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Section 6

Disease

Cereal variety disease guide 2018

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EXTENSION

Summary of 2017 season and implications for 2018

2017 was a relatively quiet year for foliar diseases in the cereals. In some areas this was due in part to dry conditions and late sowing, in others the cold winter helped to suppress some of the pathogens. The good spring conditions however favoured late development of diseases particularly in the longer season areas.

Septoria tritici blotch and to a lesser extent **eyespot** were observed at higher levels across the medium and high rainfall areas. Both diseases were favoured by a significant build-up of inoculum in the previous two years. Most varieties are susceptible to varying degrees to both these diseases and fungicide sprays were likely to have been beneficial in many situations. There is some indication that the septoria population is adapting to different regions through increased virulence to local varieties. Confirmation of these changes will require further testing.

Net form net blotch and spot form net blotch were at lower levels in 2017 than previous years and this will have resulted in lower inoculum levels leading into 2018. However, the high yields of RGT Planet will possibly lead to

large areas sown to this variety in coming years and this could lead to significant future issues with NFNB as this variety is very susceptible (SVS) to this disease.

Leaf rusts in wheat and barley

Leaf rust in wheat was observed early in 2017 but was kept in check by cold temperatures through winter and through effective fungicide management of crops, in most cases as a precaution against stripe rust and/or septoria. Barley leaf rust was also present at much lower levels than previous years.

Stripe rust arrived very late and caused little or no problem owing to its late arrival and effective use of fungicides.

Stem rust

Stem rust was not observed in wheat in 2017. It is a concern however that quite a few new wheat varieties are quite susceptible to stem rust. This is particularly the case with some long season wheats not included in this table, some of them bred overseas where stem rust is not such a concern. Whilst stem rust has not been a problem in recent years this has perhaps led to some complacency that growers should be aware of as an epidemic could be hard to control and very damaging.

Eyespot

Eyespot resistance ratings have been included in the table for the first time, although many varieties are yet to be tested and rated. 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. Saintry is also more prone to eyespot lodging compared to other durums.

Powdery mildew

It has become apparent that variation in this pathogen has not been adequately reflected in the data obtained from nurseries on the Waite Campus. Specifically, Trojan has been found quite susceptible in the South-East but has shown more resistance in the nursery. For this reason data in the table should be treated with some caution.

Powdery mildew has become an increasing problem in SA as crops have been getting thicker and more N has been applied to them. Wyalkatchem (SVS) made the problem particularly severe and when this variety was largely replaced by Mace (MSS) on the lower EP, the problem abated to some degree. Control was enhanced because most Mace crops were treated with fungicide for stripe rust control. Scepter appears to be more susceptible to powdery mildew than Mace, similar to Wyalkatchem and Corack, and with stripe rust under better control it is possible this will lead to an increase in powdery mildew in future.

Barley powdery mildew is also variable and so the ratings provided here may not reflect all situations. 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 avoid loss of disease resistance and later fungicide efficacy in other varieties.

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. The damp conditions prior to harvest in 2016 meant higher levels of black point were observed in grain from several NVT trials as well as our special nursery near Millicent. This has resulted in a significant improvement in data for this guide in 2018.

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 a '-' 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**

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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	-	RMR	MRMS	MRMS	S	MS	MS	MRMS	AH
Axe	MS	RMR	SVS	SVS	S	S	S	MS	MS	MS	S	MSS	S	S	AH
Beckom	MRMS	MRMS	MSS	SVS	R	MSS	S	MS	S	MSS	S	MSS	MR	MRMS	AH
Chief CL Plus	RMR	S	R	S	MS	MRMS	-	RMR	MS	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
Cosmick	MS	MSS	SVS	SVS	S	MRMS	S	MSS	MSS	MSS	S	MSS	SVS	MRMS	AH
Cutlass	R	MS	R	MSS	MR	MS	S	S	MSS	MSS	S	MS	MS	MS	APW
Darwin	MRMS	MR	S	SVS	MS	S	MSS	MRMS	S	S	S	MSS	MR	MS	AH
Emu Rock	MS	MRMS	S	SVS	S	MRMS	MSS	MSS	MSS	MSS	MS	MSS	MS	MS	AH
Forrest	RMR	RMR	MSS	SVS	S	MRMS	MS	MS	MS	VS	SVS	MS	MR	MR	APW
Grenade CL Plus	MR	MRMS	S	S	MR	MR	S	MS	MSS	MSS	S	MRMS	MR	MSS	AH
Harper	MRMS	MS	S	MSS	MRMS	MRMS	S	S	S	S	S	MRMS	RMR	MRMS	APW
Hatchet CL Plus	MS	MRMS	SVS	VS	MR	MR	S	MRMS	MSS	MSS	S	MS	RMR	S	AH
Havoc	S	MR	S	MSS	S	MRMS	-	-	S	S	S	MS	MS	MS	AH
Impala	MR	MR	SVS	VS	MSS	MS	-	R	SVS	S	S	MSS	S	MS	Soft
Kiora	RMR	RMR	MRMS	S	MSS	MRMS	-	MS	MSS	MRMS	S	MS	MRMS	MS	AH
Kord CL Plus	MR	MRMS	MS	MS	MR	MR	-	MS	MSS	MSS	S	MRMS	MR	MRMS	AH
Longsword	MR	RMR	MSS	MSS	MRMS	MRMS	-	-	MRMS	MRMS	S	MRMS	MRMS	MRMS	Feed
Mace	MR	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	MS	MS	MS	S	SVS	MS	MS	S	MSS	S	S	Soft / Hay
Pascal	MSS	RMR	MS	MS	S	MRMS	MSS	-	S	S	S	MS	S	MS	APW
Revenue	RMR	R	VS	S	S	S	-	R	S	S	S	SVS	S	MS	Feed
Scepter	MR	MSS	MSS	S	MRMS	MRMS	S	SVS	S	MSS	S	MS	MSS	MS	AH
Scout	MR	MS	MS	S	R	MR	S	MRMS	S	MS	MSS	S	MR	S	AH
Shield	RMR	MR	R	S	MRMS	MRMS	S	MR	MSS	MSS	S	MRMS	S	MSS	AH
Tenfour	S	SVS	S	SVS	MS	MRMS	S	MS	S	S	S	MS	RMR	MS	Feed
Trojan	MRMS	MR	MR	MS	MS	MRMS	MS	S	MSS	MSS	MS	MS	SVS	MRMS	APW
Wyalkatchem	MS	S	S	SVS	S	MR	S	SVS	MRMS	MS	S	MSS	SVS	MS	APW
Yitpi	S	MRMS	S	MSS	MR	MRMS	MSS	MRMS	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

