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**Shahid Chamran University of Ahvaz**  
**Faculty of Agriculture**  
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**Thesis submitted in partial fulfillment of requirements for the degree of  
Doctor of philosophy (Ph. D.) in Plant Pathology**

**Title:**

**Identification of plant-parasitic nematodes in Misan province, southeastern  
Iraq**

**Supervisor:**

**Dr. Sedighe Azimi**

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**March 2023**

## Abstract

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<b>Title:</b> Identification of plant-parasitic nematodes in Misan province, southeastern Iraq	
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<b>Degree:</b> Ph. D.	<b>Course:</b> Plant Pathology
<b>University:</b> Shahid Chamran University of Ahvaz	
<b>Faculty:</b> Agriculture	<b>Department:</b> Plant Protection
<b>Graduation date:</b> 12 March 2023	<b>Number of pages:</b> 143
<b>Key words:</b> Misan, Morphology, Morphometric data, Phylogeny	
<p><b>Abstract:</b> Misan province is located in the southeast of Iraq and is considered one of the important provinces of this country in terms of agriculture and industry. In order to identify the plant-parasitic nematodes in Misan province during 2020-2022, 221 samples of soil around the roots and roots of different crops were collected in different cities. The samples were transferred to the laboratory, then the nematodes were extracted and transferred to pure glycerin. Permanent slides were prepared from the isolated nematodes. Observations, measurements, and drawings were performed using a light microscope equipped with a drawing tube. The figures of the species were prepared using a microscope equipped with a digital camera. The species were identified based on the morphological and morphometric characteristics, and valid keys. The study of the molecular phylogeny of some species was done using the partial sequences of the 18S rRNA gene, the D2-D3 region of the 28S rRNA gene and the ITS rRNA gene. In this research, 16 species belonging to 12 genera were identified, which consist of <i>Aphelenchus avenae</i>, <i>Criconemoides</i> sp., <i>Ditylenchus clarus</i>, <i>Filenchus annulatus</i>, <i>Helicotylenchus abunaamai</i>, <i>H. egyptiensis</i>, <i>H. exallus</i>, <i>Heterodera avenae</i>, <i>Hoplolaimus Columbus</i>, <i>Malenchus (Malenchus) labiatus</i>, <i>Paratylenchus nainianus</i>, <i>Pratylenchus musii</i>, <i>Pratylenchus thornei</i>, <i>Psilenchus hilarulus</i>, <i>Tylenchorhynchus clarus</i> and <i>T. zaeae</i>. According to the available references, among the identified species, 12 species are new to the nematode fauna of Iraq. The description of the Iraqi population along with molecular studies on <i>P. thornei</i>, <i>H. avenae</i>, <i>H. columbus</i>, <i>P. hilarulus</i>, <i>T. clarus</i> and <i>T. zaeae</i> was done for the first time. <i>T. zaeae</i> is reported for the first time in association with pumpkin in the world. <i>H. columbus</i> has been reported for the first time in association with oleander in the world. The obtained species of the genus <i>Criconemoides</i> did not correspond to any of the species of this genus and was considered unidentified species.</p>	