
An Update on Spring-Flowering Bulb Crops

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Every year Harold Wilkins at the University of Minnesota publishes guidelines on Easter lily production for the approaching Easter season. He discusses timing by the leaf counting procedure, and then lists averages of leaf numbers on 'Ace' and 'Nellie White' lilies for several years. For the last few years he has had asterisks in the table which indicate that there were not enough 'case-cooled' Easter lilies grown in Minnesota to obtain a meaningful average. That is quite a contrast from the situation in North Carolina. We would have to use asterisks in a table to indicate we do not have enough CTF lilies in the state to get a meaningful average.

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Quite a few Easter lily growers in the state did build cold storage units so they could get lily bulbs shipped in in early October, and give the potted plants the 'controlled temperature forcing' treatment. They liked the bud count, plant shape and other traits which resulted from the CTF treatment, but they started to use their cold storage units for bulb crops such as tulips, hyacinths, crocus and daffodils. They no longer had room for the Easter lilies. Our flower growers would like to have Spring-flowering bulbs and Easter lily plants fill the cooler simultaneously but they can't. It is somewhat ironical that A. A. (Gus) De Hertogh, now department head at N. C. State University, did so much to make the CTF Easter lily a reality while he was a researcher at Michigan State University, and now tulips, hyacinths and daffodils, so thoroughly investigated by him, have removed the Easter lily from North Carolina cold storage units.

We get frequent inquiries from growers who are interested in growing Spring-flowering bulb crops for the first time, and questions don't disappear even after they have grown the crops for a year or two. Some of these questions, and our attempts at answers, are discussed below.

What is a good potting mix for bulb crops?

There are several reasons why growers must be particular in their choice of potting media for these crops. The first reason is anchorage. We have used media which were well-drained and of the proper pH but not heavy enough to keep bulbs in place in the pot, once the bulbs were rooted. Plants were actually pushed out of the medium and out of the pots. We then had to place the plants back in the pots and add sand as ballast, both time-consuming and tedious operations. The best solution is to use a medium that is heavy enough to keep the bulbs in place. You do want vigorous root systems, as it is difficult to force high-quality bulb crops if rooting is inadequate.

We did not have to worry about roots pushing bulbs out of the pots when we didn't pay attention to pH of the medium. The mix with a low pH resulted in very poor root systems (Figure 1). Five media are compared in Figure 2. The influences of media on growth and flowering are quite apparent. The medium we now use seems to have the characteristics we desire. It contains equal proportions, on a volume basis, of pine bark humus, sand, acid peat moss and loam soil. We incorporate 10 pounds of dolomitic limestone and 2½ pounds of hydrated lime per cubic yard of mix at time of potting. The pH is approximately 6.2. We have good root growth, good drainage, with no upheaval of plants in this medium.

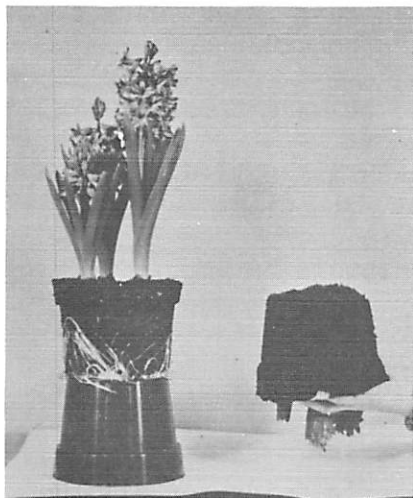


Figure 1. Results of low pH shown on right.

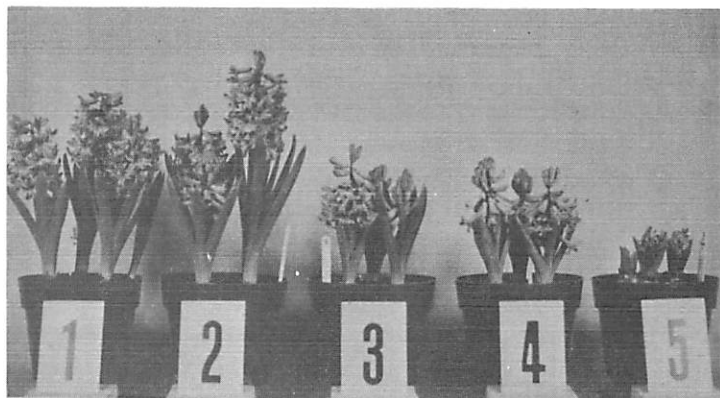


Figure 2. 'Ostara' hyacinths grown in (1) Metro Mix 350; (2) Nova Mix; (3) 3 bark: 1 sand:1 peat; (4) 2 soil:1 peat moss; (5) peat moss.

