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## Disease

# Cereal variety disease guide summary of 2019 season and implications for 2020

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### Season summary

2019 was a second successive year with generally low levels of foliar diseases, owing to low carryover of inoculum, relatively dry growing conditions in most areas, and many growers using fungicides as protectants. Large areas of SA are also now being sown to such a narrow range of wheat and barley varieties, that the predominant varieties are largely determining which diseases are most prevalent.

### Net form net blotch

The major concern that came out of 2019 is the rapid spread of resistance to fungicides observed in net form net blotch and wheat powdery mildew. The large area sown to Spartacus CL and Compass in South Australia has seen virulence on these varieties increase in the past three years. This is particularly the case with Spartacus. Testing of specific samples collected from the Yorke Peninsula by SARDI in 2019 has shown that a proportion of the pathogen population is now highly virulent on this variety. This is reflected in the lower rating provided in this guide.

The growing of barley in infected barley stubbles from the same variety will have greatly sped up

this natural evolutionary process. The use of fungicides may have helped protect barley crops up to this point but it is now apparent that the same evolutionary processes have led to the development of resistance to SDHI products, including Systiva®, and some DMI products including tebuconazole. A limited survey conducted across the Yorke Peninsula suggests that the SDHI resistance is currently focused on the mid to lower Yorke Peninsula whilst the DMI resistance is likely to be much more widespread across SA.

### Rusts

The rusts were almost absent from South Australian crops. Just a smattering of barley leaf rust was observed in the most susceptible varieties in untreated trial plots on the Yorke Peninsula and in the South East. Stripe rust, although absent from SA this season, has changed in virulence once again with a new strain observed in Victoria and NSW. This new strain's most notable feature is increased virulence on almost all durum varieties. It also has significantly increased virulence on DS Bennett, Emu Rock and Trojan but decreased virulence on many varieties including Mace, Scepter, and Chief CL Plus.

### Powdery mildew in wheat

This disease has become a regular problem in the northern part of the Yorke Peninsula, particularly around Bute. Close rotations with the very susceptible varieties, Scepter and Chief CL Plus are largely responsible for this problem. Frequent use of fungicides to manage this disease as well as preventative sprays for rusts and septoria have now resulted in resistance to strobilurins and some DMI products developing in the mildew population. A limited survey conducted in the area revealed a high level of resistance to both strobilurins and tebuconazole in several paddocks.

### Rhizoctonia

In most parts of South Australia, Rhizoctonia has built up substantially over the last two seasons. This pathogen was helped by the dry winter and spring conditions experienced in both 2018 and 2019, while a dry summer in 2018/19 also ensured the soil-borne inoculum carried through to the next season. Rhizoctonia is hosted by a broad range of plants, however cereals and grassy weeds are preferred hosts and will increase inoculum greatly.

Unfortunately the run of bad seasons may put pressure on growers to plant repeated cereals and limit effective grassy weed control in pastures and break-crops, each of which is likely to favour *Rhizoctonia*.

**Crown rot** was a serious problem for cereal crops which had acceptable rainfall early in 2018 but had little rainfall during grain filling. Low rainfall at the start of the season in many areas meant that infection with crown rot was lower than expected in those crops and expression of crown rot was limited. The low rainfall in 2018 also meant that breakdown of infested cereal residues will have been very slow, with inoculum levels after non-cereals higher than expected in 2019. It will be particularly important to know the crown rot risk (using the PREDICTA@B service) prior to making the decision to sow very susceptible cereal crops such as durum wheat in 2019.

**Eyespot** was less of a problem in most crops in 2019 due to low rainfall. There were some exceptions to this where eyespot expression was much higher than would have been expected given the low rainfall. Crops affected in this way seem to have had higher

loads of infested stubble from previous crops. This suggests that the infested stubble has been wetted up by small rainfall events which produced a very humid environment at the base of the new crop, allowing higher than expected levels of spore production and infection.

### Explanation for resistance classification

**R** The disease will not multiply or cause any damage on this variety. This rating is only used where the variety also has seedling resistance.

**MR** The disease may be visible and multiply but no significant economic losses will occur. This rating signifies strong adult plant resistance.

**MS** The disease may cause damage but this is unlikely to be more than around 15% except in very severe situations.

**S** The disease can be severe on this variety and losses of up to 50% can occur.

**VS** Where a disease is a problem, this variety should not be grown. Losses greater than 50% are possible and the variety may create significant problems to other growers.

