McLAREN VALE
GRAPE, WINE
& TOURISM

McLaren Vale 'CropWatch' Disease and Pest Advisory Service

CropWatch SA
McLAREN VALE GRAPE WINE & TOURISM INDUSTRY ASSOCIATION

FINAL REPORT to

GRAPE AND WINE RESEARCH & DEVELOPMENT CORPORATION

Project Number: **RT 02/32-4**

Principal Investigator: **Lucy Hyde, Viticulture Officer**

Research Organisation: **McLaren Vale Grape, Wine and Tourism**

Date: **28th June 2004**

CropWatch SA McLaren Vale

Executive summary:

CropWatch SA Mclaren Vale has been running since September 2003, with weekly reports being sent to over 200 growers registered to receive the service. Hard copies of the report were also made available at various community points within the region. Feedback from users of the services indicates that it has been a useful tool for IPM management decisions. The service was launched with an information session about Downy and Powdery Mildew, approximately 80 growers attended this event. The service is designed to minimise agricultural chemical use in the region whilst maximising disease control. CropWatch has also been used as a powerful tool to communicate with growers in the region on wider issues such as irrigation management, OH&S, EMS and various workshops.

Background:

McLaren Vale is a premium winegrape 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 McLaren Vale 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 they appear in the original application are listed below, objectives remained relevant for duration of pilot service.

To establish a pilot test of a CropWatch service for growers and fieldworkers in the McLaren Vale. Specifically to:

- Select a minimum of five vineyards with weather stations (AWS) that will provide automatic remote-access to data compatible with AusVit;
- Establish routine monitoring for diseases and pest in those vineyards;
- Establish a link with CropWatch SA to enable rapid processing and interpretation of the weather and the vineyard data;
- Establish an e-mail and/or fax list for distribution of McLaren Vale CropWatch messages to growers of the region, to be sent weekly or more often as needed.
- To educate growers to use weather technology in the management of their spray programs.
- To make this technology available to all growers in the McLaren Vale region.
- To minimize the use of chemicals.
- To help growers select the most appropriate and economical chemicals for the job.
- To give growers some security in interpreting the disease likelihoods from current weather events.
- To have a positive impact on the overall quality and cleanliness of fruit coming from the McLaren Vale region and continuity of production in seasons favourable to disease.

Method:

Weather Data

Data from weather stations on the following properties; Tinlins, Paul Shirvington, Southcorp, Hamilton Vineyards and John Harvey along with monitoring information from vineyard blocks in the vicinity of the stations were analysed by Peter Magarey at Loxton on a weekly basis and reports were issued. The canopy temperature, relative humidity and rainfall were recorded every 15 minutes along with a measure of leaf wetness. These data were then processed through AusVit™ by Western Electronic Design and the risk of downy mildew assessed. Weather data was processed on a need basis upon the advice of the monitoring company after significant rain events in the region.

Monitoring

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

The service

The weather data, AusVit™ warnings and monitoring assessments were reviewed by Peter Magarey, Senior Plant Pathologist, SARDI and a report compiled and made available to growers in the McLaren Vale Region. CropWatch SA McLaren Vale reports were reviewed by Trevor Wicks, SARDI, Lucy Hyde, McLaren Vale Grape, Wine and Tourism, James Hook, Landmark Agrisystems and a subcommittee in McLaren Vale to ensure regional relevance and accuracy and distributed to growers via fax and email weekly or as weather conditions required.

Growers were able register for the service through McLaren Vale Grape, Wine and Tourism Industry Association. The service was free to all McLaren Vale Growers and businesses were able to have more than one person registered if they wished.

Results/Discussion:

Service Delivery

CropWatch SA McLaren Vale provided growers with free disease and pest management information on a weekly 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.

Over 200 McLaren Vale growers have registered to receive the service thus far and growers continue to sign up for next season. Seventy five percent of growers registered to receive the service receive the report by email and twenty five percent by fax. A number of growers not registered for the service collect reports from one of four businesses that support the service in the region. Through this data base CropWatch has been used as a powerful tool to communicate with growers in the region on wider issues such as irrigation management, OH&S, EMS and to publicise various workshops including the RITA sponsored 'Managing Irrigation to Improve Water-Use Efficiency and Grape Quality'.

