Welcome to the Field Crop Diseases Victoria podcast, brought to you by Agriculture Victoria.

In this episode the researchers will reflect on 2020 and look forward to 2021.

Today we are joined by Grant Hollaway, senior plant pathologist, with 28 years experience conducting, managing and communicating research in the Australian grains industry. Thank you for joining us Grant.

**Grant Hollaway**

Hi Jemma and hi everyone. Great to be here.

Working with Grant, we have Josh Fanning, who leads the pulse pathology team at Agriculture Victoria, with over 10 years experience. Thanks for being here Josh.

**Josh Fanning**

Thanks Jemma. It is good to be here.

And we also have Steve Marcroft, Australia’s leading blackleg disease expert. Steve has over 25 years experience working with canola diseases and leads Marcroft Grains Pathology. Welcome Steve.

**Steve Marcroft**

Thanks Jemma. Welcome to 2021.

**Jemma Pearl**

Josh, was there any diseases that took you by surprise in 2020?

**Josh Fanning**

Personally, diseases don't take us by surprise. We see the diseases every year, it's just which disease is going to be of greater significance in each season, and that's very seasonally dependent, as well as what crops are being grown locally, or in each particular paddock, and what regimes or disease management plans different growers have in place. So in 2020, the area of concern that I saw was more around chocolate spot, and botrytis grey mould, so chocolate spot in faba beans, and botrytis grey mould in vetch and lentils.

And we saw that with that greater rainfall last year, and an environment that was conducive to those diseases, we saw growers get caught off guard, and basically that those disease epidemics were created in paddocks or established in paddocks. And we saw some significant losses due to those diseases. It was important to note that even though we didn't have higher temperatures or optimum temperatures for these diseases, it is sort of like a bell curve.

So even though we have lower temperatures than normal, we're still getting those diseases develop in paddocks, just at a slower rate. So where people were expecting warmer weather when the diseases take off, the diseases were still there in the paddock, and people weren't putting in control methods for those diseases. And so they still developed across paddocks. And then in some areas, we did get those optimal environments, and it did take off, or others just got caught off guard because that disease got severe over time, but at a slower rate, and they weren't expecting it to come in. And that's why we saw some yield losses. So it's just important to note that diseases do develop at a range of temperatures. It's just often we talk about the optimum conditions to have a really conducive disease epidemic.

**Jemma Pearl**

With regard to cereals, Grant, what was 2020 like?

**Grant Hollaway**

During 2020, there were a whole range of diseases in cereal crops. And that was to be expected with the favorable conditions that we had during the season. But the one that was different to recent years was the levels of stripe rust right across the district in our wheat crops. We've been dealing with stripe rust in wheat crops for quite a number of years, but in recent times, stripe rust has been only occurring very late in the season. Whereas in contrast, during 2020, it came in a fair bit earlier than recent years. And for some, it's been many years since they've been dealing with stripe rust. Some of the reasons for that increased level of stripe rust last year was carry over of the rust on volunteers over the summer. Also, the epidemic started quite early in Northern Australia, where there was significant summer rains and volunteers growing early and some early planted crops that got early infection, which provides inoculum across large areas.

The other thing is, is the occurrence of a new pathotype, which was a new introduction into Australia in the last couple of years, that has reduced the level of resistance in some important varieties. So, when we bring them together, carry over of the inoculum, new pathotype rendering some previously resistant varieties more susceptible. And, ideal conditions during the growing season that resulted in high levels of stripe rust and the need for growers to get out and apply timely applications of fungicides.

In some of the research that we did within Agriculture Victoria at Horsham last year, we showed that if stripe rust wasn't controlled in the more susceptible varieties, yield losses range from 25 to 50% last year. Again, highlighting the need to be proactive in our disease management.

**Jemma Pearl**

Given the rainfall in 2020, Steve, how did canola fair?

**Steve Marcroft**

2020, there was plenty of disease around canola, which as we'd expect being a good rainfall year. However, it probably wasn't as severe as people thought it might've got since we had dry periods in the middle of winter, et cetera. So, the diseases probably really didn't get away like there was a lot of concern they might. So, blackleg really did what we expected it to do. There was certainly yield loss around, people didn't control it well, and certainly in our experiments, given fungicides, et cetera, we picked up some very significant yield improvements on more susceptible cultivars, et cetera. So it was from a blackleg perspective, it was managed well, there was no real issues. But other than that, there could have been some yield loss. But, I guess 2020 was a year where we did see other diseases popping up occasionally.