Where ‘-’ is used then the rating is given as a range of scores that may

be observed depending on which strain of the pathogen is present. This is currently only used for some barley and oat diseases where the pathogens are particularly variable and unpredictable. This classification based on yield loss is only a general guide and is less applicable for the minor diseases such as common root rot, or for the leaf diseases in lower rainfall areas, where yield losses are rarely as severe.

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### Disease identification

A diagnostic service is available to farmers and industry for diseased plant specimens.

### Send your samples to:

**SARDI Diagnostics  
Plant Research Centre,  
Hartley Grove  
Urrbrae SA 5064**

Wheat	Rust			Septoria tritici blotch	CCN Resistance	Yellow leaf spot	Eyespot	Powdery mildew	Root lesion nematodes		Crown rot	Common root rot	Flag smut	Black point ‡	Quality in SA
	Stem	Stripe	Leaf						P. neglectus	P. thornei					
Arrow	S	S	SVS	S	MS	MRMS	S	SVS	MRMS	MS	S	MS	MS	MS	AH
Accroc	MS	R	S	MRMS	S	MR	S	MRMS	S	MSS	SVS	S	SVS	MRMS	Feed
Beckom	MRMS	MRMS	MSS	S	R	MSS	S	MSS	S	MSS	S	MSS	MR	MRMS	AH
Bennett	MRMS	S	S	MSS	S	MRMS	MSS	R	S	S	VS	S	SVS	S	ASW
Calabro	MS	RMR	MSS	MRMS	S	MR	-	MR	S	MS	SVS	MSS	RMR	MS	Feed
Catapult	MR	MRMS	S	MSS	R	MRMS	-	S	S	MS	S	MSS	MS	MSS	AH
Chief CL Plus	MR	S	MR	MSS	MS	MRMS	S	SVS	MRMS	MSS	MSS	MS	SVS	MS	APW
Cobalt	S	RMR	MS	S	MSS	MS	-	MSS	S	S	S	MSS	RMR	MRMS	APW
Cobra	MR ^	MSS	MR/S*	MSS	MS	MRMS	S	MSS	MSS	MSS	S	MSS	S	MSS	AH
Cutlass	R	MS	R	MSS	MR	MSS	S	MSS	MSS	MSS	S	MS	MS	MS	APW
Emu Rock	MS	MSS	SVS	SVS	S	MRMS	MSS	MSS	MSS	S	MSS	MSS	MS	MSS	AH
Forrest	RMR	RMR	S	MS	S	MRMS	MS	S	VS	SVS	SVS	MS	MR	MR	APW
Grenade CL Plus	MR	MRMS	S	S	R	S	S	MSS	MSS	S	S	MS	MR	MSS	AH
Havoc	S	MR	S	MSS	S	MRMS	-	S	S	MSS	S	MS	MS	MS	AH
Illabo	MRMS	MR	S	MSS	MRMS	MS	-	MRMS	S	S	S	MSS	R	MRMS	AH
Impala	MR	MR	SVS	VS	MSS	MSS	MSS	R	SVS	S	S	MSS	S	MS	Soft
Kittyhawk	MRMS/S*	RMR	MS	MRMS	S	MRMS	S	MS	S	S	SVS	S	RMR	MRMS	AH
Longsword	MR	RMR	MSS	MSS	MRMS	MRMS	S	MSS	MRMS	MR	S	MS	MRMS	MS	Feed
Mace	MRMS	SVS	MSS	S	MRMS	MRMS	S	MSS	MS	MS	S	MS	S	MRMS	AH
Manning	MR	RMR	MSS	MR	S	MRMS	MS	MS	MSS	S	VS	SVS	R	S	Feed
Nighthawk	RMR	RMR	MSS	MSS	MS	MS	-	S	S	MS	S	MSS	MSS	-	Feed
Orion	MR	MSS	R	MRMS	MS	MRMS	S	SVS	MS	S	S	MSS	S	S	Soft / Hay
Pascal	MSS	RMR	MS	MSS	S	MRMS	MSS	R	S	S	S	MS	S	MS	APW
Razor CL Plus	MRMS	MS	S	SVS	MR	MSS	S	MSS	S	MRMS	S	MSS	RMR	MS	ASW
Revenue	RMR ^	R	VS	MSS	S	MRMS	MS	R	S	S	S	SVS	S	MS	Feed
Rockstar	MR	MRMS	S	MSS	MSS	MRMS	-	S	MRMS	MRMS	SVS	MS	VS	-	AH
Scepter	MRMS	MSS	MSS	S	MRMS	MRMS	S	SVS	S	MSS	S	MS	MSS	MS	AH
Sheriff CL Plus	MS	MSS	SVS	S	MS	MRMS	-	SVS	MRMS	MRMS	S	MSS	S	MRMS	APW
Trojan	MRMS	MSS	MR/MS*	MS	MS	MSS	MS	S	MSS	MSS	MS	MS	SVS	MS	APW
Vixen	MRMS	MRMS	SVS	S	MSS	MRMS	S	SVS	MRMS	MS	S	MSS	SVS	MSS	AH
Zanzibar	VS	RMR	SVS	S	MSS	MRMS	-	MR	S	MS	S	S	SVS	MS	Feed

