

Foliar late blight development in the UK in relation to EuroBlight fungicide efficacy ratings

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Introduction

In recent years there have been comments by some agronomists in the UK that foliar blight control is not always as closely related to EuroBlight fungicide efficacy ratings as expected. The decimal leaf blight efficacy ratings are calculated exclusively from results generated in at least six trials, over 2 years, in different European countries (DE, DK, NL and UK). The relationship between the ratings and foliar blight development was checked using results from non-EuroBlight field trials in the UK.



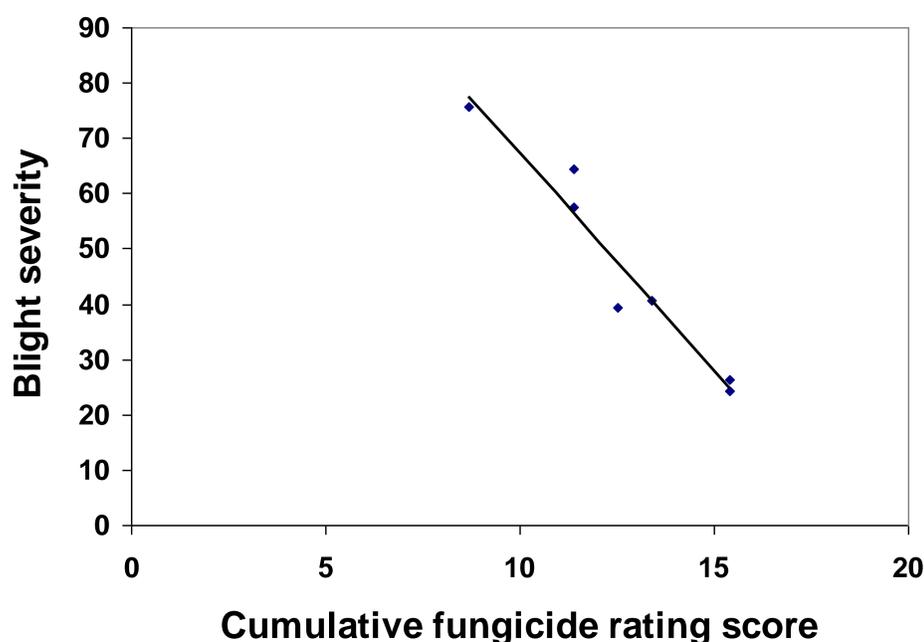
Product (Dose rate (litre or kg/ha))	Leaf blight	Tuber blight	New growth	Stem blight	Protec-test	Curative
benlatey-M + mancozeb ²	3.0		●●	●●	●●●	●●●
metalaxyl-M + mancozeb ²			●●	●●	●●●	●●●
metalaxyl-M + fluazinam ²			●●	●●	●●●	●●●
propamocarb + cymoxanil (2.0)				●●	●●	●●●
famoxadone + cymoxanil				●●	●●	●●●
cymoxanil + mancozeb				●●	●●	●●●
cymoxanil + metiram				●●	●●	●●●
cymoxanil + copper				●●	●●	●●●
propamocarb-HCl + fenamidone (2.0)	2.5		●●	●●	●●●	●●●
propamocarb-HCl + fluopicolide (1.6)	3.8	3.9	●●	●●	●●●	●●●
benthiavalicarb + mancozeb (2.0)	3.7			●●	●●●	●●●
mandipropamid (0.6)	4.0		●●	●●	●●●	●●●
mandipropamid + difenoconazole (0.6)	4.0		●●	●●	●●●	●●●
dimethomorph + mancozeb (2.4)	3.0		●●	●●	●●●	●●●
dimethomorph + fluazinam (1.0)	3.7	3.3	●●	●●	●●●	●●●

Methods

Five trials that included at least six straight fungicides or mixtures with decimal ratings for leaf blight control were selected. Selection was bias-free; no other trials were suitable for inclusion since they involved too few fungicides with a EuroBlight rating (three or fewer).

Foliar blight severities, for the assessment date with peak separation of treatments, were regressed on the cumulative fungicide rating scores for leaf blight, and also the collective ratings for leaf blight plus curative efficacy (Bain and Bardsley, 2009; Bain, 2015). For individual fungicide applications the curative rating was included only if the spray was applied within zero to two days of high risk conditions; defined as a Smith day. The fungicides tested were Diablo (ametoctradin+mancozeb), Dithane NT (mancozeb), Electis (zoxamide + mancozeb), Infinito (fluopicolide + propamocarb), Laminator Flo (mancozeb), Ranman Top (cyazofamid), Revus (mandipropamid), Shinkon (amisulbrom) + Dithane NT (mancozeb) and Shirlan (fluazinam).

Some validation trials included the UK products Invader (dimethomorph + mancozeb) and Valbon + ZinZan (benthiavalicarb + mancozeb). These treatments were excluded from this study because the decimal leaf blight ratings for these co-formulations have been predominantly calculated from EuroBlight trials including substantially different products, i.e. Acrobat and Valbon (NL formulation). In the study product rates in the validation trials matched those used to generate ratings.



Example of relationship between foliar blight and cumulative fungicide rating (leaf blight plus curative), 2007 trial

Results

In three of the five trials the linear relationship between cumulative decimal rating score and foliar blight severity was significant (Table 1). However, in the 2007 and 2011 trials this was not the case.

Incorporating the curative ratings for the treatments, when appropriate, improved the linear relationship in all five years (Table 1). For the 2007 and 2011 trials the increase in percentage of variance accounted for was very considerable.

Year of field trial	Number of fungicides tested	Significance level of regression		Percentage variance accounted for	
		Leaf blight rating	Leaf plus curative ratings	Leaf blight rating	Leaf plus curative ratings
2006	6	0.013	0.003	78	89
2007	7	0.159	<0.001	22	93
2009	7	0.021	0.004	62	79
2010	7	0.005	<0.001	79	89
2011	8	0.168	0.011	17	64

Table 1 Significance levels and percentages of variance accounted for from regressions of foliar blight severities on cumulative fungicide rating scores

Conclusions

The accuracy of the EuroBlight ratings for the fungicides tested in the five validation trials was confirmed, provided curative ratings were also taken into account.

One caveat is that care is needed regarding the few ratings that currently cover dual products in Europe, e.g. Acrobat/Invader and Valbon/Valbon + ZinZan. This issue would be alleviated by further harmonisation of products across Europe or the generation of individual ratings.

The curative ratings in the EuroBlight table are not yet derived from trials adhering to a common protocol. It would be useful to know the impact of decimal ratings for curative activity on the correlation between cumulative rating score and leaf blight control.

Validation of more recent ratings for newer fungicide products requires this exercise to be repeated in a few years time when sufficient results from non-EuroBlight trials are available.

References

- Bain, R. A. and Bardsley, E. (2009). The impact of fungicide spray order on foliar blight control in two growing seasons. PPO Special Report No.13, 115-121 Hamar, Norway.
- Bain, R. A. (2015). Report of the Control Strategies Subgroup meeting on 13 May 2015: Discussion and agreements reached. PPO Special Report No.17, 131-138 Brasov, Romania.

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