So, we did see sclerotinia, alternaria, powdery mildew, and we also saw pod infection of blackleg on canola as well. And these were all quite regionally specific. So most cases we didn't see them widespread, but in certain regions, we'd see quite a bit of this diseases. For instance, in the Western district of Victoria, we saw a lot of alternaria turn up late in the pods. And that was really a result of a longer wetter season they had down there. And we saw that their alternaria probably cost quite a bit of yield loss. In fact, some of our experiments at Lake Bolac probably suggested around a 20% return from the alternaria loss.

Again, with powdery mildew, we don't have a lot of information about powdery mildew, but it seems to becoming more prolific over time and more widespread. And 2020 was no exception for that. Sclerotinia again, we saw a little bit around the place, but not too serious. And as I said, pod-infection of blackleg, unfortunately did rear its head in a couple of spots, but that's really dependent on rainfall post flowering. So, as a summary, blackleg did what we expected it to do and other diseases just popped up regionally, specifically something to look out for, I guess.

**Jemma Pearl**

Looking ahead to 2021, what should growers and agronomists be looking out for?

**Steve Marcroft**

So, with the disease of canola, the green bridge is generally aren't problem. With most of our diseases, they're not something that we consider. They're not going to influence the amount blackleg or sclerotinia for instance, because they're being more stubble-borne diseases, not being obligate on living plants. However, like I was just reminded, viruses can be an issue. So if we do get a year where we have a green bridge and viruses, or more importantly, aphid populations build up in those populations, and then those aphids are there when our crops are germinating, aphids can move onto the seedlings and cause those virus issues. We saw that occur in 2014 but haven't had too many issues since then. And the main result of that was that early insecticide treatments were very effective at controlling those viruses. So if viruses are present on the green bridge, that's certainly something which people should be getting more information on.

But, for other diseases pre-sowing, the only really disease, I think you need to be concentrating on is blackleg. If we control blackleg well, it really doesn't cause us too many problems. We've got lots of tools in the kit at the moment to control blackleg. But if we get it wrong, it can cause a lot of yield loss, which I'm sure most agronomists are aware of. So pre-sowing, the real things are cultivar choice, making sure they choose a cultivar with a good stable blackleg resistance. And then looking at seed treatments, fungicide on the fertiliser, et cetera. And then really about where they place their canola crop to try to, if they can, get some separation between this year's crop and last year's canola stubble. And the real advantage of that is if you can do that, you're obviously much less reliant on fungicides and much less likely to sort of break the resistance in those fungicides or break the resistance in the cultivars. So they're the main things I'd be considering. Potentially getting information on viruses if aphids are present and thinking about where they place their crop and which cultivar they grow for blackleg control.

Yeah, with canola, the pre-season is actually really about placing and planning your crop. And then from that, you'll be able to determine what disease pressure your crop is going to be under. So, if you have a 500 meter isolation with the canola stubble, et cetera, you've got a good resistance cultivar, you know your crops going to be under fairly low disease pressure for the year. And you probably won't require much fungicide work. But however, if you're really pushing the envelope and growing high-intensity canola in high rainfall environment, then you already know your disease pressure can grow up during the year. And then you have to go and get out and do that scouting and fungicide application. So it's just, I guess, trying to put your crop on the page, so you sort of know where it's going to fit during the year and then what you may or may not have to do during the year.

**Jemma Pearl**

Grant, in your opinion what can growers and agronomists be doing?

**Grant Hollaway**

I think it's really important that growers evaluate the risk associated with each of their cereal crops based on the location that they are farming, the diseases that they know are important in the area and look at the individual risk within each paddock. So some of the things they need to look at is how much risk there's likely to be from a green bridge in terms of rust, viruses, and mildews. And with the summer rain that we've had, we're going to expect a fair bit of carry over of those diseases on volunteers. So those types of diseases are going to be important across all cereals. The other one to look at is which paddock they're planting into and understanding the paddock history. So, if we use wheat as that example, if there's a history of wheat in that paddock and there's stubble there that's carrying disease, there is more likely to be risks with stubbleborne diseases in that paddock and equally soil-borne diseases as well.