Monitoring of vineyards

Along with routine monitoring of the five CropWatch Vineyard sites, the monitoring company also provided Peter Magarey with information relating to local weather conditions and pest and disease incidence and severity in other vineyards in the region. This additional information proved invaluable as whilst CropWatch vineyards remained disease free other vineyards in the region had significant Powdery Mildew infections. In addition it was important for Peter Magarey to be aware of rain events as they occurred so that weather station data could be downloaded, this is essential if timely warnings of Downy Mildew events are to be delivered.

Weather data

In general Peter Magarey and Mike Western of Western Electronic Design (WED) were happy with the integrity and availability of data downloaded from Agrilink weather stations. Peter felt that Agrlink did not have up to date models available through the AgWise web site and for this reason WED was required to input weather data into the AusVit™ model. The position of the five weather stations used during the pilot programme were adequate given low disease risk, however in the event of conditions favourable to a Downy Mildew primary infection occurring in one subregion and not another more weather stations will be required. Recommended priorities for 2004/05 season are at Blewitt springs around Adams Rd and in the foot hills, close to the range. The former is important as Blewitt Spring has a higher rainfall than other parts of the region and currently no weather information is being downloaded from this area. The foothills are important as they are considered a high risk area for Downy Mildew primary infection events, it would be important to know if they have occurred here so that the risk of secondary spread to other vineyards in the region can be minimised.

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 McLaren Vale, sample reports are attached. Feedback from growers reflected satisfaction with the content and clarity of the reports. Links to photos and relevant web pages will be included in next season's electronic reports. An end of season summary was sent out at the conclusion of the 2003/04 season detailing weather and its influence on pest and disease and viticulture in general, this report is also attached.

Survey Results

Growers were surveyed three times during the CropWatch SA Mclaren Vale's pilot season. Once when they registered (232 growers), once in November (this was to allow the service providers to address any issues during rather than at the end of the season, 55 growers responded) and once at the conclusion of the service for 2004 (20 growers responded). The survey in April 2004 had significantly less respondents despite a prize being offered as incentive to return the form demonstrating the importance of timing of such requests for feedback (vintage).

Where do growers get their pest and disease information from?

Growers were asked when they registered with CropWatch to specify where they got information on pest and disease control. The results are summarised in Table 1. It is clear from looking at the number of responses to ratings of 1 and 2, wineries/grower liaison officers and chemical resellers are the first point of call for this information followed by consultants, pest and disease monitoring companies, the internet and then SARDI. The same question was asked at the conclusion of the first CropWatch season and the results are summarised in table 2.

Table 1. Information sources for pest & disease control September 03 1 = most popular and 7= least popular							
	1	2	3	4	5	6	7
Internet	14	6	12	8	3	1	
Chemical Reseller	33	25	14	4	4		
Wineries/ Grower Liaison	30	38	14	6			1
Consultant	31	9	6	5		1	
Pest and Disease Monitoring Company	18	3	2	1	1		
SARDI	2	1	4	5		2	1
Other: Books, Own Monitoring, Grape Growers, Neighbours,Spay Contractors, Publication, Phylloxera, Neighbours, Viticulturalists, Spray Contractors, CRCV, Monoriting, Weather results, Books, P&D Monitoring, Australian Viticulture Magazine, CRCV, Manager, Word of Mouth, AgWise, magazines, TV							

Table 1 is based on information collected from 232 registration forms, not all respondents rated all categories.

Table 2. Table 1. Information sources for pest & disease control April 04 1= Most 7=Least									
	1	2	3	4	5	6	7	8	9
Internet	2	1				3		1	5
Chemical Reseller	2	2		4	2	2	1		4
Wineries/ Grower Liaison	4	2	2	4	2		1	1	1
Consultant	1		1				1	1	10
Pest and Disease Monitoring Company	3	1		1		1			10
SARDI			1	1				3	8
Neighbours/other growers	3	2	1	2	2	1	3	1	1
CropWatch Reports	5	5	4	1	4				
Spray Contractors	4	1	1		1	2	1		5
Other: self monitoring, publications, own weather station									

Table 2 is based on information collected from 20 survey forms collected in April 04, not all respondents rated all categories.

Which Pest and Disease do McLaren Vale growers consider the greatest threat to their crop?

Growers were asked in November 2003 which pests and diseases they considered to pose the greatest threat to their crop. The results of the survey are summarised in Table 3. Thirty-two of the 110 growers registered with the service at the time responded. Interestingly Downy Mildew rated as number one despite the last damaging Downy Mildew event occurring over 10 years ago in McLaren Vale. Powdery Mildew followed a close second which is no surprise given the favourable climatic conditions prevalent in the region. Next was bunch rots, followed by LBAM then mites, leaf botrytis and Eutypa. The results give some guidance for priorities for CropWatch reports, however the response to this question will be strongly influence by the nature of the season, recent damage to vineyards and topical issues.

