

Spring barley disease control – taking an IPM approach

Can two farmers spend the same amount of money on fungicides as their spring barley crop but get different results? The answer is YES.

Ciaran Collins
Tillage specialist Teagasc Crops, Environment and Land Use Programme



In the Teagasc Profit Monitor results from 2017 the average spend on fungicides on spring barley was €86/ha. Over the course of this article, we will look at how the adoption of Integrated Pest Management (IPM) techniques can help you reduce the amount of fungicide you use, while gaining maximum return from your investment.

All professional users, predominantly farmers, are required to apply the general principles of Integrated Pest Management (IPM) under the Sustainable Use Directive (SUD). Many of these measures are already practiced on-farm and all that is required of many farmers is to record that they are actually doing them.

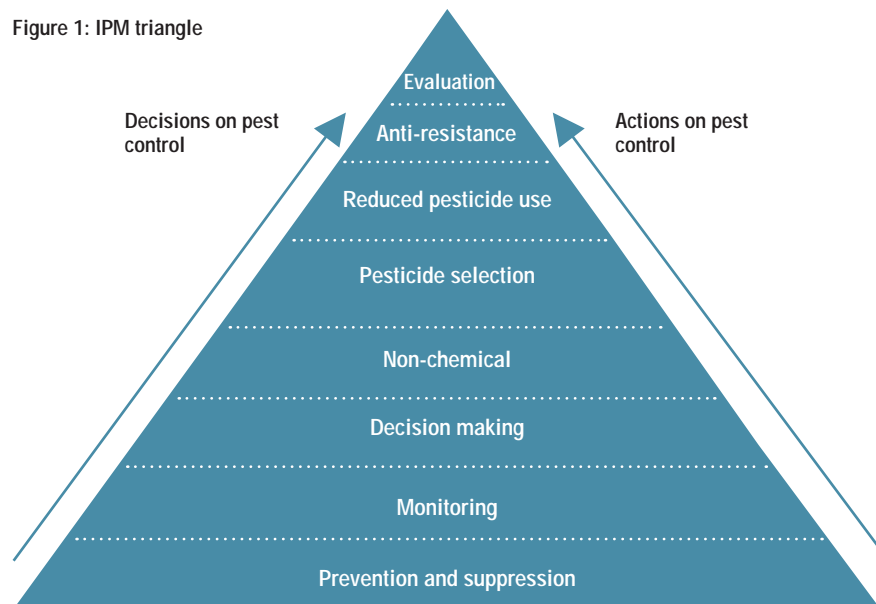
Prevention and suppression is the biggest and most important part of the IPM triangle (see Figure 1), where crop rotation and varietal disease resistance scores are important factors. But in May and June the focus for spring barley growers turns to fungicides, and how to make best use of them.

How fungicides are used is a key part of any IPM strategy. This involves the decision making process about whether a fungicide is required or not; fungicide selection; the rate and timing of application on the crop. Equally important is employing an anti-resistance strategy which is vital to prolonging our existing fungicides.

Components of yield

Barley yield is closely related to grain number/m². The main factor influencing grain number is the number of ears/m². Barley cannot compensate for lower ear numbers,

Figure 1: IPM triangle



Key IPM measures around fungicide application

- Use fungicides that are as specific as possible for the target disease,
- Use fungicides to the necessary levels,
- Use a diversity of fungicides,
- Use anti-resistance strategies to maintain the effectiveness of products,
- Record the success of the applied fungicides.

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IPM – correct timing

Research carried out at Teagasc Oak Park from 2012 to 2015 investigated the impact that various fungicide timings had on a yield of spring barley. The research compared the

traditional timings of GS 31-32 (stem extension) and GS 59 (ear emergence) to earlier timings of >GS30 (mid/late tillering) and GS 39/45 (flag leaf/awn emergence).

The research found that there was yield penalty of over 0.5t/ha by delaying fungicide application from the traditional timings.

IPM – Product mix and rates

Two important IPM measures emerged from the research; **•Product mix:** as part of an anti-resistance strategy a minimum of two actives should be included at each timing.

•Rates: no more than half the rate of any individual product is required.

