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COMPARISON OF MORPHOLOGICAL AND MOLECULAR CHARACTERS OF DIFFERENT POPULATIONS OF *Heterodera schachtii* *

A. MOKARAM HESAR[1], E. MAHDIKHANI MOGHADAM[1] and Z. TANHA MAAFI[2]**

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Abstract

Heterodera schachtii is one of the most economically important pests of sugar beet worldwide. It is also widespread in most sugar beet producing regions in Iran and causes serious yield reduction and decreasing sugar content of sugar beet in infested fields. Populations of *H. schachtii* show differences in morphological characters. Traditional identification based on morphological and morphmetrical characters of cysts and J2s is time consuming and demands careful study. In recent years, the DNA technique based on ITS-PCR-RFLP has been a useful tool for separating of *H. schachtii* from the similar species. 120 populations of *H. schachtii* were collected from different sugar beet fields in Khorasan Razavi province. The populations were studied based on morphological and morphometrical characters. 88 populations with high variation in morphological characters were selected for further studies. DNA was extracted from full cyst and the ITS-rDNA regions were amplified with using of universal primers. The PCR product of each sample was digested with *Mva*I. All populations showed similar ITS-PCR-RFLP profiles, which were in agreement with the published data. Clustering of these populations based on morphometrics features separated the south regions populations from the northern populations, however, there was not logical separation among the smaller geographic areas. Four morphological types with different underbridge and bullae in vulval cones were revealed. It was demonstrated in this study that ITS-PCR-RFLP could be used as a helpful tool for identifying different populations of *H. schachtii* with various morphological characters.

Keywords: Clustering, Sugar beet cyst nematode, Khorasan Razavi, Morphology, ITS-PCR-RFLP, *Heterodera schachtii*.

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**: Corresponding Author, Email: tanhamaafi@yahoo.com

1. Former MSc. Student and Assoc. Prof. of Plant Pathology, Respectively, College of Agriculture, Ferdowsi Univ. of Mashhad, Mashhad, Iran.

2. Assoc. Prof. of Nematology, Iranian Research Institute of Plant Protection.

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