



Horticultural
Development
Company

New Project

PC 301

Targeting of humidity control, through the use of stem temperature measurements, to reduce stem botrytis and save energy in tomato production

Project Number: PC 301

Title: Targeting of humidity control, through the use of stem temperature measurements, to reduce stem botrytis and save energy in tomato production

Start and end dates: 01 August 2009 – 31 January 2011 (30 months)

Project Leader: Dr Steve Adams, WHRI

Project Co-ordinator: Chris Durnford - Redroofs Nursery, Duswell Road, Cottingham, East Yorkshire, HU16 4JT

Location: Northmoor Nursery
Mill Nurseries (PC 278 ducted air and conventional blocks)
Wight Salads
Hornsfield Nurseries (ducts and fans for air movement)
Buckland Garden Nurseries

Background and project objectives

Humidity control is very energy intensive, especially for leafy crops such as tomatoes, but is essential as Botrytis stem rot, the most damaging form of tomato Botrytis, continues to be a significant problem in protected tomato. The risk of infection is likely to be increased by condensation or high humidity for prolonged periods. This appears to contradict commercial observations that the disease can be devastating even when the RH at the measuring box is controlled below 90%. However, work conducted as part of HH3611SPC would suggest that this discrepancy might be due to the position at which the RH is measured. When stems are cooler than the surrounding air, the localised RH will be higher and if the stem temperature drops below the dew point temperature, then condensation will form on the stem. This can even occur when the air RH is 85% and there is no obvious risk. If stem temperature is known, plant (stem) RH and HD can be calculated and most modern climate control computers have the ability to control the greenhouse climate based on plant RH or HD.

Previous work has shown that humidity control based on avoiding condensation has considerable benefits; there are a number of issues that need to be resolved for the approach to be optimised. The best method of measuring stem temperatures needs to be determined and recommendations made with regards to the number and positioning of sensors. This work is designed to resolve these issues and provide recommendations on how humidity can be best controlled to save energy without increasing botrytis. To quantify the benefits of the approach and to encourage commercial uptake, a conventionally controlled glasshouse block will be compared with one where humidity control is based on plant RH or HD.

Further information

Email the HDC office (hdc@hdc.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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