HGCA

Topic Sheet No. 80

Autumn 2004

Determining eyespot risk in winter wheat

Eyespot effects

Eyespot, caused by the fungi *Oculimacula acuformis* (R type) and *O. yallundae* (W type), seriously affects the stem base of winter wheat. It reduces yield and quality by restricting water and nutrient uptake. Lodging, due to infection, may cause further loss. Mixed R and W type eyespot infections occur in most UK crops. R type dominated in the 1990s but in the past three years R and W type have been found in almost equal proportions.

Applying certain fungicides at stem extension can reduce eyespot and increase yield by around 1t/ha in affected crops. Identifying which crops will give a cost-effective response to treatment is difficult however, and in many crops treatment will not be justified. On a 10t/ha crop, yield loss from eyespot varies from 10.3kg to 15.3kg for each percent of infection; around half can be recovered by treatment.

Determining eyespot risk

To aid decision making on the need for an eyespot treatment a model has been developed which assigns risk points to factors that contribute to final eyespot incidence (Table 1); the more points, the greater the risk. The presence of eyespot in a crop at stem extension (growth stage 31-32) when spray decisions have to be made is only one indicator of the need to treat for eyespot. Other factors include method of tillage, sowing date, spring rainfall and previous cropping.

The grower can assess total risk score (Table 2) to confirm treatment need and can also decide on an acceptable risk level. Some crops with high risk scores may not justify treatment because the grain price is too low or the fungicide cost too high.

Table 1. Accumulated risk score table

Factor	Level	Risk points
Sowing date	≥6 October	0
	<6 October	5
Eyespot infection @ GS 31-32	≤7%	0
	>7%	10
Cumulative rainfall (mm) in March / April / May	≤170mm	0
	>170mm	5
Tillage	Minimum tillage	0
	Plough	10
Soil type*	Light	0
	Medium	1
	Heavy	5
Previous crop	Non-cereal	0
	Other cereal	10
	Wheat	15

**Add a further 5 points for brash and limestone soils.*

Action:

- **Assign points to each crop for each risk factor at the start of stem extension.**
- **Either use your own farm mean spring rainfall data or obtain area data from the Met Office site (www.met-office.gov.uk/climate/uk/averages/index.html).**
- **Add the number of points to give an accumulated risk score:**
  - **Use higher risk scores to trigger treatment when grain price is low.**
  - **Use lower risk scores to trigger treatment when grain price is higher.**

If you are unsure about any of the suggested actions, or want them interpreted for your local conditions, consult a professional agronomist.

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Table 2. Examples of eyespot risk scores that would trigger treatment

Risk score	Predicted % incidence of eyespot from risk score	Yield loss recovered by treatment (kg/ha)	Treatment cost £/ha	Grain price £/t
20	30	154	15	100
29	45	230	22	100
29	45	230	15	70
36	63	320	22	70
36	63	320	15	50
40	85	440	22	50

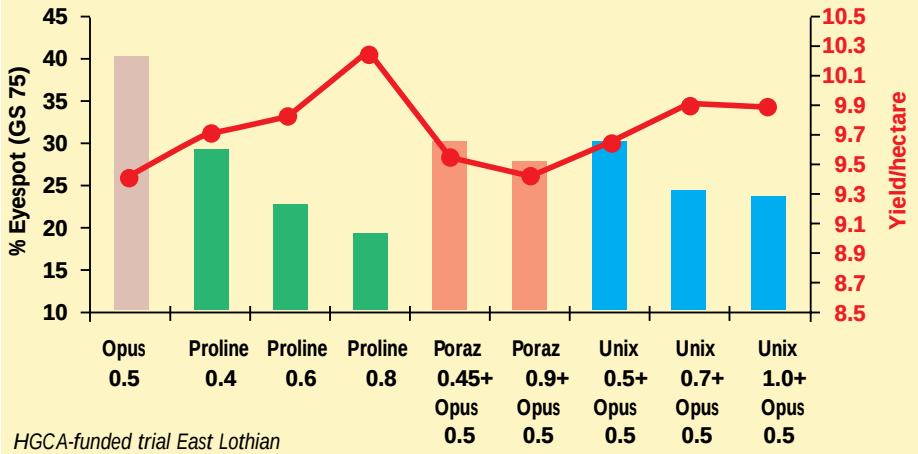
Effective eyespot products (Figure 3) include Unix (cyprodinil), Poraz (prochloraz) and Proline (prothioconazole). Higher doses of these products, especially of Proline, give more consistent control. Proline also controls both Septoria and eyespot but a higher rate is needed in an eyespot risk situation than for Septoria alone.

Flexity (metrafenone) and Landmark (kresoxim-methyl plus epoxiconazole) have label claims for eyespot reduction only.

The use of new fungicides with activity against eyespot, eg Proline, may reduce treatment cost or enhance control making a lower risk score more appropriate.

Varietal resistance at present is too weak to affect the risk score, but it may be possible to reduce treatment costs with more resistant varieties, which may be grown in the future.

Figure 1. Eyespot control and yield benefit in 2004



HGCA-funded trial East Lothian

Summary

SAC led a three-year HGCA-funded project and have produced a risk model to help growers assess the probability of yield damaging levels of eyespot developing in their crop.

Spraying for eyespot always needs to be justified economically. This can best be done by taking account of risk factors, such as a preceding cereal crop, the presence of eyespot in the crop, ploughing, early sowing, heavy soil and wet springs.

Using the table provided growers can calculate a total risk score for their crop and then choose an acceptable level of risk to justify the need for spraying.

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Topic Sheet 29

Project Reports 150, 200, 216 and 347

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