FACTSHEET 18/11
Protected Edibles

Simon Budge – Integrow Limited

Downy mildew of basil

Downy mildew of basil was first reported in the UK during the summer of 2010 on protected plants in the south-east of England. Although new to this country, the disease is relatively widespread throughout parts of Europe and America.

Downy mildew is likely to reoccur in the UK as it has done in Europe since its first outbreak. The aim of this factsheet is to help growers identify symptoms of the disease early (Figures 1 and 2), and to provide options for its control.

Figure 1. Early symptoms showing slight chlorosis to one side of the mid-rib

Figure 2. Symptoms spreading across the leaf and developing a more obvious chlorosis

Figure 3. Severe sporulation on infected leaf

Figure 4. Initial sporulation occurs on the underside of cupped leaves

Background

Downy mildew of basil (figure 3) is caused by the fungus *Peronospora belbahrii* (*P. belbahrii*). Early disease reports confused the disease with that caused by *Peronospora lamii*, which can cause downy mildew on related ornamental plants such as *Coleus* and *Salvia*. However, molecular analysis differentiated the pathogen on basil from other *Peronospora* species. *P. belbahrii* has also been reported on the related ornamental plant *Agastache* and may possibly infect other members of the Lamiaceae family.

Symptoms

Early signs of infection are easily missed and, without experience, can be confused with a nutritional disorder such as magnesium deficiency.

Figures 1 and 2 show typical early symptoms, starting as a slight chlorotic pale yellow, or yellow-white area to one side of the middle leaf vein, then quickly spreading across the whole leaf.

In favourable disease conditions, the mildew can very rapidly progress to infect the majority of leaves and produce characteristic sporulation on the underside of infected leaves. Spores are purplish grey to black and can cover the whole of the area corresponding to the chlorosis seen on the upper side.

Sporulation may not be as heavy as that shown in Figure 3, especially when the environment is less favourable. Sporulation is often confined to the underside of cupped leaves as in Figure 4.

Conditions for infection

In July 2010, when the first infection was observed on basil, environmental conditions in the glasshouse were perfect for the development and spread of downy mildews. The weather was mild (15–20°C) and overcast; humidity in the greenhouse was high and plants retained surface moisture for some hours in the morning. These mild, moist conditions are ideal for downy mildew infection, which requires a period of free water availability to allow spore germination on the leaf surface.

Control

As leaf surface moisture is important for infection, limiting or preventing any significant duration of free water on leaves as far as possible through heating, venting and air circulation can be important control mechanisms.

There are several fungicides available for protected basil, all of which were effective against downy mildew in 2010, including the actives: Dimethomorph; Mancozeb/metalaxyl-M; Metalaxyl-M; Fosetyl-aluminium/propamorcarb hydrochloride. There are reports that phosphites can also be effective, but their use needs to be investigated further as efficacy has not been confirmed and they have been linked to crop safety issues. It is, generally, accepted that preventative applications of suitable fungicides are more effective than eradicant applications.

Some downy mildew species have been shown to be seed-borne and this cannot yet be ruled out as the possible source of transmission in basil. The rapid global spread of the pathogen supports this hypothesis. The application of seed treatments may also be worth considering.

Research carried out in the USA indicates that some differences in varietal susceptibility are present in basil, therefore growing less susceptible varieties may become an option when suitable screening work has been undertaken.

A combination of cultural control and fungicide application will ensure that downy mildew infection is kept to a minimum, but emphasis has to be placed on early identification of the disease as fungicide harvest intervals mean that plants cannot be treated two or three weeks before harvest.

Further information

Regular changes occur in the approval status of pesticides arising from changes in legislation or for other reasons. For the most up to date information, please check with your preferred supplier, BASIS registered adviser or the Communications Branch at the Chemicals Regulation Directorate (CRD), Tel (01904) 455775, pesticides.gov.uk

Acknowledgements

Figures 1, 2, and 4 – copyright Simon Budge, Integrow Limited.

Figure 3 – copyright S. J. Colucci, North Carolina Cooperative Extension.

Please note that this factsheet has been rebranded, not revised, the information contained was correct at time of printing in 2011.

Want to know more?

If you want more information about AHDB Horticulture, or are interested in joining our associate scheme, you can contact us in the following ways...

horticulture.ahdb.org.uk

AHDB Horticulture, Stoneleigh Park, Kenilworth, Warwickshire CV8 2TL

T: 024 7669 2051 E: hort.info@ahdb.org.uk

@AHDB_Hort

AHDB HORTICULTURE

AHDB Horticulture is a part of the Agriculture and Horticulture Development Board (AHDB).

£8.75 where sold

HT80470716