



Colorado State Flower Growers Association

IN COOPERATION WITH COLORADO A & M COLLEGE

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COLD STORAGE OF CARNATION CUTTINGS by W. D. Holley and Roger Farmer

Previous work (Bulletin 3) indicated that a moisture proof covering was necessary to avoid dessication of carnation cuttings when held in cold storage. The second lot of unrooted cuttings of the variety Northland were placed in a cut flower cooler on October 5. The temperatures of this storage varied around 36 - 45° F. depending upon daily traffic.

Cuttings which were placed in storage October 5, were either wrapped in wax paper with moist sphagnum at their bases or were sealed in cellophane with a pinch of moist sphagnum in each package. Some of those wrapped by each method were stored in the dark and some were placed under a fifteen watt fluorescent light about eight inches below the bulb.

These cuttings were removed from storage on December 21, and January 4, and stuck along with fresh cuttings. When ready for transplanting from the propagating bench counts were made of the number rooting in each treatment as shown in table 1.

To explore one other possibility on storage of unsealed cuttings, small boxes were lined with moist sphagnum and filled with unrooted cuttings.

These were placed in storage November 19, along with cuttings sealed in cellophane. The type of cellophane used previously was unknown. Beginning with the November cuttings, MSAT cellophane was used. Approximately half of each lot was placed under lights. Table 2 shows the results obtained with this lot.

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Table 1. Northland Cuttings in Storage October 5.

Storage Temperature 36-45°F.					
Treatment	Number of Cuttings	Days in Storage	Rooted	Not Rooted	Percent of Light
Wax Paper - light	50	77	0	50	0
Wax Paper - dark	27	77	18	9	66
Cellophane - light	55	77	39	16	70
Cellophane - dark	54	77	44	10	80
Fresh cuttings	46	0	46	0	100
Wax Paper - dark	28	91	11	18	39
Cellophane - dark	55	91	43	12	78

Table 2. Northland Cuttings in Storage November 19.

Storage Temperature 36-45°F.					
Treatment	Number of Cuttings	Days in Storage	Rooted	Not Rooted	Percent of Light
Unsealed - light		63 *			
Unsealed - dark		63 *			
Cellophane - light	51	63	46	5	90
Cellophane - dark	84	63	76	8	90
Fresh	16	0	15	1	94

*Too desiccated to put in propagating bench.

With the results so far, it is evident that (1) light is unnecessary to successful storage of cuttings and (2) the cuttings must be sealed or secured with moisture proof material. Variable storage temperatures gave us rather erratic results also.

To get a better answer on the question of storage temperature, cuttings were placed in carefully controlled storages on January 24. The cuttings were sealed in MSAT cellophane, and tied in polyethylene (frozen food) bags. Storage temperatures were 30° F. and 40° F. Half of the cuttings were removed from storage April 7, and the balance removed and stuck May 17. Mice destroyed the second lot of cuttings in 30° F. storage, hence they do not appear in Table 3. Time in storage and number rooting is shown for the other treatments.

Root primordia were plainly visible on the cuttings which were removed from storage after 113 days at 40° F. This may help to explain the difference between the rooting of stored and fresh cuttings stuck on May 17. Conditions for rooting cuttings were extremely adverse just following this date.

Table 3. Northland Cuttings in Storage January 24.

Out of Storage	Treatment	Number of Cuttings	Days in Storage	Rooted	Not Rooted	Percent of Rooting
Apr. 7	Cellophane - 30° F.	49	73	28	21	57
	Polyethylene - 30° F.	50	73	44	6	88
	Cellophane - 40° F.	49	73	45	4	92
	Polyethylene - 40° F.	50	73	40	10	80
	Fresh Cuttings	50	0	33	17	66
May 17	Cellophane - 40° F.	50	113	43	7	86
	Polyethylene - 40° F.	51	113	39	12	76
	Fresh Cuttings	50	0	7	43	14

Survival of Stored Cuttings

The rooted cuttings from the October and November storage trials were transplanted to a bench of sterilized soil and grown until May 10. At this time, the base of each plant was cut to determine the amount of discoloration present. Notes made on general vigor of the plants in each treatment are included in Table 4.

Table 4.

Storage Treatment	Some Discoloration			
	Healthy	At Base	Poor	Dead
Cellophane - dark	178	4	8	5
Cellophane - light	73	5	4	3
Fresh Cuttings	54	5	1	1

Storage of Rooted Cuttings

Repeated trials with storage of rooted cuttings of the varieties Northland and William Sim were unsatisfactory. When sealed, the rooted cuttings molded severely. When stored under properly aerated conditions to prevent mold, the cuttings dried out.

On the basis of our findings so far we can offer these recommendations for saving cuttings from a period of plenty to one of scarcity:

1. A storage temperature of from 35-40° F. should be satisfactory.
2. Seal cuttings in MSAT cellophane or use a moisture proof covering.
3. Store the cuttings as they come from stock plants. Do not dip them in water and use a small amount of moist sphagnum in each package.
4. If it is desirable to use a fungicide on the cuttings, either spray the stock plants the day before cuttings are taken or dust the cuttings lightly before placing them in storage.
5. Store only cuttings from your cleanest stock.