Government of South Australia

SARDI
SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE

FS 7/86/09

FACT SHEET

Cereal variety disease guide 2009

By Hugh Wallwork, Principal Plant Pathologist and Pamela Zwer, Oat Breeder

Summary of 2008 season and implications for 2009

Stripe rust

During 2008 three different strains (pathotypes) of stripe rust were recorded in SA. Of these much the most common and widespread was the new 'Jackie' pathotype (134E16 A+ J+) which was first observed in NSW in October 2007. This pathotype was derived from the old WA pathotype and is able to severely infect some of the triticale varieties including Jackie. It is unable to overcome the Yr17 (VPM) resistance gene so varieties such as Pugsley, Gladius and Espada were mostly resistant in 2008. The original WA strain was also recorded in the Lower North and at Tumby Bay. The Yr17 attacking pathotype was recorded from only one location, Kapinnie, in SA in 2008 however it was recorded from numerous locations in NSW and Victoria so is quite likely to recur in SA in future years.

Both the Jackie and Yr17 attacking pathotypes are derived from the WA pathotype. There does not appear to be any significant variation in the level of adult plant resistance in varieties infected by these pathotypes.

A further new pathotype (134E16 A+ J+ Yr27+), which first appeared in Victoria and NSW in 2008, is capable of overcoming the Yr27 gene. This pathotype will make the variety GBA Ruby susceptible but should not change the resistance rating of any other varieties currently grown in SA.

In this year's Disease Guide we have presented the response of varieties to the Yr17 virulent pathotype since this is currently the most damaging on wheat varieties. Varieties with the Yr17 resistance gene are indicated in the table and these will be resistant if this pathotype is not present.

The cool spring conditions in SA in 2008 resulted in some adult plant resistance (APR) being less effective than in other years. This was particularly the case with Wyalkatchem which showed little resistance throughout the season. Most damaging stripe rust infection in SA occurred on this variety. With several new varieties with better resistance now available Wyalkatchem should now be replaced. This will also reduce future risks from stem rust and powdery mildew.

Other wheat foliar diseases

There was no stem or leaf rust reported in wheat crops in South Australia, Victoria, or southern NSW during 2008.

Flag smut appeared in a few crops on the eastern Eyre Peninsula. In each case the susceptible variety Wyalkatchem was infected. Other varieties that are likely to show severe flag smut if left untreated for too long are AGT Scythe and Magenta.

Net form net blotch (NFNB)

Many Keel crops on the northern Yorke Peninsula, Adelaide Plains and Lower North showed high levels of net form net blotch early in the season. In most cases this occurred where Keel was sown into barley stubbles. However, the disease failed to develop during winter and spring such that little damage was visible in crops later in the season.

Glasshouse tests on seedlings and adult plants using isolates collected from Keel during 2007 and 2008 showed the NFNB isolates on Keel had increased virulence on Keel, Hindmarsh and Baudin at later growth stages but that they were less aggressive (slower growing and less damaging) than isolates collected before 2007 from other varieties. They were also less virulent on Capstan. Tests of two of the new isolates on a wider range of varieties differing in seedling resistance showed that they resembled some older strains from Western Australia that were avirulent on Skiff and Franklin and were unlikely to be recent mutations of the common Skiff virulent SA isolates.

It is not known whether the lack of infection in crops during spring was due to unfavourable weather conditions or to the low aggressiveness observed in the new strains. It is quite likely that over time the new virulence will combine with increased aggressiveness observed in older isolates and this could lead to more severe damage in future in varieties such as Keel, Hindmarsh and Baudin.

