Crop damage, economic losses, and the economic damage threshold for northern corn leaf blight

De Rossi, Roberto Luis 匝

, Guerra, Fernando Andrés, Plazas, María Cristina 💿

and Vuletic, Ezequiel Esteban (2022) *Crop damage, economic losses, and the economic damage threshold for northern corn leaf blight.* Crop Protection, 154. ISSN 0261-2194

El texto completo no está disponible en este repositorio. URL Oficial: https://www.sciencedirect.com/science/article/pii/...

Resumen

Northern corn leaf blight (NCLB), caused by Exserohilum turcicum (E. turcicum), is one of the most common maize (Zea mays L.) diseases worldwide. To determine the crop damage and economic losses caused by NCLB and propose economic damage thresholds (EDTs), 16 field experiments were performed for seven crop seasons (2010–11 to 2016–17) during different naturally occurring outbreaks of NCLB in central-northern Córdoba province, Argentina. NCLB severity gradients were generated by applying different fungicides and doses at different growth stages to seven susceptible (S) and nine moderately susceptible (MS) hybrids. Plots were arranged in a completely randomized block design with four replications. Severity was evaluated at the R4 growth stage by estimating the percentage of leaves affected; and grain yield in kg ha–1 per plot was also estimated. A critical-point yield model was fitted with NCLB severity and the EDT and the action damage threshold (ADT) were calculated. The management regime generated disease gradients with severities ranging

between 3.2 and 33.1. There was a statistically significant negative correlation between severity and yield (R2 = 0.52; p = 0.001). On average, for each percentage point increase, in NCLB severity, 20.15 kg t–1 of yield were lost; MS and S hybrids were 23.88 kg t–1 and 15.21 kg t–1, respectively. The mean EDT was 1.09% of severity and the mean ADT was 0.88%. Furthermore, the mean economic losses were 243.6 USD ha–1 [122.0–353.2]. The generated information can play a role in optimizing the use of fungicides for NCLB control, reducing disease control costs, and protecting the ecological environment of farmlands.

TIPO DE DOCUMENTO: Artículo

DOI:	https://doi.org/10.1016/j.cropro.2021.105901
PALABRAS CLAVE:	Maíz. Fungicidas. Enfermedades.
TEMAS:	Q Ciencia > Q Ciencia (General)
	R Medicina > R Medicina (General)
	S Agricultura > S Agricultura (General)
UNIDAD ACADÉMICA:	Universidad Católica de Córdoba > Unidad Asociada a CONICET