Getting the most out of this season’s yields

Bayer CropScience cereal and oilseed rape fungicides 2013

Despite the difficult plantings and current spring conditions, it’s still worth pushing the majority of winter crops to try to achieve the best possible yields. With another season of unsettled weather likely, the key learning from 2012 was that robust (no less than 75% of label) doses of the best fungicides will give you the best risk management to buffer against spray timing difficulties or rapidly developing disease epidemics. It’s important to manage disease early on all crops, since even low yield potential crops respond to effective fungicide programmes in proportion to higher yielding crops, because disease does not discriminate between them. ALL good fungicides work best as protectant applications.

Click on the buttons below for extra technical information.

Winter Wheat

Winter Barley

Spring Barley

Oilseed Rape

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Use plant protection products safely. Always read the label and product information before use. Pay attention to the risk indications and follow the safety precautions on the label.
Create a yield platform

**Target:** Leaves 4 and 5, between 2-4 weeks before T1

**Key aim:**
- Early yellow rust management with fast-moving tebuconazole (0.4 - 0.6 L/ha Folicur) or cyproconazole (40g/ha)
- Early Septoria inoculum management with chlorothalonil (1.0 L/ha).

**Benefits:**
Helps promote azole diversity in the programme to support resistance management. Epoxiconazole and prothioconazole should be saved for later timings. Helps secure some timing flexibility at T1 if needed due to wet weather, and reduces the risk of chasing disease throughout the programme as in 2012. Easily cost-justified, and an essential component for yellow rust management on susceptible varieties.
Winter Wheat

Lay the yield foundation

**Target:** Leaves 3 and 4 + stem base

**Key aim:**
To maintain protection of leaves 3 and 4 from Septoria, rusts, mildew and cover any risk of stem base disease, aiming to keep leaf 2 clean ahead of flag leaf emergence.

**Solution:**
Broad spectrum foliar and stem base disease control with 0.55 L/ha Proline275 (150g/ha prothioconazole) and CTL (required to support prothioconazole in the absence of bixafen (Aviator235Xpro).

- Covers Septoria, yellow rust, mildew, true eyespots, and early season Fusarium inoculum management
- If yellow rust has escaped the T0 timing, or T0 was omitted, add in strobilurin e.g. 1.4 L/ha Firefly155 (154g/ha prothioconazole + 63g/ha fluoxastrobin) + CTL
- Where the T1 is delayed or in very high early Septoria pressure seasons, substitute the CTL with bixafen i.e. use 1.0 L/ha Aviator235Xpro (160g/ha prothioconazole + 75g/ha bixafen). Do not reduce the dose below 1.0 L/ha
- For early drilled second wheats at increased risk of Take-All, consider using 1.5 L/ha Fandango + CTL

**Benefits:**
Minimise inoculum levels of Septoria, rusts and mildew in the canopy, maintain healthy stems in the main shoots and tillers by suppressing the stem base complex, and reduce Fusarium inoculum ahead of the T3 timing (Proline275). You cannot achieve this broad spectrum risk management and longer-lasting protection with less than 0.55 L/ha Proline275.

**Results from 0.55 L/ha Proline275 at T1:**

- **Eyespot:** 0.5t/ha benefit vs 1.5 L/ha Tracker in high pressure SAC eyespot trial 2008, despite Tracker giving 15% better visual disease control. Lack of correlation between visual disease control and yield is common in eyespot trials, reflecting difficulties in visually scoring yield robbing Oculimacula acuformis (R-type). It also reflects the broader stem base spectrum and Septoria activity of Proline275
- **Septoria:** 0.1t/ha more than 1.5 L/ha Tracker, and 0.3t/ha more than 1.0 L/ha Tracker in moderate to severe Septoria trials (5 independent trials AICC, SAC, OAT, Velcourt and Scottish Agronomy 2008) gave 0.55 L/ha independent trials show £30+/ha more MOIC than Tracker in Septoria and eyespot situations through superior yield delivery
- **Yellow rust:** performs identically to Tracker, but delivers higher yields due to better Septoria and stem base activity (High pressure BCS yellow rust trial 2011)
- **Fusarium inoculum management:** 2008-2012 HAUC and Fera trials have shown that, when used at T1, Proline275 can help uniquely reduce later season ear blight and mycotoxins by up to 50%, by suppressing stem base Fusarium
- **Mildew:** similar protectant activity to specific mildewicides (HGCA 2009).