Table 3 Perceived Damage caused by Pest and Disease in McLaren Vale

1=most damage and 7=least damage

	1	2	3	4	5	6	7
Powdery Mildew	10	8	1	1	9		3
Downy Mildew	16	6	4	1	4		1
Leaf Botrytis	4	7	9	8	3		1
Bunch Rot	14	8	3	1	3	3	1
Mites	6	8	3	5	4	2	3
Light Brown Apple Moth (LBAM)	13	7	4	3	4		1
Vine Moth						1	
Eutypa / Dead Arm	1		1				
Earwigs / Garden weevil				2			
Weeds / Salvation Jane				1			
Blister Mite		2					
Rabbits and Hares		1					
Birds		2					
Sunburn		1					

Level of satisfaction with CropWatch

Growers were asked to comment on their level of satisfaction with the CropWatch service in November 2003 and April 2004. The results are summarized in Tables 4 and 5.

Table 4. Are you happy with Crop Watch?
1=strongly agree 2=strongly disagree - **Nov 03**

	1	2	3	4	5	6	7
Crop Watch helps me make decisions on disease & pest control in my vineyard.	17	8	5	1			
Crop Watch reports are easy to understand	24	7		1			
Crop Watch reports are not relevant to disease & pest management in my vineyard				3	1	5	21

Table 5. Are you happy with Crop Watch?
1=strongly agree 2=strongly disagree - **May 04**

	1	2	3	4	5	6	7
Crop Watch helps me make decisions on disease & pest control in my vineyard.	8	7	1	1	1		
Crop Watch reports are easy to understand	13	3				1	1
Crop Watch reports are not relevant to disease & pest management in my vineyard				1		3	15

Table 4 is based on survey response forms from 55 growers and Table 5. is based on survey response forms from 20 growers.

Comments

The following comments were complied from feedback forms collected in November 2003, and April 2004.

November 2003
Keep it up

April 2004

- It was a very successful first session. Well done Lucy
- Crop Watch reports are excellent – Keep it going! What percentages of growers receive the reports? – for total success it should be 100%
- Congratulations on your special bulletins like this week. Are a number of weather stations being expanded to give a more complete coverage of the region? This year's patterns were fairly general but another year?????????
- Availability of relevant pest and disease information was excellent and timely in view of the then existing weather conditions in McLaren Vale
- If possible weather report for the following week.
- As new growers we find the information very successful
- Good timing and frequency, clear excellent really thank you.
- I thought the information was great and really helpful
- We do not hold chemicals on our property and therefore rely on crop watch reports and our contractors to spray

- Just keep it up, the information is invaluable, With regard to the AgWise site I did have some difficulty looking at the real-time stats from the individual weather stations.
- Not so relevant [to my vineyard] but interesting to know what others are looking out for.
- [We only occasionally] and if we are looking to monitor or research something specific because we do not have the luxury of spending too much time on the web, the fax is the most convenient way to receive information.

Feedback on Agwise web site requested in April 2004

The results below provide feedback form a very small sample of growers however it is clear form this feedback and anecdotal information that use of the website was not as extensive as hoped.

Total Respondents to these questions = 18 growers

Question 4. Would you use a web page designed specifically for CropWatch?
Yes= 13, No= 2, No comment = 3

Question 5. Did you use the Agwise web site?
Yes= 5 – Was it useful? Yes= 3 No = 2 (too far from Blewitt Springs, could be better)
- Was it easy to use? Yes= 4 No= 1
No= 5, No comment= 8

Outcome/Conclusion:

The pilot of CropWatch SA McLaren Vale successfully delivered a useful, relevant service to McLaren Vale growers. Growers were able to utilise the information in the reports to assist with management decisions. The service assisted with lifting awareness of pest and disease incidence and risk and in some cases improved efficiency of chemical use. Thus, CropWatch SA McLaren Vale has demonstrated that it can deliver significant economic and environmental benefits to McLaren Vale growers.

The development of the service had the additional benefit of providing McLaren Vale Grape, Wine and Tourism with a powerful communication tool, improving the ability of the organisation to deliver extension and other project information.