Other barley foliar diseases

Leaf scald was observed at high levels in crops that benefited from good rains. Higher than expected

Further information on cereal diseases may be obtained from Hugh Wallwork,
South Australian Research and Development Institute, phone: (08) 8303 9382.

www.pir.sa.gov.au

FS 7/86/09
AGDEX 110/630
ISSN 1440-8775
Revised January 2009

Wheat

	Rust			CCN		Septoria tritici blotch	Yellow leaf spot	Powdery mildew	Root lesion nematodes			Crown rot	Common root rot	Flag smut	Black point†	Quality in SA
									P. neglectus		*P. thornei*					
	Stem	Stripe#	Leaf	Resistance	Tolerance				Resistance	Tolerance	Resistance					
Annuello	R	MS-S	MR	R	I	S	S	–	MS-S	MI	S	S	–	MR	MS	AH
Axe	MS	MR	MR	S	–	MR-MS	S	MR	S	–	S	S	MS-S	S	MS-S	AH
Barham	MR	#MS-S	MR-MS	MS	–	MS-S	MS-S	MR-MS	MR	–	MS	S	MS-S	MR-MS	MS	Soft
Bowie	S	#S	MR	MR-MS	MT	MS	S	–	MR	MT	MS	S	S	–	MR-MS	Soft
Bullet	R-MR	MS-S	MR-MS	MR	–	S	MR-MS	–	–	–	–	S	–	S	MS	APW
Catalina	MR-MS	MR-MS	R-MR	R	–	MS-S	MS-S	MR-MS	S	–	MS	S	MR-MS	R-MR	–	AH
Chara	MR-MS	MS-S	MS	R	MI	MS	MS-S	–	MS-S	MT	MR	S	S	MR	MS	AH
Corell	MR-MS	MR-MS	MS	MR	–	MR-MS	S-VS	R	S	–	MS	S	MS-S	R	MR-MS	AH
Derrimut	R-MR	#MS^	R	R	–	MS-S	MS-S	MS	S	–	MS-S	S	S	R	S	AH
Espada	R-MR	#MR-MS	R-MR	MS	–	S	MR-MS	–	MS	–	S	S	MS	MS	MS-S	APW
Frame	MS	MR-MS	MS	MR	MT	MS	S-VS	R	MS-S	MT-T	S	S	S	MR	MS	APW
Gladius	MR	#MR-MS	MS	MS	–	S	MS	MR-MS	MS-S	–	MS-S	S	MS	R-MR	MR	AH
Guardian	R-MR	MS	MS	R	–	MS-S	S	MR-MS	S	–	MS	S	MS	S	S	APW
H46	MR-MS	#VS	R	S	MI	VS	MR-MS	S-VS	MS	–	MS-S	S	MS-S	R-MR	MR-MS	APW
CLF Janz	MR	MS	MS	S	I	MS	S	MS	MS-S	MI	S	S	MS-S	R	S	AH
Krichauff	MR	S-VS	S	S	MT	MS	MS	–	MR	MT	MS	S	MS	MR-MS	MR	ASW
Kukri	MR	MR-MS^	R	S	I	MR	MS	–	MR-MS	MT	MS	MS	S	MS	MS	AH
Lincoln	MR	R	R-MR	S	–	S	MR-MS	–	S	–	S	–	MS	R-MR	–	AH
Mace	MR	#MS-S	R	MR-MS	–	MR-MS	MR-MS	–	MR	–	–	–	–	S	MR	–
Magenta	R	MS	MR	MS-S	–	MS	MR	R	–	–	–	–	S-VS	S-VS	S	ASW
Peake	MR-MS^	MR-MS^	R^	R	–	S	MS-S	MS	S	–	MS	S	S	MR-MS	MS-S	AH
Pugsley	MS	#S	MR	MS	MI	MS	S	MS	S	MT	–	S	MS	MR	MS	APW
Ruby	MR-MS	R-MR[a]	R	S	–	MR-MS	MR	MS	–	–	–	S	MS	S	MS	ASW
Scythe	MR	MS-S	MS-S	S	–	MS	S	R	MS	–	MS-S	S	MS	S-VS	MR	APW
Sentinel	R	R-MR	R	S	–	MS-S	MR-MS	R	S	–	MS	MS-S	S	MS-S	–	ASW
Wyalkatchem	MS	S§	R	S	MI	MR-MS	MR	S	MR	MT-T	–	S	S	S	MS	APW
Yitpi	S	MR-MS	MS	MR	MT	MS	S-VS	–	MR-MS	MT-T	–	S	MS	MR	MS	AH
Young	MR	#MS^	MR-MS	R	–	MS	MR-MS	R	S	–	MS	S	MS-S	MS	MR	AH
Durum																
Hyperno	R	MR	R	MS	–	–	–	–	MR-MS	–	–	VS	–	–	MR	Durum
Kalka	MR	MR	MR	MS	MT	MS	MR	–	MR-MS	–	R	VS	MS	R	S	Durum
Saintly	MR	MR	MR	MS	–	–	–	–	MR-MS	–	–	VS	–	–	MR	Durum
Tamaroi	R	MR	MR	MS	–	S	MR	–	MR-MS	MI	R	VS	MS	R	MS	Durum
Triticale																
Jaywick	MR-MS	MR-MS	R	R	–	–	–	–	–	–	–	–	–	–	–	Triticale
Hawkeye	R	MR	R	R	–	–	–	–	–	–	–	–	–	–	–	Triticale
Kosciuszko	–	S	S	S	T	–	–	–	–	–	–	–	–	–	–	Triticale
Rufus	MR	R	R	R	T	–	–	–	R-MR	MT	R-MR	–	–	–	–	Triticale
Speedee	R	MS	R	S	T	–	–	–	R-MR	MT	–	S	–	–	–	Triticale
Tahara	R	MR	R	R	T	R	R	–	R-MR	MT	R	S	MS	R	–	Triticale
Treat	R	MR	MR	MS	T	–	R	–	MR-MS	MT	–	S	MS	R	–	Triticale

