Adelaide Hills Wine Region

Australian Government
Grape and Wine Research and Development Corporation

CropWatch in the Adelaide Hills Wine Region



FINAL REPORT TO GRAPE AND WINE RESEARCH & DEVELOPMENT CORPORATION

PROJECT NUMBER: **RT 07/02-3**

DATE:

RESEARCH ORGANISATION: Adelaide Hills Wine Region Inc

CropWatch in the Adelaide Hills Wine Region

Executive Summary

CropWatch in the Adelaide Hills Wine Region commenced in Septembers 2007. Weather stations and vineyards spread throughout the region in key locations have been utilised to collect weather data and vine/vineyard information that is compiled in to bulletins that are sent to members of the Adelaide Hills Wine Region.

In total, 28 CropWatch bulletins were complied and sent to members either by fax of e-mail and two Downy Mildew alerts were issued. From September to May bulletins were sent out fortnightly and from May to August they were sent monthly.

Initially the service's aim was to provide members with regional weather data and pest and disease prevalence in the region and information on how this can be managed. However, the bulletins were able to encapsulate much more information such as agrochemical management including withholding periods and re-entry periods, irrigation and vineyard canopy management issues, nutrition management and phenology.

Feedback from members has been extremely positive. The region has a diverse viticultural community from large scale vineyards owned and managed by publicly listed companies through to small scales vineyards run by families that have full time jobs outside the region. The bulletins contained information that was aimed to benefit all of these types of growers thus being used as a management tool as well as an educational resource.

Background:

The Adelaide Hills Wine Region is a relatively young wine grape producing region. Major varieties produced are Chardonnay, Pinot Noir and Sauvignon Blanc. Much of the fruit grown in the region is purchased by large wine companies and vinified outside the region. The region has a reputation in the industry as a super premium producer of fruit and wine. The Adelaide Hills Wine Region Inc aims to maintain this reputation and understands that wine quality begins in the vineyard. To better help its members manage pests and disease in the vineyard and assist in vineyard management decisions, a CropWatch service was established to provide growers with up to date weather data and vineyard management information.

The Adelaide Hills is a premium wine grape region and seeks to maintain this standard by providing growers with a high level of service in information and technology required to optimize the sustainability of production. An increasingly relevant component of this is provision of disease and pest weather advice which is based on critical weather information. CropWatch SA Adelaide HIlls was introduced to provide locally relevant information to assist with keeping number of fungicides spray to a well-timed and effective medium. CropWatch combines local weather and monitoring information to provide best practice advice on disease and pest risk and assist growers by providing up to date information to base management decisions on.

Objectives:

Objectives as described in the original application are:

- Minimising the use of agrochemicals
- Help grape growers select the most appropriate and economical agrochemicals
- Supply timely and accurate weather and pest and disease information to grape growers to aid in decision making
- Help grape growers to efficiently manage irrigation using weather data from the CropWatch Service
- To aid grape growers in interpretation of weather data and management systems
- To make the CropWatch bulletins available to all members of the AHWRI
- Link in with other regions currently using the CropWatch service in a similar manner for information and data sharing
- A positive impact on grape growing methods, the environment and fruit quality in the Adelaide Hills Wine Region

Method:

Weather Data & Vineyard Monitoring

Weather data was collected and vines were monitored on vineyards in the following locations:

- Vickers Road, Lenswood
- Junction Road, Balhannah
- Greenhills Road, Meadows
- Tynan Road, Kuitpo
- Williamstown Road, Forreston
- Buckleys Road, Lobethal

Data from weather stations and vineyard field monitoring on the above properties was collected by the sub-contracting agency and analysed by Peter Magarey at Loxton on a weekly basis and reports were issued. Weather data collected included rainfall, temperature, relative humidity and was stored every 15 minutes. Leaf wetness was also recoded for use in disease modelling. These data were then processed through the AusVit™ and the risk of downy mildew assessed. Weather data was collected and processed on a needs basis upon the advice of the monitoring company after significant rain events in the region and alerts issued to growers when required.

Monitoring

Landmark Agrisystems was chosen as the successful tender to monitor six vineyards in the region (vineyard details above – see 'Weather Data') and report on the pest and disease status each fortnight. Monitoring information was recorded and sent to Peter Magarey weekly (blocks were spilt into two groups and monitored on alternate weeks).

Results/Discussion:

Service Delivery

CropWatch SA Adelaide Hills provided Adelaide Hills Wine Region members with free disease and pest management information on a fortnightly basis, or more often when wet weather occurred. For example during extended periods of wet weather Downy Mildew updates were delivered to growers to assure them conditions were not suitable for infection and when primary infections were recorded in vineyards just outside the CropWatch area this was dealt with through the service. In total, 28 CropWatch bulletins were complied and sent to members either by fax of e-mail and two Downy Mildew alerts were issued. From September to May bulletins were sent out fortnightly and from May to August they were sent monthly.

