

# Influence of different growth regulators on micropropagation of pink dianthus (*Dianthus chinensis x barbatus*)

Ivana Velesanova, Fidanka Trajkova, Liljana Koleva Gudeva

Faculty of Agriculture, Goce Delcev University – Stip, Krste Misirkov Str., No. 10-A, 2000 Stip, Republic of Macedonia

Corresponding author: [liljana.gudeva@ugd.edu.mk](mailto:liljana.gudeva@ugd.edu.mk)

In this research the influence of different concentrations and combinations of growth regulators on meristem buds and cotyledons from pink dianthus (*Dianthus chinensis x barbatus*) as starting explants was studied: A - MS + 2 mg/l BA + 0,1 mg/l IAA + 0,1 mg/l GA<sub>3</sub>; B - MS + 2 mg/l BA + 0,1 mg/l NAA; C - MS + 2mg/l BA and D - MS + 5 mg/l BA + 5 mg/l NAA. The meristem buds cultivated on MS medium supplemented with certain growth regulators developed merely shoots. All combinations of growth regulators under this study resulted in development of roots from shoot regenerants. The newly regenerants were acclimatized with their transfer to sterile mix of perlite and peat (1:1) in high moisture conditions.

## Materials and methods

### 1. Obtaining of starting material for *in vitro* propagation

The seeds of commercial genotype of pink dianthus were inoculated on basal medium as 10 seeds in 10 Erlenmeyer flasks, or in total 100 seeds of each species. After seed germination, the meristem buds and cotyledons were isolated and they were used as starting explants in the research.

### 2. Sterilization of the seed material

The seed material was surface sterilized with:

- Submersing in 70% C<sub>2</sub>H<sub>5</sub>OH for 3 minutes,
- Submersing in 1.5% Izosan G for 10 minutes,
- Afterwards they were washed (x3 times) in sterile distilled water.

### 3. Regeneration of meristem buds and cotyledons on MS medium with different growth regulators

The meristem buds and cotyledons as starting explants were inculcated on MS medium, supplemented with certain concentration of BA, GA<sub>3</sub>, IAA and NAA. The development of the explants was followed during the experiment.

### 4. Acclimatization of regenerants

The regenerants were transferred to sterile mixture of perlite and peat (1:1) in high humidity conditions. After planting, the regenerants were treated with 20 ml 1/2 MS и 20 ml 0.1 Mm ABA for better acclimatization.

*De novo* regenerants planted into sterile mix of peat and perlite and treated with ABA growth regulator for acclimatization.

