

EFFECTS OF THE NUMBER OF FUNGICIDE APPLICATIONS ON COMMON BEAN GENOTYPE WITH PARTIAL RESISTANCE TO WHITE MOLD. T. C. FERREIRA¹; L. R. V. SOUSA²; A. F. F. SOUZA²; P.H. TEIXEIRA²; P.M.L. SILVA²; R.C. LIMA¹; T. J. PAULA JÚNIOR¹; R. F. VIEIRA³. ¹Epamig, Viçosa, MG, 36570-000 Brazil/ ²Universidade Federal de Viçosa, Dep. de Fitotecnia, Viçosa, MG/ ³Embrapa-Epamig, Viçosa, MG. E-mail: tatianecravo.ferreira@gmail.com

The use of cultivars with partial resistance to white mold (WM) helps the management the disease and might reduce the number of fungicide applications for its control. We hypothesized that the number of fungicide applications for WM control in a genotype with partial resistance to WM can be reduced compared to a susceptible genotype. Two trials were conducted in Viçosa, Minas Gerais state, during the fall-winter season, with sprinkler irrigation, in a field naturally infested with sclerotia of *S. sclerotiorum*. Treatments were arranged as 3 x 4 factorial combination of Type III genotypes of carioca market class (VC 17, Pérola or Madrepérola) and number of fungicide applications (0, 1, 2 or 3). Under field conditions, the line VC 17 has exhibited partial resistance, Pérola has exhibited moderate resistance, and Madrepérola has exhibited susceptibility to WM. The resistance of VC 17 is most due to avoidance mechanisms. The fungicide fluazinam (0.625 L/ha) was first applied at the beginning of the flowering stage. The second and third applications were made at intervals of eight days later. A randomized block design with four replications was used. On average, WM incidence (WMI) was 9% and 25%; WM severity index (WMSI), 5% and 15%; and grain yield, 3336 and 2762 kg/ha in 2015 and 2016, respectively. In 2015, genotype x fungicide interaction was significant for WMI ($p=0.03$) and WMSI ($p=0.01$). Genotype ($p=0.08$), fungicide ($p=0.71$) and interaction ($p=0.09$) did not affect yield, but genotype ($p=0.03$) and fungicide ($p<0.001$) affected sclerotia mixed with the seeds. On average, when no fungicide was applied, Madrepérola had higher WMI and WMSI than Pérola, which, in its turn, had higher WMI and WMSI than VC 17. One application of fluazinam reduced WMI and WMSI significantly in Madrepérola and Pérola, but did not affect significantly these variables in VC 17. Sclerotia mixed with the seeds of Madrepérola (300 g/ha) was significantly higher than those mixed with the seeds of both Pérola (25 g/ha) and VC 17 (12 g/ha). Without fungicide, sclerotia mixed with seeds (across genotypes) weighted on average 375 g/ha. With one fungicide application, weight of sclerotia mixed with seeds dropped to 35 g/ha. Further fungicide applications did not affect weight of sclerotia significantly. In 2016, genotype x fungicide interaction was non-significant for WMI, WMSI, yield, and sclerotia mixed with seeds. On average across genotypes, WMI was 42% and WMSI was 29%. when no fungicide was applied. One application of fungicide dropped these values to 28% and 15%, respectively. With two fungicide applications, only WMI (17%) dropped significantly in comparison to WMI found with one fungicide application. There was non-significant difference between two and three fungicide applications on these variables. The lower yield was obtained with no fungicide (2390 kg/ha). Yield was significantly higher with three fungicide (3150 kg/ha) than with one (2759 kg/ha) or two fungicide (2748 kg/ha) applications. Sclerotia mixed with the seeds of Madrepérola (3.5 kg/ha) was two-fold higher compared with those mixed with seeds of VC 17. Without fungicide, sclerotia mixed with seeds weighted 6 kg/ha. With one fungicide application, weight of sclerotia dropped significantly to 2 kg/ha. Further fungicide application did not affect weight of sclerotia significantly. The results suggest that in a year less favorable to WM there is no need of fungicide to control WM in a genotype with partial resistance to WM. In years with climatic conditions more favorable to WM, two fungicide applications may be sufficient for the genotypes, regardless of their level of resistance to WM.

Keywords: *Phaseolus vulgaris*; *Sclerotinia sclerotiorum*; Fungicide; Resistance.

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