

Curvularia leaf spot on white fonio accessions in the commune of Boukoumbe in north Benin

Zinsou Amégnikin Valerien^{1*}, Sekloka Emmanuel¹, Dramane Mahfouz¹, Tchemadon Gildas¹, Kora Tikin Ayouba¹, Djaouga Mamadou Néhal¹ and Kanlindogbe Cyrille¹.

¹Laboratoire de Phytotechnie, d'Amélioration et de Protection des Plantes, Faculté d'Agronomie, Université de Parakou, BP123 Parakou, Benin

*Corresponding author email: valzinsou@gmail.com Tel: +229-95962574

Key words: accessions, Curvularia leaf spot, fonio, *Digitaria exilis*, Benin

Publication date 30/06/2020, <http://m.elewa.org/Journals/about-japs/>

1 ABSTRACT

Fonio cultivation in West Africa relies only on traditional accessions, which are less productive, and their resistance to Curvularia leaf spot, one of the major constraints, are not well documented. The objectives of this study were to determine the distribution of the leaf spot of white fonio (*Digitaria exilis*) in the commune of Boukoumbe in north Benin, to identify its causal agent and to evaluate white fonio accessions for their resistance to the leaf spot. A survey was conducted in July 2018 in the 6 districts of the commune of Boukoumbe. Two to three sites were surveyed per district and at each site, 30 plants were randomly selected on two diagonals through the field to evaluate the disease incidence. Ten of these plants were used to assess the disease severity. Samples of the diseased plants were taken to the laboratory for isolation. Additionally, an experiment was conducted in a greenhouse at the experimental farm of the faculty of agronomy of the University of Parakou (Benin) where twenty-three accessions were inoculated with two virulent isolates of the pathogen, and evaluated for disease severity and seed weight losses due to the disease. The experiment followed a split plot design with accession as main factor and isolate as secondary factor in 3 replicates. For the survey, there were a significant difference in disease incidence and severity. The district of Boukoumbe had the least disease incidence (74.44%) and severity (24.54%). The districts of Manta, Korontiere and Dipoli had the highest disease incidence (100%) and the district of Manta recorded the highest disease severity (53.08%). There were significant difference in disease incidence ($p = 0.004$) between the accessions of farmers during survey whereas all the accessions did not differ significantly from each other in respect to disease severity. After isolation, cultures observed were identified as *Curvularia* sp. For the experiment, 3 accessions were resistant, 6 were moderately resistant, 6 were moderately susceptible and 8 were susceptible. Moreover, a significant correlation between disease severity and seed weight were observed ($r = -0.81$ and $p = 2.2e^{-16}$), and seed weight loss due to the disease up to 45% was reported. In conclusion, Curvularia leaf spot is a constraint to fonio cultivation in the commune of Boukoumbe in the north Benin and resistant accessions exist and could be recommended to the farmers.