

KAKO NUTRITIVNE OSOBINE SEMENA JEČMA UTIČU NA RAZVIĆE PIRINČANOG ŽIŽKA (*Sitophilus oryzae* L.)?

Sonja Gvozdenac¹

0000-0001-9366-5172

Ljiljana Brbaklić¹

0000-0001-9570-266X

Sanja Mikić¹

0000-0002-4215-453X

Snežana Tanasković²

0000-0002-7853-2328

Jelena Ovuka¹

0000-0002-1741-9508

Milica Škorić¹

¹Institut za ratarstvo i
povrtarstvo, Institut od
nacionalnog značaja za
Republiku Srbiju,
Maksima Gorkog 30, Novi Sad,
Srbija

²Agronomski fakultet u Čačku,
Univerzitet u Kragujevcu,
Cara Dušana 34, Čačak,
Srbija

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Sažetak:

Pirinčani žižak, *Sitophilus oryzae* (L.) je primarna štetočina žitarica, od rastućeg značaja. Poslednjih godina predstavlja ograničavajući faktor tokom skladištenja strnih žita u Srbiji. Ima izraženu preferentnost prema pšenici, ali u značajnoj meri oštećuje i zrna ječma. S obzirom da su primećene razlike u podložnosti genotipova ječma na napad žižaka, od velikog je značaja definisati osobine semena koje utiču na tolerantnost prema ovoj štetočini, kako bi se mogla utvrditi međusortna razlika. Genetski potencijal za tolerantnost prema štetočinama uskladištenih proizvoda je ključan za smanjenje kvantitativnih i kvalitativnih gubitaka zrna tokom skladištenja. Stoga je i informacija o tolerantnosti određenog genotipa važna za unapređenje programa kontrole ove grupe štetočina i za razvoj novih strategija oplemenjivanja. Cilj istraživanja je bio da se: i) identifikuje pogodnost sorti ječma (27 genotipova) za razvoj pirinčanog žižaka, ii) u korelaciji sa nutritivnim osobinama zrna i iii) identifikuje gubitak mase semena. Pratili smo produkciju potomstva žižaka (broj novoispilelih jedinki) nakon jedne, dve i tri generacije i intenzitet ishrane (% konzumiranog zrna) nakon tri generacije (~ 90 dana), u testu „bez izbornosti“ u kontrolisanim uslovima. Nutritivne osobine kao što su sadržaj proteina, skroba i vlakana (%) su određene NIR spektroskopijom. Među ispitivanim sortama, NS Talos, Novosadski 331, Novosadski 525, NS Golijat, Nonius, NS Lala, NS Mile i NS Marko su se pokazale kao pogodne za razvoj pirinčanog žižaka, kako u pogledu produkcije potomstva tako i po intenzitetu ishrane. S druge strane, sorte NS Parip, NS Izdan, NS Deran, NS Brka, Novosadski 565 i NS Asteriks su ispoljile tolerantnost i u pogledu razvoja žižaka (produkcije potomstva) i ishrane. Pirinčani žižak je prouzrokovao 2,5-62,0% gubitaka semena ječma, što ukazuje na značajnu razliku u tolerantnosti genotipova na napad žižaka. NIR analizom utvrđene su značajne razlike u sadržaju vlakana koji je bio u negativnoj korelaciji sa intenzitetom ishrane i sadržajem skroba koji je bio u pozitivnoj korelaciji sa navedenom osobinom. Generalno, sorte koje su ispoljile određeni nivo tolerantnosti prema ovoj štetočini treba uzeti u obzir u budućim programima oplemenjivanja, pogotovo ukoliko prihvatimo činjenicu da će problem sa pirinčanim žižkom biti sve veći, a mere suzbijanja sve oskudnije.

Ključne reči: štetočine semena, produkcija potomstva, intenzitet ishrane, sadržaj skroba, sadržaj proteina



HOW DOES THE NUTRITIVE QUALITY OF BARLEY SEEDS AFFECT DEVELOPMENT OF THE RICE WEEVIL (*Sitophilus oryzae* L.)?

Sonja Gvozdenac¹

0000-0001-9366-5172

Ljiljana Brbaklić¹

0000-0001-9570-266X

Sanja Mikić¹

0000-0002-4215-453X

Snežana Tanasković²

0000-0002-7853-2328

Jelena Ovuka¹

0000-0002-1741-9508

Milica Škorić¹

¹Institute of Field and Vegetable Crops, National Institute of the Republic of Serbia,
Maksima Gorkog 30, Novi Sad, Serbia

²Faculty of Agronomy, University of Kragujevac,
Cara Dušana 34, Čačak, Serbia

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Summary:

The rice weevil, *Sitophilus oryzae* (L.) is a primary pest of cereals, with growing importance. In the last few years, it represents a limiting factor in a post-harvest storage of small grains in Serbia. It has strong preference for wheat, but damages barley grains at certain extent as well. As differences in susceptibility of barley genotypes to the weevil attack have been recorded, it is of great interest to define seed traits responsible for tolerance, so as to be able to differentiate suitable and/or tolerant varieties. Genetic potential to resist storage pests is crucial to minimize quantitative and qualitative grain losses during storage. Thus, further knowledge on the tolerance of a specific genotype, is important for improving pest management programs and developing new breeding strategies. The aim of the study was to: i) identify tolerance potential of barley varieties by testing suitability of 27 barley genotypes for the rice weevil development, ii) in correlation with nutritional traits, and to iii) identify the quantity loss of barley seeds. We monitored weevil progeny production (number of newly emerged adults) after one, two and three generations and feeding intensity (% of consumed grains) after three generations (~ 90 days), in a “no-choice” under controlled conditions. Nutritive traits such as protein, starch and fibre content (%) were determined using NIR analyser. Among tested varieties, NS Talos, Novosadski 331, Novosadski 525, NS Golijat, Nonius, NS Lala, NS Mile and NS Marko revealed good suitability for the rice weevil development, both in terms of progeny production and feeding intensity. On the other hand, varieties NS Parip, NS Izdan, NS Deran, NS Brka, Novosadski 565 and NS Asteriks showed lower suitability for the weevil development (progeny production) and feeding. The rice weevil caused 2.5-62.0% losses of barley seeds, which indicates a significant difference in genotypes tolerance to the weevil attack. NIR analysis detected significant differences in fibre content that was negatively correlated with feeding intensity and starch content that was in positive correlation with the mentioned trait. In generally, varieties that manifested tolerance potential to this pest should be considered in future breeding programs.

Keywords: seed pest, progeny production, feeding intensity, starch content, protein content.

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