Monitoring of vineyards

It was found to be beneficial to monitor vines growing along side the weather stations as the weather data collected was even more relevant to the vineyard monitoring. The vineyard monitoring covered phenology, viticultural operations relevant to that time of the season or growth stage. Some basic management and operational recommendations were also made for pest and disease control, irrigation and canopy management which members found helpful.

Weather data

In general Peter Magarey of SARDI was happy with the integrity and availability of data downloaded from the weather stations. The Adelaide Hills Wine Region has taken the next step though, to standardise all weather stations and ensure that they are all able to be accesses remotely.

The Reports

The report layout and content are based on the CropWatch SA Riverland reports however changes were made to make the reports relevant to the Adelaide Hills, sample reports are attached. Feedback from growers reflected satisfaction with the content and clarity of the reports. An end of season summary was sent out at the conclusion of the 2007/08 season detailing weather and its influence on pest and disease and viticulture in general, this report is also attached.

Proposed - Operating Budget

Budget	Funding required from GWRDC	AHWRI Contribution	Funding required from GWRDC	AHWRI Contribution
	2007-08		2008-09	
Vineyard Monitoring, Weather Data Collection & Report Collation	6250	6250	1250	1250
Administration	2083.3	2083.3	416.7	416.7
Repairs & Maintenance	1041.7	1041.7	208.3	208.3
CropWatch SA Fee	1666.66	1666.66	333.33	333.33
Software	416.66	416.66	83.33	83.33
TOTAL	11,458.32	11,458.32	2,291.66	2,291.66
ADD GST (10% of the Total)	1,145.83	1,145.83	229.17	229.17
TOTAL FUNDS REQUESTED FROM GWRDC	12,604.15	12,604.15	2,520.83	2,520.83

Actual Expenditure - CropWatch

Adelaide Hills Wine Region Inc
38 Adelaide Road
MOUNT BARKER
SA 5251

RITA 07/02-03 year 1 Activity [Detail]
1/07/2007 To 30/06/2008

Job #	Job Name	Date	Memo	Credit	Debit
2-4055	RITA 07/02-3				
RITA 07/02-3	RITA 07/02-3 year 1	26/09/2007	RITA 07/02-3 year 1 in ADVANCE	$13,750.00	
RITA 07/02-3	RITA 07/02-3 year 1	21/12/2007	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	15/01/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	26/02/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	29/02/2008	Purchase; Landmark Operations Ltd	$1,000.00	
RITA 07/02-3	RITA 07/02-3 year 1	29/02/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	31/03/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	23/04/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	30/04/2008	Cropwatch expense transfer over to RITA		$2,500.00
RITA 07/02-3	RITA 07/02-3 year 1	5/01/2008	Purchase; Landmark Operations Ltd		$1,000.00
RITA 07/02-3	RITA 07/02-3 year 1	6/01/2008	Purchase; Landmark Operations Ltd		$500.00
RITA 07/02-3	RITA 07/02-3 year 1	6/01/2008	Purchase; Adelaide Hills Vineyard Contractors		$286.40
RITA 07/02-3	RITA 07/02-3 year 1	31/12/2007	Admin charge for RITA [Quarterly]		$1,250.00
RITA 07/02-3	RITA 07/02-3 year 1	31/03/2008	Admin charge for RITA [Quarterly]		$1,250.00
RITA 07/02-3	RITA 07/02-3 year 1	30/06/2008	Admin charge for RITA [Quarterly]		$1,250.00
RITA 07/02-3	RITA 07/02-3 year 1	30/06/2008	Admin charge for RITA [Quarterly]		$715.00
			RITA 07/02-3 RITA 07/02-3 year 1 Total:	$14,750.00	$14,751.40

CropWatch Bulletin – July 2008

Adelaide Hills CropWatch

WINTER BUD **EL01**

Winter finally arrived last month with temperatures throughout July resembling those we would expect for this time of the year. Significant frost events were recorded on the 24th, 27th, 28th, and 29th with sites near Woodside and Kuitpo recording a low of -1.7°C and -2.80°C respectively on the 24th. Good widespread falls were recorded at most sites with some locations recording above average rainfall figures for the month. Kuitpo was the stand out in July with 165mm for the month. July totals for sites across the region include: Junction Creek 134mm, and Forreston 88.2mm.

This message from Adelaide Hills CropWatch SA was compiled on Friday, August 1st 2008.

More Pest and Disease information is available at www.cropwatchonline.com

Powdery Mildew

Adelaide Hills CropWatch (14th, 21st, and 28th January) reported Powdery Mildew persisting in a number of blocks across the region. While the CropWatch sites remained clean throughout the season, persistent Powdery Mildew was reported in scattered blocks of Chardonnay. This occurred in a number of wine regions.

Plate 1: A diseased 'Flag Shoot' with tell tale 'cupped' leaves.



