Post-harvest Storage and Handling of Dutch Iris Flowers

By
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Southeastern North Carolina produces more than 1300 acres of fieldgrown cut flowers annually. Included in this total are approximately 300 acres of Dutch iris which are marketed during March and April. Although most of the iris is grown in open fields, some growers plant fairly large quantities in protected beds for early production.

The flowers are usually harvested in the bud stage, brought into cold storage rooms and placed in water prior to packing and shipping. When handled in this way they open properly and keep well after they reach their destinations.

Iris are sometimes stored for periods of several days or more to help prevent "gluts" or to have flowers available for special days such as Easter or Mother's Day. During such storage the flowers may be held dry or they may be placed in water in cold storage rooms.

In recent years, partially as a result of tests conducted by the Horticultural Crops Research Station at Castle Hayne, a few growers have been placing iris in plastic bags and holding them in dry storage at 31°F. This method makes it possible to hold certain varieties successfully for periods up to 25 days. When removed from storage and held at room temperatures the flowers open properly and hold for as long as a week.

In the past there has been little uniformity in the way iris have been handled after removal from 31°F storage. The recommended procedure has been to cut the stems, condition the bunches in warm water for a few hours, and then package and ship them. Although some growers have followed this practice, others have removed the bunches from storage and shipped them without the water-conditioning treatment. Instances have also been observed where quantities of iris were held dry in boxes in storage at 40°F, or higher, and then shipped dry. Further information has been needed on methods of handling and conditioning from the time the flowers are cut until they reach the market. Tests were started in 1959 to obtain this information.

Iris are usually shipped in trucks which are refrigerated in hot weather. They are in transit from one to two days. In these tests some lots were held for 30 hours in a 40°F room to simulate the period of time they would be in transit under refrigerated conditions (although temperatures in transit vary considerably and may often run higher than 40°).

To simulate a terminal holding period such as occurs when the flowers reach the wholesaler, several lots were held for one day at room temperature (70°F). One of these lots was placed in water and one was kept dry. The bases of the stems were freshly cut on all lots placed in water except for a check. The various storage and holding treatments are given in Table 1 together with a record of the number of days before the first flowers began to wither.

In another test, iris were placed in water in a cold storage room which was held at an average temperature of 38°F. Thermocouples were located in stems, buds, and in air spaces within bunches. Temperatures were taken at regular intervals at these locations in small bunches of 12 flower spikes and in large bunches of 150 to 200 spikes. The temperature of the bunches at the start of the test was 73°.

Results and Discussion

Data presented in Table 1 shows that Dutch iris flowers will open and remain in good condition for seven days after removal from 31° storage if they are handled properly. Flowers remained in good condition one day longer than the check treatment when the lower ends of the stems were cut off before they were placed in water. They kept for seven days when the stems were cut and placed in water immediately after removal from 31° storage, or when they were held dry for 30 hours at 40° and then placed in water. Flowers that were placed in water for six hours after removal from 31° storage, held dry for 30 hours at 40,° and then placed in water at 70° held for six days.

One of the poorest methods proved to be dry storage for six days at 40°. When treated in this way the Imperator variety withered in five days. Furthermore, the flowers did not open fully and none of them were as good in quality as iris stored in other ways. The foliage on these lots turned yellow in five to six days.

In the cooling test the small bunches of 12 flowers dropped to 39° in one and one-half hours, but the temperature of the larger bunches averaged 51° at the end of that period of time. It required five and one-half hours for the temperature of the large bunches to drop to room temperature. This emphasizes the importance of proper air circulation in order to effect rapid cooling of flowers when placed in storage.

Growers have reported instances where iris turned yellow and were dumped upon reaching their destinations although there was no apparent reason for such loss. It is probable that large quantities of the hot flowers were brought in from the fields and packed closely together in the cold storage rooms. Under such conditions it is doubtful if they cooled sufficiently prior to packing and shipping. This could cause them to breakdown in transit.

Conclusions

On the basis of these tests it is concluded that Dutch iris, after dry storage at 31°F, can be held either in water or dry up to 30 hours at 40°F. The stems should

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then be cut off near the bases and the bunches placed in water. It does not seem to be necessary to "condition" them in water immediately after removal from 31° storage, but it is necessary to hold them at relatively low temperatures (around 40°) when they are first removed from such storage. The flowers may be expected to remain in salable condition for at least a day longer if the stems are cut off at the bases before they are placed in water.

When iris are cut under high temperature conditions they should be given adequate spacing in cold storage to permit rapid cooling.

If iris are to be stored longer than two or three days they should be placed in sealed containers such as pliofilm bags and held dry at 31°F. Dry storage at temperatures above 32° should be avoided. For short periods of storage the flowers will keep well when placed in water in a cold storage room at 40°F.

TABLE 1. RESULTS OF STORAGE TREATMENTS WITH DUTCH IRIS AT CASTLE HAYNE, N. C. 1959.

Lot No.	Dry Storage 31°F for 8 days	In water 6 hrs. 70°F	In water 30 hrs. 40°F	Dry, 30 hrs. 40°F	Dry 1 day at 70°F	In water 1 day 70°F	In water 1 day 40°F	In water 70°F	No. days after removal from storage before flowers began to wither
1	X							X	6
2	X							X[1]	5
3	X			X	X		X	X	6
4	X			X		X	X	X	7
5	X	X		X	X			X	6
6	X		X					X	7
7	[2]							X	5[3]

[1] Stems not cut before placing in water—check.

[2] Held *dry* for six days at 40°F.

[3] Flowers "cupped" and did not open properly.