



Cereal Seed Treatments 2018

Hugh Wallwork, Principal Plant Pathologist, SARDI

Observations from 2017 and lessons for 2018

Early in 2017 several reports were received where barley crops treated with Systiva® were showing significant levels of spot form net blotch (SFNB). Subsequent tests using fungal cultures obtained from these crops have not shown resistance to the fungicide. Also the infected crops did not go on to develop severe SFNB later in the season although this could be due to unfavourable environmental conditions for the disease in 2017 as well as the use of effective foliar fungicide treatments. It thus remains a bit of a puzzle as to whether there has been a significant deterioration in the efficacy of Systiva® against the disease. It is however only too likely that over time, with extended use of this treatment, that resistance to this and other fungicides will develop. It would be wise therefore for growers to take precautions so that the development of resistance will be delayed. These precautions include avoiding choice of the most susceptible varieties in areas prone to the disease; by rotating and/or combining different chemical groups and by keeping disease levels low by the early use of foliar applications of fungicide in affected crops.

Resistance to fungicides is also likely to develop over time to the net form net blotch, septoria tritici blotch in wheat and powdery mildew in wheat and barley and so similar strategies to delay the development of resistance should be taken with these diseases.

Loose smut continues to be observed in many barley crops and particularly in Spartacus CL+. Seed treatment tests conducted by SARDI in 2015 have shown that products containing just triadimenol provide only about 50% control of loose smut in Hindmarsh. A similar level of control is expected in Spartacus CL+. Effective control is provided by products containing the SDHI fungicides, carboxin, Evergol Prime® and Vibrance® although where seed is known to be infected then the higher rates set for rhizoctonia control should be used. The higher rates of Rancona Dimension® may also provide effective control. Other registered products provide intermediate levels of control.

Field observations from NVT trial sites where seed of a very susceptible barley were treated with Systiva® and compared with an untreated control plot have indicated that one or more environmental factors also have a role

to play in determining the efficacy of treatments. The efficacy of Systiva® was found to vary from 70-95% from one trial site to another even though the seed and fungicide treatments were identical.

Growers should be aware that use of seed treatments for the control of barley mildew should continue as a high priority for effective long term management of this disease. Where control of loose smut is a priority growers planning on using carboxin should consider mixing it with triadimenol or flutriafol for mildew control.

Powdery mildew can also be a problem in wheat and several reports were received in 2017 including where infection had occurred in the head. Where crops received in-furrow treatments or early fungicide sprays for stripe rust control then mildew control was often a side benefit.

New products

Syngenta have registered CRUISER® 350FS as an alternative to imidacloprid for control of aphids in wheat and barley. Cruiser® 350FS contains thiomethoxam which, like imidacloprid, is also a neonicotinoid insecticide. These products protect plants from spread of barley yellow dwarf virus (BYDV) and cereal yellow dwarf virus (CYDV).

Choice of seed or in-furrow treatments

Wheat

There are four principal reasons for applying a fungicide treatment to wheat at sowing.

- For smut control alone: use a product from Table 1.
- For suppression of soil-borne diseases: use a product from Table 2.
- For control of foliar fungi as well as smuts: use a product from Table 3.
- For control of aphids and therefore BYDV: use a product from Table 4. These treatments also control some stored grain pests.

This factsheet does not include information on the control of stored grain pests. However many of the products listed in this sheet do provide some control of these pests.

