

Some Quality Traits of Potato Tubers Produced under the Agroecological Conditions of Croatia

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Abstract

The aim of the field cultivar trial involving 19 potato cultivars of different growing period lengths, conducted in the Gospić region in 2006, was to select the best cultivars for the production of Lika potato. Influence of agroclimatic and agrotechnical factors on market yield of tubers and tuber quality was investigated: bulk specific gravity, content of dry matter, ash, protein and nitrate concentration. The cultivar trial was set up on light, dystric cambisol of acid reaction (pH 4.2), moderately humus-rich (2.7% humus), poor in potassium (13.5 mg K₂O/100g soil) and very poor in phosphorus (1.2 mg P₂O₅/100 g soil). Fresh mass yield of marketable tubers ranged from 7.9 t/ha (Jaerla) to 47.0 t/ha (Rodeo). The highest bulk density (1.101) was recorded for cultivar Mozart, and the lowest (1.069) for Dynamica. The highest dry matter yield of 9.7 t/ha was determined for cultivar Rodeo, and the lowest for Jaerla (1.6 t/ha). At the same time, the highest ash yield (1.98 t/ha) was produced by cultivar Mondial, and the lowest (0.35 t/ha) by Jaerla. Potato cultivars that accumulate more dry matter have lower ash contents, and vice versa. Tubers of early-ripening potato cultivars Jaerla, Fabula, Triplo, Adora contain lower concentrations of nitrates (1100 to 1300 mg NO₃/kg) compared to dry matter richer cultivars Courage, Rosara, Desire (1500 to 1700 mg NO₃/kg). Early-ripening cultivars (Fabula, Adora, Jaerla, Rafela) also accumulate more protein (10.13 to 10.81 g/kg) than late-ripening cultivars (Mozart, Courage, Rodeo, Victoria), which accumulate more dry matter in tubers, with less protein (8.63 to 9.81 g/kg). Meteorological conditions and cultivar characteristics had a significant influence on the yield, dry matter content and bulk specific gravity. Natural restraints and climate of a region as well as agrotechnical characteristics determine the production potential of cultivars and the potential tuber quality. It should be every producer's goal to use high-yielding potato cultivars, with high concentrations of dry matter, and to apply agricultural management practices that will reduce internal and external tuber damage.

Key words: potato, environmental conditions, chemical composition, quality

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Neka kvalitativna svojstva gomolja krumpira uzgajanog u agroekološkim uvjetima Hrvatske

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Sažetak

Poljski sortni pokus sa 19 sorata krumpira različite dužine vegetacije proveden je 2006. godine na području Gospića s ciljem izbora najpogodnije sorte za uzgoj ličkog krumpira. U istraživanju se razmatra utjecaj agroklimatskih i agrotehničkih faktora na tržišni prinos gomolja i pokazatelje kvalitete gomolja: specifična volumna masa, sadržaj suhe tvari, pepela, proteina i koncentracija nitrata. Sortni pokus je postavljen na laganom, distrično smeđem tlu kisele reakcije (pH 4,2), umjereno humoznom (2,7% humusa), siromašnom kalijem (13,5 mg K₂O/100g tla) i vrlo siromašnom fosforom (1,2 mg P₂O₅/100 g tla). Prinos svježe mase tržišnih gomolja kretao se od 7,9 t/ha (Jaerla) do 47,0 t/ha (Rodeo). Najviša volumna masa (1,101) zabilježena je u sorte Mozart, a najniža volumna masa (1,069) u sorte Dynamica. Najviši prinos suhe tvari od 9,7 t/ha zabilježen je u sorte Rodeo, a najniži u sorte Jaerla (1,6 t/ha). Istovremeno najviši prinos pepela (1,98 t/ha) utvrđen je u sorte Mondial, a najniži (0,35 t/ha) u sorte Jaerla. Sorte krumpira koje akumuliraju više suhe tvari imaju manji sadržaj pepela i obratno. Rano zrele sorte krumpira imaju nižu koncentraciju nitrata u gomolju Jaerla, Fabula, Triplo, Adora (1100 do 1300 mg NO₃/kg) nego sorte s više suhe tvari Courage, Rosara, Desire (1500 do 1700 mg NO₃/kg). Istovremeno rano zrele sorte (Fabula, Adora, Jaerla, Rafela) nakupljaju više proteina (10,13 do 10,81 g/kg) nego kasno zrele sorte (Mozart, Courage, Rodeo, Victoria) koje akumuliraju više suhe tvari u gomolju sa manje proteina (8,63 do 9,81 g/kg). Meteorološke prilike i svojstva kultivara značajno su utjecali na visinu prinosa, sadržaj suhe tvari i specifičnu volumnu masu. Prirodna ograničenja i obilježja klime određenog područja i agrotehnička obilježja uvelike određuju proizvodni potencijal sorte ali i potencijalnu kvalitetu gomolja. Cilj svakog proizvođača treba biti da u proizvodnji koriste visoko prinodne kultivare krumpira s visokim sadržajem suhe tvari, a agrotehničkim mjerama umanjiti unutarnja i vanjska oštećenja gomolja.

Ključne riječi: krumpir, klimatske prilike, kemijski sastav, kvaliteta

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