

Effect of nocturnal ventilation on the occurrence of *Botrytis cinerea* in Mediterranean unheated tomato greenhouses

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ABSTRACT

Botrytis cinerea is the causal agent of grey mould disease which is one of the most important diseases affecting tomato crops in unheated greenhouses. Nocturnal ventilation is a technique that can be used to reduce relative humidity inside unheated greenhouses. The main objectives of this research were to investigate the effect of ventilation management on the environmental conditions and on the disease severity, to develop and validate a model which could predict disease severity and to present a warning system.

Experiments were conducted in two plastic greenhouses. Two natural ventilation treatments were randomly assigned to the greenhouses. One was nocturnal ventilation (NV), with the vents open during the day and night, while the other was classical ventilation (CV), in which the vents were open during the day and closed during the night.

A tomato crop was grown directly in the soil between the end of February and the end of July during two crop seasons. Climatic data were measured with three meteorological stations, averaged and recorded on an hourly basis. The number of diseased leaflets were counted and removed from the greenhouse.

In the NV greenhouse a significant reduction of air humidity and disease appearance was observed. A warning system was developed and can be a useful tool for helping to decide on appropriate actions and the correct timing to avoid conditions that favour disease development. For a more practical application, disease risk levels were defined as a function of the duration of periods with RH > 90%.

Keywords: nocturnal ventilation, unheated greenhouse, tomato crop, *Botrytis cinerea*

Baptista F.J., Bailey B.J. and Meneses J.F. 2012. Effect of nocturnal ventilation on the occurrence of *Botrytis cinerea* in Mediterranean unheated tomato greenhouses. *Crop Protection* 32:144-149.