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Section

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Disease

Cereal variety disease guide 2019

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EXTENSION

Summary of 2018 season and implications for 2019

2018 was a second quiet year in succession for foliar diseases in the cereals. Low inoculum levels of most diseases from 2017 certainly helped but also dry conditions in autumn and winter would have slowed any disease development. Good rainfall in the South-East meant that diseases were more prevalent in that region.

Septoria tritici blotch continued to be the main disease of interest and the fungus was certainly widespread across the medium and high rainfall areas. Most varieties are susceptible to varying degrees and fungicide sprays were likely to have been beneficial in many situations.

Net form net blotch and spot form net blotch were at low levels in both 2017 and 2018 and this will mean low levels going in to 2019. With early sowing and favourable conditions both diseases can develop rapidly. Growers sowing susceptible varieties should be ready to apply early sprays as these are the most effective way to manage these diseases. NFNB is particularly damaging and very variable so the disease ratings are provided as a range.

Leaf rust and stripe rust were absent from wheat crops in SA in 2018. Very low levels of rust in 2017 and use of fungicides either

for rust, septoria or eyespot will have contributed to this success.

Barley leaf rust was also present at lower levels than previous years. We recorded it on the lower Yorke Peninsula including at severe levels in one crop of Compass, which also had the rust on the weed Star of Bethlehem. This weed allows the rust to transfer from old barley stubbles to new crops by hosting a key stage of the rust's life cycle. Hence growers with this weed should be very careful about sowing barley where infected barley stubbles are also present.

Stem rust

Stem rust was not observed in wheat in 2018. It remains a concern however that some new varieties are highly susceptible to stem rust. This is particularly the case with some long season wheats not included in this table. Some of them are bred overseas where stem rust is not such a concern. Factsheets on these varieties do not always reveal this deficiency, so if considering these varieties it is important to ask the agent about stem rust. Whilst stem rust has not been a problem in recent years this has perhaps led to some complacency that growers should be aware of because an epidemic could be hard to control and very damaging.

Powdery mildew in wheat has become a higher concern in the past two years. Thicker crops with increased canopy humidity, closer rotations and increased use of applied N have favoured the disease. The variety Scepter is particularly susceptible and worse than Mace. In 2018 it also became evident that Chief CL Plus is also very susceptible to a strain identified from the Yorke Peninsula. Collections of mildew from a severely infected crop of Chief near Bute in early September was used to test adult plants grown on the Waite Campus under controlled conditions and this confirmed that Chief CL Plus was very susceptible along with several other varieties including the new varieties Arrow and Havoc.

Because powdery mildew grows on leaf sheathes around the lower stem, controlling this disease requires fungicide sprays before canopy closure similar to eyespot. Sprays after this time will only be partially effective and unable to control infection in the head, which can be a problem in wetter seasons.

Barley powdery mildew is also variable and so the ratings provided in this guide may not reflect all situations. The data comes mostly from nurseries in Queensland and Western Australia. Some barleys from Europe carry the *mlo* resistance gene which has proven durable over a long period of time. Where known this will be indicated in the table so that growers are notified that mildew control is not required in seed treatments for these varieties. All other varieties should be treated for mildew control to keep inoculum levels low thereby reducing the risk of resistance loss in other varieties and also reducing the risk of loss of fungicide efficacy.

Crown rot was not obviously a problem in 2018. Conditions for infection were not ideal. However there would have been a reduced breakdown of infected stubbles from 2017 so growers may need to use PredictaB samples to check on paddocks where crown rot has been a problem in previous years, especially if planning to sow a durum crop.

Eyespot

Whilst there is not a lot of variation amongst the varieties, those that are rated MS or MSS should provide a useful level of resistance over varieties rated S. Note however that taller varieties or varieties with weaker straw will be more prone to lodging due to eyespot than varieties with similar resistance ratings but which have stronger stems. Mace for example is more prone to eyespot lodging

than Wyalkatchem, although both are equally susceptible to infection and yield loss other than through lodging.

Black point is not a disease but a genetic response to particular environmental conditions, mainly damp weather post flowering. It is however included in this sheet for historical reasons.

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.