*Data from HAUC and FERA
Results from 1.0 L/ha Aviator<sup>235</sup>Xpro at T2:

- **Yield:** 2012 - 0.8t/ha more than strob + azole (35 independent and BCS trials), 0.5t/ha more than 0.8 L/ha Seguris (21 independent and BCS trials) and 0.1t/ha more than 1.5 L/ha Adexar - for significantly less £/ha (6 independent and 2 BCS trials)
- **Septoria:** 2012 - HGCA + 11 independent and BCS Septoria trials identifies similar performance to 1.5 L/ha Adexar, for £10-15/ha less. Independent high Septoria pressure T2 timing trials in 2012 (Velcourt), showed 1.0 L/ha Aviator<sup>235</sup>Xpro to give 10% better Septoria control and 0.4t/ha more yield than 1.25 L/ha Adexar when flag leaf spray timings were slightly delayed
- **Brown rust:** 2012 - 9 european BCS trials show identical performance to 1.5 L/ha Adexar
- **Yellow rust:** 2009 -12 - 8 BCS and 1 independent trial show identical disease control to high dose epoxiconazole + pyraclostrobin in programmes
- **Enhanced photosynthesis:** unique label claim, helping the crop to build yield in the absence of disease
- **N- scavenging:** 2012 - ADAS trial showed 1.0 L/ha Aviator<sup>235</sup>Xpro delivered an extra 0.25t/ha more than 1.0 L/ha Adexar at the optimum N rate, with similar disease control. 62.5g/ha fluxapyroxad did not utilise N any more effectively than 100g/ha pyraclostrobin
- **Drought stress tolerance:** 2010 - BCS research trials demonstrated improved water use efficacy under conditions of restricted water supply. This was supported in the field by delivery of an extra 0.3t/ha more yield than strob + azole in low/no Septoria scenarios in the dry season of 2011
- **Spikelet fertility:** 2010-11 ADAS and BCS trials demonstrated ability of T2 Aviator<sup>235</sup>Xpro to secure extra grains per ear at optimum TGW, by helping to maintain spikelet fertility in adverse growing conditions.
- **Crop spray coverage:** 2010-11 spray application studies with Silsoe Spray Applications Unit (SSAU) demonstrated class leading foliar spray coverage compared to best T2 standards, for effective disease control
- **Rainfastness:** 2011 rainfastness studies with SSAU showed Aviator<sup>235</sup>Xpro to be rainfast in minutes, making it an ideal choice in catchly weather.
Protect the Quality

**Target:** Ear + flag leaf

**Key aim:**
To ensure long-lasting suppression of the whole ear blight complex e.g. *Microdochium nivale* and all true *Fusarium* species, as well as sooty moulds. To help extend flag leaf disease protection to harvest (especially in extended growing seasons/regions).

**Solution:**
Best integrated activity on the complete ear blight complex including *Fusarium culmorum*, *F. graminearum* (mycotoxin formers) and *Microdochium nivale* (seed infection) with 0.55 L/ha Proline275 (150g/ha prothioconazole).

**Benefits:**
Secure grain quality premium by effective mycotoxin suppression, and seed viability by *Microdochium* suppression. Provides effective *Septoria* and rust protection on the flag leaf during grain fill.

