

A Business Intelligence Approach to Support a Greenhouse Tomato Crop Grey Mould Disease Early Warning System

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Introduction

This paper presents a Business Intelligence architecture proposal, including data sources, data warehouse, business analytics, and information delivery, to launch an early warning system for greenhouse tomato crop grey mould disease.

Tomato is a very important crop in the Mediterranean region in general and in Portugal in particular being the production for fresh consumption made essentially in greenhouses.

Botrytis cinerea Pers.: Fr. is the causal agent of grey mould disease and is one of the most important diseases affecting greenhouse tomato crops, high relative humidity and the presence of free water on the plant surfaces have been recognized as favourable to the development of this disease.

The availability of a early warning system providing to the tomato grower alerts with information of the potential favoured conditions for the disease appearance in its early stages or even before can have a very positive impact in reducing the economic and environmental impacts due to a more rational and efficient disease control management.

Today we have the necessary technology to build and launch an Internet based early warning system for grey mould disease in greenhouse tomato crop supported by a wireless sensor network adopting a Business Intelligence approach.

From the research conducted until the moment the proposed solution is viable and the next step will be to validate it in the field in different locations and with distinct greenhouses conditions.

Greenhouse Tomato Crop Grey Mould Disease

In the Mediterranean region greenhouse areas are significant with tomato being the most commonly grown vegetable (Castilla 2002). In Portugal according to available statistical information greenhouse tomato crop was cultivated in 1,550 ha with a total production of 98,646 ton in 2003 (GPP 2007).

Botrytis cinerea Pers.: Fr. is the causal agent of grey mould disease and is one of the most important diseases affecting greenhouse tomato crops. This disease could be responsible for production losses of 20% and treatments could represent about 60% of the total fungicides used over a cropping season (Prieto *et al.* 2003). Conditions inside greenhouses; warm, humid, high plant density and frequent handling are conducive to the establishment and spread of the pathogen.

High relative humidity and the presence of free water on the plant surfaces have been recognized as favourable to the development of grey mould. Due to the common occurrence of