Barley

	Scald	Spot form net blotch	Net form net blotch	Leaf rust	Powdery mildew	CCN		Root lesion nematodes		Barley grass stripe rust	Covered Smut	BYDV	Common root rot	Black point†
						Resistance	Tolerance	*P. neglectus*	*P. thornei*					
Barque	S-VS	MR	MS-S	MS	MR	R	T	R-MR	MR	MR	S	S	S	S
Baudin	MS-S	MS-S	‡MS	VS	S-VS	S	T	–	–	MR	S	MR	S	MS
Buloke	MR-MS	MS-S	MR	MS-S	MR	S	T	–	–	R	MR	S	MS	S
Capstan	‡MR	MS	MS	MS	MR	R	T	MR	–	MR-MS	MR	S	S-VS	MS
Commander	S	S	MS	S	MR	R	T	–	–	R	R	S	MS-S	S
Flagship	MS	MR-MS	MR-MS	MS-S	MR-MS	R	T	R	MR-MS	MR	MR-MS	S	S	S
Fleet	MR-MS	MR	MR-MS	MS	MR-MS	R	T	–	–	MR	MR	S	MS-S	S
Gairdner	‡R	S-VS	MR-MS	MS	MR	S	T	MR	MR-MS	R	–	MR	MS-S	MR
Hindmarsh	‡MR	S	‡MR	MS-S	MS	R	T	–	–	R	MS	S	S	–
Keel	MS	MR	‡MS	VS	MR-MS	R	T	MR	MR	MS	R	S	S	S-VS
Maritime	MS-S	MR-MS	R-MR	MS	S	R	T	MR	–	S	MS	S	S	S
Schooner	MS-S	MS-S	MR	S-VS	S	S	T	MR-MS	R	R	MR	S	S	S
Sloop	S	S-VS	MR	S	S	S	T	MS	MR	MR	R	S	S	MS
Sloop SA	S	S-VS	MR	S	S	R	T	MS	R	R	R	S	S	MS
Sloop Vic	S	S	MR	MS-S	MR	R	T	MS	R	R	–	S	–	MS
Yarra	S-VS	MS	MS	R	S	R	T	–	–	R	MS	S	S-VS	S-VS
WI4262	R	MR-MS	MR	VS	–	R	T	–	–	MR	MS	S	S	–

