Use of Plants with Biocidal Action in Greenhouse Vegetable Production

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Abstract

In Slovenia the fruit vegetables are the main crop produced under the protection. Due to crop rotation abandonment the problems with soil borne diseases and pests often occur. One of the possibilities for their control is the use of plants of *Brassicaceae* family in the rotation. Valuable organic matter and biocidal effect is provided when abundant plant material rich in glucosinolates is incorporated into soil.

The aim of the research in unheated plastic tunnel was to evaluate (1) the agronomical traits of different species of *Brassicaceae* and find out which species could be used in rotation with tomato and (2) how the vegetative growth and yield of tomato are affected at different soil treatments (control, application of dazomet, incorporation of rocket (*Eruca sativa*) and incorporation of rocket followed by soil covering with transparent plastic).

Eruca sativa, Brassica campestris (variety Perko) and *Brassica juncea* over wintered well. The *Eruca sativa* was the first to begin flowering, the faze when the concentration of glucosinolates is the highest. The best vegetative growth was noticed for the treatment where incorporated rocket was covered with transparent plastic. The differences among yields at different treatments were not statistically significant but the trend of higher yields at both treatments with rocket can be noticed.

The winter growth of plants from *Brassicaceae* family in the rotation with fruit vegetables in the main season is a promising way of solving problems that occur due to inadequate crop rotation in vegetable production under protection. The most suitable species and varieties in the climatic conditions of Slovenia are those with good over wintering ability, high biomass production and quick beginning of flowering (in the case of our trial *Eruca sativa*).

Key words: crop rotation, soil sterilisation, glucosinolates, tomato, *Eruca sativa*

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Uporaba biljaka biocidnog djelovanja u proizvodnji povrća u zaštićenom prostoru

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Sažetak

U Sloveniji se u zaštićenim prostorima uzgaja pretežito plodovito povrće. Zbog nepoštivanja plodosmjene dolazi do nakupljanja bolesti i štetnika u tlu. Jedno od mogućih rješenja je uključivanje u plodored biljaka iz porodice krstašica (*Brassicaceae*). Inkorporacijom obilne biljne mase koja sadrži glukozinolate povećava se organska tvar u tlu i postiže biocidno djelovanje.

Cilj je istraživanja bio u negrijanom zaštićenom prostoru provjeriti (1) koje su vrste krstašica po agronomskim svojstvima najprikladnije za uključivanje u plodored kod proizvodnje rajčice te (2) kako na rast i prinos rajčice utječu različiti načini raskuživanja tla (kontrola, tretiranje tla dazometom, inkorporacija rige (*Eruca sativa*) te inkorporacija rige i prekrivanje tla prozirnom folijom).

Prezimljavanje su dobro su podnijele vrste *Eruca sativa, Brassica campestris* (sorta Perko) i *Brassica juncea*. U fazu cvatnje, kada je sadržaj glukozinolata najveći, prva je ušla vrsta *Eruca sativa*. Najveći je rast rajčice ostvaren kad je riga inkorporirana u tlo, a tlo je prekriveno folijom. Prinosi plodova između tretiranja nisu se statistički značajno razlikovali, ali postoji trend većeg prinosa kod oba tretiranja s inkorporiranom rigom.

Uzgoj biljaka iz porodice krstašica u zaštićenim prostorima izvan glavne sezone uzgoja plodovitog povrća perspektivan je način rješavanja poteškoća zbog nepoštivanja plodoreda. U uvjetima Slovenije najprikladnije su vrste, odnosno, sorte koje dobro prezimljavaju, stvaraju obilnu biljnu masu i brzo prelaze u fazu cvatnje (u našem istraživanju *Eruca sativa*).

Ključne riječi: plodored, raskuživanje tla, glukozinolati, rajčica, *Eruca sativa*

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