

Filter Paper Wicks for Support in Growing Carnation Shoot Tips

by

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In Colorado the growth of carnation shoot tips in an agar medium seems to be limited by a pronounced drying at the surface of the medium. In order to lessen the effect of this desiccation a filter paper wick was substituted for agar. This study compared the growth of carnation shoot tips using agar as a support and a filter paper wick as a substitute for the agar. This wick devised by Heller (1) is an inverted cup made by folding a disk of filter paper in a form of a glass tube. This paper cup can be slipped into the culture tube so that it dips into the liquid medium and remains saturated while providing support and proper aeration for the shoot tip.

Twenty 1 mm tips were placed on both types of support using a carnation growth medium.¹ The tips were grown under 40 watt florescent tubes, 16 inches from the plants for 5 weeks, at a temperature of 70-75°F in test tubes equipped with cotton stoppers. At the end of this time, the plants in the 2 groups were compared by measuring the total length of each plant, root development, and the air-dry weight of the plants.

The results of the experiment are recorded in table 1. The data from the growth of the plants, as estimated by measuring the total length of the plant, were analyzed and tested by a standard statisti-

Table 1. Growth and root development of carnation shoot tips growing on filter paper wicks or agar.

Shoot tip number	Agar		Filter paper wick	
	Growth (mm)	Root development ^a	Growth (mm)	Root development ^a
1.	7	4	2	2
2.	7	4	9	4
3.	7	4	22	4
4.	2	3	12	4
5.	7	4	10	4
6.	1	0	22	4
7.	6	4	9	4
8.	10	4	9	4
9.	4	4	3	3
10.	5	4	11	4
11.	7	3	3	2
12.	5	4	20	4
13.	7	4	20	4
14.	6	4	14	4
15.	7	4	17	4
16.	5	3	22	4
17.	7	4	22	4
18.	5	4	x	x
19.	10	4	x	x
20.	x	x	x	x
Mean	6**	3.6	13**	3.7

** Significant difference at the 1% level

x Eliminated from data due to contamination

^aRoot development scale: 0 - no indication of rooting, 1 - bulbous base, 2 - abundant callus, 3 - roots evident, 4 - roots well developed.

cal test. These results indicated that plants on wicks were longer and the dry weight was greater than those grown on agar (Fig. 1); however, there was no apparent difference in root initiation. The callus of plants grown on the agar was brown and

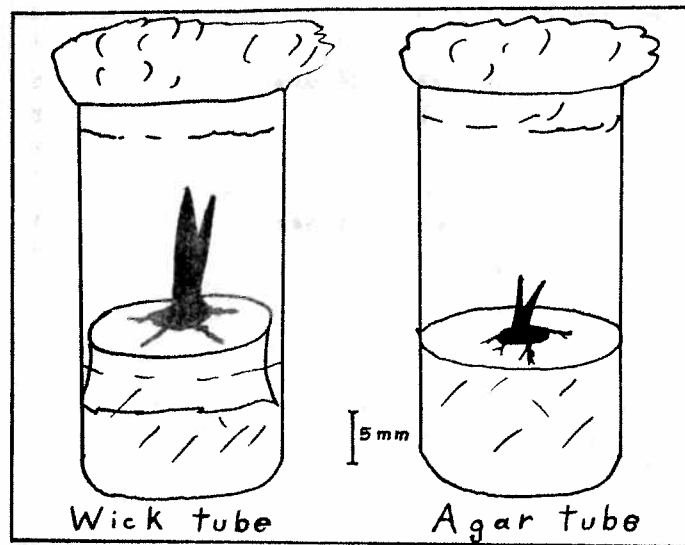


Fig. 1--The relative growth of carnation shoot tips on agar and filter paper wicks.

the general condition of the plants indicated that a dry condition was present in these tubes. This experiment was repeated and similar results were obtained.

These experiments indicated that the substitution of filter paper wicks for agar is an advantage where conditions of drying are limiting the growth in tissue culture of the carnation shoot tip.

¹Dr. P. Neergaard, unpublished

Literature Cited

1. White, Philip R., 1954. The cultivation of Animal and Plant Cells. The Ronald Press Company, New York. p 239.