Grower Summary

TF 195

Sensitivity of apple powdery mildew (*Podosphaera leucotricha*) populations to triazole and strobylurin fungicides

Annual 2012

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Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of the full report, please email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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Project Number:	TF 195
Project Title:	Sensitivity of apple powdery mildew (Podosphaera leucotricha) populations to triazole and strobylurin fungicides
Project Leader:	Dr Angela Berrie
Contractor:	East Malling Research
Industry Representative:	Nigel Kitney
Report:	Annual Report 2012
Publication Date:	21/08/2012
Previous report/(s):	None
Start Date:	01 March 2011
End Date:	31 March 2014
Project Cost:	£42,226

Headline

Exact protocols for conducting experimental work have been established for determining the sensitivity of apple powdery mildew to fungicides in Year 2.

Background and expected deliverables

Apple powdery mildew can reduce yield and fruit quality and levels as low as 8% mildewed leaves can reduce yield and quality on sensitive varieties such as Cox. On other varieties, high levels of mildew have been recorded in many commercial orchards but the effect on yield and quality is not as well understood as on Cox.

All growers and advisers are agreed that powdery mildew control is becoming difficult with some badly affected farms in East Kent having orchards with 50-100% mildew-infected shoots on average. There are many possible reasons for the poor mildew control including: limited range of effective fungicides, reduced efficacy of triazole or strobilurin fungicides due to changes in the sensitivity of the mildew population, change in shoot growth pattern due to climate change, poor spray cover or insufficient monitoring of mildew development.

Good control of powdery mildew during the growing season is the top priority. Triazoles are the most effective fungicides against apple powdery mildew and consequently are used intensively in apple orchards as there are few alternative products. This leads to repeated use of fungicides from the same chemical group resulting in a high risk of mildew isolates being selected with reduced sensitivity.

Alternative products for mildew control, including potassium bicarbonate, potassium phosphite, Milsana (knotweed extract) and a biocontrol agent *Ampelomyces quisqualis,* were evaluated as part of a Defra project (HH2502STF). Most had limited efficacy. A new Hort LINK project on chemical control in horticultural crops (Sceptre) started in 2011; one of its objectives is to find new fungicides and/or alternative products for controlling powdery mildew on apple. Information on whether triazole (myclobutanil, penconazole) or strobilurin (kresoxim-methyl, pyraclostrobin) fungicides are less effective due to reduced sensitivity of mildew populations in orchards is important for selecting appropriate fungicides to achieve good control and minimise the risk of insensitivity development.

Expected deliverables and benefits

The information on the sensitivity of apple powdery mildew to triazole and strobilurin fungicides and its possible contribution to the current poor mildew control will benefit the industry in the following aspects:

（1） The information generated will complement that generated in the HortLINK project

(Sceptre) in which new fungicides and/or alternative products for controlling powdery mildew will be investigated.

（2） It should provide the industry with a clearer understanding on fungicide control of apple powdery mildew.

（3） It will enable growers to select appropriate products in order to improve control as well as to reduce the risk of development of fungal resistance/insensitivity to fungicides.

Summary of the project and main conclusions

In Year 1,protocols have been developed to study the response of apple powdery mildew to different fungicides at a range of concentrations using rootstocks. In Year 2, treated rootstocks and seedlings will be exposed to powdery mildew spores in a number of orchards where powdery mildew control has been difficult. Thus, by the end of Year 2, tentative conclusions on the (in)sensitivities of powdery mildew to selected fungicides may be drawn.

Financial benefits

Growers can benefit from the project results in the following ways:

1) Correct selection of fungicide products in spray programmes to control powdery mildew and minimise the establishment and subsequent spread of mildew strains that are insensitive to fungicides.
2) Maintaining a good range of effective fungicides against powdery mildew to achieve effective control.

Action points for growers

There are no action points for growers at present as the project is at an early stage.