INFLUENCE OF INTER-ROW CULTIVATION ON YIELD COMPONENTS AND KERNEL YIELD OF MAIZE HYBRIDS FROM DIFFERENT FAO MATURITY GROUPS

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Introduction

- Cultivation measures of maize crop are performed in order to provide optimal conditions for growth and development of plants during the vegetation period.
- For this reason, in this manuscript we investigated the impact of inter-row cultivation on productive response of maize hybrids of different maturity group FAO.

Matherials and methods

- Field microexperiments were conducted during 2019 in the agroecological conditions of the central Šumadija (near locality Rača Kragujevačka), on brown forest soil type (Eutric Cambisol), according to the Split plot design in four repetitions.
- In this research, a two-factorial experiment was based in the following variants:

a) Hybrid ((A_1 - P0023 (FAO 400), A_2 - P0412 (FAO 500), A_3 - P1241 (FAO 600)),
b) Inter-row cultivation (B_1 - without inter-row cultivation, B_2 - with inter-row cultivation).

Results and discussion

By applying inter-row cultivation, the length of the ear was increased by 10.4%, the number of kernels per ear by 9.3%, the weight of kernels per ear by 11.4% and the content of ears by 5.5% of index points. The highest length of the ear (20.3 cm) was measured in hybrid P0023, the largest number of rows of kernels per ear (16.8), the number of kernels per ear (624.8), as well as the weight of kernels per ear (159.0) were achieved by hybrid P1241, while the highest content of ear (20.6%) was found in hybrid P0412. Depending on the hybrid, the kernel yield varied in the range of 6.53 t ha-1 (P0412 hybrids) to 6.90 t ha-1 (P1241 hybrids), and the weight of 1000 kernels from 250.2 g (P0023 hybrids) to 263.9 g (P1241 hybrids).

Table 1. Influence of inter-row cultivation and hybrids on the number of kernels per ear

Hybrids (A)	Inter-row cultivation (B)		Average	Index (%)
	without	with		
P0023	582,0	615,6	598,8	100,0
P0412	536,8	537,6	537,2	89,7
P1241	576,8	708,8	642,8	107,3
Average	565,2	620,7	592,9	-
Index (%)	100,0	109,3	-	-

Table 2. Influence of inter-row cultivation and hybrids on the mass of kernels per ear (g)

Hybrids (A)	Inter-row cultivation (B)		Average	Index (%)
	without	with		
P0023	140,0	160,0	150,0	100,0
P0412	130,0	142,0	136,0	90,7
P1241	152,0	166,0	159,0	106,0
Average	140,7	156,0	148,3	-
Index (%)	100,0	111,4	-	-

Table 3. Influence of inter-row cultivation and hybrids on the length of the ear (cm)

Hybrids (A)	Inter-row cultivation (B)		Average	Index (%)
	without	with		
P0023	19,4	21,1	20,3	100,0
P0412	17,3	18,9	18,1	89,2
P1241	17,8	20,4	19,1	94,1
Average	18,2	20,1	19,2	-
Index (%)	100,0	110,4	-	-

Table 4. Influence of inter-row cultivation and hybrids on the kernel yield (t ha^{-1})

Hybrids (A)	Inter-row cultivation (B)		Average	Index (%)
	without	with		
P0023	6,16	7,04	6,60	100,0
P0412	6,24	6,82	6,53	98,9
P1241	6,69	7,10	6,90	104,5
Average	6,36	6,99	6,68	-
Index (%)	100,0	109,9	-	-

Conclusions

An interdependence between hybrids and inter-row cultivation was found. By applying this agrotechnical measure, higher kernel yield was achieved by 0.41 t ha-1 in hybrid P1241, by 0.58 t ha-1 in hybrid P0412 and kernel yield was higher in hybrid P0023 by 0.88 t ha-1.