How To Store Alyssum Plugs

by ROYAL HEINS and THOMAS F. WALLACE, JR.

WE have experimented with low-temperature storage of a variety of bedding plant plugs (results were reported in GREENHOUSE GROWER in January and February, 1991, and February, March, and April, 1992). Our research objective was to determine optimum storage conditions and durations that would not result in unacceptable extension of forcing and growth periods after transplanting.

Here, we review optimum storage conditions for alyssum; next month, vinca will be examined.

How We Did It

We received plug sheets (size 406) of alyssum 'New Carpet of Snow' from a commercial grower when the plugs were transplantable. Plants were kept in a glass greenhouse at 68°F for a week prior to experiment initiation to eliminate shipping effects.

One plug sheet was placed in storage at each of 18 temperature and light-level combinations. Temperatures were 32°, 36.5°, 41°, 45.5°, 50°, or 54.5°F, and light levels were 0, 5, or 25 footcandles with cool white fluorescent bulbs burning constantly. Darkness, or 0 footcandles, was achieved by placing plug sheets in closed cardboard shipping boxes.

All plants were subirrigated with clear water as needed during storage. Irrigation frequency varied from 3 to 20 days, depending on the temperature and humidity in the coolers. Contact between water and foliage was minimized to avoid fungal infection.

Ten representative plants were removed from each treatment once a week for 6 weeks, and one plant per treatment was photographed before the plants were potted in 4-inch containers. Plants were forced into flower in a glass greenhouse with a minimum temperature of 68°F.

We recorded the date of first flower for each plant that survived storage, determined the average number of days from the start of forcing to first flower, and calculated percent plant survival for each treatment.

Storage treatments were rated satisfactory or unsatisfactory. Satisfactory meant no more than one of 10 plants died after storage, and flowering was not delayed more than 5 days compared to unstored plants.

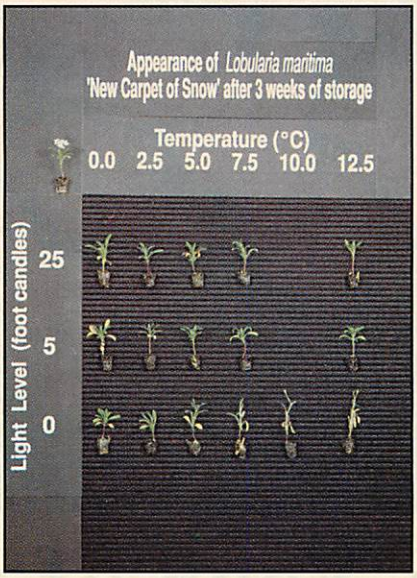

Figure 1: Appearance of alyssum plugs immediately following 3 weeks of storage at 0-25 footcandles and 0°-12.5°C (32°-54.5°F).

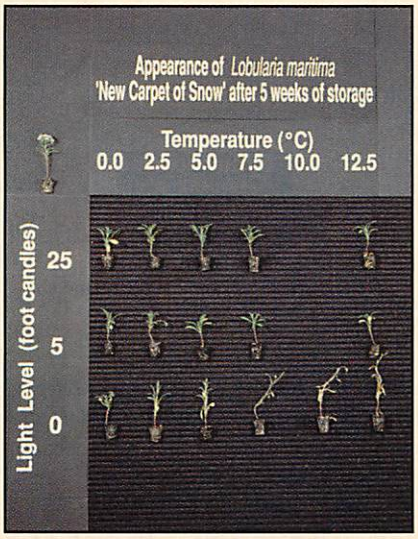

Figure 2: Appearance of alyssum plugs immediately following 5 weeks of storage at 0-25 footcandles and 0°-12.5°C (32°-54.5°F).

Results

Alyssum plugs stored best in light under low temperatures (Figures 1 and 2).

There was no chilling injury at any temperature. Plants tolerated 1 week of storage under any of the temperatures in either light or dark, but as dark-storage duration increased, plants first elongated and etiolated (Figure 1), then died (Figure 3). All plants stored for more than 3 weeks in the dark at 45.5°F or higher died.

Plants stored in light did not elongate and etiolate (Figure 2), and compared to plants stored in darkness, percent death was lower at 45.5°-54.5°F (Figure 4).

Post-storage regrowth potential was determined by calculating the time it took a transplant to reach a 3-inch diameter. No significant growth trend was observed in plants stored in light; however, time to achieve a 3-inch diameter increased for surviving plants as dark-storage temperature and duration increased.

Plants stored for 1 and 5 weeks

looked similar after 6 weeks of forcing, although plugs held in the greenhouse for 5 weeks were smaller than those held in cold storage.

Optimum Storage Conditions

Alyssum plugs should be stored at 41°F or lower. Store them in light when storage exceeds 2 weeks; they do not tolerate dark storage well.

At warmer temperatures (45°F or higher), acceptable storage duration significantly increased when a small amount of light (5 footcandles) was added. Etiolation, elongation, and percent death were all reduced.

Whenever possible, add light to plug storage chambers — the results are quite dramatic. **GG**

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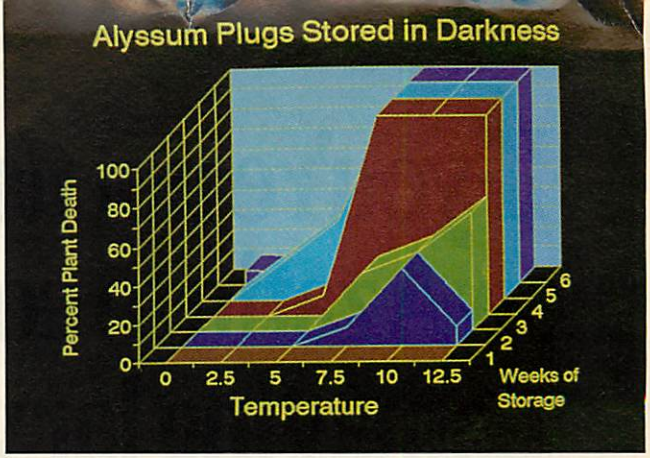

Figure 3: Percent plant death of alyssum after 0-6 weeks of dark storage at 0°-12.5°C (32°-54.5°F).

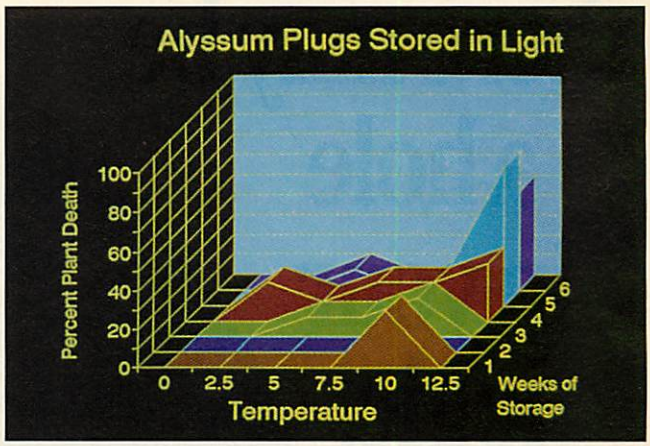

Figure 4: Percent plant death of alyssum after 0-6 weeks of light storage at 0°-12.5°C (32°-54.5°F).