**Results from 0.55 L/ha Proline275 at anthesis:**

- **Yield:** 2012 - two AICC trials generated an extra 0.9t/ha, which indicates the yield robbing potential of *Fusarium*
- **Mycotoxin suppression standard:** 2009-2012 - Independent trials with Fera and HAUC show 0.55 L/ha Proline275 to be the most effective mycotoxin suppressive fungicide due to its broad spectrum ear blight activity
- **More flexible application window:** 2008 - Timing trials at the University of Bonn show that Proline has a wider activity window than tebuconazole (pre-anthesis protectant and just post-anthesis curative) if timing exactly to anthesis not possible
- **Sooty moulds:** 2009 Fera trials confirmed excellent activity on sooty moulds
- **Septoria:** long-lasting flag leaf top-up during grain fill
- **Yellow rust:** 2011-12 excellent yellow rust protectant (HGCA data) with long duration of activity.
Create a yield platform

**Target:** Growth Stage 23 - 30

**Key aim:**
To reduce inoculum levels of established powdery mildew and *Rhynchosporium* on susceptible varieties.

**Solution:**
*Torch* (spiroxamine) has activity against both powdery mildew and *Rhynchosporium* when used at 0.5 L/ha in mixture with cyprodinil will provide protection up to the T1 application.

**Benefits:**
Helps reduce selection pressure by saving prothioconazole for T1 and T2. Can buy time at T1 and reduces the risk of chasing disease throughout the season.
Build the yield

**Target:** Growth Stage 30 - 31

**Key aim:**

The most important and responsive spray timing in winter barley, aiming to protect leaf 3 from all foliar disease, to eradicate disease on leaf 4 and to ensure effective suppression of stem base diseases to optimise tiller survival.

**Solution:**

1.0 L/ha Fandango (prothioconazole + fluoxastrobin) for lower yield potential crops or 0.6 L/ha SiltraXpro (prothioconazole + bixafen) on higher yield potential crops or where disease pressure is elevated.

**Benefits:**

Tried and tested credentials of prothioconazole in properly-ratioed mixtures designed for barley.

- Prothioconazole can offset the need for a specific mildewicide
- Fluoxastrobin in Fandango has additional stem base and take-all activity, thought to be an increasing risk in barley
- Bixafen in SiltraXpro is at the most effective dose for barley to avoid over-extending crop greening effects
- Bixafen and prothioconazole are formulated to work together in SiltraXpro for effective, mutual, Rhynchosporium, net blotch and Ramularia resistance management.

**Results:**

- In 3 Winter barley trials in 2012 a programme delivering 200g/ha prothioconazole gave 0.27 yield uplift over an equivalent rate programme of epoxiconazole
- In 11 independent trials in 2012 Fandango programmes delivering 1.75 L/ha outperformed Adexar co-forms delivering 1.5 - 1.6 L/ha by 0.1t/ha.
Protect the yield

**Target:** Growth Stage 39 - 49

**Key aim:**
Foliar disease top up: net blotch in all areas; brown rust in the south and east; *Rhynchosporium* in the north and west in cool wet summers or *Ramularia* in the north and west is particularly important if there are periods of leaf wetness in spring and/or if crops are stressed.

**Solution:**
0.75 L/ha Fandango for lower yield potential crops or 0.4 - 0.6 L/ha SiltraXpro on higher yield potential crops or where disease pressure is elevated. Consider the higher rate of SiltraXpro in Scotland where the period of green canopy is extended.

**Benefits:**
Tried and tested credentials of prothioconazole in properly-ratioed mixtures designed for barley.

- Prothioconazole can offset the need for a specific mildewicide, infections of mildew at this timing can reduce green leaf area
- Bixafen in SiltraXpro is at the most effective dose for barley to avoid over-extending crop greening effects
- Bixafen and prothioconazole are formulated to work together in SiltraXpro for effective, mutual, *Rhynchosporium*, net blotch and *Ramularia* resistance management.

