

CONTROLLING BOTRYTIS ORGANICALLY

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It is hard to quantify just how much botrytis infection costs the New Zealand wine industry. Needless to say, it is substantial, which makes controlling it a priority of on-going research.

Dr Philip Elmer, senior scientist at Lincoln University, is one of those researchers, concentrating on biological control systems.

At this stage in New Zealand there are 10 products available to organic growers, with five of those being biological control agents (BCAs). And while most are proving their worth in the vineyard, Elmer is quick to point out they also require a whole system approach if they are to deliver efficacy.

At the recent Organic and Biodynamic Winegrowing conference, Elmer highlighted how you can get the most out of your

BCAs, and had some sage advice.

Number one – you need to open up your canopy.

“Canopy management is one of the cornerstones for the successful use of biological controls and natural products,” he said. “As part of the Grape Futures Project we listed that as the most important non chemical strategy for managing botrytis in vineyards. It is widely adopted now and is based on shoot thinning, bunch and leaf zone removal, vine trimming, bunch thinning and mechanical removal of aborted fruitlets and floral debris, which we refer to as bunch trash.”

As part of the research project, Elmer used a Collard to blow the trash from the bunches.

“We were able to bring the crop loss in Chardonnay down from 21 percent (where we did nothing) to 13 percent crop loss, just by going

through with the Collard system and blowing that floral trash out of the bunches.”

That reduction increased even further, when blowing floral trash out was combined with mechanical leaf removal. Crop loss when both were undertaken, dropped to 6 percent.

Removing trash is one of the biggest deterrents of botrytis Elmer said, because it gets rid of the early season botrytis inoculum.

“In trashy clones of Chardonnay, where you get an abundance of necrotic caps and aborted fruitlets, it becomes a nirvana for a pathogen like botrytis. It is their food base. We know when it gets established on those caps early and on the aborted fruitlets, we get an even greater supply of botrytis that can sit inside the developing bunches. This provides the

inoculum for all those early season latent infections, the green rot you occasionally see during mid season rain, and bunch rot at harvest.”

Another form of opening the canopy up is to graze sheep among the vines.

In some cases where the munching habits of sheep were utilized, 93 percent fruit exposure was achieved.

“Some of you might say that is too high. But at berry pea size, sheep were very effective. Just don’t leave them in there too long.”

Secondly, Elmer says you need to ensure you have the correct set up for sprayers.

“It is almost as if the success of the biological and natural products, begins and ends here.”

He says 80 percent good coverage of the surfaces will ensure there is good control.

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"It always comes as a surprise at how poorly some of these sprayers are performing. You need water sensitive papers to show whether or not the spray is reaching the target."

"At the end of the day, how well biological or natural products work does not reside with the vineyard manager or the winery owner. It resides with the guy on the tractor."

Mixing up your modes of action is another suggestion he has.

"I would suggest you do not rely on one single mode of action, or one natural or biological control. It does pay to mix them up."

There are a number of inexpensive products that can compliment BCAs. One such product, which the researchers have been trialing, is calcium.

"We know that if we can get significant increases in calcium content, it can reduce botrytis in

grapes, although it does depend on the variety. It can be used as an additive to increase the efficacy of the biological control agents."

In trials that began in the lab, then moved onto potted vines, small plot trials and finally grower based trials, the use of calcium reduced the botrytis levels significantly.

"We used Biomin C and put three applications on. Some growers actually only put two on, although our early research had shown that four would be best."

"Basically they were applied at 14 day intervals and the average reduction across these blocks was about 48 percent. We have not yet combined Biomin C with our biological and natural products. That is something we still have to do."

Some seaweed products have also shown good results when used with a biological control. But Elmer says there is a caveat

there, in that if you are going to mix BCAs with seaweed products, you need to check with the manufacturer to find out if they will be beneficial.

Another method proven to dramatically reduce botrytis levels is mechanical thinning or shaking. (See NZ Winegrower issue 92, Shaken Not Dropped).

In summary Elmer said if you are using biological or natural products, you have to take a whole systems approach.

"We do have to give them a hand at times. Modifying the canopy is the simplest way of doing that. We know they (BCAs and natural products) work better under



80% coverage such as this shows will provide good cover.



There is too much yellow on this paper, showing how little of the spray has actually reached the target.

low disease pressure conditions, as opposed to having to blast epidemics." ■
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