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How can I control height of spring-flowering bulbs?

Plants which seem to be of the right height while in the greenhouse often do stretch excessively in the home, under reduced light conditions and fairly high temperatures. This is particularly true of tulips. Hyacinths often will fall over as the flower spike elongates, even under greenhouse conditions. Growers would like to have some magical growth regulators which would prevent those things from happening. We have studied height control of tulips and have had no success with A-Rest drench treatments when plants were grown in a medium containing bark (Figure 3), but some control when the medium was primarily soil (Figure 3).

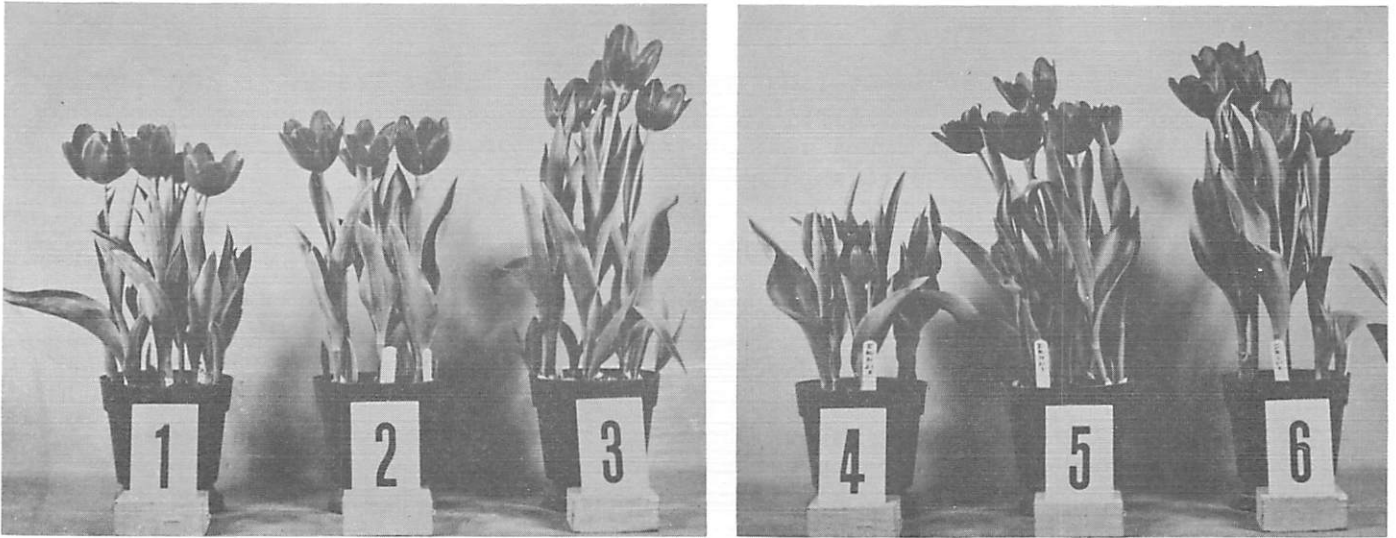


Figure 3. 'Bing Crosby' tulips in a media:height control study. Left photo: Medium was 3 parts pine bark humus:1 part sand:1 part acid peat moss. (1) A-Rest drench; (2) A-Rest spray; (3) Control. Right photo: Medium was 2 parts soil:1 part peat. (4) A-Rest drench; (5) A-Rest spray; (6) Control.

Researchers at the Glasshouse Crops Research Institute in England have reported height control on the varieties Lucky Strike, Apeldoorn and Paul Richter when an A-Rest drench application of 0.625 mg active ingredient was used, one day after forcing started. A 2-day delay in flowering did occur when plants were treated.

The subject of height control of pot tulips is covered very well on pages 90-99 in the Holland Bulb Forcer's Guide (see the page in this issue, with the list of Bulb Information Available). Important points to consider are:

1. Varieties do differ in response so tests should be made prior to further treatment.
2. Medium must be uniformly moist when A-Rest drench is applied.
3. Do not use bark in the potting medium if A-Rest for height control is planned.
4. Four fluid ounces of A-Rest and water solution should be applied to plants in 6-inch pots.
5. A-Rest should be applied 5 to 7 days after forcing has started, if 15 to 16 weeks of cold temperatures were used. Plants exposed to cold temperatures for 17 to 18 weeks can be treated after 1 or 2 days in the greenhouse.