‡ - Black point is not a disease but a response to certain humid conditions.

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, ^ = some susceptible plants, /\* = Reaction to less common strains  
Tolerance levels are lower for durum receivals



Durum	Rust			Septoria tritici blotch	CCN Resistance	Yellow leaf spot	Eyespot	Powdery mildew	Root lesion nematodes		Crown rot	Common root rot	Flag smut	Black point †	Quality in SA
	Stem	Stripe	Leaf						P. neglectus	P. thornei					
Artemis	MR ^	MS	RMR	MRMS	MS	MRMS	-	MSS	MS	MR	VS	MS	R	MS	Durum
Aurora	RMR	MRMS	R	MRMS	MSS	MRMS	S	MSS	MRMS	RMR	VS	MSS	R	MSS	Durum
Bitalli	MR	MS	MR	MRMS	S	MRMS	-	S	MSS	RMR	SVS	MS	R	MRMS	Durum
Saintly	MR	MR	MRMS	S	MS	MRMS	MS	MSS	MRMS	MR	VS	MS	R	MS	Durum
Spes	R	MRMS-SVS	R	MRMS	MS	MRMS	-	MSS	S	RMR	VS	MSS	R	MS	Durum
Vittaroi	MR	MS	MR	MS	S	MRMS	-	MR	MS	MR	SVS	MSS	R	MSS	Durum
Westcourt	RMR	MR	RMR	MS	MSS	MRMS	-	MSS	MS	MR	VS	MS	R	-	Durum

Triticale	Rust			Septoria tritici blotch	CCN Resistance	Yellow leaf spot	Eyespot	Powdery mildew	Root lesion nematodes		Crown rot	Common root rot	Flag smut	Black point †	Quality in SA
	Stem	Stripe	Leaf						P. neglectus	P. thornei					
Astute	RMR	RMR	RMR	R	R	MRMS	-	R	R	MS	MSS	MS	R	MR	Triticale
Fusion	R	RMR	RMR	R	R	MRMS	MS	R	RMR	MSS	MS	S	R	MSS	Triticale
Goanna	R	MR ^	RMR	R	R	MR	-	R	MRMS	SVS	S	-	R	-	Triticale
KM10	R	RMR	MR	R	S	MR	-	R	MR	MS	MS	MRMS	R	MRMS	Triticale
Wonambi	R	MR ^	R	RMR	MS	MR	-	R	MR	MS	MSS	-	R	-	Triticale
Joey	S	MR	MR	RMR	MRMS	MR	-	R	MRMS	MSS	MS	MRMS	-	-	Triticale

† - Black point is not a disease but a response to certain humid conditions.  
R = resistant, MR = moderately resistant, MS = susceptible, VS = very susceptible, ^ = some susceptible plants, / \* = Reaction to less common strains  
Tolerance levels are lower for durum receivals

