IMPROVING CUMIN PRODUCTION UNDER SOIL INFESTATION WITH FUSARIUM WILT PATHOGEN: II- FIELD TRIAL OF DIFFERENT LANDRACES AND SEED TREATMENTS

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Abstract:

Two landraces of the Balady cumin (Qina and Assiut) and seven seed treatments were tested in this field study. The treatments included two fungal antagonists (Trichoderma harzianum, and T. humatum), one bacterial antagonist (Bacillus subtilis), 2-days water priming, combined water priming with T. harzianum, biocide PlantGuard and control seed treatment. The fungi and the bacteria were isolated from infected cumin plants collected from Assiut. A significantly reduced percentage of infection and increased seed yield/plant than the control occurred in both years as a result of pre-sowing seed treatments. The lowest percentage of infection was exhibited by the plants raised from seeds that received combined treatment of two-day water-priming and T. harzianum. Use of T. harzianum alone or in combination with water priming tended to produce a high seed yield/plant in both years. The increased seed yield was significantly associated with decreased percentage of infection in the two landraces and in both years. Significant positive correlation coefficients were found between the seed yield and each of the number of the main and secondary branches, the number of umbels and the weight of the mature dry plants. The cumin landrace from Qina showed an overall lower percentage of infection and higher seed yield/plant than Assiut landrace in both years. We recommend utilizing combined 2-days water priming with T. harzianum antagonist for pre-sowing seed treatment. This treatment seemed to combine complementary mechanisms of action against the pathogen enabling a consistent control of the disease. It would establish a better plant stand in the field and, consequently, increased seed yield per production area unit.

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