

Cereal fungicide challenges and choices for 2020

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Challenges and choices 2020

Pesticide withdrawals Evolving diseases and resistance New products

- What are the resistance issues and how can we manage them?
- Where and when to use new and existing products?

Chlorothalonil withdrawal

(Authorisation ends: (a) 20 November 2019 for sale and distribution & (b) 20 May 2020 for the disposal, storage and use of existing stocks)







Threats to existing pesticides Arable: Risk to top 50 (by crop area treated):







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Value of Output (£m) at low risk

Potential loss of pesticides – likely impacts

- Best case scenario
 - Cereals, oilseeds, potatoes relatively unscathed
 - Edible and ornamental horticulture sector badly hit
- Worst case scenario
 - Cereals, oilseeds, potatoes significant impact
 - Edible and ornamental horticulture sector severely affected
- 5-8 years until alternative technologies close the gap
- Increased reliance on 'alternatives' to pesticides IPM





Revystar XE

New fungicide product for 2020

- Contains a new triazole (Revysol) and an SDHI (Xemium)
 - 100 g/L mefentrifluconazole + 47.5 g/L fluxapyroxad
- Maximum individual dose 1.5 L/ha
- Maximum of two applications
- To be applied before GS69
- Approved for wheat, barley, oats, rye, triticale, spelt and durum wheat





Inatreq™

- Currently waiting approval and should be launched in 2020
- Contains fenpicoxamid
- Derived from a natural compound produced by fermentation of an Actinomycete (Streptomyces spp.)
- New mode of action Quinone Inside Inhibitor (Qil) blocking mitochondrial respiration
- No cross-resistance to existing cereal fungicides but single site active so needs careful stewarding against resistance
- To be used once and only in mix with other actives to minimize the risk of resistance development.
- Best used as a protectant treatment or in the earliest stages of disease development.





Septoria protectant activity 2019 (5 trials)



Septoria curative activity 2019 (2 trials)





Septoria trial yields 2019 (7 trials)



Yellow rust 2019





Yellow rust trial yields 2019





Brown rust 2019



Fusarium trials (inoculated) Zyatt (near Mansfield, Nottinghamshire)





Note: Mancozeb doesn't seem to control DON mycotoxin levels

Opportunity in better resistance stewardship

- Stewardship measures based on reduced reliance
- Heavy usage of an a.i. confers a massive advantage to any resistant individuals
- Advice is to use all available methods to reduce pressure on chemistry – mix, alternate, use low-risk multisites
- All of the above give the chance to better tailor programmes, broaden the range of diseases managed and improve margins







Wheat programmes – what do we **really** need?

- T minus autumn or winter clean up
- T0 early rust protection
- T1 stem-base disease and protection of yield important leaves
- T1.5 protection of leaf 2 is gap between T1 and T2 is stretched
- T2 protection of yield important flag
- T3 continued green leaf retention and protection from ear diseases
- T4 continued ear disease protection
- Can we reduce use of more marginal sprays?



Wheat programmes – what do we **really** need?

- T minus autumn or winter clean up
- T0 only for early rust protection
- T1 stem-base disease and protection of yield important leaves (risk based CTL maximised)
- T1.5 protection of leaf 2 is gap between T1 and T2 is stretched
- T2 protection of yield important flag deploy new chemistry maximising lowest risk options
- T3 continued green leaf retention and protection from ear diseases (azole and alternative multisite?)
- T4 continued ear disease protection
- Can we reduce use of more marginal sprays?



Chlorothalonil authorisation for disposal, storage and use ends 20 May 2020

Reminder of growth stages 20 May 2019 (source adopt-a-crop)

	Average	Maximum	Minimum
Spring barley	17.56	31	10
Spring oats	16.5	22	11
Winter barley	48.2	61	33
Winter oats	32	33	30
Winter wheat	35	41	30