Interested readers should refer to the Holland Bulb Forcer's Guide for all the information on height control of tulips.

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Stem topple of hyacinths can make plants unsalable for any market (Figure 4). Florel (ethephon) now has label clearance, to help reduce this problem. Details are listed in Bulletin 10 published by The Netherlands Flower-Bulb Institute. Some of the guidelines are:

1. Growers using Florel for the first time on hyacinths should try it on only a portion of the crop, because of variety differences and because of different forcing procedures practiced by growers.
2. Use either 1000 or 2000 ppm, spraying to run-off.
3. Florel should be used within 4 hours after mixing as the solution may change, particularly if the water is acidic.
4. Florets must not show color when the spray is applied, as Florel can cause the florets to age prematurely. Leaves and/or floral stalk should be 3 to 4 inches long. Foliage should be dry, and a late afternoon application is recommended. Foliage should not be moistened for 12 hours after application. The greenhouse should be well-ventilated (60-70°F).
5. Recommended Florel concentrations can be achieved with the following dilutions:

1000 ppm Ethephon	1/2 pint Florel diluted to 2.5 gallons with water
2000 ppm Ethephon	1 pint Florel diluted to 2.5 gallons with water

This quantity of solution will treat 500 6-inch pots. Approximately 0.5 oz (14 ml) of spray will cover 3 hyacinths in a 6-inch pot.

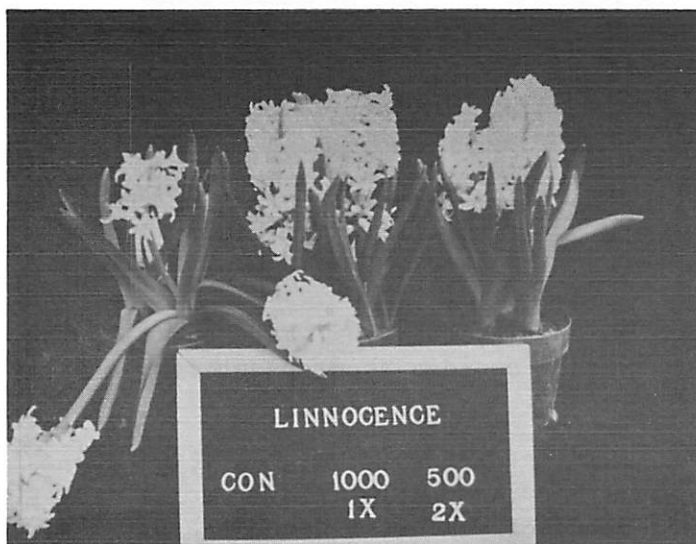


Figure 4. Stem topple of hyacinths. This problem can be reduced with Florel.

The Florel requirements for 19 hyacinth varieties are listed in Table II in Bulletin 10 referred to above. Varieties such as 'Anna Marie' require single applications of 1000 ppm for flowering periods H-1 through H-4, while 'Delft Blue' requires double applications of 2000 ppm for flowering periods H-1 through H-5. Readers should refer to that publication for more details.

Florel also is cleared for use as a growth retardant on potted daffodils. Treatment procedures are similar as for hyacinths, except leaves and/or floral stalk should be 4 to 5 inches long. Varieties do differ in Florel requirements and response, and that information is also contained in Bulletin #10.

What tulip varieties are good for pot plant production?

Growers frequently ask this question, particularly if they want to offer an assortment of colors. We have evaluated varieties for 3 years. Karen

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Satterwhite (Figure 5) evaluated 14 varieties last year when she was a senior in floriculture at N. C. State University. Numerous plant characteristics were considered in the evaluation. Karen listed the following varieties as

Figure 5. Karen Satterwhite took a close look at bulb varieties in 1981-82.



promising. Cost prohibited the use of colored photographs, but hopefully the black and white pictures will give the reader an idea about plant form and attractiveness.

