Vigilance for healthy vines

Regular monitoring for pest and disease issues is becoming increasingly important, given growing pressures on Australia's biosecurity system. And reporting unusual symptoms is a vital cog in a healthy system. But how do we monitor and who do we report to? Vinehealth Australia Technical Manager **Suzanne McLoughlin** explains.

You're wandering down a vine row and you notice a strange looking leaf. It doesn't look like downy or powdery mildew, or anything you instantly recognise, and you quickly rule out herbicide damage. So, what is it? And what do you do next?

This scenario plays out in vineyards around the globe every day. Here in Australia, we're lucky not to have some of the world's worst grapevine pests and diseases to deal with, such as *Xylella fastidiosa* (Pierce's Disease in grapevines), but the risk of an outbreak of an unfamiliar pest or disease is increasing. And consider for a moment if you would know what actions to take if what you see when monitoring turns out to be an exotic.

Due to heightened global trade and tourism, Australia now records about 30,000 interceptions per year at the national border, which includes plants, animals, seeds and invertebrates that are being picked up on people, in cargo and in airfreight. This annual rate is 30% higher than a decade ago.

There has been a doubling in the number of exotic plant pest incursions in Australia in the past seven years. And phylloxera, already in Victoria and New South Wales, is an ever-present threat.

Monitoring for pests and diseases is recommended weekly on foot through the growing season. Photo: Vinehealth Australia

MONITORING

How to monitor for something unusual

It's important to be constantly alert for anything unusual in the vineyard. This might be an insect or set of disease symptoms you've never noticed before, abnormally slow vine growth, or vines that never burst after damage or experience a significant stress in the previous season.

Monitoring for pests and diseases is recommended weekly on foot through the growing season by zig-zagging up and down between rows and visiting known 'hotspot' areas.

Hotspots can be:

- areas in a block where disease has been identified before or where vectors of a disease have been found previously,
- susceptible varieties to a particular pest or disease,
- end panels of rows that may have been missed with sprays,
- depressions in the landscape where water pools,
- areas with irrigation leaks, which are often seen by increased weed growth under vine, and
- larger canopy sizes where natural airflow may be hampered and where achieving effective spray coverage is more difficult.

When monitoring, record the date, row numbers you inspect and results of your inspections; recording negatives is just as important as positive detections. Know what vine parts are likely to be impacted by different pests and diseases, and the seasonality of symptom expression so you can

narrow down what pest or disease you look for at certain times of the year.

It also pays to know what time of the day particular pests are most active and time your monitoring activities to coincide, so you'll have the best chance of finding them if they are there. This will also often be the best time of the day to apply a control treatment too.

Take photographs of what you see to help to verify your findings:

- ensure you photograph the top side and underside (or back and front) of the plant material or insect,
- if taking photographs of insects, put them in the fridge or freezer first to ensure they sit still for the photographs,
- use a flash which will enhance fine detail, and
- take photographs in line with a ruler to show the size of the infection or insect and/or use a known object, such as a pen or 20c piece, to convey the relative size of the infection or insect.

Set a standard number of observations per hectare and monitor any changes in levels of pests or diseases found over time. Mark and record vines where infection or pests have been found, which will allow you to monitor the effectiveness of the controls you apply and monitor the spread of the infection/pest over time.

Monitoring for anything unusual also crosses over into the winery or packaging/distribution centres. Pests such as borers and bugs can harbor in items such as barrels, pallets or packaging material. Ensure these items are inspected routinely upon arrival at your winery.

A grapevine infected with Pierce's Disease in California.

What are we looking for in the vineyard or winery?

Most growers are familiar with identifying the most common endemic pests and diseases already in Australia, so in this article we focus on those that growers are less likely to be familiar with – exotics.

In 2013, high priority exotic plant pests and diseases to Australian viticulture were identified through the development of the Viticulture Industry Biosecurity Plan. Priority ratings considered the entry, establishment and spread probabilities for each pest in Australia, the likely impacts of the pest on the cost of production, productivity, removal of quarantine barriers and market access, and how difficult the organism would be to control and/or eradicate.

Pierce's Disease (*Xylella fastidiosa*) was named Australia's number one exotic plant disease. Other high priority exotics for vines are: glassy-winged sharpshooter, spotted winged drosophila, black rot, grapevine leaf rust, grapevine red blotch virus, angular leaf scorch and rotbrenner, bacterial blight of grapevine, vine and grape mealybug, European grapevine moth and American berry moth.

It is vital that Australia is prepared to respond to an incursion of an exotic plant pest or disease. This response relies heavily on growers identifying unusual pests or diseases and reporting them immediately.