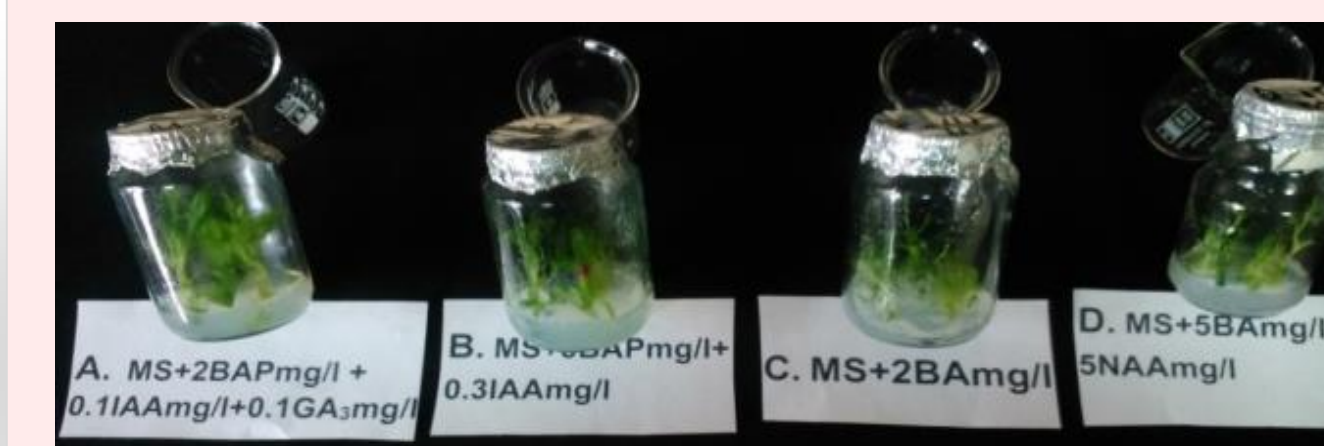
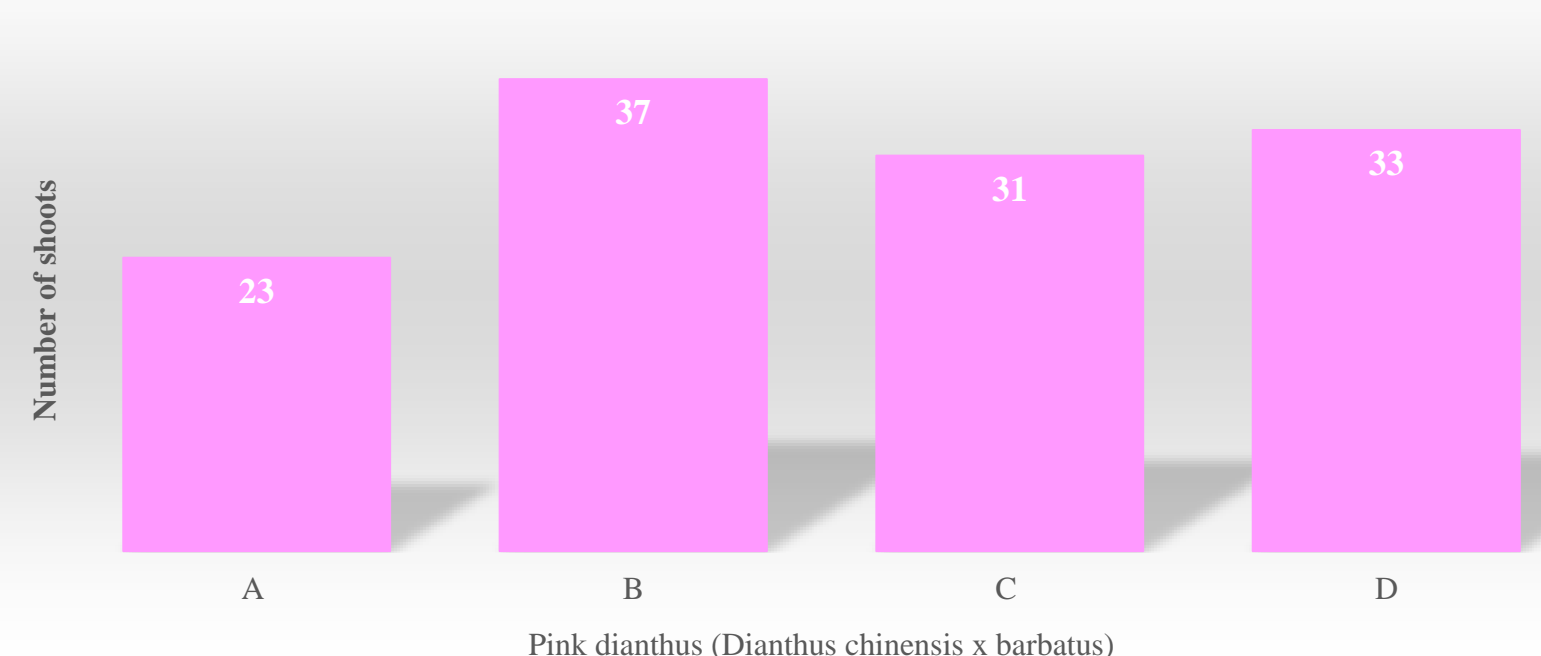


