

DRUŠTVO GENETIČARA SRBIJE
SEKCIJA ZA OPLEMENJIVANJE ORGANIZAMA

SERBIAN GENETIC SOCIETY
SECTION OF THE BREEDING OF ORGANISMS

DRUŠTVO SELEKCIONERA I SEMENARA
REPUBLIKE SRBIJE

SERBIAN ASSOCIATION OF PLANT
BREEDERS AND SEED PRODUCERS

ZBORNİK APSTRAKATA

X SIMPOZIJUMA DRUŠTVA SELEKCIONERA I SEMENARA
REPUBLIKE SRBIJE

i

VII SIMPOZIJUMA SEKCIJE ZA OPLEMENJIVANJE ORGANIZAMA
DRUŠTVA GENETIČARA SRBIJE

VRNJAČKA BANJA, 16.-18. OKTOBAR 2023.

BOOK OF ABSTRACTS

X SYMPOSIUM OF THE SERBIAN ASSOCIATION OF PLANT
BREEDERS AND SEED PRODUCERS

AND

VII SYMPOSIUM OF THE SERBIAN GENETIC SOCIETY
SECTION OF THE BREEDING OF ORGANISMS

VRNJAČKA BANJA - SERBIA, 16-18 OCTOBER 2023

Beograd/Belgrade
2023.

Izdavač/Publisher

Društvo genetičara Srbije, Beograd
Serbian Genetic Society, Belgrade

Društvo selekcionera i semenara Republike Srbije
Serbian Association of Plant Breeders and Seed Producers, Belgrade

Urednici/Editors

dr Vesna Perić, dr Vojka Babić, dr Sandra Cvejić

Priprema za štampu i realizacija štampe

ABRAKA DABRA, Novi Sad

Tiraž

150

Ova publikacija je štampana uz finansijsku pomoć Ministarstva nauke, tehnološkog razvoja i inovacija

Simpozijum je organizovan u saradnji sa Institutom za kukuruz "Zemun Polje", Beograd i Institutom za ratarstvo i povrtarstvo, Institutom od nacionalnog značaja za Republiku Srbiju, Novi Sad

ISBN: ISBN-978-86-87109-17-9

Beograd/Belgrade

2023.

X SIMPOZIJUM DRUŠTVA SELEKCIONERA I SEMENARA REPUBLIKE SRBIJE i VII
SIMPOZIJUM SEKCIJE ZA OPLEMENJIVANJE ORGANIZAMA DRUŠTVA GENETIČARA
SRBIJE

Vrnjačka Banja, 16.-18. oktobar 2023.

X SYMPOSIUM OF THE SERBIAN ASSOCIATION OF PLANT BREEDERS AND SEED
PRODUCERS and VII SYMPOSIUM OF THE SERBIAN GENETIC SOCIETY SECTION OF
THE BREEDING OF ORGANISMS

Vrnjačka Banja - Serbia, 16-18 October 2023

Počasni odbor/

dr Miodrag Tolimir

dr Milena Simić

Prof. dr Jegor Miladinović

Prof. dr Dragana Latković

dr Aleksandar Lučić

dr Darko Jevremović

dr Dejan Sokolović

dr Milan Lukić

dr Nenad Đurić

Prof. dr Nikola Ćurčić

Naučni odbor/Scientific Committee

dr Vesna Perić, predsednik

dr Violeta Anđelković

Prof. dr Ana Marjanović Jeromela

dr Aleksandra Radanović

dr Dušan Stanisavljević

dr Ivana S. Glišić

dr Jelena Ovuka

dr Jovan Pavlov

dr Milan Mirosavljević

dr Mirjana Petrović

dr Natalija Kravić

dr Dobrivoj Poštić

dr Nikola Grčić

dr Sanja Mikić

dr Snežana Dimitrijević

dr Sofija Božinović

dr Svetlana Roljević Nikolić

dr Vladan Popović

dr Vladimir Filipović

dr Zdenka Girek

Organizacioni odbor/Organizing Committee

dr Vojka Babić, predsednik

dr Sandra Cvejić, zamenik predsednika

dr Aleksandar Popović

Prof. dr Dragana Miladinović

dr Jelena Srdić

dr Milan Jocković

dr Ratibor Štrbanović

dr Vuk Đorđević

Sekterarijat/Secretariat

Beka Sarić, master

Danka Milovanović, master

dr Iva Savić

Miloš Krstić, master

Nemanja Ćuk, master

Sanja Jovanović, master

Maja Šumaruna, master

VARIJABILNOST PRINOSA USEVA POD UTICAJEM KLIMATSKIH ČINILACA

Svetlana Roljević Nikolić¹, Nikola Ćurčić¹, Mirela Matković Stojšin¹, Violeta Mickovski Stefanović¹

¹Istraživačko-razvojni Institut Tamiš, Novoseljski put 33, Pančevo, Srbija
e-mail: roljevic@institut-tamis.rs