Oats

	Rust		Septoria avenae	BYDV	CCN		Stem nematode		Bacterial blight	Red leather leaf	*Pratylenchus neglectus*	
	stem	leaf			Resistance	Tolerance	Resistance	Tolerance			Resistance	Tolerance
Brusher	MS	R	MR-MS	MS	R	MI	–	I	MS	MR-MS	MR-MS	–
Echidna	S	S	VS	MS	S	VI	R	T	S	MS	MR	MI
Eurabbie	MS	S	MR	MS	MS	MI	MS	MI	S	MR-MS	–	–
Euro	VS	MS	S	MR	R	VI	VS	I	MS	MS	MR	T
Glider	R	R	MR	S	MS	I	R	MT	R	R	–	–
Kangaroo	R	MR	MR	MS	R	MT	–	MI	MS	MS	–	–
Marloo	S	S	MS	MR	R	MT	MS	MI	S	S	–	–
Mitika	R	MR	MS	MS	VS	I	–	MT	MR	MS	–	–
Numbat	S	MR	MS	R	S	I	–	I	S	–	MR	–
Potoroo	S-VS	MS	VS	MS	R	T	MR	MT	S	VS	MR	T
Possum	MS	MS	MS	MS	VS	I	–	MI	S	MS-S	MR	–
Quoll	R	R	MR	MS	S	I	R	T	MS	MS	MR-MS	–
Swan	VS	S	MS	S	R	VI	VS	VI	MS	S	MR-MS	–
Tungoo	MS	MR	MR	MR	R	MT	R	T	MR	R	–	–
Wallaroo	S	S	S	MS	R	MT	MS	MT	MS	MS	MR	MI
Wintaroo	S	S	MR	MR-MS	R	MT	MR-MS	T	MS	MS	MR-MS	–
Yallara	MR	R	MS	MS	R	I	–	I	MS	MS	–	–

The stripe rust ratings are for the WA Yr17 strain prevalent in SA in 2007 and also present at low levels in 2008. Varieties with a # have the Yr17 (VPM) seedling resistance and so will be resistant to the older WA and the newer WA Jackie strains.

§ Wyalkatchem shows stronger stripe rust resistance at higher temperatures. This variety is rated at MS-S nationally.

^ Some susceptible plants in the mix.

[a] Ruby has the resistance gene Yr27 which is no longer effective to a new strain found in NSW in 2008.

† Tolerance levels are lower for durum receivals. Black point is not a disease but a physiological response to certain humid conditions.

‡ These varieties may be susceptible if alternative strain is present.

Key to ratings used

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, T = tolerant, MT = moderately tolerant, MI = moderately intolerant, I = intolerant, VI = very intolerant, – = uncertain

levels were found in some early sown Keel, Fleet and Flagship crops in the Mid-North.

Powdery mildew developed to serious levels in some barley crops in the Mid-North. As with 2007 the high level of powdery mildew was most likely due to growers trying to reduce Rhizoctonia with Dividend fungicide. It is strongly recommended that where Dividend is used that it be combined with a fungicide that controls powdery mildew. This will not only protect the treated crops but also other crops in the district once the effects of their seed treatments wear off.

Leaf rust was at low levels in 2008 mainly due to late sowing of crops and dry conditions on the lower Yorke Peninsula where the rust generally survives between seasons. Leaf rust was more damaging on some crops in the South-East where the rust also commonly survives over summer.

Oat diseases

Oats were largely free of disease in 2008 although red leather leaf was found in several crops and particularly where oats were sown into oat stubbles. Bacterial blight is also a particular threat in wet years where oats are grown as successive crops. Red leather leaf also developed uniformly in a trial so ratings for this disease have now been added to the oat variety disease table. A fungicide spray trial in 2008 showed that none of the available fungicides provided useful protection against red leather leaf.

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 15-50% 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.

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 losses are rarely severe.

Other information

This fact sheet supplements other information available including the cereal sowing guides (Grain Business, November 2008) and Crop Watch newsletters. Cereal Leaf and Stem Diseases and Cereal Root and Crown Diseases books (2000 editions) are also available from Ground Cover Direct or from Hugh Wallwork in SARDI.

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 to the following address:

SARDI Diagnostic Centre
Plant Research Centre
Hartley Grove
Urrbrae SA 5064

Further information contact:
wallwork.hugh@saugov.sa.gov.au