P.5.43

IMPROVED SEPTORIA TRITICI BLOTCH DISEASE CONTROL USING VARIETY MIXTURES

S. Ben M'Barek[1,4], K. Petteri[2], M. Fakhfakh[3], H. Kouki[4], A. Mikaberidze[2], A. Yahyaoui[4,5]

[1] Regional Field Crop Research Center of Beja (CRRGC) BP 350, 9000 Beja
[2] Plant Pathology Group, Institute of Integrative Biology, ETH Zurich, Zurich, Switzerland,
[3]Comptoir Multiservices Agricoles, 82, Avenue Louis Brailles, Tunis Belvedere, Tunis
[4] CRP Wheat Septoria Phenotyping Platform, Tunis
[5]International Maize and Wheat Improvement Center (CIMMYT) km. 45 Carretera México-Veracruz El Batan, Texcoco, Estado de México, CP 56130

Septoria tritici blotch (STB), caused by *Zymoseptoria tritici* is a serious threat to durum wheat in the Mediterranean Basin. Frequent virulence changes, slow release of resistant varieties and insufficient crop rotations lead to recurrent Septoria disease epidemics in Tunisia. Hence, variety mixtures is a promising method to improve the disease management. Field experiment conducted at the Septoria Phenotyping Platform at Kodia station (Tunisia) using three durum wheat varieties with different levels of resistance to STB were assessed in 2017/2018 cropping season to examine the effect of mixtures on disease levels. The wheat varieties included Karim, by far the most widely grown variety in Tunisia, which is susceptible to STB, and Salim and Monastir, the two newly released varieties with high levels of disease resistance. Pure stands along with two-way mixtures and three-way mixtures of different proportions were planted in three replicates in a randomized complete block design.
F-1 and flag leaves were collected at two time points late in the season. Disease incidence was assessed visually and conditional severity was measured as the percentage of leaf area covered by lesions as well as the density of pycnidia within lesions with the help of the automated digital image analysis. The two measures of conditional severity in each leaf were multiplied by the incidence of the respective plotto estimate the full severity. Separate comparisons were conducted for the two time points. Preliminary results suggest that STB is efficiently controlled by adding a proportion of resistant variety to a susceptible variety. Karim in the pure stand showed the highest disease levels and adding only 25% of a resistant variety in two-way or three-way mixtures decreased the disease levels to a level comparable to pure stands of the resistant varieties.

ABSTRACT