So some of the things that farmers can do to identify those risks, one is understanding how much of a green bridge there is in the environment. The next is know what stubble is present in that paddock, so looking at the paddock history. And then they can also look at taking a soil test using the PREDICTAB® technology by contacting their agronomist, doing the soil test, which will identify the risk associated with a whole range of cereal soil-borne pathogens, including crown rot, and increasingly some of the important stubble borne diseases that cause foliar diseases in our cereal crops as well.

The other thing that influences risks quite a bit in addition to our inoculum sources is the varieties that have been grown. So, it's really important that each year farmers review their varieties in terms of their disease reactions, by going to the latest copy of the Victorian Cereal Disease Guide. And if they're growing varieties that are highly susceptible to diseases that are important in their area, they need to carefully look at paddock selection and equally what management plans around fungicides they're going to have for controlling disease in the susceptive of varieties this year.

One of the things for people to think about is once they've identified the risks that they have in their paddock is looking at what pre-planting or at sowing treatments they can use in terms of fertiliser treatments, or seed treatments with fungicides to help suppress any diseases that may be important in that paddock. And the other one to always remember is the importance of using a seed treatment for the control of bunts and smuts.

These diseases are very cheap to control. The seed treatments are very effective, if they're applied every year and with good coverage. But, we have to keep in mind that even though we don't see bunt very often because we're using seed treatments every year, that if we don't and these diseases take hold in a paddock, they can make grain unsaleable.

**Jemma Pearl**

Josh is there anything you would like to add?

**Josh Fanning**

For pulses, it's very similar to the other crops that have been discussed, and I haven't got too much more to add on that. What I would suggest is similar to previous seasons, it's about having a plan in place for the current season and enacting that plan once you know how the seasons looking, and what you've got in each paddock. It's really thinking about your stubble load as others have talked about and think about what's happening or what has happened in previous seasons. So making sure that that stubble has broken down, so if you're in a drier environment, even though you may have had a chickpea crop or a lentil crop three years ago with disease, it's making sure that stubble is no longer there in that paddock when you go back into it with that crop again, because that's going to increase your risk.

In terms of pulses, pre-sowing, the main thing people can think about is their variety choices, which has been mentioned in other crops, but what's important with pulses is we know a lot of our varieties are quite susceptible to numerous diseases. There is limited resistance for some diseases in some crops in pulses. So even though we talk about, say I'll use chickpea ascochyta as an example, that most varieties are susceptible, just swapping to that MS variety actually makes a significant amount of difference to control and the outcome at the end of the season. So even that one resistance class is going to make a large difference.

The other point to make apart from variety choice is about fungicides. Last year, I heard a number of people get caught out without enough fungicides. They didn't have a plan in place for accessing more fungicides later in the season. This is the time to think about what crops you're planting, and how many fungicides that you're going to potentially need. And having a plan in place, depending on which way the season ends up going. It's not about pre-purchasing everything now, it's just about having that plan in place, and knowing what fungicides you're going to need if what situation develops in the crops that you're growing.

**Jemma Pearl**

What tools are out there to help growers and agronomists?

**Josh Fanning**

So the two main tools that we've got for pulses are probably the Agriculture Victoria Disease Guide, that has all the latest ratings in it, and that gets released after those ratings are all verified and completed. So that has all the latest ratings for the 2021 season, based on last year's and all the previous data. So it's really important to check those latest resistance ratings for all our pulse crops.

So second place that we can look or second tool for pulses is the Pulse Australia website, and it's a really good summary of what's on the APVMA website a lot of the time, and simplifies a lot of our permits and registrations. So the APVMA is the definitive source for a lot of these registrations and permits for fungicides that we can use on pulses, but the Pulse Australia website basically summarises that in an easy to use fashion. There's also some good management guides for growing pulses on the Pulse Australia website.