U radu je primenom metoda deskriptivne statistike i analize varijanse istraživan uticaj temperature vazduha i sume padavina na varijabilnost prinosa ekonomski najznačajnijih useva u tridesetogodišnjem periodu (1991 – 2021. godine). Korišćeni su podaci o prosečnim prinosima kukuruza, pšenice, soje, suncokreta i šećerne repe dobijeni na oglednom polju Istraživačko-razvojnog instituta Tamiš u posmatranom periodu. Tokom trideset godina, prosečna godišnja temperatura vazduha kretala se od 10,6°C do 14,1°C u 1993. odnosno 2000. godini. Najmanja suma padavina zabeležena je 2000. godine i iznosila je 334 mm, a najveća 2014. godine kada je zabeležena godišnja suma padavina od 973,70 mm. Analiza varijabiliteta prinosa ukazuje da je najveći koeficijent varijacije prinosa zabeležen kod soje (34,25%), zatim šećerne repe (30,8%) i kukuruza (30,5%), dok su manje vrednosti dobijene kod suncokreta (22,3%) i pšenice (20%). Prosečan prinos soje kretao se u nivou od 954 kg do 4.631 kg (1993. i 2018. godine), šećerne repe od 18.270 kg do 78.900 kg (1993. i 2010. godine), kukuruza od 2.887 kg do 11.523 kg (2000. i 2006. godine), prinos suncokreta od 1.333 kg do 3.734 kg (1999. i 2013. godine), a prinos pšenice u nivou 3.590 kg do 7.957 kg (2006. i 2021. godine). Rezultati analize varijanse i lineare regresije za tridesetogodišnji period pokazuju da su padavine imale značajan ($p < 0,05$) uticaj na prinos kukuruza ($\hat{y}_i = 8630,7 + 4,924 * x_i$) i soje ($\hat{y}_i = 2212,9 + 2,273 * x_i$), dok na prinos pšenice, suncokreta i šećerne repe nije utvrđen značajan uticaj klimatskih činilaca u posmatranom periodu. Međutim, kada se izvrši detaljnija analiza po dekadama, zapaža se da je prinos kukuruza ($\hat{y}_i = 2516,4 + 7,917 * x_i$), soje ($\hat{y}_i = -957,710 + 4,124 * x_i$) i šećerne repe ($\hat{y}_i = -35680,135 + 43,110 * x_i$) u prvoj dekadi značajno zavisio od sume padavina. Sa druge strane, u drugoj dekadi temperatura je značajno uticala na visinu prinosa kukuruza ($\hat{y}_i = 37077,474 - 0,093 * x_i$) i soje ($\hat{y}_i = 11921,39 - 8,452 * x_i$), dok u trećoj dekadi analizirani klimatski činilaci nisu značajno uticali na varijabilnost prinosa posmatranih useva. Dobijeni rezultati ukazuju da klimatski činilaci najviše pogađaju prinos kukuruza, ali i da na variranje prinosa useva utiču i drugi faktori, verovatno gajenje adaptibilnih genotipova i primena adekvatnih agrotehničkih mera.

Ključne reči: variranje prinosa, pšenica, kukuruz, suncokret, soja, šećerna repa

Zahvalnica: Istraživanje je finansirano sredstvima Ministarstva nauke, tehnološkog razvoja i inovacija Republike Srbije, broj ugovora 451-03-47/2023-01/200054

VARIABILITY OF CROP YIELD UNDER THE INFLUENCE OF CLIMATE FACTORS

Svetlana Roljević Nikolić¹, Nikola Ćurčić¹, Mirela Matković Stojšin¹, Violeta Mickovski Stefanović¹

¹Tamiš Research and Development Institute, Novoseljanski put 33, Pančevo, Serbia
e-mail: roljevic@institut-tamis.rs

The study examined the impact of air temperature and the sum of precipitation on the yield variability of the most commercially important crops over a thirty-year period (1991–2021) using methods of descriptive statistics and analysis of variance. The data on the average yields of corn, wheat, soybean, sunflower, and sugar beet obtained on the experimental field of the Tamiš Research and Development Institute in the observed period were used. The average annual air temperature for a period of 30 years varied between 10.6°C and 14.1°C in 1993 and 2000, respectively. The lowest sum of precipitation, 334 mm, was recorded in 2000, and the highest amount, 973.70 mm, was recorded in 2014. The analysis of yield variability indicates that soybean had the highest coefficient of variation (34.25%), followed by sugar beet (30.8%) and corn (30.5%), while sunflower (22.3%) and wheat (20%) had lower values. The average yield of soybean ranged from 954 kg to 4,631 kg (1993 and 2018), sugar beet from 18,270 kg to 78,900 kg (1993 and 2010), corn from 2,887 kg to 11,523 kg (2000 and 2006), sunflower from 1,333 kg to 3,734 kg (in 1999 and 2013), and the wheat yield at the level of 3,590 kg to 7,957 kg (2006 and 2021). The results of the analysis of variance and linear regression analysis for the thirty-year period reveal that precipitation had a significant ($p < 0.05$) influence on the yield of corn ($\hat{y}_i = 8630.7 + 4.924 * x_i$) and soybean ($\hat{y}_i = 2212.9 + 2.273 * x_i$), while no significant influence of climatic factors was found on the yield of wheat, sunflower, and sugar beet during this period. However, when a more detailed analysis is performed by decade, it is noted that the sum of precipitation had a significant impact on the corn ($\hat{y}_i = 2516.4 + 7.917 * x_i$), soybean ($\hat{y}_i = -957.710 + 4.124 * x_i$), and sugar beet ($\hat{y}_i = -35680.135 + 43.110 * x_i$) yields in the first decade. On the other hand, in the second decade, temperature significantly influenced the yield of corn ($\hat{y}_i = 37077.474 - 0.093 * x_i$) and soybean ($\hat{y}_i = 11921.39 - 8.452 * x_i$), while in the third decade, the analysed climate factors did not significantly influence the variability of the observed crop yields. The obtained result indicates that climatic factors affect the yield of corn the most, but also that other factors influence the variation in crop yield, probably the cultivation of adaptable genotypes and the application of adequate cultural practice.

Key words: yield variation, wheat, corn, sunflower, soybean, sugar beet

Acknowledgment: The research was funded by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, contract number 451-03-47/2023-01/200054.