Recently, the author has received numerous enquiries as to best practice management of Powdery in 'problem' blocks, or in varieties that are predisposed to Powdery infection. With the growing season rapidly approaching, it seems pertinent to briefly discuss some key points surrounding the management of this disease in blocks that experienced increased disease pressure last season. Good early season control in the coming vintage will be of upmost importance. Please note that this discussion contains management guidelines for 'problem' blocks only.

It is important to remember that Powdery usually does not require rainfall to promote conditions conducive to its development – it is a dry weather disease. The principle drivers behind development are: 1) the number of flag shoots (diseased buds) present at budburst; 2) the amount of primary inoculum in the form of over-wintering fruiting bodies (cleistothecia). In light of these two sources of primary inoculum, a quality spray program in unison with good canopy management practices can effectively negate the source of disease from one season to the next. Accordingly, early season control is critical in preventing spores from infecting the developing canopy and cluster parts. Early season sprays are often the most effective, as the developing canopy has a lower density than later in the season and therefore, good spray coverage is easier to achieve.

So what do early season sprays do? The two primary sources of disease inoculum are in the forms of diseased buds (which lead to flag shoots) and ascospores (from cleistothecia fruiting bodies). It is important to note that developing buds are susceptible to Powdery Mildew while they are green. As buds begin to 'brown' they

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develop resistance to the disease. Accordingly, if we can stop the development of Powdery before buds become infected, we have effectively prevented the formation of a primary source of inoculum – flag shoots. In addition, in unsprayed vineyards, the incidence of Powdery rapidly increases after approximately 40 days from budburst (Magarey *pers comm.* 2008). Secondly, cleistothecia (the fruiting bodies) will form during summer and early autumn when compatible fungal mating types come together. Consequently, by limiting the spore load in your vineyard early, you can significantly reduce these over-wintering structures of Powdery Mildew. However, moderate temperatures in the Adelaide Hills during the initial stages of the season are generally not conducive to ascospore release (optimum temperature range for infection occurs at approximately 20-25°C). Accordingly, a spray program that enables a high level of control both prior to, and during the flowering period will limit the incidence of the disease and will protect developing clusters. Only as berries approach Pea-Size do they develop ontogenetic resistance to Powdery Mildew, that is, resistance due to aging of the berries.

So, if we are to effectively control Powdery early in the growing season, when is the best time to spray and what products should be used? Figure 1 illustrates various product groupings at suggested spray periods for the control of Powdery Mildew. The array of products available for use against Powdery, and the combination of products applied during a given spray event (compatibility issues) is vast. Accordingly, specific product recommendations have not been made here.

As always, check the label of any product prior to use to ensure its compatibility with other chemicals, and the suitability of its use for any given stage of grapevine development (withholding periods).

In order to achieve a high level of control in blocks with a history of Powdery Mildew, or in varieties with increased susceptibility, it is suggested that an application of a DMI or group E product is applied in one of the recommended flowering sprays (Figure 1).

Caution: Generally, the DMI group of fungicides are not compatible with copper-based fungicides used for the control of Downy Mildew. However, there are some exceptions to the rule. As mentioned previously, read the product label prior to use. If in doubt, contact your local agronomist for advice.

Key points in the control of Powdery Mildew in problem blocks include:

- Powdery Mildew develops over two growing seasons
- Early season control reduces disease levels this season and reduces the overwintering inoculum for next season.
- Spray intervals of 2, 4, 6 and 10 weeks post-budburst; then -
  Monitor for disease and spray again if necessary.
- Early season spraying is important.
- Thorough spray coverage is critical.
- Best controlled prior to flowering.
  (SARDI 2008).

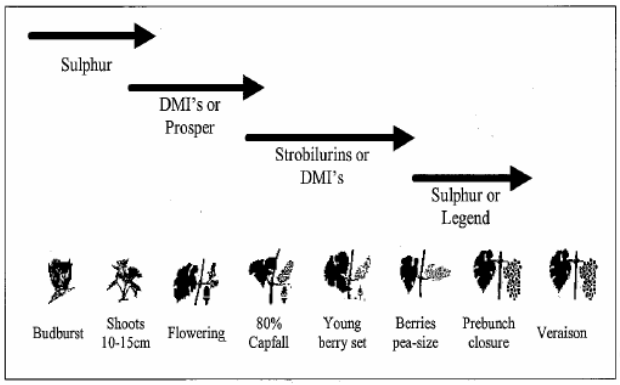


Figure 1: Product groupings and suggested spray periods for Powdery Mildew control.
Source: Magarey, P. 2008

Common varieties with increased levels of susceptibility to Powdery Mildew include:

- Chardonnay
- Verdelho
- Semillon
- Riesling
- Chenin Blanc

(IPM Viticulture, 1997)

References:

IPM Viticulture 1997: Research to Practice – Training Workshop Manual, 1997/98. Institute for Horticultural Development, Vic.

Magarey, P. 2008. Personal communication, Powdery Mildew Presentation, SARDI, Loxton.

SARDI, 2008: Powdery Mildew Fact Sheet. Loxton, SA

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