Solaris®

FAQs for Solaris® Fungicide Use in Grapevines

Efficacy

What is in Solaris® and how does it work?

Solaris® contains 300 g/L of cyprodinil - a systemic fungicide that is taken up into the cuticle and waxy layers of leaves and fruit. From there it is distributed and penetrates into other parts of the plant.

Cyprodinil inhibits the biosynthesis of methionine and acts on secretion of hydrolic enzymes. This mode of action is specific for the anilinopyrimidine group of fungicides which include cyprodinil, pyrimethanil and mepanipyrim. Anilinopyrimidines show no cross-resistance with other fungicide groups.

Is Solaris® as good as other botryticide options currently available?

Solaris® is a unique EC formulation of cyprodinil that is highly active against *Botrytis cinerea* in grapes (Botrytis Bunch Rot or Grey Mould) and offers outstanding performance under wet conditions and high disease pressure providing protection inside the leaf which doesn't wash off. In all field trials conducted by Adama during development, Solaris® provided equivalent control to Switch* at 80 g/100 L.

What sort of residual protection will I get from Solaris®?

Solaris® will protect leaves and bunches when applied in a sound spray program at intervals of 10-14 days.

When to use Solaris®

What conditions most favour infection from *Botrytis cinerea?*

A film of free water on the plant surface is essential for spore germination. This surface moisture may be due to rain, dew, mist or fog or simply high humidity causing condensation to build on sensitive plant parts such as flowers or damaged tissues.

Ambient temperatures determine how fast botrytis infection occurs with the optimum temperature for spore germination around 18–21ºC. Longer periods are required to achieve the same level of infection below these optimum temperatures. Temperature, relative humidity and wind speed all affect the length of time that surface moisture remains in the canopy, and as a result, the level of infection.

Not all latent infections lead to rotten berries. Warm to hot and dry weather through summer and autumn can prevent the expression of latent infections in berries and the development of berry and bunch rots. The proportion of berries developing rots after latent infection appears to be correlated to high relative humidity, and possibly high soil water content.

Botrytis risk is highest in thin-skinned varieties with compact bunches in humid canopies carrying high crop loads. Botrytis often relies on wound points for entry and so is exacerbated when there is damaged or weakened tissue – such as the scars left after cap-fall.

How can early season botrytis infection most successfully be prevented?

Applications of botryticides such as Solaris® are an effective means of preventing flower and berry infection. When the risk of infection is high, such as severe botrytis in the vineyard in the previous season, wet spring conditions and/or a high incidence of leaf botrytis, apply a prophylactic fungicide at 80% cap-fall, when most of the cap scars are exposed. Monitor the weather forecast to ensure that fungicides are applied prior to rain - early enough to ensure that the rainfast period is observed. Thorough spray coverage of developing flowers and berries is vital in conditions conducive to botrytis. Adequate water volumes must be applied and spray machinery should be adjusted – including reducing sprayer air speed or ground travel speed - for accurate coverage of the bunch zone.

When is my application window for Solaris®?

Under AWRI Guidelines, Solaris® can be used at any time from the beginning of flowering (E-L 19) through to when berries are pepper-corn size (E-L 29). The most effective period to apply is prior to bunch closure when good spray coverage can still be achieved inside the bunch to help protect against infections that can develop as the fruit ripens.

When is the best time to use Solaris® in Grapevines?

Whilst Solaris® is highly active against *Botrytis cinerea* conditions should be monitored and application of botryticides should occur prior to infection reaching unacceptably high levels in the vineyard. All Group 9 and other systemic fungicides including Solaris® SHOULD NOT be used curatively.

What is the withholding period for Solaris®?

Growers need to ensure that a 60 day pre-harvest interval is observed for grapes destined to be used in export wine. The harvest withholding period for Solaris® in table grapes or grapes not destined for use in export wines is 4 weeks.

Fungicide Resistance Management

How many applications can I apply of Solaris® per season?

If three or fewer Bunch Rot sprays are to be applied in a season, use no more than 1 spray of Solaris® or any other Group 9 fungicide. If four or more Bunch Rot sprays are to be applied in a season, up to 2 sprays of any Group 9 fungicide including Solaris® may be used. DO NOT APPLY more than 2 applications of Solaris® or other Group 9 fungicides per season.