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	MR	MRMS	RMR	VS	MRMS	R	MSS	Durum
Caparoi	RMR	MR	RMR	RMR	MS	MR	-	MS	MS	MR	VS	MRMS	R	MSS	Durum
Hyperno	RMR	MR	R	MS	MS	MRMS	MS	MR	MR	RMR	SVS	MRMS	R	MS	Durum
Saintly	MR	MR	MRMS	S	MS	MRMS	MS	MSS	MRMS	MR	VS	MS	R	MS	Durum
Tjilkuri	MR	MR	RMR	MS	MS	MRMS	-	S	MRMS	MR	VS	MS	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
Bison	RMR	R	RMR	R	R	MR	-	R	R	RMR	MSS	MRMS	R	MRMS	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	-	-	RMR	MRMS	-	MRMS	R	MRMS	Triticale
Rufus	RMR	MS	R	R	MR	R	-	R	RMR	RMR	MS	MS	-	-	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*	Barley grass stripe rust	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	-	-	-	R	MSS	MR	MR	MRMS	MRMS
Charger	MR-S	VS	S	S-VS	R	R	-	RMR	MSS	MS	MR	MRMS	MRMS	MRMS
Commander	MS-S	MSS-SVS	MSS	S-SVS	R	MRMS	-	R	RMR	MSS	MRMS	MRMS	MRMS	MSS
Compass	R-SVS	MR-MS	MR-MSS	MS-SVS	R	MRMS	MS	R	R	MS	MRMS	MR	MR	MSS
Explorer	R-MRMS	R-S	MRMS-S	SVS	R	R	-	-	MRMS	MS	MRMS	MRMS	MRMS	MS
Fathom	MR-MSS	MS-VS	RMR	R-MS	R	MRMS	MRMS	R	MR	MSS	MRMS	MR	MR	MSS
Fleet	MRMS-S	S-VS	MR	MR-SVS	R	MRMS	-	RMR	MR	S	MRMS	MRMS	MRMS	MS
Grange	R-MS	R-MS	S	MS-SVS	R	R <i>mlo</i>	-	R	RMR	S	MRMS	MRMS	MRMS	MRMS
Hindmarsh	MRMS-S	MR-MS	S	R-VS	R	MR-S	MRMS-S	MR	MS	S	MRMS	MRMS	MRMS	MSS
La Trobe	MRMS-S	MR-MS	MSS	R-VS	R	MR-S	MRMS-S	RMR	MS	S	MRMS	MRMS	MRMS	MSS
Maritime	MRMS-S	R-VS	MRMS	MS-SVS	R	SVS	-	S	MS	MSS	MR	-	-	MS
Oxford	R-MR	MR-SVS	S	MR-SVS	S	R	MRMS	R	MRMS	MSS	MR	MRMS	MRMS	MRMS
RGT Planet	MR-MS	MRMS-SVS	S	R-S	R	R	-	-	R	MSS	MRMS	MRMS	RMR	MRMS
Rosalind	MR	MR	MS-S	MR-SVS	R	MR-S	MS	-	MRMS	S	MRMS	MR	MR	MSS
Schooner	S-VS	MR	MS	MS-S	VS	SVS	-	RMR	MR	S	MS	MRMS	MRMS	MS
Scope	MS-SVS	MR	MS-S	MS-S	S	R-MR	MS	RMR	MS	MS	MRMS	MRMS	MRMS	MS
Shinestar	MRMS	R-MS	MRMS	MS-S	R	MS-SVS	-	-	MRMS	MS	MRMS	MRMS	MRMS	MS
Spartacus CL	MR-S	MR-MSS	S	R-VS	R	MR-S	MS	RMR	MS	MS	MRMS	MRMS	MRMS	MSS
Westminster	R-MRMS	R-S	S	R-S	-	R <i>mlo</i>	-	R	MR	MSS	MRMS	MRMS	MS	MRMS

* Due to multiple strains of these pathogens, the table provides a range of reactions that may be observed. Different ratings are separated by a -
R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible
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	VS	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	-

* Due to multiple strains of these pathogens, the table provides a range of reactions that may be observed. Different ratings are separated by a -
R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible
T = tolerant, MT = mildly tolerant, I = intolerant, MI = moderately intolerant, , = uncertain
†BYDV = Barley Yellow Dwarf Virus