

## QUANTITATIVE SIGNIFICANCE OF TRACE ELEMENTS IRON (Fe), MANGANESE (Mn) AND MOLYBDENUM (Mo) ON GROWTH AND SPORULATION OF *PYRICULARIA ORYZAE*

SANDEEP SHUKLA & RENUBALA SHARMA

Department of Botany, Govt. E.V.P.G. College, Korba C.G. – India

### ABSTRACT

*Pyricularia oryzae* is one of the most primary causes to destroy Rice crop in all the Rice producing countries. It causes Blast disease in Rice, other species of *Pyricularia* also infect the different monocot plant. Humidity, temperature, Rainfall and nutrients are the major factors which control the growth and spread of the *Pyricularia oryzae*.

Some nutrients in very small quantities are required for the growth, development, and other physiological and metabolic activities of the fungi. In *P. oryzae* we can control the production of spores and growth by changing the quantity of these trace elements.

In the present study, we tried to understand the effect of three trace elements or micronutrients i.e. Iron (Fe), Manganese (Mn), and Molybdenum (Mo) on spore formation and growth efficiency of *P. oryzae*. 5 ppm (part per million) concentration of Fe is most suitable for optimum spore formation and growth in *Pyricularia oryzae* when we increased the concentration of Fe in the media it poses a negative effect. Mn is required in a little more quantity than Fe. As we increased Mn concentration growth and sporulation increased respectively. On other hand, controlled quantity of Mo is sufficient for growth and sporulation. The increase in a small quantity of Mo in the medium poses a negative effect on *Pyricularia oryzae* growth and spore production. So, by manipulating quantities of these trace elements in the food chain, we can control blast disease.

**KEYWORDS:** Trace element, *Pyricularia*, Blast disease, Micronutrients

Received: Nov 01, 2020; Accepted: Nov 30, 2020; Published: Dec 17, 2020; Paper Id.: IJBRDEC20209

### INTRODUCTION

*Pyricularia oryzae* is a specific pathogen for Blast disease of the rice. The sexual stage of the fungi is also known as *Magnaporthe oryzae*. Blast is a very common and widely distributed Rice disease, and cause of up to 30 % yield loss worldwide (Skamnioti et al .2009). *Pyricularia oryzae* is a host-specific fungus, many other species of *Pyricularia* infect other monocots.

Rice is the main food item for more than half the population of the world. Most Asian countries including India are the major producer of Rice. A decrease in the production of Rice poses a real threat to starvation.

The blast disease of rice caused by *P. oryzae* affects all aerial parts of the Rice plant. Most of the symptoms are visible on the leaves, a gray or white lesion on the panicles, which turn white and die before the grains are filled (S.C. Scardaci et al. 1997)<sup>[1]</sup>. For the Rice plant *Pyricularia oryzae* is highly specific. The blast disease was recorded more than three centuries ago in Asia and is now reported from more than eighty countries.