</i>)	0.4 L	7 days	4
Foliar	Tomato	Late blight (<i>Phytophthora infestans</i>)	0.4 L	7 days	4
Foliar	Onion	Downy mildew (<i>Peronospora destructor</i>) *	0.5 L	7 days	4

* Mandipropamid provides just limited control of downy mildew in onions. Higher application rates are required.

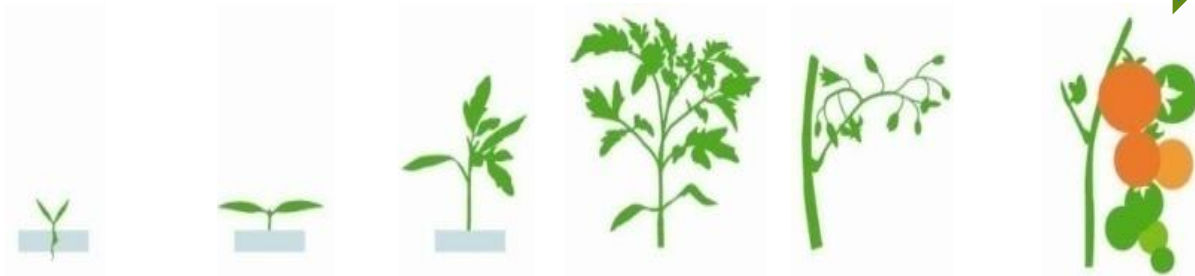
Tomatoes – Late blight



 Orondis[®]Ultra

 Orondis[®]Ultra

Late blight



BBCH:	00-13	14-15	15-20	21-50	51-69	71-79	81-89
Stage	Nursery	Transplanting	Growth	Side shoots	Flowering	Fruiting	Ripening
Days:	0-20	20-25	25-40	40-60	60-90	90-150	100-170

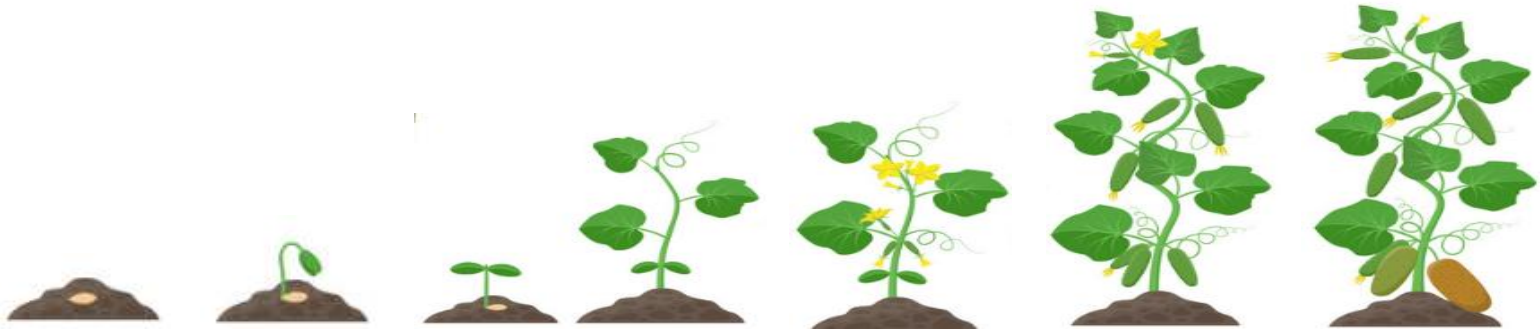
Cucumbers – Downy mildew



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Downy mildew



BBCH:	00	01-09	10-59	60-69	71-79	81-89
Stage	Seeding	Germination	Vegetative growth, formation of side shoots	Flowering	Fruiting	Ripening
Days:	0	3-7	8-21	On-going	On-going	48-76

Grapes – Downy mildew



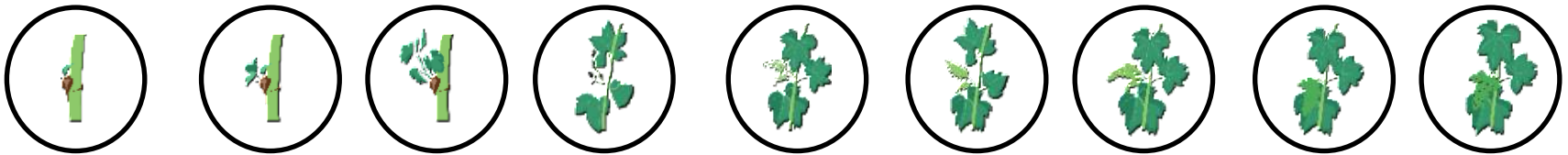
Leaf diseases

Bunch diseases



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EARLY SEASON

MID SEASON

LATE SEASON

BBCH 09	BBCH 11	BBCH 53	BBCH 57	BBCH 65	BBCH 71	BBCH 75	BBCH 81	BBCH 89
Sprouting	Leaf development	Inflorescence emergence	Inflorescence full developed	Flowering	Fruit set	Berries pea-sized	Start of ripening	Harvest

Technical Features and Benefits

Technical Features

ORONDIS™ Ultra is extremely potent

ORONDIS™ Ultra is systemic and has translaminar movement

ORONDIS™ Ultra is extremely rainfast

ORONDIS™ Ultra is durable and have long residual performance

ORONDIS™ Ultra is a product with a new and innovative MoA that works in a way different than other Oomycides

Grower Benefit

Use at low dose rates, better residues acceptability, safe to crops

- Protects the leaves from the inside and outside.
- Protects new growths.

Protects the crop even after heavy rainfalls

Provides long-lasting disease control – up to 2-3 weeks, ensuring higher yield

- ORONDIS™ Ultra a powerful tool in resistance management.
- Protects crop from strains resistant to other Oomycides