Table 1: Seed-borne disease control

Product	Active ingredient		Company	Form	Rates per 100 kg	Smuts controlled at low/high rates					Net form net blotch
	Fungicide	Insecticide				Wheat & barley		Oats	Flag smut		
						Loose	Covered †		seed-borne	soil-borne	
Vitaflor C	carboxin	cypermethrin	Arysta	f	125/250mL	-/√	√	√	√	-	-
Vitavax 200FF	carboxin + thiram	-	Arysta	f	250/500 mL	-/√	√	√	√	-/√	√
Vibrance	difenoconazole + metalaxyl + sedaxane	-	Syngenta	f	90/180 mL	√b/√	√b/√	-/√	-/√	-/√	-/√
Pontiac	flutriafol + metalaxyl	imidacloprid	Nufarm	f	400 mL	√	√	√	√	√	-
Veteran C	flutriafol	cypermethrin	Nufarm	p/f/l	100 g/mL	√	√	√	√	√	-
Vibrant 25C	flutriafol	cypermethrin	Conquest	l	100 mL	√	√	√	√	√	-
Superstar	flutriafol	cypermethrin	Apparent	l	100 mL	√	√	√	√	√	-
Vincit C	flutriafol	cypermethrin	FMC	p/f/l	100 g/mL	√	√	√	√	√	-
Vincit Zinc	flutriafol	-	FMC	f	400mL	√	√	√	√	√	-
Systiva	fluxapyroxad	-	BASF	f	150 mL	√	-	-	-	-	√
Rancona C	ipconazole	cypermethrin	Arysta	me	100 mL	√	√	√	√	√	-
Rancona Dimension	ipconazole + metalaxyl	-	Arysta	me	80 mL	√	√	√	√	√	-
EverGol Prime	penflufen	-	Bayer	f	40-80 mL	√	√	√	√	√#	-
Axle	tebuconazole	cypermethrin	Apparent	f	100 mL	√	√	√	√	√	-
Veto C	tebuconazole	cypermethrin	Conquest	f	100 mL	√	√	√	√	√	-
Kingpin	tebuconazole	triflumuron	Apparent	f	100 mL	√	√	√	√	√	-
Veto T	tebuconazole	triflumuron	Conquest	p	100 g	√	√	√	√	√	-
Tebu T	tebuconazole	triflumuron	Genfarm	f	100 mL	√	√	√	√	√	-
Raxil T	tebuconazole	triflumuron	Bayer	p/f	100 g/mL	√	√	√	√	√	-
Tebuconazole 25T	tebuconazole	triflumuron	4 Farmers	f	100 mL	√	√	√	√	√	-
Triticonazole 200C	triticonazole	cypermethrin	4 Farmers	f	75-150 mL	√	√	-	√	√	-
Premis Pro C	triticonazole	cypermethrin	BASF	f	100 mL	√	√	√	√	√	-

p = powder l = liquid
f = flowable me = micro-emulsion

† Bunt in wheat

b = barley only

-/√ = Only registered at the higher rate

* Suppression only in barley

= suppression only

Table 2: Suppression of soil-borne diseases

Product	Active ingredient		Company	Form	Rates per 100 kg or per ha	Pythium	Rhizoctonia	Take-all
	Fungicide	Insecticide						
Vibrance	difenoconazole + metalaxyl + sedaxane	-	Syngenta	f	180/360 mL	√	√b/√	-
Jockey Stayer	fluquinconazole	-	Bayer	f	450 mL	-	-	√
Quantum Pro	fluquinconazole	-	Arysta	f	450 mL	-	-	√
Pontiac	flutriafol + metalaxyl	imidacloprid	Nufarm	f	400 mL	√	√#	-
Systiva	fluxapyroxad	-	BASF	f	150 mL	-	√	-
Rancona Dimension	ipconazole + metalaxyl	-	Arysta	me	200/320 mL	√	-/√	-
EverGol Prime	penflufen	-	Bayer	f	40-80 mL	-	√	-
Uniform	azoxystrobin + metalaxyl	-	Syngenta	spray	200-400 mL	√	√	-
EverGol Prime	penflufen	-	Bayer	spray	60-120 mL	-	√	-
Intake HiLoad Gold / Combi Sapphire	flutriafol 500 g/L	-	Nufarm	spray	200/400 mL	-	-	√
Various (See below) ∂	flutriafol 250 g/L	-	Various	spray	400 mL	-	-	√
Various (see below) √	flutriafol 500 g/L	-	Various	spray	200 mL	-	-	√

∂ = Impact (FMC), Jubilee (Adama), Flutriafol 250 (Innova), Flutriafol 250 SC (Genfarm, Imtrade, Titan), Flufol in Furrow (Farmalinx), Pollux (Kenso Agcare)

