

UTJECAJ NAVODNJAVANJA I GNOJIDBE DUŠIKOM NA UROD I KOMPONENTE URODA KUKURUZA

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SAŽETAK

Sve češći klimatski ekstremi stavljaju u prvi plan potrebu korištenja navodnjavanja. Ovo istraživanje pokušava odgovoriti koliko vode i kada dodati, uz primjenu odgovarajuće količine dušika, za postizanje visokih i kvalitetnih uroda. Tijekom 2000. i 2002. godine postavljen je poljski pokus po split-plot metodi na pokušalištu Poljoprivrednog instituta Osijek. Glavni čimbenik (A) je bilo održavanje sadržaja vode u tlu u 3 stepenice (A1 80-100 % PVK; A2 65-100 % PVK; A3 kontrola), a podčimbenik (B) gnojidba dušikom u 3 stepenice (B1 100 kg N/ha; B2 150 kg N/ha i B3 200 kg N/ha). Određena su fizikalna i kemijskih svojstava tla i vode za navodnjavanje. U vegetaciji je praćen sadržaj vode u tlu te se pristupalo navodnjavanju kada se sadržaj vode spustio na donju vrijednost A1 ili A2 varijante. Navodnjavalo se samohodnim vučenim rasprskivačem (tifon) s vodom koja nije imala ograničenja. Dušik je dodan u osnovnoj obradi, prije sjetve i kroz prihranu. Tijekom istraživanja praćeni su klimatski pokazatelji, stanje usjeva te visina biljke do klipa i metlice. Na kraju vegetacije određene su komponente uroda s 10 klipova (dužina klipa, broj redova zrna, broj zrna na klip, masa zrna s klipa, hektolitarska masa, masa 1000 zrna, suha tvar, randman te sadržaj dušika u zrnu kukuruza). Nakon žetve uzeti su uzorci zrna u cilju određivanja sadržaja dušika pojedinoj varijanti navodnjavanja i gnojidbe. Urod kukuruza je bio pod značajnim utjecajem godine (2002. godini veći za 1,49 t/ha prema 2000.). Signifikantno veći urod bili su na varijantama najviše razine navodnjavanja. Varijanta B3 dala je signifikantno veći urod samo u 2002. godini. Signifikantan do vrlo signifikantan utjecaj navodnjavanja utvrđen je kod visine do klipa i vrha metlice, mase zrna na klip i mase 1000 zrna, a hektolitarska masa u 2000.godini. U 2000. godini signifikantan utjecaj B3 utvrđen je kod svojstva broja redova zrna na klip, a u 2002. godini kod svojstava dužine klipa i mase zrna na klip. Svaka viša varijanta gnojidbe dušikom rezultirala je signifikantno većim sadržajem dušika u tlu, ali tek u 2002. godini.

Ključne riječi: navodnjavanje, voda, dušik, urod, komponente uroda, kukuruz

INFLUENCE OF IRRIGATION AND NITROGEN MANURE ON YIELD AND YIELD COMPONENTS OF MAIZE

SUMMARY

Master`s thesis

Today we can see climatic changes more often than before. This investigation tried to give the answer, when and how much water and nitrogen we should apply to achieve high and quality yield. In 2000 and 2002 field experiment has been set by split-plot method at The Agricultural Institute of Osijek. The main factor (A) was keeping the water content in the soil in three different levels (A1 80-100 % fwc – field water capacity; A2 65-100 % fwc and A3 control without irrigation). Factor B was application of nitrogen in three levels (B1 100 kg N/ha; B2 150 kg N/ha; B3 200 kg N/ha). Some physical and chemical components of the soil and water for irrigation were determined. During the vegetation, water content in the soil was measured, and irrigation was applied when water content decreased below minimal basic value in A1 or A2 variants. The irrigation was realized with sprinkler system «Tifon». Water for irrigation had no limitation. Nitrogen was added in autumn,

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spring, before sowing and during the vegetation. Climatic value were monitored during the vegetation together with crop condition and plant characteristics (plant hight to the ear and to the top of the plant). At the end of the vegetation, yield components were determined from 10 ears (ear length, grain row and grain number on the ear, grain weight from the ear, hectolitar mass, 1000 grain mass, dry matter, randman and nitrogen content in the grain). After the end of vegetation, grain samples were taken for determination of nitrogen supply. It was established that the maize yield was under the significant influence of the year (in 2002 yield was higher for 1,49 t/ha related to 2000). In both years, significantly higher yields were realized on A1 variant. Variant B3 had significantly higher yield only in 2002. Significant to very significant influence of irrigation related to non irrigation was realized in several components: plant hight to the ear and to the top of the plant, grain weight and 1000 grain mass and the hectolitar mass in 2000. In 2000 significant influence of B3 was realized for grain row on ear and in 2002 for ear length and grain mass on the ear. Each variant with higher nitrogen level resulted in significantly higher soil nitrogen content in 2002.

Key-words: irrigation, water, nitrogen, yield, yield components, maize