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A case of infection on the scion of grafted tomatoes by the root-knot nematode *Meloidogyne javanica*

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ABSTRACT

This is a preliminary communication reporting on a case where the scion of a grafted tomato in a greenhouse crop of Crete became infected by the root–knot nematode *Meloidogyne javanica*.

Key words: greenhouse crop, grafting, nematodes

IZVLEČEK

PRIMER OKUŽBE CEPLJENEGA PARADIŽNIKA Z NEMATODO *Meloidogyne javanica*

Predhodno poročilo o primeru, da je cepič cepljenega paradižnika v rastlinjaku na Kreti okužila nematoda *Meloidogyne javanica*.

Ključne besede: vrtnina v rastlinjaku, cepljenje, nematode

1 INTRODUCTION

Grafting vegetables on resistant rootstocks is a mean of controlling root-knot nematodes in areas with intensive land use (Lee, 1994; Greco, 1999; Ioannou, 2001; Kacjan Maršić and Osvald, 2004; Lopez-Perez et al., 2006).

Despite several grown tomatoes are resistant against the root-knot nematode species *Meloidogyne javanica*, *M. incognita* and *M. arenaria* (Williamson, 1998), the desirable fruit characteristics are not always available in the nematode resistant cultivars. In these cases susceptible varieties with the commercially required characteristics can be grafted onto nematode resistant rootstocks. In Greece the interest in growing grafted plants to control root-knot nematodes, especially in greenhouses, has been increased, but published data are available only for cucumber (Giannakou and Karpouzas, 2003).

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An investigation of a problem observed in a grafted greenhouse tomato crop is described below.

2 MATERIALS AND METHODS

In a greenhouse of Crete with known problem of root-knot nematodes, a tomato crop had been established with a susceptible cv. grafted on a resistant rootstock. That was an evaluation of experimental genotypes under the development to become cultivars by a Seed Company. Many plants remained stunted and chlorotic and produced small fruits. Root samples were brought in the lab and examined.

3 RESULTS AND DISCUSSION

Several galls were observed on roots deriving from the scion. In contrast, the rootstock was free of galls but small in size (Figure 1). The galls of the scion root were dissected and revealed the presence of several females and egg masses of root-knot nematodes. The population was identified as *M. javanica*.

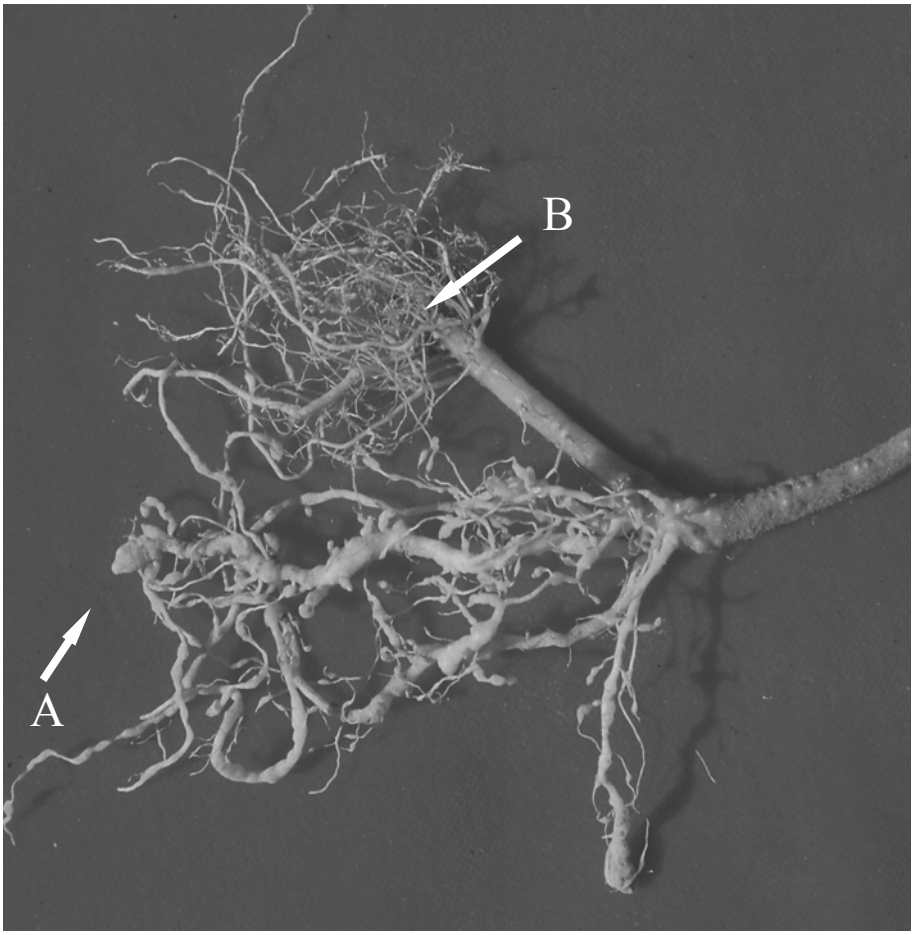

Figure 1. Root galls of *M. javanica* on a root produced by a scion (A) in a grafted tomato plant. The resistant rootstock (B) remained uninfected.

The certain plants had been planted deeply and the point of grafting was very close to the soil surface or had been covered with soil. The great humidity caused rooting of the

scion and this newly produced root became larger than that of the rootstock and as was susceptible, became infected by nematodes. It is hypothesized that the plant was receiving the majority of water and nutrients from the scion's root system and that explains the appearance of symptoms typical of nematode infection. These problems of scion rooting should be avoided at planting taking care so as the grafting point not to be close to soil surface. Furthermore cultivation techniques should prevent the formation of soil piles around the plant stem.

The use of grafted tomatoes on resistant rootstocks as a mean of managing nematode populations should be investigated in greenhouse crops of Greece. Rotation of resistant tomato with susceptible has been already proved successful for reducing *M. javanica* infestations in greenhouse conditions of Crete (Tzortzakakis et al., 2000). Further research is also required in accessing the susceptibility of tomato rootstocks to resistance breaking pathotypes of *Meloidogyne*, which have been found infecting resistant tomatoes in both field and experimental conditions (Tzortzakakis *et al*., 1999, 2000, 2005).

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