

DIFFERENTIATION STAGE AS PART OF “IN VITRO” MULTIPLICATION FOR QUINCE

FAZA DE DIFERENȚIERE ÎN CADRUL PROCESULUI DE ÎNMULȚIRE „IN VITRO” A GUTUIULUI

COSAC AURELIA CORINA, FRASIN LOREDANA BEATRICE
Valahia University Targoviste

Abstract. *A regeneration protocol was developed for three quince (Cydonia oblonga Mill.) cultivars: „Moldovenești”, „Aurii”, „Aromate” and two rootstocks: „Tip A” and „BN 70”. For initiating the culture the terminal and lateral meristems were used (meristematic dom surrounded by two to three leaf initials); they were prelevated and putted on the medium in vegetative pause. The tested mediums are: Murashige-Skoog, Lepoivre, Fossard and Woody Plant Medium. For quince cultivars the highest results were obtained on MS medium (77,77%) supplemented with 0,1 mg/L BAP and ml/L AG₃; for the “BN 70” and „Tip A” rootstocks the most favourable differentiation medium was Fossard (58,33 %).*

Rezumat. *Pentru stabilirea protocolului de regenerare „in vitro” a gutuiului (Cydonia oblonga Mill.) au fost luate în studiu trei soiuri: „Moldovenești”, „Aurii” și „Aromate” și doi portaltoi: „Tip A” și „BN 70”. Pentru inițierea culturii s-au folosit meristeme terminale și axilare, prelevate și pasate pe mediu în perioada de repaus vegetativ. Mediile testate sunt reprezentate de: Murashige-Skoog, Lepoivre, Fossard și Woody Plant Medium. Pentru soiurile de gutui cele mai bune rezultate s-au obținut pe mediul MS (77,77 %) suplimentat cu 0,1 ml/L IBA și 1 ml/L AG₃; pentru portaltorii “BN 70” și „Tip A” cel mai favorabil mediu de diferențiere a fost reprezentat de Fossard (58,33 %).*

MATERIALS AND METHODS

The quince and pear planting material production didn't satisfy the cultivator's expectations, neither before or after 1989.

The necessity to modernize the planting material production technologies of the two species, at present requests level, is determined by many other considerations such as:

- increasing the tree's density in field-grown trees and transition to intensive system culture, in which the selections of new rootstocks (vegetative), creation and introduction of new cultivars, the modernization of tree's conduct and carving allow to catch a sight of a new „era” in the two species culture, of course, this being conditioned by the rapid providing of more and more quantity of planting material.

- contributions to fast replacement of uneconomical sorts from the old field-grown trees and introduction of new middle-little vigour pear's cultivar, with fast fruit - bearing, that have compatibility with quince and tolerance to fire blight.

According to the national and international researches carried out until recently with regard to branches and meristems prelevation epoch which lead to conclusion that the optimum period is vegetative pause, we initiated the experiment between 11-25 November 2005.

The branches sterilization was achieved by immersing them in ethylic alcohol for 10 min, succeeded by their maintenance in Ca hypochlorite (6%) for 20 minutes.

The biological material was then rinsed for three times in bidistilled water and kept into the last water until the prelevation. For initiating the culture the terminal and lateral meristems were used (meristematic dom surrounded by two to three leaf initials); they are able to generate little plants in vitro.

After inoculation the explants were passed into the growing chamber at 24⁰ C and a photoperiod of 16 h illumination and 8 h obscurity.

RESULTS AND DISCUSSIONS

The results on this paper include the phases of initiation and differentiation.

The starting phase of experiment: because the based mediums (Murashige-Skoog, Fossard, Lepoivre, Woody Plant Medium) contain only macro, microelements and vitamins, there were aded dextrose = 40 g/L; agar = 10 g/L; IBA = 0,1 ml/L; AG₃ = 1 ml/L; Na Fe EDTA = 3,2 ml/L. pH medium was between 5,5-5,7.

For this phase we made the following study: the influence of culture medium on explants differentiation. The experiment was initiated between 11-25 November 2005, with all five quince and rootstock cultivars.

The best results in differentiation stage (table 1) are obtained by „Moldovenesti” cultivar (100% on MS, F, WPM mediums and 83,3% on L medium). It is the only one wich differentiated on WPM medium. The smallest results were obtained by “Aromate”: 33,3% differentiation on MS and L mediums and zero explant on F and WPM mediums.

As for the rootstocks the best results are obtained by “Tip A”. At the end of the stage all explants put on WPM medium were necrosed.

Less than 10 % contamination was observed and the buds on the Lepoivre medium were developed callus, more than the others. The influence of WPM medium was revealed by the inhibition callus forming (0 %).

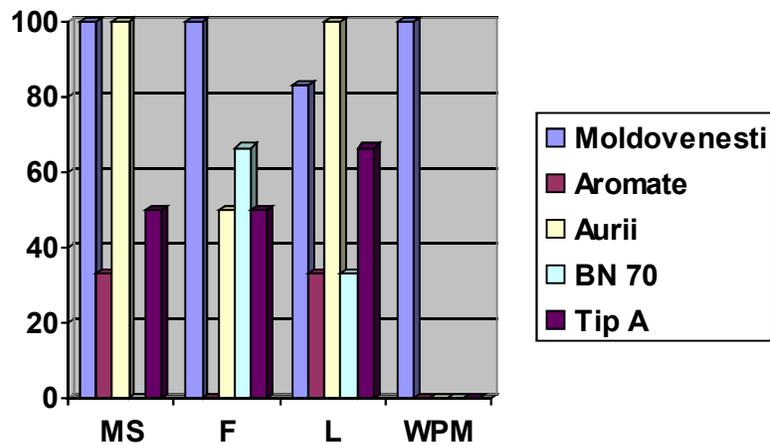


Fig. 1 Influence of culture medium on explants differentiation

Table 1

Influence of culture medium on explants differentiation

Cultivar	Tested mediums							
	MS		F		L		WPM	
	Differentiation rate*	%	Differentiation rate*	%	Differentiation rate*	%	Differentiation rate*	%
MOLDOVE NESTI	6/6	100	6/6	100	5/6	83,3	6/6	100
AROMATE	2/6	33,3	0/6	0	2/6	33,3	0/6	0
AURII	6/6	100	3/6	50	6/6	100,0	0/6	0
BN 70	0/6	0	4/6	66,6	2/6	33,3	0/6	0
TIP A	3/6	50,0	3/6	50,0	4/6	66,6	0/6	0
Total	17/30	56,6	16/30	53,3	19/30	63,3	6/30	20,0

* At numerator – number of explants differentiated in rosette or bud
At denominator – number of explants put on the mediums.

CONCLUSIONS

For all quince cultivars the highest results were obtained on MS medium (77,77%) supplemented with 0,1 mg/L BAP and ml/L AG₃, followed by Lepoivre (72,20 %), Fossard (50 %) and WPM (33,33 %). For the “BN 70” and „Tip A” rootstocks the most favourable differentiation medium was Fossard (58,33 %); it was followed by Lepoivre (50 %), MS (25 %), WPM (0%).

The prelevation period and the initiation of the experiment are the most important stages because all experiment depends on the success of these phases. Function on these data, other values of the differentiation and multiplication rate on different mediums are obtained.

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