How many consecutive sprays of Solaris® should I use?

Whether applied alone or in combination with a Group 12 fungicide, no more than two consecutive Group 9 fungicides should be applied for the control of *Botrytis cinerea* in grapes as per CropLife FRMS. The same limitation applies to Group 2 (iprodione - Chief®/Rovral*) and Group 17 (fenhexamid – Teldor*) fungicides.

Is Solaris® in the published AWRI Dog Book?

Solaris® is in the AWRI Dog Book in both hard copy and online at www.awri.com.au.

What is the Adama recommendation for Group 9 Fungicide use in Grapes?

Adama are an active member of the FRMRG and have contributed significantly towards management guidelines for fungicide use in grapes and other crops. Based on the best available data from field trials, resistance monitoring results and expert opinion, Adama advise that the use of cyprodinil alone in grapes is a responsible approach when used in conjunction with an effective FRMRG strategy. Adama do recommend that whilst a maximum of 2 consecutive applications of Group 9 fungicides is allowed under the FRMS for botrytis in grapes, growers should avoid consecutive applications of Anilinopyrimidine fungicides where possible under a sound disease management program.

Where does Solaris® fit in my spray program?

Solaris® should be used as a preventative fungicide in rotation with other fungicides with a different mode of action. Depending on the expected level of disease pressure, Solaris® can be used either during flowering or prior to bunch closure (E-L 29) as a direct substitute for current alternatives including Switch* and Scala*.

Who did the trial work prior to registration in Australia and where?

In Australia, field trials were conducted on behalf of Adama by independent researchers including SARDI and Peracto between 2010 and 2012 to generate the data required for registration. These trials were conducted in key winegrowing areas with a prevalence of botrytis infections.

Do Adama have a summary of trial results, to indicate performance when compared to industry standards?

Yes. Summaries of trials conducted by Peracto and SARDI can be discussed by contacting your local Adama representative.

Application

What is the registered label use rate per 100 L of water?

Use Solaris® at 100 mL/100 L of water for botrytis control when dilute spraying and adjust accordingly for concentrate spraying.

Spray to the point of run-off when dilute spraying, however, if greater than 1000 L/Ha is required to achieve point of run-off, adjust the amount of product added for each 100 L of water to ensure no more than 1.0 L/Ha product is applied.

Can I apply Solaris® using my current spray equipment?

Solaris® can be applied by dilute or concentrate spraying equipment. In field trials, concentrate rates of up to 4X the label rate were applied with no application problems or crop safety issues.

What volume of water should I use per hectare? Can I apply with water volumes less than 250 L/Ha?

Dilute water rates are preferred as they generally achieve more consistent coverage and efficacy.
The recommendation is to use enough spray volume to achieve sufficient coverage of foliage and bunches, without going below 250 L/Ha. The required dilute spray volume will change according to crop growth stage/canopy size, spray quality and application equipment.

Do I need to add a wetting agent?

Solaris® does not require the addition of a wetter.

What is the rainfast period for Solaris®?

The rainfastness period for Solaris® is a minimum of 2 hours providing the spray has dried on the plant surface. Under humid conditions it may take longer than 2 hours for the spray to dry on the plant surface.

Can I use bore water or river water when applying Solaris®?

As with water for all agricultural chemical applications, the best water available should be used – usually rainwater. Whichever source is used should be free of silt, neutral in pH and free of foreign matter which may block nozzles.

Do I need to apply at a certain time of day?

There are no general rules with the time of day to apply Solaris®. If applying earlier in the morning the plant surfaces may not have dried adequately from heavy dew and more spray may be lost due to runoff.

Does droplet size have impact on efficacy? Is good coverage essential?

Thorough coverage of the vines is essential to maximise fungicide performance. Droplet size and water volumes need to be chosen carefully to ensure this is achieved.

Is there any vapour activity within the canopy?

No. Cyprodinil does not exhibit any vapour activity.

How safe is it to humans? How safe is it on beneficial insects?

Solaris® toxicity is low for mammals, birds, bees, insects, and earthworms.

What is the re-entry interval after application?

Re-entry is permitted once the spray is dried.

Will Solaris® kill beneficial Mites and Wasps? How safe is it on Bees?

