

THE SUSCEPTIBILITY OF POLISH BREEDING FLINT AND DENT ZEA MAYS LINES TO *FUSARIUM TEMPERATUM*

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Fig. 1. Maize ear rot with symptoms inoculated
by *Fusarium temperatum*

KEYWORDS

Fusarium temperatum, maize, cob rot

INTRODUCTION

Fusarium temperatum Scaufl. & Munaut is associated with a key causative agent of ear rot of maize, especially in cool and wet climate zones of the world. The disease with harmfulness is determined by its prevalence and risk of infection and mycotoxins contamination of cobs.

MATERIAL AND METHODS

The aim of the study conducted in 2017 was analysis of disease severity of maize in field test after plant inoculation with selected, pathogenic fungus strains. In total 120 genotypes of two botanical varieties i.e. *Zea mays* var. *indurata* (flint) and *Zea mays* var. *indentata* (dent), supplied by two breeding companies were tested. Infection degree was evaluated using six degree (0-5) rating scale. According to experiment design, each genotype of maize was evaluated in two experimental field localizations. The 60 genotypes were tested at Radzików and Kobierzyce and the next set of 60 genotypes at Radzików and Smolice.

RESULTS

The range of variability of the analyzed genotypes ranged from 0.90 to 4.22. The significant impact of the environment on the level of cobs infection by *F. temperatum* was noted. The level of infected plant material from MHR Kobierzyce (2.21) and HRS Smolice (1.83) was different slightly but statistically significant. The corn cobs collected in Kobierzyce (2.22) and Radzików (2.01) were significantly stronger infected by pathogen than in Smolice (1.82). It has to be underlined that the flint forms of *Zea mays* cobs were significantly less susceptible for infection than dent and infection degree was 1.90 and 2.17 respectively. The mentioned above feature was observed in two localization - Smolice and Radzików. The infection degree of maize cobs, collected from fields at Radzików was 1.94 and 2.10, for flint and dent forms respectively. The range of this trait for corn cobs, collected from experimental fields in Smolice was 1.57 for flint, when the dent forms were more infected (2.29). For plant material estimated in Kobierzyce, the infection degree was 2.25 for flint cobs and 2.20 for dent ears, but the difference was not statistically significant.

Quite scant reports in the literature about susceptibility of breeding *Zea mays* lines to infection by *F. temperatum* points to the need continuous in this aspect of the research study.

CONCLUSIONS

1. The tested breeding materials differ in susceptibility to infection by *F. temperatum*.
2. The dent forms of *Zea mays* are more susceptible to infection by *F. temperatum* than flint forms.

ACKNOWLEDGEMENTS

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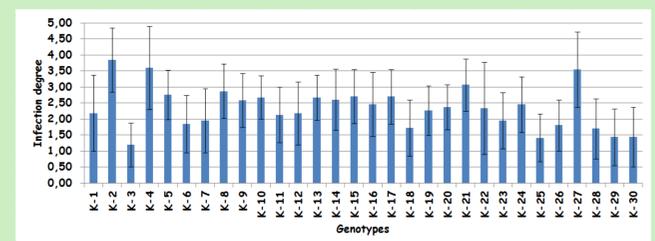


Fig. 2. Infection degree of flint forms of maize, mean value for plant material from MHR Kobierzyce

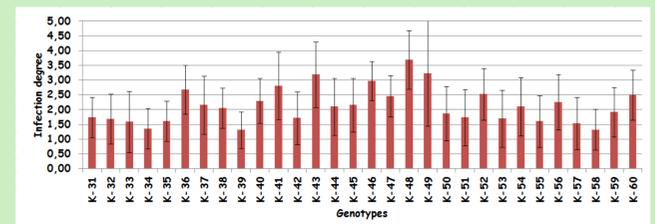


Fig. 3. Infection degree of dent forms of maize, mean value for plant material from MHR Kobierzyce

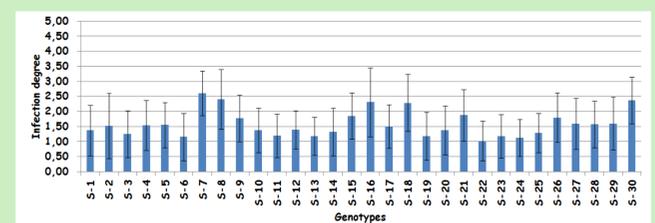


Fig. 4. Infection degree of flint forms of maize, mean value for plant material from HRS Smolice

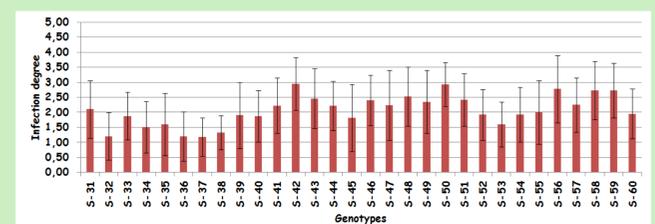


Fig. 5. Infection degree of dent forms of maize, mean value for plant material from HRS Smolice

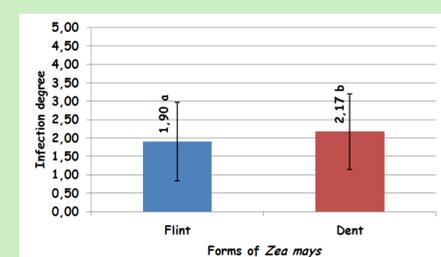


Fig. 6. Mean value of infection degree of flint and dent forms of *Zea mays*, inoculated by *Fusarium temperatum*