

Dealing with disease resistance to control impatiens downy mildew



Sporulation of the metalaxyl-M resistant downy mildew strain on the underside of leaves on young impatiens plants treated with water



Sporulation of the metalaxyl-M resistant downy mildew strain on the underside of leaves on young impatiens plants treated with metalaxyl-M

Background

Impatiens downy mildew (*Plasmopara obducens*) is a foliar disease which is specific to impatiens. It was found affecting *Impatiens walleriana* for the first time in the UK in 2003 and thereafter remained absent or at low levels before re-appearing in 2007, 2008 and 2011.

Initially listed as a notifiable disease, a decision was taken by Defra Plant Health to remove the need for emergency control measures and allow the industry to manage the disease in a similar manner to other downy mildew diseases on ornamentals.

AHDB Horticulture funded projects (PC 230, 230a and 230b) have provided an important understanding of the disease and its control. However, the introduction of a metalaxyl-M resistant strain of *P. obducens* to the UK in 2011 meant that programmes based around products containing metalaxyl-M would potentially no longer provide effective control of the disease.

| Product | Active ingredient | Rate/ha | Disease control (%) | |
|-----------------|-------------------------------------|--------------|---------------------|-------------------|
| | | | Sensitive isolate | Resistant isolate |
| Fenomenal | Fenamidone + fosetyl aluminium | 4.5 kg | 100 | 99 |
| Paraat | Dimethomorph | 3 kg | 95 | 100 |
| Revus | Mandipropimid | 0.6 l | 100 | 97 |
| Previcur Energy | Propamocarb HCL + fosetyl aluminium | 3 kg | 76 | 73 |
| Subdue | Metalaxyl-M | 12.5ml/100 l | 100 | 12 |

Method

Efficacy testing was originally carried out to determine the activity of a range of fungicides to *P. obducens*. All products were tested for protectant and eradicant activity in both single product and programme trials.

Testing was repeated following the introduction of the metalaxyl-M resistant strain of *P. obducens* in 2011. The protectant activity of the most effective non-metalaxyl-M containing products from the previous trials were examined in both single product and programme trials.

Since 2012 monitoring of downy mildew infections in the UK has taken place to determine the frequency and distribution of those caused by the metalaxyl-M resistant strain.

Results

The initial trials showed a number of products provided good protectant activity against downy mildew, however none had any eradicant activity. The most effective products tested contained metalaxyl-M. Spray programmes combining these products with Fenomenal, Paraat or Revus were shown to provide optimum disease control.

Testing against the metalaxyl-M resistant strain showed that products gave disease control similar to that obtained with the sensitive strain. The exception to this was products containing metalaxyl-M. Spray programmes containing Fenomenal, Paraat or Revus provided the best disease control.

Since 2011, metalaxyl-M resistance in impatiens has only been detected in the UK during 2014.

Action points for growers

- Where possible grow seed-raised *Impatiens walleriana*.
- With the exception of New Guinea impatiens, avoid the production of cutting-raised impatiens.
- Apply a protectant fungicide programme to seed-raised crops during the production phase.
- *The most effective products with protectant activity all contained metalaxyl-M.*
- *Other products with good protectant activity included Fenomenal, Paraat and Revus.*
- Provide crops with good levels of ventilation.
- Don't water crops late at night.
- Where possible water crops from beneath.
- Monitor crops carefully for signs of the disease.
- Dispose of infected plant material in sealed bags or bins.