



University of Zabol
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The Thesis Submitted for M.Sc. Degree in Plant pathology

**Morphological, molecular, pathogenicity study of fungal agents of
rice stem diseases (rots, burns) in Gostan province**

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Abstract

Rice is one of the most important agricultural and economic crops in the world. It is the second main food of half of the world's people after wheat and the main source of protein for the world's population. All the plant organs of rice (root, stem, spike) are exposed to the invasion of plant pathogens. During the growth of the plant, the rice stalk is attacked by several pathogens, the most important of which are rots and burns of the rice stalk caused by fungal agents. Identification of plant pathogenic agents of rice stem can lead to the control of these fungi and ultimately increase the final yield of the product. In the present research, by collecting infected samples from different farms in Golestan province, the pathogenic agents of the stem have been identified. After identification and separation, the stems with burns and decay were transferred from the field to the laboratory. To cultivate the infected parts and purify the isolates, WA and PDA media were used, and the obtained fungal agents were used for study with valid keys and molecular studies. In order to perform polymerase chain reaction, a pair of standard primers ITS4, ITS5 was used to amplify and determine the sequence of these genomic regions. Also, the pathogenicity test (Koch's principles) was performed to prove the pathogenicity of fungal agents on the plants grown in the greenhouse environment. In this research, according to the results of morphological studies and comparing the sequence of amplified ITS regions, the species *Rhizoctonia solani*, *Sclerotium hydrophilum*, *Fusarium incarnatum* and *F. verticillioides* from the samples collected from rice fields with symptoms of stem and pod rot was obtained and among them the most isolates belonged to the genus *Fusarium* and the species *F. verticillioides*.

Keyword: Koch's principles, Sheat blight, rice