At field rates there is no evidence of any negative impact from Solaris® on beneficial Insects including Mites, Bees, Wasps or Ladybeetles.

Compatibility

What other fungicides and insecticides can I mix with Solaris®?

Solaris® has been subjected to infield testing in various tank-mix combinations. No mixing problems or phytological effects on the crop were observed 4DAA and 14 DAA with the following mixtures applied to White Muscat table grapes at late Veraison near Stanthorpe, QLD in 2013:

- Solaris® + Axiom® Plus
- Solaris® + Axiom® MZ
- Solaris® + Citadel® or Bayfidan* 250 EC
- Solaris® + Captan 800
- Solaris® + Custodia®
- Solaris® + Sphinx®
- Solaris® + Dithane+
- Solaris® + Dithane+ + wettable sulfur
- Solaris® + wettable sulfur + Kocide*
- Solaris® + Warlock®.

What foliar fertiliser products or growth regulants can I mix with Solaris®?

Mixing Solaris® with foliar fertilisers has not been tested and is not recommended by Adama due to the wide range of products on the market, variability in their specifications and the large number of compatibility tests that would be required. No growth regulants have been tested in combination with Solaris®.

Can I use a pH buffering agent in my tank mix?

Yes. There are no issues with adjusting water pH prior to mixing with Solaris® providing the pH is within the normal range for spraying agricultural chemicals.

Phytotoxicity

What Winegrape varieties can I safely apply Solaris® to?

Solaris® has been applied safely to Albariño, Chardonnay, Garnacha, Semillon, Petit Corbu, Sauvignon Blanc and Tempranillo varieties during trial work in Australia and Europe.

It is not anticipated that any varieties will be sensitive to Solaris® applications when used as directed.

What Table Grape varieties can I safely apply Solaris® to?

Solaris® has been applied safely to Red Globe, White Muscat and Thompson Seedless Table Grapes. It is not anticipated that any varieties will be sensitive to Solaris® applications when used as directed.

What concerns (if any) are there for spray drift onto non-target crops?

Minimising spray drift is a general rule for spraying any crop protection product. Aside from any crop specific phytotoxic effects that can occur when using products such as herbicides, there is also an issue with residues and trade.

If a tank mix partner requires wetter, will this be phytotoxic?

A 100% non-ionic wetter will not change the level of crop safety for Solaris®, however, do not mix with vegetable or mineral oil-based adjuvants.

Do high Summer temperatures cause any burning issues?

There has been no trial work done under extreme weather conditions i.e. week-long periods with temperatures over 40°C. The likelihood of Solaris® or other botryticides being required when extreme temperatures are expected is low. If extreme heat is expected within a few days of application then caution should be exercised when applying Solaris® or any other product.

Domestic and Export Wine Restrictions

Are there MRL's in place for both domestic and export wine markets?

There are CODEX international food standard MRLs set by the FAO that apply to the cyprodinil in Solaris®. MRLs are generally used to establish the WHP in Wine and Table Grapes. However, in addition to the WHP, there are also export harvest intervals (EHIs) for all products registered in Winegrapes. The EHIs are established by the Australian Wine Research Institute (AWRI) as not all products with CODEX status will have an MRL in the importing country. This may be because Grapes are not grown commercially in these countries and there is no need to register products for use on Grapes. As a result no MRL is set, which means that the importing country will either not allow any detectable residue of the agrochemical in wine, or only permit 'safe' amounts of it.

AWRI have established an EHI for Solaris® and this is listed in their industry publication known as the 'Dog Book'.

What is the latest growth stage that I can apply Solaris® on Grapes destined for the Export Wine market?

For Winegrapes - the EHI recommendation is DO NOT APPLY after berries are peppercorn-sized (E-L 29).

What is the latest growth stage that I can apply Solaris® on table grapes?

The WHP for Solaris® is 4 weeks in table grapes.

Purchasing Questions

Where can I buy Solaris®?

Solaris® is available from key distributors of crop protection products across the grape growing regions of Australia. Contact your local supplier of crop protection products or visit adama.com to find out more.

What pack sizes is Solaris® available in?

Solaris® will be available in 1 L and 5 L pack sizes offering convenience for both large and smaller areas.

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