AgroSym

BOOK OF ABSTRACTS

IX International Scientific Agriculture Symposium
"Agrosym 2018"
Jahorina, October 04-07, 2018

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Impressum

IX International Scientific Agriculture Symposium „AGROSYM 2018“

Book of Abstracts Published by

University of East Sarajevo, Faculty of Agriculture, Republic of Srpska, Bosnia
University of Belgrade, Faculty of Agriculture, Serbia
Mediterranean Agronomic Institute of Bari (CIHEAM - IAMB) Italy
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Maize Research Institute “Zemun Polje”, Serbia
Faculty of Agriculture, University of Novi Sad, Serbia
Institute for Animal Science, Ss. Cyril and Methodius University in Skopje, Macedonia
Academy of Engineering Sciences of Serbia, Serbia
Balkan Scientific Association of Agricultural Economics, Serbia
Institute of Agricultural Economics, Serbia

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Website:

http://agrosym.ues.rs.ba

CIP - Каталогизација у публикацији
Народна и универзитетска библиотека
Републике Српске, Бања Лука

631(048.3)(0.034.2)

INTERNATIONAL Scientific Agricultural Symposium "Agrosym 2018" (9 ; Jahorina)
Book of Abstracts [Elektronski izvor] / IX International Scientific Agriculture Symposium "Agrosym 2018", Jahorina, October 04 - 07, 2018 ; [editor in chief Dušan Kovačević]. - East Sarajevo =Istočno Sarajevo : Faculty of Agriculture =Poljoprivredni fakultet, 2018. - 1 elektronski optički disk (CD-ROM) : tekst, slika ; 12 cm

CD ROM čitač. – Nasl. sa nasl. ekrana. - Registar.

ISBN 978-99976-718-5-1

COBISS.RS-ID 7679512

VARIABILITY OF MAIZE LINES IN NITROGEN USING EFFICIENCY

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Abstract

Nitrogen is important macro-nutrient that influences various physiological processes in plants. It is responsible for protein synthesis and their role in plant metabolism. However, nitrogen is ambiguous element that is highly metabolisable by soil microorganisms and could be loosed from the soil by leaching and evaporation. To prevent this devastation, low nitrogen inputs are required. Maize genotypes exhibit various susceptibility to low nitrogen level in soil. From that reason, variability in reaction of 30 maize lines to grow in conditions with optimal (fertilization with urea), and with low nitrogen (without fertilization) was examined. All other growing measures and fertilization with other elements was applied at the same manner on whole experimental plot. The values of maize grain yield and 1000 grain weight were slightly lower in the field without nitrogen fertilization. It is significant to highlight that high variability between maize lines in term of efficacy of yielding was present, with values varying up to 152.31%, indicating that some lines under the low nitrogen conditions reached even higher grain yields, than in conditions with optimal nitrogen in soil, declaring them as genotypes with high nitrogen using efficiency. However, these lines achieved moderate yields (in both fields) in comparison with all tested lines. Lines with better nitrogen using efficiency, as well as higher grain yields will be introduced into further research, i.e. breeding of maize hybrids with better nitrogen usage from soil, even in the conditions with low nitrogen.

Keywords: *Maize lines, Nitrogen using efficiency, Grain yield.*