

MAIZE (*ZEA MAYS* L.) LEAF DISEASES IN LATVIA

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Abstract. *Maize has important role in agriculture of Latvia. Area planted with maize has increased rapidly from 5.1 thousand ha in 2008 to 20.6 thousand ha in 2012. Maize in Latvia is mostly used as forage (silage) and as raw material for biogas production. Some farmers in despite of temperate climate harvest maize for grain. In regions where moderate temperatures and relatively high humidity during growing season are typical the most important leaf disease is Northern Corn Leaf Blight (NCLB). The same weather conditions favour the development of Northern Corn Leaf Spot (NCLS). In previous studies on maize leaf diseases it has been found that NCLB is present in Latvia and if the conditions are favourable for disease the use of fungicides can significantly reduce symptoms of disease and increase the yield and quality of production. (Treikale, Vilcans, Javoisha, 2012; Treikale et. al., 2014). NCLB is caused by *Exserohilum turcicum* Leonard & Suggs (*Helminthosporium turcicum* Pass.), which is the teleomorph of *Setosphaeria turcica* (Lutterell) Leonard & Suggs. Favourable conditions for NCLB development are temperatures between 20 and 25°C, relative humidity from 90 to 100% and low luminosity. NCLB can cause serious yield losses up to 50%. However in studies which confirms such a serious yield reductions artificial inoculation has been used. The aim of study was to evaluate NCLB incidence and severity in different maize hybrid performance comparison trial in Research and Study farm "Vecauce" (latitude: N 56°28', longitude: E 22°53') of Latvia University of Agriculture. Hybrids were arranged in randomized blocks with 4 replications, plot size 16.8 m² (4 rows). In this trial 26 different maize hybrids were tested. The trial was carried out in Calcaric Luvic Epigleyic Phaeozem soil (pH KCl – 6.9, P₂O₅ – 583 mg kg⁻¹, K₂O – 219 mg kg⁻¹, organic matter – 3.0%) Pre-crops in trial were maize in 2010, 2011 2013 and sunflower in 2012. Conventional soil tillage technology was used. Planting date was 6th May and planting density 83000 seeds ha⁻¹. Maize was harvested for silage on 6th October, average dry matter content – 33.5% and average dry matter yield – 18.51 t ha⁻¹. Observations was started at growth stage BBCH 65-67, the first symptoms appeared at growth stage BBCH 71-73, then assessments of severity were carried out two times on 6th and 18th September. Assessment data were used to calculate area under disease pressure curve (AUDPC). AUDPC data were submitted to analysis of variance to compare means between hybrids. Disease symptoms observed were elliptical lesions initially in grey-green colour, but later tan in colour. The spots weren't restricted by the leaf veins and their size was from 1 to 6 cm. These symptoms are typical for *Exserohilum turcicum*, but can be confused with symptoms of NCLS (anamorph *Helminthosporium carbonum*) however the lesions of NCLS usually elongate linearly between the veins of the leaf. Overall the disease severity was low and only in some cases area of leaf damaged was higher than 2%. The slight increase of disease severity was observed between 1st and 2nd (twelve days later) assessment. The average disease incidence on 1st assessment in trial was about 41%, but severity only about 0.5% and on 2nd assessment about 53% and 0.6% respectively. The average AUDPC was 16.34 ± 4.55. AUDPC difference between hybrids was significant. In several studies has been confirmed that susceptibility level of genotypes can be reason for significant differences in leaf disease severity and incidence. The maize hybrids were divided in three groups. The group average AUDPC ± SE (16.34 ± 4.55) includes 11 genotypes from 26. In group of genotypes below average AUDPC ± SE were 9 hybrids. The AUDPC in this group were between 7.80 and 11.73. In group above average AUDPC ± SE were 6 cultivars and here AUDPC was between 23.10 and 30.08. Although severity of maize leaf diseases is not very high in Latvia yet, this can change especially if the total area of maize continues to grow.*

Key words: temperate, northern, hybrids, NCLB, AUDPC.