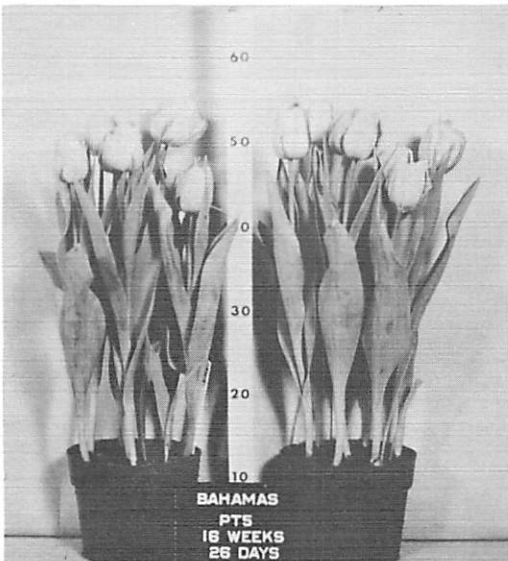


Figure 6. "Bahamas"

"Bahamas" (Figure 6): This variety has an unusual but interesting flower color. It is a blend of yellow, red and peach. The flowers are large and long-lasting. Satisfactory for PT-5 to PT-7.

"Etude": This variety has excellent potential as a pot tulip. It seems suitable for 4" pots. Satisfactory for PT-3 to PT-7.

"Frankfurt": It might be too tall for a pot plant but it is a good red tulip. Cut flowers lasted 7 days. Satisfactory for PT-3 to PT-7.

"High Noon": A very good pink and white bi-color pot tulip. The flowers remain cupped. Abundant foliage make the plants very attractive.

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"Ile de France" (Figure 7): This is an excellent deep red variety but it is too tall as a pot plant without height control. Cut flowers lasted for 7 days.

"Margot Fonteyn" (Figure 8): This variety is short, stocky with orange and yellow flowers. Flowers do not last as long as "Etude".

"Negrita" (Figure 9): This variety perhaps is too tall as a pot plant but the purple flowers are attractive. It is fragrant, and the flowers are long-lasting (approximately 8 days).

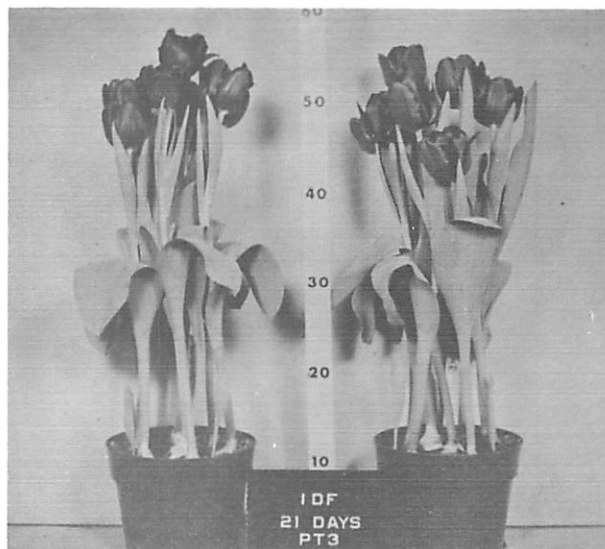


Figure 7. "Ile de France"

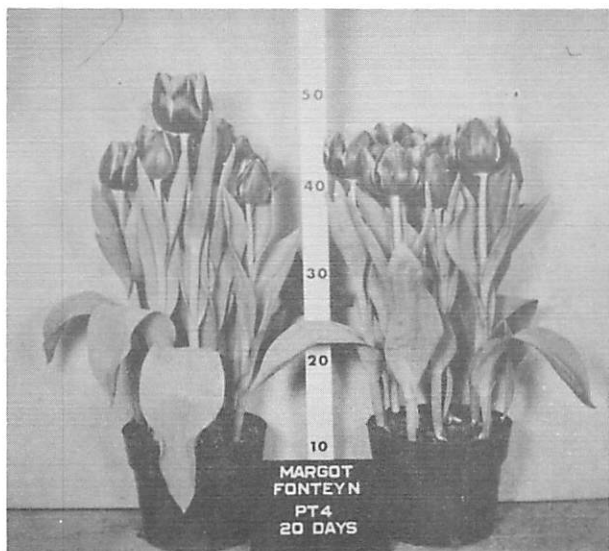


Figure 8. "Margot Fonteyn"

"Varinas": This variety was one of the best in the evaluation study in 1981-82. It has a tendency to have more than one flower per bulb, so plants are very floriferous. Flowers are mauve-colored.

Some varieties are very attractive in the greenhouse, and seem to be suitable as pot tulips. Some undesirable trait then surfaces. The variety Ad Rem (Figure 10) appeared to be very acceptable as a pot tulip, but the flowers collapsed just when a grower would have been ready to send plants to market. Flowers on the variety Grevel were concealed in the foliage, so we didn't consider it as an acceptable variety for pot tulip forcing. Some varieties, such as "High Society" and "Mexico" were too subject to disease. Stem topple was severe on the variety "White Dream".



Figure 9. "Negrita"

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