



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

FV 381

Herbs: A survey into the prevalence and severity of *Itersonilia* spp. in UK crops

Final Report 2011

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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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Headline

- Survey results suggest that the highest risk of *Itersonilia perplexans* infection on dill occurs during September and October in each year, and that periods of high rainfall increase the risk of severe infection in crops at other times.

Background

In September 2009 a sample of dill with leaf-blight symptoms was received in the Plant Clinic at Stockbridge Technology Centre in North Yorkshire (see image below). The grower reported that several crops were similarly affected each year at around that time and that once the symptom was observed little or no control could be gained from applying fungicides. The affected crops were generally abandoned, particularly as the outdoor cropping season was drawing to a close.



Itersonilia leaf blight symptoms seen during 2009

Tests were carried out on the affected material, and a diagnosis of *Itersonilia* sp. was made. This fungal pathogen was later confirmed as the primary cause of infection following pathogenicity testing, when the symptoms were reproduced in healthy dill plants following inoculation with the isolated organism. The same diagnosis of *Itersonilia* sp. was made on affected material supplied by the same grower to the diagnostic department at Fera. Additional work carried out by Fera later confirmed the pathogen as *Itersonilia perplexans*. Optimum conditions for the spread and development of this fungus are temperatures of 10-15°C and relative humidity >70%. Periods of heavy rainfall increase the risk of infection in susceptible crops.

As this was a newly recorded pathogen on dill in the UK some additional testing was carried out and the results were reported to the British Herb Trade Association (BHTA) at their meeting held at STC in March 2010. It was agreed that a better understanding of the incidence and severity of the leaf-blight pathogen on dill and other herbs was required to enable the BHTA to determine the potential impacts of this new pathogen/host combination on the UK herb industry.

Summary

With industry support, through HDC, information regarding the finding of this new threat to UK herb crops was circulated more widely to all herb growers via a survey and sample request letter, which was sent out via the HDC and the BHTA.

A relatively low number of samples were received during the early part of the 2010 season; however a flurry of samples were received between September and November as the weather conditions became cooler and wetter providing a more conducive environment for the spread and development of leaf-blight problems.

A total of 36 samples were received over the duration of the project. Samples of dill totaled 19, of which 15 were found to be infected with *Itersonilia* sp. Eleven coriander samples were received, but none of those examined were found to be infected with *Itersonilia* sp. Tests were also carried out on samples of flat leaf parsley, fennel and groundsel (growing in a heavily infected dill crop). *Itersonilia* was found on the various host species, although pathogenicity has only been confirmed on the parsley to-date. Unfortunately it was not possible to draw any conclusions on geographically high disease risk areas from the samples received as these came from relatively few growers overall.

I. perplexans is known to infect a number of herb species, particularly in the Umbelliferae e.g. coriander, parsley, cumin, anise, chervil, lovage and caraway, as well as members of the Asteraceae. The findings from this study suggest that the leaf-blight problem appears to be affecting dill predominantly, although this pathogen has been previously reported on coriander in the UK. However, the late findings of *Itersonilia* on parsley and fennel may be significant and may be a consequence of an increase in air-borne inoculum (spores) in herb crops generally. The potential impact of *Itersonilia* infection may vary from crop to crop. In fennel the leaf-blight, if occurring late in the season, is not likely to affect the harvested bulb, and therefore may not cause financial losses. However, if the infection arrives early, as was seen in a few dill crops in 2010, the loss of foliage would have a more dramatic effect on bulb development in fennel. Parsley is a high volume crop and loss of production due to leaf-blight symptoms would result in a severe financial impact for growers.

The fungus is spread primarily by spores fired into prevailing wind currents, however it may also be relevant to consider alternative methods of spread e.g. seed-borne and also spores spread from weed species present in or around susceptible crops.

Financial Benefits

The scope of this study was to gather information on behalf of the UK herb industry. No financial benefits have resulted from this work to-date.

Action Points

- Herb growers should remain vigilant and become familiar with the host range of this pathogen i.e. dill, parsley, fennel, coriander, cumin, caraway and perhaps tarragon and chamomile. Particular attention should be paid during or following periods of high rainfall.
- Where possible plants affected by leaf-blight should be removed as soon as possible following detection to minimize risk of spread.
- No information on the potential of fungicide efficacy is known at this time, however broad spectrum fungicides such as the strobilurin fungicides e.g. Amistar (azoxystrobin) may be beneficial.
- As additional HDC funding has been provided to extend this survey for the 2011 season growers are kindly requested to send any suspect herb material to the STC Plant Clinic for diagnosis during the coming season. There will be no Plant Clinic charge for these samples. The quality of the information produced from that work will depend heavily on grower participation. All samples will be treated in confidence and anonymity in the final report is assured.