Farmers can purchase fungicides in two ways: the straight product on its own e.g. Proline or a pre-formulated mix like Siltra, which contains Proline and an SDHI. A good anti-

Spring barley fungicide response

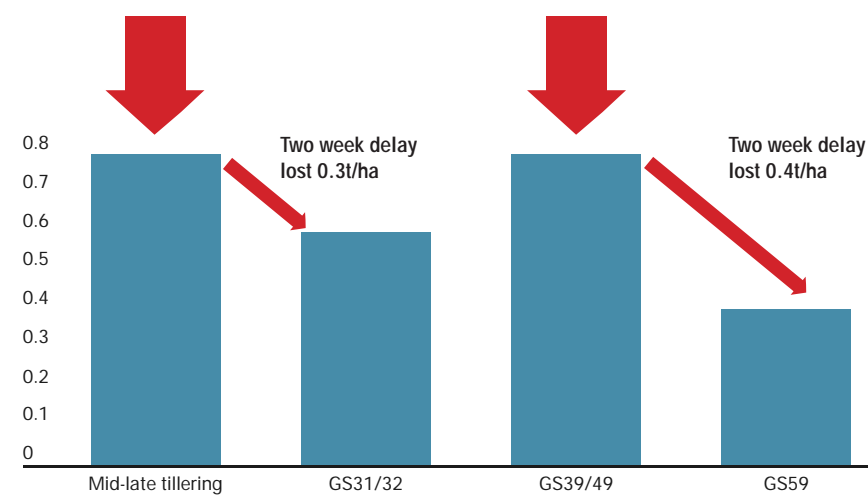


Figure 2: Impact of delayed applications of fungicides on spring barley

Table 1: Spring Barley Fungicide Programme

Timing	Target Diseases	Programme
Tillering GS <30	Rhyncho	Mixtures: Azole/Strob/SDHI.
	Net Blotch Brown Rust Mildew	Mildewicide where required.
Awn emergence GS 39-49	Rhyncho	Chlorothalonil 1.0 L (All mixes)
	Net Blotch Brown rust Ramularia Rust	+ Mixtures: Azole/Strob/SDHI Mildewicide where required.

resistance strategy will have two actives that have activity on the target disease.

So, in the case of Rhyncho this could be Proline and an SDHI. Whether the farmer uses a pre formulated product or purchases the 'straights' separately, it doesn't matter once there are two actives in the mix from different groups, with activity on the target disease. The research also proved that there is no advantage in using any more than half the rate of each component of the mix. This ties in with the IPM principle of using fungicides to the necessary levels.

Ramularia control in 2019

Ramularia is a key disease for spring barley growers and, left uncontrolled, can lead to large yield reductions. Varietal disease resistance will form part of the IPM strategy in the future but currently we do not have enough information on varietal resistance

to ramularia, so an application of Chlorothalonil is essential at the final timing for control. It is vital that it is applied prior to the development of symptoms.

Typical symptoms of ramularia are small brown rectangular lesions surrounded by a yellow halo. One of the distinguishing features of ramularia is that it can be seen through the leaf. Sometimes symptoms can be seen on lower, dead leaves, but normally symptoms appear post flowering.

Evaluation

The tip of the IPM triangle is evaluation. While you are required under cross-compliance to record pesticide use, evaluation of the success or otherwise of the fungicide programme is an important final step. This IPM measure will inform your future decision making on whether further reductions in fungicide use are possible.

Chlorothalonil

The European Standing Committee on Plants, Animals, Food and Feed (SCoPAFF) has voted against renewal of approval of the fungicide Chlorothalonil.

No dates are confirmed but it will be available for this season. Chlorothalonil (often referred to as Bravo) is a key active ingredient for the control of ramularia in barley and it is an important part of an anti-resistance strategy in wheat.

Teagasc produced a report last autumn on the possible implications of the loss of chlorothalonil. One of the key points from the report was, where chlorothalonil is not available, the report estimates the most likely scenario for e-Profit monitor farmers is an average net margin reduction of over 50% in wheat and 65% in barley.

The report also states that in the medium term the introduction of new fungicides will be welcome and will increase disease control options.

However, in the absence of chlorothalonil a more rapid loss of efficacy of these fungicides is expected due to high disease pressure.



Figure 3: Ramularia – Chlorothalonil is essential for control in 2019.