

# Effects of Particle Size of the Rooting Medium on the Rooting of Carnation Cuttings

by R. E. Odom

Early growers of carnations and many other crops recommended sharp sand for a propagating medium. Last year Norman Butterfield made some studies on particle size of propagating sand used by Massachusetts growers and found that many of their propagation troubles came from using a sand that contained too much fine material. (Mass. Flw. Gro. Assn. Bul. 16).

The propagating sand which we have been using at Fort Collins contains the following percentages of sized particles:

Particles larger than 2 mm.	18.7 percent
2 mm. to 20-mesh	26.0 percent
20-mesh to 40-mesh	34.0 percent
40-mesh to 60-mesh	13.2 percent
Smaller than 60-mesh	8.1 percent

To study the effects of particle size on rooting response of carnation cuttings, this sand was altered by screening and the following media were tested:

1. Unaltered sand
2. Particles smaller than 60-mesh removed
3. Particles larger than 2 mm. removed.
4. All particles passing 20-mesh screen
5. All particles passing 30-mesh screen.

Four replications of 10 cuttings each of the variety Miller's Yellow were stuck in each medium on March 14. The cuttings were removed April 7, the rooting response observed and representatives from each medium photographed.

The extent of rooting of each cutting was arbitrarily graded into 4 categories:

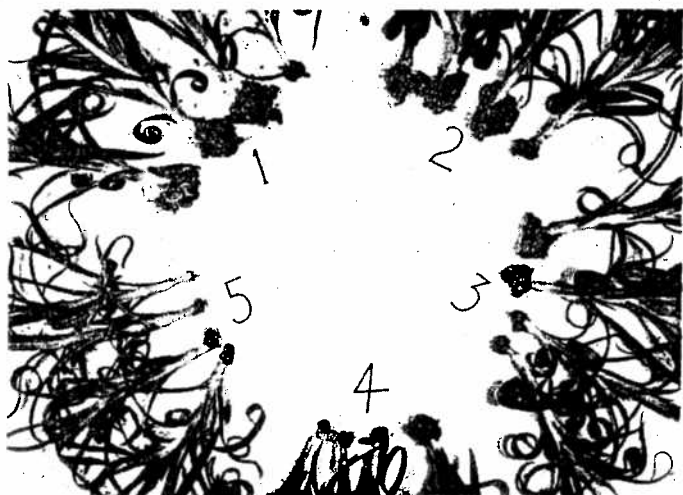
1. No rooting
2. Slightly rooted-unsatisfactory for transplanting.
3. Medium rooted-small root septum but satisfactory for transplanting
4. Well rooted

The average rooting from each treatment was:

Unaltered sand	3.56
60-mesh particles removed	3.47
Particles larger than 2 mm. removed	3.02
All particles passing 20-mesh	3.00
All particles passing 30-mesh	2.40

The accompanying figure represents the response of cuttings in each medium.

The speed of rooting and the quality of the root system decreased as the particle size decreased. Some fine particles are essential to hold water in the medium, but too high a percentage of fine particles will hold too much water and exclude oxygen. This can lead to delayed rooting and sloughing of root systems when the cuttings are removed from the medium.



Miller's Yellow Cuttings - Number corresponds to treatment.