Obtaining of Grafted Planting Material at Some Romanian Tomatoes

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Abstract

The tomatoes have highest share in Romanian crops from protected spaces (greenhouses, solariums). The grafting is an agronomical technique that induces or improves some qualities of the tomato cultivars (resistance to soil diseases and pests, resistance to abiotic factors, quantity and quality of fruit production). The research was aimed the establishing of the technological stages for producing of scion and rootstock seedlings from *L. esculentum* species, to obtain compatible phenotype when is grafted. The observations of this research were conducted on Department of Horticultural Cultures in Protected Spaces from Horting Institute Bucharest. The experience was carry out on a cultivar collection consisting from *L. esculentum* plants: Romanian scions ('Siriana'-F₁ hybrid and 'Buzău 1600'- variety), creations from the germplasm bank of Research and Development Station for Vegetable Growing Buzău (VDRS Buzău) and Japanese rootstock ('Groundforce'-F₁ hybrid) from Sakata seed. The plant diameters were correlated for splice grafting, cutting at 45 degrees. The grafting was performed successfully. The technological steps have achieved phenotypic compatibility of the plants when was the splice grafting. The technology for producing of grafted planting material at some Romanian tomatoes ('Siriana' and 'Buzău' 1600) was established for the crops in protected spaces in south area of Romania.

Keywords: grafted seedlings, *Lycopersicon esculentum*, Romania

Introduction

The tomatoes have highest share in Romanian crops from protected spaces (greenhouses, solariums). Leonardi and Romano, 2004 said that some cultivars are not able to adapt to protected cultivation, withstand soil born disease pressure and extreme changes in temperature and moisture. The grafting is an agronomical technique that induces or improves some qualities of the tomato cultivars (resistance to soil diseases and pests, resistance to abiotic factors, quantity and quality of fruit production).

Grafted seedlings are being progressively adopted by vegetable industry as propagules of choice for crop establishment (Leonardi and Romano, 2004). In Romania, the use of grafting techniques started after 1973 (Tomescu, 2005) and it has been developed because soil borne

pathogens are a serious problem, that can be avoided by using resistant rootstocks (Doltu *et al.*, 2015). Doltu *et al.*, 2013 say that the grafting can be performed successfully if the plants (scion and rootstock) have similar diametres.

Aims and objectives

The research was aimed the establishing of the technological stages for producing of grafted planting material at some Romanian tomatoes: sowing of scions and rootstocks from *L. esculentum* specie, grafting, callusing to obtain compatible phenotype when is grafted and planting in protected spaces in south area of Romania.

Materials and methods

The observations of this research were conducted on Department of Horticultural

Tab. 1 Technological dates for obtaining of Romanian grafted tomato seedlings

Scion Rootstock	Sowing data	no. of days	Emergence data	no. of days	Grafting data	no. of days	Callusing data
'Siriana'	19.02.	7	26.02.	21a	18.03.	7	25.03.
'Buzău 1600'	19.02.	7	26.02.	24b	21.03.	7	28.03.
'Groundforce'	26.02.	6	3.03.	15,18	18-21.03.	7	25-28.03.

Duncan test $p < 0,05$

Cultures in Protected Spaces from Horting Institute Bucharest.

The experience was carry out on a cultivar collection consisting from *L. esculentum* plants: Romanian scions ('Siriana'–F₁ hybrid, 1000 seeds and 'Buzău 1600'–variety, 1000 seeds), creations from the germplasm bank of Research and Development Station for Vegetable Growing Buzău (VDRS Buzău) and Japanese rootstock ('Groundforce'–F₁ hybrid, 2000 seeds) from Sakata Seed.

The technology for obtaining of ungrafted seedlings (scions and rootstock) is according to the ecological requirements of the species. The agronomical technique was splice grafting.

The statistical analysis was carried out by Duncan test.

Results and Discussion.

Obtaining of grafted tomato seedlings implies following steps: sowing of scion and rootstock, preparing for grafting, grafting, forming of callus, transferring of seedlings from the tunnel for callus forming in the growing space. After sowing, the plants are cultivated in classic conditions for tomatoe seedlings.

The technological dates for obtaining of Romanian grafted tomato seedlings there are in table (Tab. 1).

The plants had optimal diameters (2-2,5 mm) and 2-4 leaves at grafting.

Bogoescu *et al.*, 2008 say that the optimum diameter is 1,5 mm. The grafting was performed successfully (95% grafted plants/scion cultivar). Duncan test shows as between 'Siriana' and 'Buzău 1600' are not significant diference, the grafting was to 21 days ('Siriana') and 24 days ('Buzău 1600') from emergence of scions.

Doltu *et al.*, 2013 say that the grafting of some Japanese hybrids was achieved after 16–18 days and 19–20 days from scion emergence and 13–14 days from the rootstock emergence.

Conclusion

The technological steps have achieved phenotypic compatibility of the plants when was the splice grafting, the plants (scion and rootstock) had optimal diameters. Between 'Siriana' and 'Buzău 1600' are not significant diference concerning the grafting.

The technology for producing of Romanian grafted tomato seedlings ('Siriana' and 'Buzău 1600') was established for the crops in protected spaces in south area of Romania.

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