Given the positive feedback and adoption of the service by growers it is recommended that McLaren Vale Grape, Wine and Tourism through the McLaren Vale Wine Industry Fund continue the service for the 2004/05 season.

It is recommended that CropWatch SA McLaren Vale be improved by incorporating additional weather station data into pest and disease models to ensure accuracy across all sub regions in McLaren Vale, this will also make the service more relevant to those growers not covered by the existing network.

Incorporation of electronic links to photos and relevant websites will assist in providing a more informative service. The quality of the content of the reports needs to be maintained to ensure that those growers receiving the reports by fax and notice boards are not disadvantaged.

In the long term utilising local consultants to interpret data and collate reports and running pest and disease models through the AgWise web site instead of exporting the data will make the service more economical and regionally self sufficient. This will not be possible for 2004/05 as adequate models are not yet in place on the AgWise web site.

Budget Reconciliation:

Budget	Funding required from GWRDC	Actual expenditure
Weather station access from Agrilink and growers	$2,500.00	$32,000.00
Vineyard Monitoring	$3,000.00	$3,500.00
Weekly dissemination of reports		$2,000.00
Interpretive costs - SARDI PIRSA Loxton	$4,000.00	$4,000.00
Infrastructure set up costs - WED	$3,000.00	
Admin costs	$500.00	$1,600.00
Workshop launch costs	$500.00	$500.00
Total	$13,500.00	$43,600.00
GST	$1,350.00	$4,360.00
Total funds requested from GWRDC	$14,850.00	$47,960.00

CropWatch Regional Overview – McLaren Vale

Notes from the 2004 vintage
By James Hook

Vineyard monitoring began in September 2003 and concluded in early April 2004. The CropWatch project was launched in the last week of September and posted bulletins to the end of March.

General Season Comments

The winter & early spring of 2003 recorded average rainfall in the district. Temperatures were warm through winter and amazingly some bud-burst of Chardonnay was seen in stressed vineyards as early as July! The shoots in these blocks stayed at the 1-3 leaf until September when 'normal' bud burst occurred.

During September several heavy showers fell. The wet conditions through early spring and good soil moisture levels lead to a high level of budburst. Most vines had more than 100% budburst, with the vines throwing watershoots (non-count shoots).

After budburst temperatures were colder than average. In other regions of South Australia severe frost damage occurred particularly affecting Chardonnay. Frost damage 'burnt' off some or all of the vines growing tips. Some minor cold damage was seen on the Willunga plains. This did not appear to have a major affect on the vines, which recovered well.

As is typical in McLaren Vale region severe winds early in the growing season damaged and restricted shoot growth. Hail caused some shoot and bunch damage in early October when a large hailstorm passed north of the township of McLaren Vale. Most of the significant damage was seen around McLaren Flat, but other isolated areas of the basin also had damage.

Late spring and early summer was mild with warm temperatures and clear weather that resulted in a generally consistent berry set. Most varieties set well including most Merlot blocks. Good set lead to high bunch weights at harvest. Bunch weights were above average in most varieties, which was attributed in most cases to more berries per bunch and above average berry size.

Cabernet Sauvignon was an exception. Some Cabernet blocks -mainly in the cooler parts of the district- showed 'hen & chicken' berry development. In these blocks a percentage of fruit was aborted and stayed in the bunch as small, green 'shot' berries which did not develop any further. Some Chardonnay also had 'hen & chicken' set.
Another problem with set was seen in some Grenache blocks had 'shatter' where sections of the bunch fell out after flowering.

In general bud fruitfulness for the 2005 vintage should be high due to the warm spring weather. However many vineyards had increased competition for nutrients from the high crop load and high shoot levels which may reduce potential crops for next season.

The season then progressed into a fairly dry and mild summer with very little rainfall recorded.
On Saturday the 8th of February extremely hot, still conditions where seen in the all districts around Adelaide. This caused widespread sunburn in McLaren Vale. This damage showed up as pink or brown fruit, which rapidly shriveled up. Sunburn was generally worse on western side of canopies where bunches were exposed to the afternoon sun. In particular, young vineyards with small canopies suffered damage.

The next weekend- 15-16th saw even hotter conditions with temperatures in the mid-40's seen inside grape vine canopies. Some vineyards suffered from defoliation and leaf burning. The burn symptoms were worse in vineyards with sandy or shallow soil, or on areas where subsoil moisture levels were low. In some situations these vineyards dropped their lower leaves.