Barley	Leaf rust*	Net form net blotch*	Spot form net blotch*	Scald*	CCN Resistance	Powdery mildew	Eyespot*	Covered smut	Common root rot	Root lesion nematodes		Black point
										<i>P. neglectus</i>	<i>P. thornei</i>	
Alestar	R-MS	MR-S	MSS	MS-SVS	R <sup>^</sup>	RMR	-	R	MSS	MR	MR	MRMS
Banks	MR-S	R-MRMS	MRMS-S	R-SVS	S	MR-MS	-	MSS	MSS	MR	MR	MS
Commander	MS-S	MS-VS	MSS	MR-SVS	R	MRMS	-	RMR	MSS	MRMS	MRMS	MSS
Compass	SVS	MR-MSS	MRMS-MSS	MR-SVS	R	MRMS-S	MS	R	MS	MRMS	MR	MSS
Fathom	MRMS-S	MS-VS	RMR	R-S	R	MRMS	MRMS	MR	MSS	MRMS	MR	MSS
La Trobe	MRMS-S	MR-MSS	MSS	R-SVS	R	MR-SVS	MRMS-S	MS	S	MRMS	MRMS	MSS
Leabrook	MS-SVS	MR-MS	MR-MS	MS-SVS	MRMS	MR-MS	-	R	MS	MR	MR	MSS
Maximus	MS-S	MR-MRMS	MRMS-MS	R-MRMS	R	MR-S	-	MS	S	-	-	MSS
Oxford	R-MS	MR-VS	MS-S	MS-SVS	S	R	MRMS	MRMS	MSS	MR	MRMS	MR
Planet	MR-MS	MR-SVS	S-SVS	R-SVS	R	R	S	R	MSS	MRMS	RMR	MRMS
Rosalind	MR-MS	MR	MS-S	MR-S	R	MRMS-S	MS	MRMS	S	MR	MR	MSS
Scope	MS-SVS	MR	MS-S	MS-SVS	S	RMR	MS	MS	MS	MRMS	MRMS	MS
Spartacus CL	MR-S	MSS-SVS	S	R-VS	R	MR-SVS	MS	MS	MS	MRMS	MRMS	MSS
Westminster	R-MRMS	R-S	S	R-S	-	R m/o	-	MR	MSS	MRMS	MS	MRMS
WI4952	MS-SVS	MR-MRMS	MR-MS	R-VS	S	R-MS	-	R	MSS	MR	MR	MSS

R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible, VS = Very Susceptible, - = Uncertain  
 \* Due to multiple strains of these pathogens, the table provides a range of reactions that may be observed. Different ratings are separated by a -  
 m/o - These varieties carry durable resistance

Oats	Rust		CCN		Stem nematode		Bacterial blight	Red leather leaf	BYDV*	Septoria avenae	End Use
	Stem*	Leaf*	Resistance	Tolerance	Resistance	Tolerance					
Bannister	MR-S	R	R	I	-	MI	MR-S	MS	MS	S	Grain
Bilby	S	R	S	-	-	-	S	MS	MR-MS	S	Grain
Brusher	MS-S	MS-S	R	MI	MS	I	MR-MS	MS	MS	MS	Hay
Durack	S	R-S	R	MI-MT	-	I	MR-S	MS	MS-S	S	Grain/Hay
Forester	R-S	MR-MS	MS	MI	S	I	MS-S	MR	MR-S	MR	Hay
Glider	MR-S	MS-S	MS	I	R	T	R	MR	MR-S	MR	Hay
Koorabup	R-S	MS-S	S	-	-	MI	MR-MSS	MS-VS	MS-S	MR	Hay
Kowari	MR-S	R	VS	-	-	I	MR-MSS	MS	S	S	Grain
Mitika	MR-S	MS-S	VS	I	S	I	MR-MSS	S	MS-S	S	Grain
Mulgara	MS	MR-MS	R	MT	R	MT	MR	MS-S	MS	MS	Hay
Tammar	MR-S	MR-MS	MR	MT	R	T	MR	MR-MS	MS	MR	Hay
Tungoo	MS-S	MS	R	MT	R	T	MR	MR	MR-MS	MR	Hay
Wallaroo	S	S	R	MT	MS	MI	S	MS	MS	S	Hay
Williams	MR-S	R	S	I	-	I	MR-MSS	MS	MR-MS	MR-MS	Grain/Hay
Wombat	MS-S	MS	R	T	MR	MT	MS-S	MS	MR	MS	Grain
Wintaroo	S	S	R	MT	MR	MT	MR-MS	MS	MR-MS	MR-MS	Hay
Yallara	S	MS	R	I	S	I	MR-MSS	MS	MS	MS	Grain/Hay

T = Tolerant, MT = Moderately Tolerant, MI = Moderately Intolerant, I = Intolerant, VI = Very Intolerant, - = Uncertain

\* = Due to multiple strains of these pathogens, the table provides a range of reactions that may be observed. Different ratings are separated by a -