

Results Concerning the Growth Indicators of the Cucumbers Grafted Seedlings

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Abstract. The research was realized in the Laboratory of Protected Cultures of the ICDIMPH-Horting Bucharest, during the years 2008-2013. Were watched the growth of the cucumbers grafted seedlings. The biological material used was composed from grafted seedlings, using one scion, cucumbers F₁ hybrids (Mathilde) and three rootstocks – wild variety, F₁ hybrids (TZ148, Shintoza, Batora). From registration of the growth indicators has resulted a superior quality of the grafted planting material, compared with the normal seedlings. TZ148 rootstock has obtained the best results, followed by Shintoza, then Batora.

Keywords: grafted seedlings, cucumbers, growth indicators

Introduction The grafted cucumbers seedlings compared with normal seedlings have superior growth, are a valuable planting material, give quality of the crops and increased production. Also, the grafted plants are resistant to diseases (*Fusarium* spp., *Verticillium* spp.) and pests (nematodes) transmitted through the ground (Bogoescu, 2008). The researchers have demonstrated in scientific papers that the production at grafted plants of cucumbers is higher than at normal plants (Reid J., Klotzbach K., 2011 Heidari A.A. *et al.*, 2011).

The production technology of the grafted cucumbers has opened the prospect of a production in accordance with the standards required by the European market.

The quality of the seedlings is essential to ensuring economic efficiency and environmental protection (Dobrin, 2005).

Aims and objectives. The research has aimed registration of the growth indicators (height, stem diameter, root length, root volume) some grafted cucumbers seedlings, to emphasize characteristics by quality. This strategy led to the choice of the best variant. TZ148 rootstock has obtained the best results, followed by Shintoza, then Batora.

Materials and methods. Experience was realized in the Laboratory for Protected Cultures of ICDIMPH-Horting Bucharest. Were researched grafted cucumbers seedlings, combinations (rootstock x scion): TZ148 x Mathilde, Shintoza x Mathilde, Batora x Mathilde. The observations were made in 2008-2013 period. The research methods was biometric measurements and statistical analysis (Fisher test).

Results and Discussion The results concerning the growth of the normal and grafted cucumbers seedlings was indicators of growth: height, diameter, length (Tab. 1).

Tab. 1

Cucumbers seedlings growth indicators at the planting time
(average of the years 2008 - 2013)

Combinations (rootstock x scion)	Height (cm)	Stem diameter (mm)	Root length (cm)
V ₁ - Mathilde F ₁ /TZ148	21	6.2	21.7
V ₂ - Mathilde F ₁ /Shintoza	21	6	21.6
V ₃ - Mathilde F ₁ /Batora	20	5.5	20.5
V ₄ - Mathilde F ₁	21	5	20.0

For grafted plants, the highest values of the indicators have obtained the variants grafted on TZ148 and Shintoza rootstocks (V_1 , V_2), followed by the variant grafted on Batora rootstock (V_3); at normal plants (V_4), the indicators values shows a lower quality planting material. Through grafting, the rootstock (wild variety) determine superior values to the planting grafted material, with implications on the field culture (vigour, resistant and production).

The results concerning analysis of variance at root volume values are shown in the table of the variances (Tab. 2).

Tab. 2

Analysis of variance for variants at root volume (average of the years (2008-2013))

Source of variance	SSD	DF	d ²	F
Between groups	227	1	227	38
Within the group	142	24	6	
Total		25		

By calculating the factor F of Fisher's exact test, were obtained the F function values: 4,28 și 7,88; it follows that it is less than the theoretical F factor for $\alpha = 5\%$ and $\alpha = 1\%$, so the difference between variances is significant.

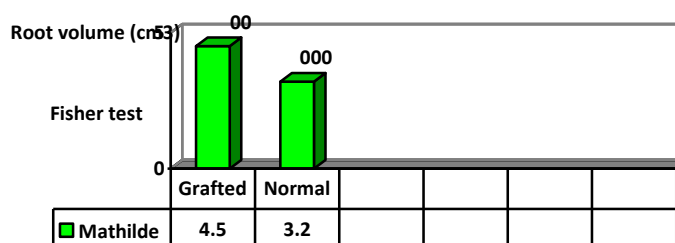


Fig. 2. Variation of the root volume, depending by the rootstocks researched

Analyzing the results obtained on the variation of root volume, depending on the scion hybrid for rootstocks is observed that the lower value showed a normal variant and the largest values showed the grafted variants on rootstocks - TZ148, Shintoza, then Batora (Fig. 2).

Conclusion

The quality of the vegetables seedlings is essential for production. At grafted seedlings studied, the growth indicators had superior values, quality comparative with the normal seedlings. The rootstocks used in research has printed the plants vigour; the grafted cucumbers had superior growth indicators than the normal cucumbers. TZ148 rootstock has obtained the best results, followed by Shintoza, then Batora. Through grafting, the rootstock (wild variety) determine big vigour, high resistant and major production to culture.

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