



Grower Summary

Monitoring metalaxyl-M sensitivity of Downy Mildew infections of Impatiens

PO 011b

Final report 2018

Project title: Monitoring metalaxyl-M sensitivity of Downy Mildew infections of Impatiens

Project number: PO 011b

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(or expected completion date):

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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GROWER SUMMARY

Headline

- Metalaxyl-M resistance in *Plasmopara obducens* has not been detected since 2014.
- Downy mildew infection on impatiens was mainly found in the wider environment.

Background

Impatiens downy mildew (IDM), caused by *Plasmopara obducens*, is a foliar disease specific to impatiens. During early 2011, a metalaxyl-M resistant strain of *P. obducens* was introduced into commercial impatiens production resulting in widespread downy mildew infections which were difficult to control. To try and minimise the risk posed by the resistant strain, pro-active action was taken by the industry to restrict impatiens production using cutting raised plants. This action appeared to have been successful as no IDM infections caused by the resistant strain were detected during monitoring in 2012 (PO 011) or 2013 (PO 011a); in 2013 no downy mildew infections of impatiens were reported. However, the risk of infection by the resistant strain still remains, particularly in areas where infection has occurred previously.

This small scale project aims to continue the monitoring work undertaken during 2012 and 2013 to provide growers with:

1. An early warning system for identifying the presence of metalaxyl-M resistance, in order to assist with decisions on suitable spray programmes.
2. Guidance as to the prevalence, persistence and geographical distribution of the metalaxyl-M resistance compared to metalaxyl-M sensitivity in the wider environment.

Summary

Sporangia washed from downy mildew infected impatiens samples sent to Fera, were inoculated onto three replicate impatiens plants treated with a Subdue soil drench prior to inoculation. An additional three plants, drenched with an equivalent volume of water, were inoculated as untreated controls. Inoculated plants were grown at 20°C until symptoms

developed on the controls (8-10 days) at which point the metalaxyl-M sensitivity of the inoculated isolate was determined based on the pattern of infection; resistant isolates infected both treated and control plants whereas sensitive isolates only infected the control plants.

Over the duration of project PO 011b (2014-2018), nine impatiens downy mildew samples were screened for resistance to metalaxyl-M. Of the nine samples, three were sent by nurseries (two samples in 2014 were sent by the same nursery) and six were from the wider environment (private gardens). Three of the nine samples were shown to be metalaxyl-M resistant, two were sent by the same nursery in 2014 and one was from the wider environment. All three of the metalaxyl-M resistant isolates were detected in 2014; no metalaxyl-M resistance in *P. obducens* has been detected since 2014.

Samples from downy mildew infections on nurseries generally occurred during June and July whereas those from the wider environment occurred during late August and September. The difference in timing between infections found on nursery and the wider environment suggests that, over the period of project PO 011b, the infections was not likely to have passed from nursery to the wider environment or vice versa.

Over the period of this project the level of impatiens downy mildew found on commercially grown impatiens has been very low, which reflects the continued success of the decision by most UK growers to produce only seed-raised impatiens.

Financial Benefits

In the UK, the annual retail value of the impatiens crop before 2008 was estimated to be £40m; however the onset of impatiens downy mildew has considerably reduced this value. The outbreak of downy mildew in 2011 demonstrated that the disease has potential to destroy whole site annual production as well as undermine consumer confidence in this commercially important product.

Prompt (up to 10 days after sample receipt) and widespread (sample originator and the wider network of growers) reporting of the metalaxyl-M resistance status of any infections would allow growers to ensure that spray programmes used will be effective in minimising losses that may result from any outbreaks.

Action Points

- Where possible grow impatiens from seed not vegetative cuttings.

- Apply a protectant fungicide programme to seed raised crops during the production phase.
- Monitor crops carefully for signs of the disease, provide good levels of ventilation and don't water crops late at night.
- Dispose of infected plant material into sealed bags or bins.