Disease identification

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

Samples of all leaf and aerial plant parts should be kept free of moisture and wrapped in paper, not a plastic bag. Roots should be dug up carefully, preserving as much of the root system as possible and preferably kept damp. Samples should be sent, not just before a weekend, to the following address:

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

Further information contact: hugh.wallwork@sa.gov.au or tara.garrard@sa.gov.au

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Wheat	Rust			Septoria tritici blotch	CCN Resistance	Yellow leaf spot	Eyepot	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	-	SVS	MRMS	MRMS	S	MS	MS	MRMS	AH
Beckom	MRMS	MRMS	MSS	S	R	MSS	S	MSS	S	MSS	S	MSS	MR	MRMS	AH
Chief CL Plus	RMR	S	R	MS	MS	MRMS	-	SVS	MR	MS	S	MS	SVS	MS	APW
Cobra	RMR	MSS	MR	MS	MS	MRMS	S	MSS	MSS	MSS	S	MSS	S	MSS	AH
Corack	MR	MS	SVS	S	RMR	MR	S	SVS	MSS	MSS	S	MS	S	S	APW
Cutlass	R	MS	R	MSS	MR	MSS	S	MSS	MSS	MSS	S	MS	MS	MS	APW
DS Bennett	MRMS	RMR	S	MSS	MSS	MRMS	-	R	MSS	MSS	SVS	-	SVS	S	ASW
DS Darwin	MRMS	MR	S	S	MS	S	MSS	MS	S	S	S	MSS	MR	MS	AH
DS Pascal	MSS	RMR	MS	MS	S	MRMS	MSS	R	S	S	S	MS	S	MS	APW
Emu Rock	MS	MRMS	S	SVS	S	MRMS	MSS	MSS	MSS	MSS	MS	MSS	MS	MS	AH
Forrest	RMR	RMR	MSS	MS	S	MRMS	MS	S	VS	SVS	SVS	MS	MR	MR	APW
Grenade CL Plus	MR	MRMS	S	S	MR	S	S	MSS	MSS	MSS	S	MRMS	MR	MSS	AH
Havoc	S	MR	S	MSS	S	MRMS	-	S	MSS	MSS	S	MS	MS	MS	AH
Illabo	MS	RMR	S	MSS	MRMS	MS	-	MRMS	MSS	MSS	SVS	-	R	MS	AH
Impala	MR	MR	SVS	VS	MSS	MSS	-	R	SVS	SVS	S	MSS	S	MS	Soft
Kittyhawk	MRMS-S	RMR	MS	MRMS	S	MRMS	-	MS	S	S	SVS	S	RMR	MRMS	AH
Kiora	RMR	RMR	MRMS	MS	MSS	MRMS	-	MS	MSS	MRMS	S	MS	MRMS	MS	AH
Kord CL Plus	MR	MRMS	MS	MS	MR	MRMS	-	MS	MSS	MSS	S	MRMS	MR	MRMS	AH
Longsword	MR	RMR	MSS	MSS	MRMS	MRMS	-	MS	MR	MR	S	MRMS	MRMS	MRMS	Feed
Mace	MRMS	SVS	MSS	S	MRMS	MRMS	S	MSS	MS	MS	S	MS	S	MRMS	AH
Manning	MR	RMR	MS	MR	S	MRMS	MS	MS	MSS	MSS	VS	SVS	R	SVS	Feed
Orion	MR	MSS	R	MRMS	MS	MRMS	S	SVS	MS	MS	S	MSS	S	S	Soft / Hay
Razor CL Plus	MRMS	MS	S	SVS	MR	MSS	-	MSS	S	MR	S	-	RMR	MS	ASW
Revenue	RMR	R	VS	S	S	MRMS	-	R	S	MSS	S	SVS	S	MS	Feed
RGT Accroc	MS	R	S	MS	S	MRMS	-	MRMS	-	-	-	-	-	MRMS	Feed
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	-	S	MRMS	APW
Trojan	MRMS	MR	MR	MS	MS	MRMS	MS	S	MSS	MSS	MS	MS	SVS	MRMS	APW
Vixen	MRMS	MRMS	SVS	S	MSS	MRMS	-	SVS	MRMS	MRMS	S	-	SVS	MSS	AH
Wyalkatchem	MS	S	S	S	S	MRMS	S	SVS	MRMS	MRMS	S	-	SVS	MS	APW
Yitpi	S	MRMS	S	MSS	MR	MRMS	MSS	MS	MSS	MSS	S	MS	MR	MS	AH

† - 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, - = Uncertain

- = mixed reaction, ^ = some susceptible plants

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					
Aurora	RMR	RMR	R	MRMS	MSS	MRMS	S	MSS	MRMS	RMR	VS	MRMS	R	MSS	Durum
Saintly	MR	MR	MRMS	S	MS	MRMS	MS	MSS	MRMS	MR	VS	MS	R	MS	Durum
Spes	RMR	RMR	R	MRMS	MRMS	-	-	S	S	RMR	VS	-	R	-	Durum
Vittaroi	MR	MR	MR	MRMS	MSS	MRMS	-	MR	S	RMR	VS	-	R	MSS	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	-	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	-	-	R	-	Triticale
KM10	R	RMR	MRMS	R	S	MR	-	R	MR	MRMS	-	MRMS	R	MRMS	Triticale
Wonambi	RMR	MR ^	R	RMR	MS	MR	-	R	MR	MS	-	-	R	-	Triticale

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible

Tolerance levels are lower for durum receivals.