To help, Vinehealth Australia produced a handy poster, 'If you spot me, report me', and associated documents that provide information on symptoms, impacts on vine growth and fruit quality and when to monitor in relation to each of the exotic pests and diseases. You can access the tools here: http://vinehealth.com.au/industry/resources/farm-gate-hygiene/farm-gate-hygiene-posters/

And you can also access information about the range of exotic pests and diseases here: www.vinehealth.com.au/pests-and-diseases/exotic-pests-diseases-to-australia

Benefits of monitoring

- Each pest or disease found requires a different consideration as to whether control is warranted, and if so, what control options are available. Correct identification of the pest or disease is vital for applying effective and efficient action to achieve eradication.
- Growers can waste money if the wrong sprays are applied, or the right sprays are applied at the wrong time.
- Control measures can be less effective on insects as they increase in size or lifestage.
- Dealing with an issue early can minimise secondary effects, for example, controlling a vector like mealybug or scale can minimise the spread of a virus across a block.
- Biological controls are often most effective when timed for introduction at the appropriate pest or disease lifestage and also when applied during appropriate weather conditions.
- Enacting a control program when the pest, disease or weed incidence and severity are low (but above your threshold), generally ensures a more effective and less costly result. Late in the growing season, fewer chemical options are available for control. And delivering a critical amount of active ingredient to a pest or disease to ensure 100% mortality is reduced with increased canopy size.
- While vineyard monitoring mostly helps curb the spread of a pest or disease in a particular block, it can reduce spread to other blocks on your property and also to other vineyards in your region.

REPORTING

How to report

If you find something that looks like an exotic plant pest or disease, or a notifiable established pest such as grape phylloxera, Queensland Fruit Fly or Mediterranean Fruit Fly, you are obligated to report it immediately to your relevant state or territory agriculture agency through the Exotic Plant Pest Hotline on 1800 084 881 or Vinehealth Australia on (08) 8273 0550.

What happens when you call the hotline?

A report to the Exotic Plant Pest Hotline triggers investigations by the

relevant state agency to identify the pest or the unusual plant symptoms. Diagnosticians in that state or territory are tasked with determining if the suspicious pest or disease is exotic.

Calls to the Exotic Plant Pest Hotline connect to an automated system that allows the caller to choose the state or territory that the call relates to. The caller will then be connected to the relevant authority for that jurisdiction where calls will be answered by an experienced person, who will ask questions to help understand the situation, such as:

- Where is your property?
- What was seen (describe the pest or send a photo) and when was it first noticed?
- Where it was found and what it was on?
- How many pests are present/how infected is the crop?
- How widely distributed is it?

Every report is taken seriously, investigated and treated confidentially.

What happens if a reported pest is confirmed to be an exotic?

Exotic plant pests are managed under the Emergency Plant Pest Response Deed (EPPRD), which is a legally binding agreement between Plant Health Australia (PHA), the Australian Government, all state and territory governments and plant industry signatories.

This agreement provides a consistent national approach to the management and funding arrangements of responses to emergency plant pest incidents and provides a recognised role for affected industry parties to participate in approved responses, and to assume a greater responsibility in decision making.

For a pest to be classified as an emergency plant pest, it must either be listed in Schedule 13 of the EPPRD: http://www.planthealthaustralia.com.au/wp-content/uploads/2018/08/EPPRD-22-August-2018.pdf or be determined by the Categorisation Group or National Management Group to be of potential national significance and meet at least one of the criteria summarised below:

- a known exotic pest
- a variant form of an established plant pest
- a previously unknown pest
- a confined or contained pest.

Where pests are deemed not to be classified as an emergency plant pest through this system, they revert to the relevant industries and/or the relevant state/territory governments to directly manage.

Benefits of reporting

We often hear the phrase that biosecurity is a shared responsibility. And it's true. Everyone, including the Federal Government, state governments, industry and the general public, has an obligation to keep our country, state and regions free of damaging pests, diseases and weeds.

Every day, we enjoy eating food produced in a comparatively clean and green environment, which can be negatively impacted by a pest, disease or weed incursion where we have to apply control measures to eradicate or minimise the spread. Reporting unusual pests and diseases ultimately aims to protect our way of life and our ability to trade our produce freely.

Reporting can come with a risk of personal cost though. It takes commitment to report an exotic pest, knowing it may have a detrimental effect on your own productivity for a period of time while quarantine zones are established and the movement of machinery and grapes is impacted. But reporting often reduces implications for the broader industry and community.

At the grower level, early reporting – when the outbreak is often restricted in size – gives greater chance of successful control or effectively limiting the spread between properties in a region, or between regions.

Ensuring a pest or disease is formally identified by an expert is a vital stage of monitoring and reporting, as an incorrect assumption can result in extreme stress for individuals and communities and, even, unwarranted trade restrictions.

If you would like to know more about monitoring or reporting, or you notice something unusual in your vineyard, contact Vinehealth Australia on (08) 8273 0550 or visit www.vinehealth.com.au

Suspicious stinkbug sparks response

When a staff member walked into Warren Birchmore's office with a suspicious looking bug on her jumper, Warren immediately thought of the Brown Marmorated Stink Bug (BMSB).

"I was aware of the BMSB problem due to the recent publications and alerts, so I had heightened awareness," said Warren, who is viticulture systems manager at Accolade Wines, based at Reynella.

