XXVth EUCARPIA Maize and Sorghum Conference

Current Challenges and New Methods for Maize and Sorghum Breeding

Book of Abstracts

May 30 – June 2, 2022.

Belgrade – Serbia

25th EMS conference

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Publisher
Maize Research Institute, Zemun Polje
Slobodana Bajića 1, 11185 Belgrade - Zemun, Serbia

Multiplied by
Maize Research Institute, Zemun Polje
Slobodana Bajića 1, 11185 Belgrade - Zemun, Serbia

Number of e-copies
150 USB flash drive
Online on the website https://eucarpiamaizesorghum2022.com

ISBN-978-86-80383-15-6

Financialy supported by Ministry of Education, Science and Technological Development of the Republic of Serbia

CIP - Каталогизација у публикацији

Народна библиотека Србије, Београд

633.15/.17:631.527.53(048)(0.034.2)

EUCARPIA Maize and Sorghum Conference Current Challenges and New Methods for Maize and Sorghum Breeding (25 ; 2022 ; Beograd)
Book of abstracts [Електронски извор] / XXVth EUCARPIA Maize and Sorghum Conference Current Challenges and New Methods for Maize and Sorghum Breeding, May 30 – June 2, 2022. Belgrade – Serbia ; [organizers EUCARPIA (European Association for Research on Plant Breeding) [and] Maize Research Institute Zemun Polje] ; [editors Violeta Anđelković, Jelena Srdić, Milica Nikolić]. - Zemun Polje : Maize Research Institute, 2022 (Zemun Polje : Maize Research Institute). - 1 USB fleš memorija ; 4 x 2 x 1 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 150. - Registri.

ISBN 978-86-80383-15-6

а) Кукуруз -- Оплемењивање -- Апстракти б) Сирак -- Оплемењивање -- Апстракти

COBISS.SR-ID 66525961

NUTRITIONAL AND COST EFFECTS OF ADAPTED QUALITY PROTEIN MAIZE ON BROILER FEEDING

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ZPQPM13 is a maize hybrid with improved protein quality, adapted to temperate climate growth conditions, developed by crossing a QPM version of ZPL5 commercial line (developed by marker assisted selection) and GS-6 (a QPM line with 50% tropical and 50% temperate germplasm). This hybrid has grain yield as commercial hybrids, over 90% of hard endosperm, contents of tryptophan and protein over 0.075% and 10%, respectively, and stability of tryptophan content over different locations and years. ZPQPM13 was tested for use in broiler feeds, with the aim to reduce utilization of costly synthetic lysine or soybean components. The feeding experiment on Ross 308 broilers was divided into two groups – control (fed with standard maize) and treatment (fed with QPM). In treatment group diets, ZPQPM13 was increased and soybean component decreased for 3%. Chemical analyses revealed higher contents of limiting essential amino acids in mercantile ZPQPM13 compared to standard maize – 0.44 vs. 0.25 % lysine, 0.077 vs. 0.070 % tryptophan and 0.39 vs. 0.27 % threonine. Duration of each feeding trial was 42 days, comprising three phases - starter (1-14 days), grower (15-35 days) and finisher (36-42 days). Feed intake (FI), body mass gain (BMG), average daily gain (ADG) and feed conversion ratio (FCR) were calculated at the end of each phase. In treatment group, FI was reduced, while BMG and ADG were higher in starter phase but lower in grower and finisher phases. FCR was lower in all three phases in treatment group – 1.13 vs. 1.30, 1.25 vs. 1.33 and 1.28 vs. 1.45. Although a small drawback is that final weight was 3.4 % higher in control broilers, comparison of feed and meat prices show that financial benefits of using QPM are still significant compared to using standard maize in feeds, as soybean is four times more expensive than maize.

Keywords: *broilers, diets, FCR, lysine, QPM*