^ - Some susceptible plants in mix

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

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	RMR	-	R	MSS	MR	MR	MRMS
Banks	MRMS-S	R-MRMS	MS	MR-SVS	S	MR-MSS	-	MSS	MSS	MR	MR	MRMS
Commander	MS-S	MSS-SVS	MSS	S-SVS	R	MRMS-S	-	RMR	MSS	MRMS	MRMS	MSS
Compass	SVS	MR-MSS	MR-MSS	MS-SVS	R	MRMS-S	MS	R	MS	MRMS	MR	MSS
Fathom	MRMS-S	MS-VS	RMR	R-MS	R	MRMS	MRMS	MR	MSS	MRMS	MR	MSS
La Trobe	MRMS-S	MR-MSS	MSS	R-VS	R	MR-SVS	MRMS-S	MS	S	MRMS	MRMS	MSS
Oxford	R-MS	MR-VS	MS-S	MR-SVS	S	R	MRMS	MRMS	MSS	MR	MRMS	MR
RGT Planet	MR-MS	MRMS-SVS	S	R-S	R	R	-	R	MSS	MRMS	RMR	MRMS
Rosalind	MR	MR	MS-S	MR-SVS	R	MR-S	MS	MRMS	S	MR	MR	MSS
Schooner	S-VS	MR	MS	MS-S	VS	SVS	-	MR	S	MS	MRMS	MS
Scope	MS-SVS	MR	MS-S	MS-S	S	RMR	MS	MS	MS	MRMS	MRMS	MS
Spartacus CL	MR-S	MRMS-S	S	R-VS	R	MR-SVS	MS	MS	MS	MRMS	MRMS	MSS
Traveller	R-MS	R-MS	MS	MR-S	-	RMR	-	MS	-	-	-	-
Westminster	R-MRMS	R-S	S	R-S	-	R <i>mlo</i>	-	MR	MSS	MRMS	MS	MRMS
WI4952	MS-SVS	MRMS	MR	S-VS	S	MR-S	-	R	MSS	RMR	RMR	S

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 -
mlo - These varieties carry durable resistance

Oats	Rust		CCN		Stem nematode		Bacterial blight	Red leather leaf	BYDV*	Septoria avenae	P. neglectus Nematodes
	Stem*	Leaf*	Resistance	Tolerance	Resistance	Tolerance					
Bannister	MR-S	R	R	I	-	MI	MR-S	MS	MS	S	-
Brusher	MS-S	MS-S	R	MI	MS	I	MR-MS	MS	MS	MS	MR-MS
Durack	S	R-S	R	MI-MT	-	I	MR-S	MS	MS-S	S	-
Forester	R-S	MR-MS	MS	MI	S	I	MS-S	MR	MR-S	MR	-
Glider	MR-S	MS-S	MS	I	R	T	R	MR	MR-S	MR	-
Kangaroo	MS-S	MS-S	R	MT	S	MI	MR-MS	MS	MR-S	MR-MS	-
Kowari	MR-S	R	VS	-	-	I	MR	MS	S	S	-
Mitika	MR-S	MS-S	VS	I	S	I	MR	S	MS-S	S	-
Mulgara	MS	MR-MS	R	MT	R	MT	MR	MS-S	MS	MS	-
Tammar	MR-S	MR-MS	MR	MT	R	T	MR	MR-MS	MS	MR	-
Tungoo	MS-S	MS	R	MT	R	T	MR	MR	MR-MS	MR	-
Wallaroo	S	S	R	MT	MS	MI	S	MS	MS	S	MR
Williams	MR-S	R	S	I	-	I	R	MS	MR-MS	MR-MS	-
Wombat	MS-S	MS	R	T	MR	MT	MR-MS	MS	MR	MS	-
Wintaroo	S	S	R	MT	MR	MT	MR-MS	MS	MR-MS	MR-MS	MR-MS
Yallara	S	MS	R	I	S	I	MR-MS	MS	MS	MS	-

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 -