"When I pointed out the bug on her jumper, she instinctively flicked it off and it flew away. But I knew I needed to catch it for identification. I managed to catch it and contain it in a jar, which was hard to do as the bug was very active."

The next step was finding information to assist with identifying the bug. Warren contacted Vinehealth Australia and spoke to technical manager Suzanne McLoughlin. Suzanne provided a quick reference guide, contained within the 'Guide to the identification of brown marmorated stink bug, *Halyomorpha halys*, and other similar bugs' by the Australian Department of Agriculture and Water Resources. And together they identified some of the distinguishing features of the bugs that Warren could use to initially discount the bugs it was likely not to be.

"Suzanne also suggested putting the bug in the fridge to slow it down, which was a great tip. Once the bug was sluggish, I put a ruler under the jar for scale, and took photos using the flash function," Warren said.

"This was also a good move, because the colours and markings on the bug showed up vastly different in the photos when I used a flash. I thought the bug was a brown/grey

colour, but it was actually dark brown to black, with yellowish spots. That was a real eye opener – the colour differences between the naked eye and the camera."

The markings on the bug and the number of antenna sections were also helpful in identification. "The bug we caught had four antenna sections, while the BMSB has five. I was fairly certain it wasn't a Brown Marmorated Stink Bug, but I wanted to be sure."

Suzanne put Warren in touch with SARDI entomologist Greg Baker and within a matter of 20 minutes, Greg had confirmed that the stinkbug in question was a shield bug native to Australia.

"It was a relief that our bug wasn't the BMSB, which is exotic to Australia and we really don't want it here," Warren said. "And it was a good process to go through for me, because now I'm familiar with the steps for identifying or reporting a suspicious pest. I'm now certain that Vinehealth Australia and SARDI would swing into action to confirm and contain anything we might find in the future."

Warren says vineyard staff are key to monitoring for unusual pests, as they are looking at vines every day.

"Our vineyard managers are well versed in knowing what pests and diseases could appear and are always on the lookout for something unusual. If they do spot something, they immediately investigate it, either internally within Accolade or outside with organisations such as Vinehealth or SARDI," he said. "There are lots of resources and industry contacts out there for growers to use.

"And all of us in the industry need to be vigilant. It's much better to be vigilant and get unusual insects or diseases identified, than to ignore the problem, and suddenly it's everywhere."

Suzanne said Vinehealth Australia was constantly looking at ways to make the pest and disease identification process easier for growers. "With new pest pressures on our doorstep, we're focused on preventing the entry of exotic pests, as well as ensuring growers know what to do if they find something unusual. We're here to help," Suzanne said.

Meanwhile, work is occurring nationally to protect Australian agricultural industries, including the wine industry, from the threat of brown marmorated stink bugs.

Between September and April each year, there is a heightened risk of BMSB on cargo imported from the US and several European countries. In response, the Department of Agriculture and Water Resources (DAWR) has strengthened biosecurity measures both offshore and at the border to ensure BMSB remains a pest exotic to Australia.

For the 2018–19 season, high-risk cargo (such as motor vehicles and heavy machinery) and cargo from high-risk countries (including France, Georgia, Germany, Greece, Hungary, Italy, Romania, Russia and the USA) will be treated for BMSB through an approved treatment provider.

DAWR has advised that managing the BMSB risk is likely to cause delays in clearance times due to identification of treated and untreated containerised cargo and the capacity of storage facilities at approved arrangement sites and onshore treatment provider premises.

The import and shipping industries can help avoid onshore delays by arranging for their goods to undergo mandatory treatment by an approved offshore provider prior to arrival into Australia. Industry is also encouraged to lodge relevant import documentation as early as possible.

For more information on the enhanced requirements, visit the department's BMSB page: www.agriculture.gov.au/import/before/pests/brown-marmorated-stink-bugs

Note: Vinehealth Australia has included the Quick Reference Guide to BMSB and similar bugs on its website, which you can find here: http://vinehealth.com.au/wp-content/uploads/2018/09/Quick-Reference-Guide-Brown-Marmorated-Stink-Bug-and-Native-Stink-Bugs.pdf

If you find an unusual bug:

- Catch it and contain it.
- If the bug is active, chill it in the fridge or freezer for about 10 minutes to slow it down.
- Take a photo with flash with a ruler for scale. Most cameras and phones have a macro mode for close up photos.
- If you think it may be a BMSB, review the BMSB Quick Image Reference Guide and look for identifying features.
- If in doubt, send your photo to Vinehealth Australia or your local entomologist or contact the Exotic Plant Pest Hotline on 1800 084 881.

NAME THAT BUG

Pictured here is the stink bug that Warren Birchmore found. There are many species of stink bug including the Brown Marmorated Stink Bug, which is exotic to Australia. But do you know what this one is? Check the quick reference guide at the link below and see if you can identity it. Then see below for the answer.

To view the reference guide, visit: http://vinehealth.com.au/wp-content/uploads/2018/09/Quick-Reference-Guide-Brown-Marmorated-Stink-Bug-and-Native-Stink-Bugs.pdf

Answer: Gum tree shield bug