This hot weather also had the affect of stopping berry sugar levels increasing- this in turn delayed harvest. Fortunately temperatures then cooled allowing the vines to recover. Heat affected blocks were close enough to harvest and 'got over the line' reaching full maturity with their remaining canopy.

Landmark- AgriSystems in conjunction with SARDI prepared this report for the McLaren Vale Grape Wine & Tourism Association- CropWatch program. For further information contact Lucy Hyde on 83239944

CropWatch Regional Overview – McLaren Vale

Notes from the 2004 vintage

Most sparkling Chardonnay and Pinot Noir was harvested about the last week of February with table whites following in the first week of March.

There was no significant rainfall from the first week of January till the last week of March. What little rain that did fall caused very minor berry splitting. Conditions during March and April were warmer and drier than normal. Flavour & seed ripeness were observed to peak with sugar ripeness in high quality vineyards. Berry acid levels were moderate to high due to the cool morning temperatures and warm days through March. Grape colour in red varieties was generally good, Shiraz in particular had high colour at harvest.

Light rains in early April had little affect on fruit quality and high baume fruit was picked on the basin and in the hills right through to the end of the months.

The season's weather is available from www.agwise.net
Login as USERNAME: cropwatchmv
PASSWORD: agwisemv

Powdery Mildew

The 2003/2004 season was generally moderate for Powdery Mildew, but there were some notable exceptions. **Powdery Mildew is a problem in the district but it is preventable as this seasons CropWatch sites showed.**

Only minor infections were seen in the CropWatch bearing vineyards. The only official CropWatch site with significant levels of Powdery was a non-bearing Cabernet Sauvignon block.

Most effective control strategies integrated the use of sulphur and other synthetic fungicides to target appropriate stages of the powdery mildew lifecycle.

Infections caused by the release of inoculum from *cleistothecia*- (Powdery spores that last over winter in bark)- were first observed in late October and November in unprotected vineyards. This powdery build up was one month earlier than 2002/03 in those same vineyards.

Powdery pressure was moderate through November and December with some cool overcast weather. Growers who used three effective sprays through this time (early flowering- full flowering and peasize) had clean berries at harvest. Good coverage & control in the lead up to flowering and until the canopy closed over after Christmas was important.

In some monitored vineyards the first bunch powdery infections were seen from the first week of January. This Powdery was caused by infections that occurred in late December. Where alerted, the vineyard operators were able to keep bunch infections to a low level but had to work hard to limit the spread of the disease. These infections were limited with multiple targeted DMI sprays. In some cases where bunch infection was a real threat to fruit quality Flint® was used.

Some Cabernet blocks with 'hen & chicken' berry development had Powdery Mildew infections on the small 'shot' berries during January. These infections spread onto the green bunch stalks and persisted until harvest.

Blocks that kept growing in January had some tip powdery seen in the middle of the month. At this time in non-bearing vineyards CropWatch monitors saw Powdery. Powdery was also seen where vineyards were hedged or summer pruned while actively growing. This forced lateral shoot growth that was susceptible to powdery in January because was not protected by earlier spray coverage.

CropWatch Regional Overview – McLaren Vale

Notes from the 2004 vintage

The hot weather at the start of February was seen to reduce the level of powdery as low humidity and UV light limit Powdery's increase. However the hot weather had little effect in limiting blocks with big, vigorous & shaded canopies.

Some cooler temperatures and rainfall in late March and April provided favourable conditions for Powdery Mildew development, particularly in young vineyards and red grape varieties that were harvested late in the season. The signs of this late infection were seen on bunch stalks, as white or grey hair like growths, and on upper leaves as a white dust like infections.
If you had powdery mildew on your berries at harvest look at your management early in the season and in the few weeks before and after flowering. **Did you follow the three T's?**

To improve powdery control attend to the three '**T**'s. This means, that in managing powdery, the correct **T**iming of the correct **T**reatment needs to be applied with the correct **T**echnique. Good spray timing needs to be supported by use of appropriate fungicides applied with the required spray cover and dose.

Downy Mildew

The dry conditions throughout the growing season were unfavourable for Downy Mildew in the McLaren Vale GI.

No primary infection events (rule of thumb = 10:10:24) were recorded this season by the CropWatch weather stations. There were two close calls at the start of October but the amount of rainfall and duration were not enough to start the disease.
Another near Downy Mildew event occurred in the last week of December. Close examination of the weather data showed that we were only 1.5 hours short of an event. CropWatch issued a bulletin about our close call and that no action needed to be taken.

