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INTRODUCTION

Arum or calla lily (Zantedeschia aethiopica) is an important ornamental plant throughout the world. There is a small Australian industry based in Victoria which exports rhizomes within and outside of Australia. In Western Australia Z. aethiopica has escaped cultivation to become a noxious weed. The ineffectiveness of chemical means of control have led to the search for pathogens of Z. aethiopica as potential bio-control agents of this noxious weed. In a recent survey of Z. aethiopica infested sites (1), galled roots were observed on a number of Z. aethiopica plants indicating the possible presence of a root-knot nematode. Recent enzymatic studies have demonstrated that species of Meloidogyne may be reliably differentiated on the basis of species specific enzyme phenotypes alone, using polyacrylimide gel electrophoresis PAGE (2).

The purpose of this study was to identify the causal agent/s of the galled Z. aethiopica roots and to determine the host range of the causative agent/s through a literature search.

MATERIALS AND METHODS

Z. aethiopica plants were excavated at 29 infested sites, collected and processed. Nematodes were extracted from galled roots and identified according to host symptoms, morphology and gel electrophoresis.

Mature female nematodes were dissected from galled Z. aethiopica roots, stored in a 0.9% NACI solution of SDI water for up to 2 hours before being subject to esterase isozyme analysis. This was performed on native 4-15% PHASTGEL Gradient Gels used in the PHAST Electrophoresis Equipment (PHARMACIA). Conditions used were from Val Williams. (Pers. Comm.) and esterase staining was performed according to (2). Unknown Meloidogyne nematodes from Z. aethiopica were run together with known Meloidogyne javanica maintained on tomato (Lycopersicum esculentum).

RESULTS

Galled roots of Z. aethiopica were recorded at 2 of the 29 sites surveyed. Both of the sites where galled roots were observed were in the Perth region of the survey. At sites 1 and 2, 5 and 12 % respectively of randomly excavated plants had galled roots. Numerous mature females were dissected from galled Z. aethiopica roots. They were morphologically characteristic of mature Meloidogyne javanica.

DISCUSSION

Given that the International Meloidogyne project concluded that 100% of M. javanica could be identified to species level on the basis of esterase banding patterns alone (2) it is reasonable to conclude that the nematode parsitizing Z. aethiopica is M. javanica. This association has not been previously recorded. It is also noteworthy that Z. aethiopica is one of the few recorded monocot hosts of M. javanica.

M. javanica attacks a broad range of plants including many agricultural crops and is therefore unsuitable as a bio-control agent for Z. aethiopica. However, there are implications to this new association which include: the need for horticulturalists growing Z. aethiopica to be aware of threat of M. javanica; and the potential for Z. aethiopica to act as an alternate host to M. javanica, further demonstrating the need to eradicate this weed.

REFERENCES