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HANDLING AND STORAGE OF EASTER LILY BULBS

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For many years commercial flower growers have been confronted with the problem of producing superior Easter lilies at the time when they would be most profitable. Some growers have claimed that certain varieties of lilies forced irregularly and that some failed to bloom in time for Easter.

Commercial flower growers do not always pot their lilies immediately upon receipt of the bulbs. The number of days until potting and the temperatures at which the bulbs are held is quite variable among commercial growers.

The reason for the variations in length of storage periods is due to the fact that the bulbs are shipped from a central point by brokers early enough for potting in the northern states. The potting date for Easter lilies is later in the South than in the North,

but the bulbs are all shipped at the same time. Many of the southern growers leave their bulbs unpotted for various lengths of time at different temperatures.

With these varying conditions existing among the growers, there developed a great need for more information concerning the effects of the various temperatures and the length of storage periods for lily bulbs after they had been precooled.

In December of 1954, the Floriculture Section at North Carolina State College initiated an experiment to study the effects of delayed potting on Croft lily plants, the bulbs of which were stored for different lengths of time at room temperature (75° F.).

Literature Review

Some of the earliest work concerning lily bulb storage was done at the United States Horticultural Station, Beltsville, Md. (1). Lily bulbs exposed to cool temperature for short periods kept in good condition and showed a marked acceleration in bloom.

Brierley (1) reported that cool storage of Easter lily bulbs is a convenient primary control over time of flowering. The customary control factor, forcing temperature, can be used as a fine adjustment after this primary control has been applied.

Kiplinger, Ohio Agricultural Experiment Station, reported that the holding temperature of lily bulbs following their precooling but before planting has a marked influence on the forcing quality of the bulbs and that high temperatures for rather short periods delay maturity.

Procedure

The bulbs used in the experiment at North Carolina State College were shipped from a commercial concern in a standard case in dry peat. When the bulbs arrived at the greenhouse on December 14 they were divided into three groups. One group was potted immediately in six inch pots. The second group of bulbs was left unpotted in the potting room where the temperatures was approximately 75° F. This group was later divided into seven smaller groups which were to be potted at two day intervals following the first potting. The third group of bulbs was placed in a cold storage room at a temperature of 31° F.

The soil mixture used for potting all the bulbs in the experiment was: 4 parts soil, 1 part peat, and 1 part leafmold. One five-inch pot of dolomitic limestone and one three-inch pot of superphosphate were added to each two and one-half bushels of the soil mixture. All the plants used in the experiment were grown at 60° to 65° F.

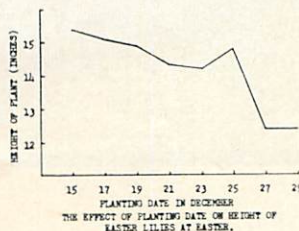
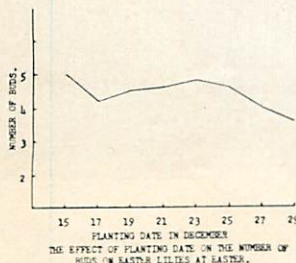
Results

The potting date for the first group of bulbs was December 15, which was the day after the bulbs arrived. The bulbs forced very uniformly and required very little temperature manipulation. The average number of buds for the group was 5.0. The average height was 15.4 inches.

The first of the smaller groups which were left in the potting room to be potted at two-day intervals was potted on December 17. They showed very little variation in growth. This proved that the precooling effects which cause the bulbs to force more uniformly had not yet been destroyed by the high temperature in which they had been stored.

THE EFFECT OF PLANTING DATE ON THE HEIGHT AND NUMBER OF BUDS OF EASTER LILIES.

| Date Planted | Height (inches) | Buds (number) |
|--------------|-----------------|---------------|
| Dec. 15 | 15.4 | 5.0 |
| 17 | 15.1 | 4.2 |
| 19 | 14.9 | 4.5 |
| 21 | 14.3 | 4.6 |
| 23 | 14.2 | 4.8 |
| 25 | 14.8 | 4.6 |
| 27 | 12.4 | 3.8 |
| 29 | 12.4 | 3.6 |
| L.S.D. .05 | 1.2 | 0.6 |
| .01 | 1.6 | 0.8 |



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A slight degree of variation was noticed in the bulbs potted on December 19. Not enough, however, to be very objectionable.

The next group which was potted on December 21 showed greater variation in growth, which made it evident that this was the breaking point for greater difference in uniformity. The average number of buds for the group was 4.6, and the average height was 14.3 inches.

The variation in uniformity of the subsequent pottings made on December 23, 25, 27 and 29 was directly proportional to the number of days of delayed potting. The average number of buds dropped from 4.6 on December 21 to 3.6 on December 29, and the buds were very immature. The average height dropped from 14.3 inches to 12.4 inches.

The bulbs which were stored at 31° F. were potted on January 5. They forced as uniformly as those potted immediately after arrival, and the bud count was high.

Summary and Conclusions

The effects of precooling are destroyed when Easter lily bulbs are stored for five days or more at room temperature. When lily bulbs are stored unpotted at room temperature the bud count is reduced and there is a greater variation in the height of the plants. Lily bulbs suffer no ill effects when they are kept in cold storage.

If the bulbs are received on the correct potting date they should be potted immediately. If the bulbs are received earlier than expected, and before the correct potting date, they should be stored where the temperature is not lower than 31° F. and not higher than 45° F. The bulbs should be kept in the refrigerated storage room until they are ready to be potted.

Literature Cited

1. Brierley, Philip. March 1941. Effect of Cool Storage of Easter Lily bulbs on Subsequent Forcing Performance. *Journal of Agricultural Research*. Vol. 62, No. 6.
2. Brierley, Philip and A. H. Curtis, February 1942. Further Studies of Cool Storage and Other Factors Affecting the Forcing Performance of Easter Lily Bulbs. *Journal of Agricultural Research*, Vol. 64, No. 6.