This wasn't the case outside of McLaren Vale. In Mt Compass, the Southern Fleurieu & in some sections of the hills above McLaren Vale a primary infection event was recorded on December 29th. Oilspots infections were then found in the first and second weeks of January. At this point some further rain fell causing a secondary infection in these areas, greatly increasing the number of oilspots.
Growers who were alert to this sprayed protectant fungicides- Copper or Mancozeb. High levels of suppression were achieved with no further oil spot outbreaks being detected.

Hot, dry conditions for the remainder of the season were unfavourable for any further secondary Downy Mildew infections. This provided the opportunity for growers to reduce the number of protectant fungicides applied compared with the last season & 2001/2002.

Downy Mildew was not a problem this season but **Downy Mildew is like a forest fire.** With suitable weather conditions it will be a major problem in McLaren Vale. If the right weather conditions occur **look to CropWatch** & seek professional advice.

Botrytis

The incidence of leaf botrytis recorded was moderate in the McLaren Vale district in October and early November due to strong winds tearing leaves and providing a point of infection for air borne spores of botrytis. Serious hail damage in October also increased the incidence of leaf botrytis. However, the dry conditions in late spring resulted in the leaf botrytis drying up before flowering.

The weather was warm and dry through flowering naturally limiting latent botrytis infection. Latent infections *'hide'* inside berries waiting for the right weather conditions to spore when the fruit is riper than 9 baume.

No significant rain occurred during February and March which is the danger time for bunch botrytis. In general the incidence and severity of bunch Botrytis was low at harvest. Some rain at the end of February caused minor berry splitting in most ripe blocks.

Fortunately dry conditions followed the rainfall maintained infection at low levels in most blocks.
If botrytis was a problem in your vineyard this season consider changing your management tactics.

Fungicide programs designed to target critical phenological stages, respond to weather conditions and reflect the level of infection risk for your block can help. Assessment of infection levels and the resistance of botrytis strains to fungicides are important tools for developing effective, sustainable and economical management strategies.
"Other Moulds", such as penicillium and aspergillus were not seen to be a widespread problem this season. There levels are dependant on skin conditions. Most berry skins held together well, even when 'hung' out in the vineyard to very high Baume levels. Minor splitting & sun damage saw some penicillium at harvest. Berries that were infected with these moulds may lose flavour or develop further sour rots and off-flavours.

Light Brown Apple Moth (LBAM)

The levels of LBAM recorded before flowering in most McLaren Vale vineyards were high. The LBAM larvae were active in vineyards in late October and through November. Initially larvae were seen in the shoot tips but began to move into the bunch zone in the middle of November as flowering began. Many vineyards opted to control apple moth at this time.

Where populations exceeded acceptable levels targeted IPM insecticides provided effective control. There was a small resurgence in population numbers later in the season with rainfall and cooler temperatures, however whilst some larvae were found to be associated with Botrytis infection, overall bunch infestation from veraison to harvest was low. Vineyards that achieved effective control of winter broadleaf weeds had a significant reduction in LBAM populations compared to vineyards with a large amount of *capeweed* or *marshmallow.*

Mites

There are three species of mite that commonly attack grapevines across Australia, they are; bunch mite, grape leaf blister mite and bud mite (which are different strains of the same mite) and grape leaf rust mite. All of these were commonly found in McLaren Vale this season.

The populations of bud mite and rust mite were moderate to high during the season. There was significant restriction of shoot growth observed in the spring and a reduction in leaf functioning at the end of the season in some blocks. Traditionally Cabernet Sauvignon shows heavy effects of Rust mites. Significant stunting of shoot growth was seen in Sauvignon Blanc and Grenache also this season.

This season some growers opted to spray for Rust mite before budburst. Those blocks, which required treatment for rust mite, were sprayed with sulphur (and oil in some cases) when Chardonnay was 10% green tip, to prevent the mites laying eggs and breeding in the buds. The early spray appeared to even out bud burst and reduce the shoot damage in sprayed blocks compared with unsprayed blocks. The continued use of timely pre and budburst sprays in conjunction with monitoring in the coming season will help to reduce the level of mites.

Low levels of Blister mite were seen in patches during January & February.