√ = Bayonet 500 (Conquest), Impact Endure (FMC), Jubilee Loaded (Adama), Flufol 500SC (Farmalinx), Flutriafol 500SC (4 Farmers, Imtrade, Crop Smart, Titan), Leda 500SC (Kenso Agcare)

= low level of suppression only

b = barley only

-/√ = Only registered at the higher rate

Table 3: Smut and foliar disease control

Product	Active ingredient		Company	Form	Rates per 100kg or per ha	Smuts controlled		Other diseases suppressed at low/high rates							
	Fungicide	Insecticide				Wheat/ barley	Oats	Stripe rust	Wheat leaf rust	Barley leaf rust	Yellow leaf spot	Net blotches	Barley scald	Barley mildew	Septoria
Jockey Stayer	fluquinconazole	–	Bayer	f	300/450 mL	✓*	–	✓	✓	–	–	–	✓*	✓*	✓
Quantum Pro	fluquinconazole	–	Arysta	f	300/450 mL	✓*	–	✓	✓	–	–	–	✓*	✓*	✓
Armour C	flutriafol	cypermethrin	FMC	p/f	100 g/mL	✓	–	✓	–	–	–	–	✓	✓	✓
Arrow C	flutriafol	cypermethrin	Nufarm	f	–	✓	–	✓	–	–	–	–	✓	✓	✓
Systiva	fluxapyroxad	–	BASF	f	150 mL	✓b	–	–	–	✓	–	–	✓	✓	–
Foliarflo C	triadimenol	cypermethrin	Arysta	f	100/150 mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Triadimenol 150+/150C	triadimenol	cypermethrin	4 Farmers	p/f	100/150 g/mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Apparent Suntan	triadimenol	cypermethrin	Apparent	f	100/150 g/mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Baytan T	triadimenol	triflumuron	Bayer	f	100/150 mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Triadimenol T	triadimenol	triflumuron	Genfarm	f	100/150 mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Vanguard C	triadimenol	triflumuron	Conquest	f	100/150 mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Proleaf T	triadimenol	triflumuron	Arysta	f	100/150 mL	✓	✓	✓	–	–	–	–	✓	✓	–/✓
Uniform	azoxystrobin + metalaxyl-m	–	Syngenta	spray	200-400 mL 300-400 mL	–	–	✓	–	✓	–	–	–	–	–
Intake HiLoad Gold / Combi Sapphire	flutriafol 500 g/L	–	Nufarm	spray	100/200/400 mL	–	–	✓§	–	–	–	–	–/✓	✓§	–/✓/–
Bayonet 500	flutriafol 500 g/L	–	Conquest	spray	100/200/400 mL	–	–	✓§	–	–	–	–	–/✓	✓§	–/✓/–
Impact Endure	flutriafol 500 g/L	–	FMC	spray	100/200/400 mL	–	–	✓§	–	–	–	–	✓/✓/–	✓/✓/–	–/✓/–
Various ∂ (see Table 2)	flutriafol 250 g/L	–	Various	spray	200/400 mL	–	–	✓	–	–	–	–	✓	✓	–/✓
Various ∃ (see Table 2)	flutriafol 500 g/L	–	Various	spray	100/200 mL	–	–	✓	–	–	–	–	✓	✓	–/✓