**Results:**
- In 3 independent trials in 2010 and 2011 a programme of 0.6 L/ha SiltraXpro followed by 0.75 L/ha Fandango gave a yield response of 0.93 t/ha over the untreated.
Build the yield

**Target:** Mid to late tillering

**Key aim:**
To protect against *Rhynchosporium*, net blotch, mildew and brown rust which is particularly important in the East.

**Solution:**
0.75 L/ha Fandango for lower yield potential crops or 0.4 L/ha SiltraXpro on higher yield potential crops where soil moisture is less of a limiting factor or where soils are particularly fertile. If planning a single spray programme for spring barley then SiltraXpro will give best results due to its superior curative disease control and longer lasting activity. Apply SiltraXpro at 0.6 – 1.0 L/ha for a single spray, dose rate is dependent upon disease pressure, variety and location.

**Benefits:**
- Tried and tested credentials of prothioconazole in properly-ratioed mixtures designed for barley.
  - Prothioconazole can offset the need for a specific mildewicide
  - Fluoxastrobin in Fandango has additional stem base and take-all activity, thought to be an increasing risk in barley
  - Bixafen in SiltraXpro is at the most effective dose for barley to avoid over-extending crop greening effects
  - Bixafen and prothioconazole are formulated to work together in SiltraXpro for effective, mutual, *Rhynchosporium*, net blotch and *Ramularia* resistance management.

**Results:**
- In 3 single spray situations in Ireland in 2009 - 2010 an application of 0.6 L/ha SiltraXpro gave on average 0.37t/ha yield advantage over 0.75 L/ha Fandango.
Protect the yield

**Target:** Growth Stage 39 - 49

**Key aim:**
The most important and responsive spray timing for disease control in spring barley, especially for *Rhynchosporium* and *Ramularia* if the summer has been wet or plants are under stress.

**Solution:**
0.5 - 0.75 L/ha Fandango for lower yield potential crops or 0.4 L/ha SiltraXpro for higher yielding crops (0.6 L/ha for high pressure *Ramularia* sites where the growing season is extended e.g. Scotland). When using Fandango the addition of 1.0 L/ha CTL is advised at T2 in spring barley in high pressure *Ramularia* situations for disease resistance management.

**Benefits:**
- Tried and tested credentials of prothioconazole in properly-ratioed mixtures designed for barley.
- Prothioconazole can offset the need for a specific mildewicide, mildew infections at this timing can reduce green leaf area
- Bixafen in SiltraXpro is at the most effective dose for barley to avoid over-extending crop greening effects
- Bixafen and prothioconazole are formulated to work together in SiltraXpro for effective, mutual, *Rhynchosporium*, net blotch and *Ramularia* resistance management.

**Results:**
- In a SAC high pressure *Rhynchosporium* in 2012 a programme of Fandango 0.75 L/ha followed by SiltraXpro 0.6 L/ha delivered 0.58t/ha yield over a 2 spray Adexar programme (0.8 L/ha fb 1.2 L/ha).
The Flowering Spray

**Target:** OSR petals

**Key aim:**
To protect against Sclerotinia by coating petals with fungicide to avoid spores infecting leaves and stems during petal fall.

**Solution:**
A split spray approach is the most effective, especially when flowering is extended. Apply 0.46 L/ha Proline275 (prothioconazole) at early to mid-flowering followed by 0.32 L/ha Proline275 if the crop is still flowering 3 weeks later.

**Benefits:**
The split spray approach covers all risk scenarios
- Proline275 gives more persistent activity against Sclerotinia which is especially useful during extended flowering periods
- Proline275 is the most effective light leaf spot product, control late in the season stops infections on pods
- Trials evidence suggests Proline275 can give a useful reduction of both powdery mildew and Alternaria on pods when used to control Sclerotinia
- Proline275 is more cost effective than Filan.

**Results:**
- 4 BCS trials 2007 - 2010 saw an increase in yield of 0.2t/ha for a single application of Proline275 over a 0.5 kg/ha application of Filan. Given current OSR prices, and the cost advantage of Proline275 this gives a return of around £75 per ha.