Other Pest and Diseases

The mild summer season favoured mealy bug- small, white, furry insects. Mealy bug numbers increased leaving a 'sticky' or shiny deposit on bunches and leaves from January onwards. Mealy bug numbers were highest in tight bunched varieties with dense canopies and a heavy crop.

Low levels of earwigs were recorded in most vineyards through October. The damage to foliage observed however was minor. Weevils were also recorded in some vineyards, but numbers were not sufficient to cause any significant impact. Weevils can cause damage to foliage and to developing bunches.

Cutworm and Black Beetle caused damage in young plantings early in the growing season. Most growers opted to control these pests with one or two applications of a broad spectrum insecticide like Chlorpyrifos tradenames- Dominex & Fastac®.

Snail numbers varied greatly across the district, dependant mostly on soil type. A comprehensive baiting program early in the season of both the perimeters of the vineyard and along the rows proved effective. Baiting programs are most effective when the application coincides with a rainfall event. Bait should be spread straight after rainfall when the snails are active.

Other Management Issues

Herbicide practices came into question this season, with many operators having problems with 'knockdown' herbicides. In general this was to do with poor spray coverage. As with all agricultural chemicals follow the advice on the label, or if no specific advice is with the label seek professional advice. Different herbicides are recommended for use at different water rates, make sure you are using the right water rate for the herbicide you are using.

The extreme weather conditions experienced in summer highlighted the necessity for effective irrigation monitoring and maintenance. High crop loads increase vine water use.

Problems were also experienced with self-flushing valves blocking and not being detected in time to prevent water stress in the vines. Annual flushing and cleaning with Phosphorus Acid or Hydrochloric Acid combined with a vigilant programme of irrigation monitoring and maintenance will help to prevent these problems occurring again in the coming season.

Welcome to CropWatch – McLaren Vale
Season 2003/2004

This **CropWatch SA** message was compiled on **Thursday December 4th 2003** and will be updated on **December 11th** unless an adverse weather event occurs.
The past week's weather is available from **www.agwise.net**

Powdery Mildew

The time to control powdery mildew on this season's crop is nearly over. Bunches on most varieties are past 80% capfall and the canopies are closing in. As the berries grow toward pea-size they are becoming tolerant to infection and the denser canopies are becoming impossible to spray effectively.

The prevailing temperatures have been very favourable for the development of powdery mildew in recent days. In an unsprayed block, there is ample reminder of what powdery can do if is not controlled effectively – the bunches are quite badly diseased! The good news continues though: the control maintained in most sprayed vineyards has been excellent.

Christmas is coming and a number of people may be considering things other than powdery. A task to achieve before Christmas is to look for mildew on at least 50 bunches per block. Select the bunches from inside the canopy and look closely for grey-white mildew growth on the berries.

Historically, a number of people return from the Christmas break and 'suddenly find' powdery mildew on their grapes but, in those vineyards, it was there before Christmas. It is a good practice to look in detail now and spray while there is some chance of control rather than leave it until the New Year – a month away – when it is too late!

Downy Mildew

Saturday night's rain was not enough for infection – so still no downy! Since berries in the most advanced blocks are approaching pea-size, they are becoming resistant to the disease. Good news!

Bunch Rots

The conditions have not been conducive to bunch rots and generally, little action is needed. But, if your vineyard has a history of bunch rots or your variety has tight bunches and wet weather is forecast, spray before bunch closure with a suitable protectant fungicide such as Captan®. Remember; it is good to keep specialist fungicides like the dicarboximides eg. Sumisclex, Rovral and Fortress™) for possible use later in the season if needed. Be sure to check with your winery for pre-harvest withholding periods.

Another way of reducing the risk of bunch rots for vigorous vines is to open the canopy by trimming the shoots. This improves airflow and reduces canopy humidity after rain periods.

Light Brown Apple Moth (LBAM) & Vine Moth

Apple moth is now quite easy to find if it is present. Look for brown 'strings' in the developing bunches. These 'strings' are made up of flower caps held together by the webbing from the feeding moth. LBAM is worse in white varieties and may need to be controlled if there is more than one moth-affected bunch in ten. If you detect larvae, apply a biological insecticide such as BT®, Avatar®, Proclaim® or Success® and check labels for details.

CropWatch SA McLaren Vale is a pilot service operated by the McLaren Vale Grape, Wine and Tourism and SARDI. Landmark AgriSystems provide vineyard monitoring, Agrilink provide weather data, Western Electronic Design process the data and link with SARDI at Loxton who interpret and compile the messages.