p = powder

f = flowable

–/✓ = Only registered at the higher rate

* Barley disease control is only registered where Raxil/Proguard Plus is added

b = barley loose smut only

§ = prolonged control is provided at the higher rates

Table 4: Aphid and therefore barley yellow dwarf virus control

Product	Active ingredient		Company	Form	Rates (per 100kg)	BYDV/CYDV	Stored grain pests	Smuts	Foliar diseases †
	Fungicide	Insecticide							
Pontiac	flutriafol + metalaxyl	imidacloprid	Nufarm	f	400 mL	✓	✓	✓	–
Hombre Ultra	tebuconazole	imidacloprid	Bayer	f	200 mL	✓	✓	✓	–
Imid-Triadimenol	triadimenol	imidacloprid	4 Farmers	f	400 mL	✓	–	✓	✓
Gaicho 600	–	imidacloprid	Bayer	f	120-240 mL	✓	✓	–	–
Senator 600	–	imidacloprid	Nufarm	f	120-240 mL	✓	✓	–	–
Guardian	–	imidacloprid	Arysta	f	120-240 mL	✓	✓	–	–
Various (See below) ∄	–	imidacloprid	Various	f	120-240 mL	✓	–	–	–
Cruiser 350FS	–	thiomethoxam	Syngenta	f	100-200 mL	✓	✓	–	–

∄ = Expunge 600SC (Apparent), Imida 600 (Conquest), Imidacloprid 600 (4Farmers, Genfarm), Picus (FMC)

b = barley only

† See diseases controlled by triadimenol in Table 3

Wheat leaf rust was widespread again in SA in 2017 albeit at low levels. Owing to the large areas sown to susceptible varieties there is a high risk of the rust surviving to next season on summer volunteers. Fluquinconazole is the only active applied at seeding currently registered for the control of leaf rust in wheat although use of in furrow treatments for control of stripe rust will provide some protection against leaf rust.

Barley

All barley seed except fully resistant varieties should be treated with a product from Table 3 that controls powdery mildew. Where growers seek to suppress *Rhizoctonia* then a product from Table 2 may be used in addition to the mildew control.

Treatments, other than Systiva®, registered for the suppression of net form net blotch are only effective for seed borne inoculum and not for stubble borne inoculum. Where growers think they may have a problem with seed borne infection, it is recommended that they use Systiva® as this will provide better overall control of the disease.

Smut Control

Wheat, barley and oat seed should be treated to control bunt, flag and loose smut in wheat, covered and loose smut in barley and smut in oats. These diseases generally occur at low or trace levels but, in the absence of seed treatments, they have the potential to increase rapidly causing significant economic losses to growers. Where farmers decide not to treat seed for one year, they are advised to treat the following year.

Bunt and covered smut spores are spread from infected heads onto healthy seed during harvest. Loose smut spores spread in the wind at flowering time and infect developing embryos. Loose smut infection remains hidden inside the seed and so is more resistant to seed treatments than the surface borne bunt and covered smuts. Flag smut spores spread by wind from infected leaves and infect developing heads. They can also survive in soil for several years infecting subsequent crops. Where smut infection is observed, growers are advised to buy new seed and use the full rate of registered seed treatments. Ensure that any machinery that has been in contact with diseased seed is cleaned.

The accepted tolerance levels are nil for bunt and three infected pieces in half a litre of grain for loose smut. Any wheat exceeding these limits will not be accepted. There is a nil tolerance level for any smutted barley or oat grain.

Emergence problems

Caution should be taken in using seed treatment products in Table 3 on wheat as they may reduce coleoptile length and cause emergence problems under some conditions.

Factors other than seed treatments can cause poor seedling emergence: these include deep sowing, surface crusting, short coleoptile varieties, soil temperatures and trifluralin.

Sowing too deep is a common cause of emergence problems. The coleoptile, which surrounds the first leaf until the shoot emerges, protects and guides the shoot as it grows through the soil. If seed is sown deeper than the length of the coleoptile the plant can fail to emerge. Because coleoptile lengths vary from one variety to another some varieties can tolerate deeper sowing than others. Coleoptile lengths vary greatly from one batch of seed to another. The source of seed is often more critical than the variety in determining coleoptile length. For this and other reasons farmers should seek to use the best seed possible.

Most emergence problems occur in heavy clay soils where surface sealing occurs. Extra care is required when treated seed and/or trifluralin is used in such soils.

Further advice:

Hugh Wallwork
South Australian Research & Development Institute
(08) 8303 9382 or hugh.wallwork@sa.gov.au

PIRSA Disclaimer

Use of the information and data contained within this site or these pages is at your sole risk.

If you rely on the information on this site you are responsible for ensuring by independent verification its accuracy, currency or completeness