**Grant Hollaway**

So a couple of things that growers and agronomists should be looking at in terms of useful resources for planning disease management, and in crop management is the Agriculture Victoria Cereal Disease Guide, which will be released in February. That will provide growers with the latest ratings for all the important cereal varieties. And in crop, we have a relatively new tool, the StripeRustWM app, and this app is available for use on iPads and tablets. And we did some evaluation of this app in the field last year and found that its predictions of outcomes from stripe rust were very good. And we view this as a very useful tool to help industry making decisions around stripe rust management in crops.

**Steve Marcroft**

So for blackleg, we've produced two guides. We've got the Blackleg Management Guide, which is updated twice every year. So that'll be coming out in March, and that's got all the latest blackleg ratings. It's important that growers do get the current one, so there'll be the 2021 version, because the blackleg is a pathogen that's changing all the time. So, they're consequently overcome resistance genes in the cultivars and the blackleg ratings of those cultivars can change. When they change, they generally always go down. So it's important that growers have the latest blackleg ratings, and that's really the main defense for blackleg. The genetic resistance that the seed companies develop is extremely good. And given, if you're growing a good cultivar, you really don't have to do a lot else really. So, the Blackleg Management Guide becomes critically important.

That also now has all the different fungicide seed treatments on it. So you can actually see how much of a boost you will get when you apply different fungicides on the seed. And you can obviously purchase the seed with them already. Purchase seed with the fungicides already on it. And it also has the different blackleg resistance groups, which is the major gene resistance. So, you'll know if you've got a cultivar which over the last few years has increased disease severity and you want to change cultivars, you can do so without inadvertently growing exactly the same resistance. We know that can help a lot as well. So the management guide is pretty crucial that everyone gets a copy of that.

The other one is the BlacklegCM app, which we've developed with GRDC and DPIRD over the last few years. And that really goes through all the different scenarios that you can do to control disease. And then gives you an idea on how much disease you'll get in any of those different interactions. So, one of the issues with disease control is there's a whole range of different things you can do, but they're all totally interrelated. So, therefore it's hard to predict just changing one management practice, how they'll actually affect the yield outcome. So, that's what the app attempts to do. It tries to link all those things together. The nice thing with the app too, is that you can just run through it and tick off everything, filling out all the parameters for your crop. And then you know that you've actually taken everything into account. You haven't forgotten about the stubble or forgotten about the seed treatment or forgotten about the resistance group or whatever. It's all there listed for you. So you can take those into account. So really, they're the two main tools that I’d consider.

Later as we get into the season, in the spring, we've also got the SclerotiniaCM app, and that really is designed to be used at that early flowering period. And you can then determine whether your crop at that time of the year is susceptible or not, and then make those fungicide decisions with that app.

**Jemma Pearl**

What advice do we have for growers and agronomists for 2021?

**Josh Fanning**

So my key points for 2021 season is knowing your region and the diseases of significance, and then ensuring you've got the latest resistance ratings for that, or for the varieties you are growing for 2021, and then having a plan in place to manage those varieties for disease.

**Steve Marcroft**

My advice for the 2021 is just get out into your crops and know how much disease is occurring at key growth stages, and then make decisions at that time. So, we know that every season, every region is going to be different for whatever reason. And if you're at your paddock and you know what to look for and when to look, it goes a long way to making a successful outcome.

**Grant Hollaway**

For 2021. I think it's important to understand the risk in your environment. And that may be within the paddock that you're planting in and also the risk posed by inoculum carry over in the district. Reviewing varieties to understand the risks posed by your variety choice, and then having a fungicide management plan that you implement based on monitoring of crops for disease during the season.

**Jemma Pearl**

We greatly appreciate the time our researchers have taken to provide their insight today. Thank you very much guys.

**Grant Hollaway**

Thanks, Jemma, and let's hope this is a ripper of a year.

**Josh Fanning**

Thanks, Jemma. Good luck for everyone with the 2021 season.

**Steve Marcroft**

No worries at all. Thanks. See you everyone.

**Jemma Pearl**

For more information, check out the Field Crop Diseases Victoria website at extensionAUS.com.au/fieldcropdiseasevic.

You can find the cereal and pulse disease guides on the Agriculture Victoria website. The canola blackleg guides can be found on the GRDC website.

Thank you for listening.

All information is accurate at the time of release. Contact Agriculture Victoria or your consultant before making any changes on farm.