## Results and discussion

### Initial cultivation of explants from pink (*Dianthus chinensis x barbatus*)

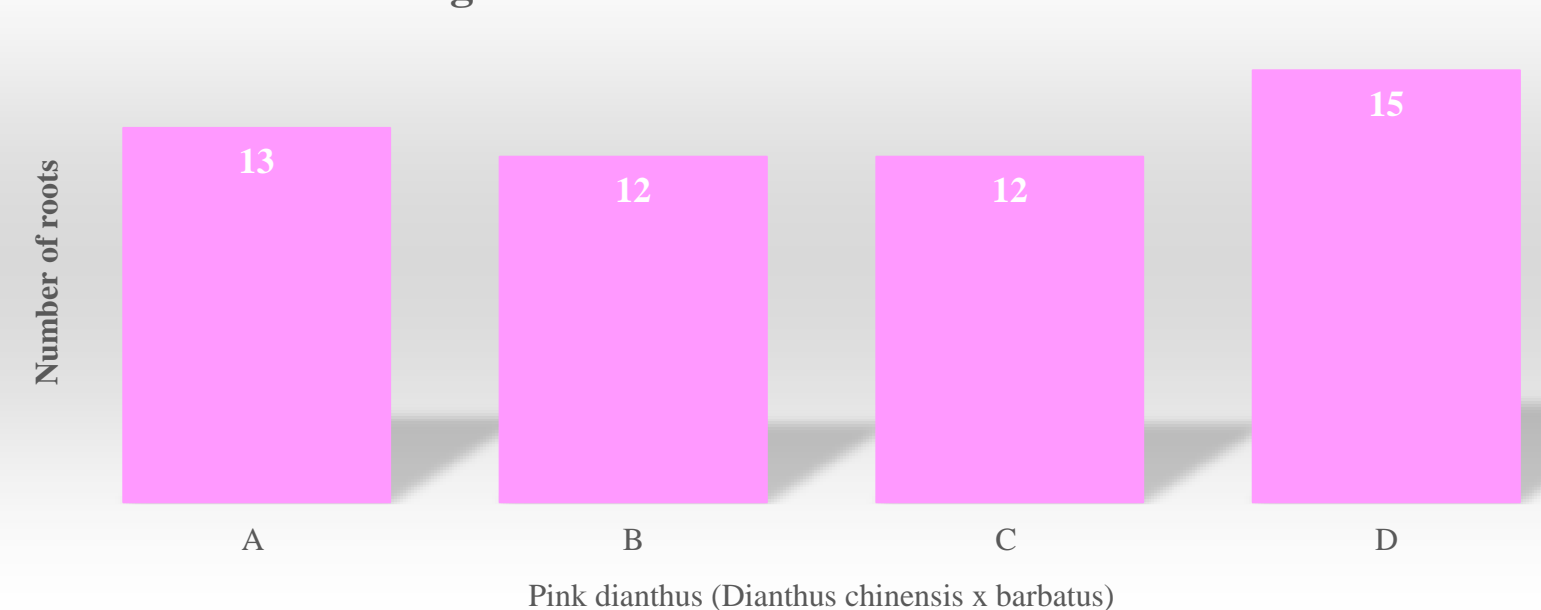
MS medium + growth regulator (mg/l)	Meristem buds			Cotyledons		
	Number of explants	Width (cm)	Height (cm)	Number of explants	Width (cm)	Height (cm)
A: MS + 2 mg/l BA + 0.1 mg/l IAA + 0.1 mg/l GA <sub>3</sub>	34	0.25	1.14	32	1.21	0.2B:
B: MS + 2 mg/l BA + 0.1 mg/l NAA	34	0.33	1.18	32	1.02	0.19
C: MS + 2 mg/l BA	38	0.24	1.0	74	0.69	0.27
D: MS + 5 mg/l BA + 5 mg/l NAA	41	0.25	1.0	68	0.24	0.22

Effect of MS medium and different growth regulators on meristem buds one month after the initial cultivation



Shoot regenerants as result of the effect of MS medium and different growth regulators on meristem buds one month after the initial cultivation.

Effect of MS medium and different growth regulators on rooting two months after the initial cultivation



Effect of MS medium and different growth regulators on cotyledons one month after the initial cultivation