Wheat programmes - strategic planning for 2020

	то	T1	Т2	тз
Late sown	×	Azole plus CTL	Range of SDHI/azole options plus alternative multisite	Alternate azole plus multisite
Resistant variety	×	Azole plus CTL	Range of SDHI/azole options plus alternative multisite	Alternate azole plus multisite
Early drilled	? Maximise CTL / minimise azole	Azole plus SDHI plus CTL	Try new chemistry plus alternative multisite	Alternate azole plus multisite
Susceptible variety	? Maximise CTL / minimise azole	Azole plus SDHI plus CTL	Try new chemistry plus alternative multisite	Alternate azole plus multisite
2 nd wheat / eyespot risk	×	Azole plus SDHI plus CTL	Top rank products plus alternative multisite	Alternate azole plus multisite
Yellow rust scenario	Maximise strob / minimise and alternate azole / use CTL	Azole plus SDHI plus CTL (increase azole or add strob)	Maximise azole / use top rank mixture products plus multisite	Two-way azole mix plus multisite

Wheat fungicide programmes for 2020



- Maximise use of CTL up to cut off and then switch to alternative multisites
- Use balanced mixtures of systemics
- Limit dose and application number of individual actives where you can
- Tune doses and actives to risk
- Target most effective products at most responsive timings
- Use new chemistry as a chance to alternate azoles
- Inatreq at T2 would give an option to alternate with SDHI at T1
- Folpet likely successor to CTL at T2 but consider mancozeb at T3



Barley programmes centred on efficient and targeted use

Understanding principles of fungicide use



- Manage crop to maximise grain number and potential grain size
- Early T1 sprays retain healthy tillers hence more ears where disease pressure threatens (winter crops and high risk spring barley scenarios)
- A T2 application at GS49 gives sufficient protection of canopy post-anthesis to ensure grains fill to their storage capacity
- Later sprays after T2 don't yield and could be omitted from recommendations



Optimising timings Spring barley - yield response to T1 fungicides highest in wet years with rhyncho present

SRUC data 2017-2019 (12 trials)



	Yield t ha ⁻¹			
Fungicide	Concerto	Fairing	Mean	Response
Untreated	6.00	6.49	6.24	
T1	6.22	6.68	6.45	0.21
T2	6.54	7.05	6.80	0.56
T1 + T2	6.62	7.01	6.81	0.57
T1.5 +T2	6.62	7.03	6.83	0.58
Variety (V)		<0.001		
Fungicide (F)		<0.001		
V*F		0.799		
LSD Fung		0.120		
LSD V*F		0.169		
residual df		376		



T1 Siltra Xpro @ 0.4 | ha⁻¹ T2 Siltra Xpro @ 0.4 | ha + Bravo @ 1.0 | ha⁻¹).

Rhynchosporium 2017–19 (8 trials)





Priaxor = fluxapyroxad + pyraclostrobin

Net blotch protectant 2017–19 (4 trials)





Ramularia 2019 (2 sites)





Alternatives to chlorothalonil SRUC winter barley trial 2019



Yield



Ramularia – current advice

- Varietal ratings for ramularia withdrawn
- Breeding solutions are a longer game
- Use multisite chlorothalonil to manage ramularia risk at T1 and T2 (until 20th May 2020)
- Residual efficacy in prothioconazole
- Revystar XE efficacy sits between CTL and prothioconazole
- Folpet, biostimulants / micronutrients may play greater role
- Minimise crop stresses





Barley programmes - strategic planning

	то	T1	Т2	ТЗ
Winter barley Susceptible	×	CTL + mid dose azole + SDHI mix	Alternate azole / Switch to other multisite	×
Winter barley Resistant variety	×	CTL + low dose azole + strob mix	Switch to other multisite	×
Spring barley Susceptible variety	×	Low dose option in wet year and if disease present	Switch to other multisite PTZ + SDHI	×
Spring barley Resistant	×	CTL* (or nothing if late crop)	Switch to other multisite PTZ + SDHI	×
Spring barley High risk ramularia	×	CTL*	Switch to other multisite Try Revystar XE	×
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CTL* - many spring barley crops may not reach mid tillering /T1 by 20th May and stock must be disposed of by then

Take home actions

- CTL loss needs to be factored in to 2020 plans
- Maximise CTL use early and then switch to other multisites
- Build fungicide programmes from key timings
- Minimise use at least responsive timings
- Adjust programmes to variety and to risk
- Get as much diversity into programmes as possible – mix and alternate
- Keep aware on technical developments







Farm Advisory Service





The European Agricultural Fund for Rural Development Europe investing in rural areas



The Scottish Government

Riaghaltas na h-Alba

