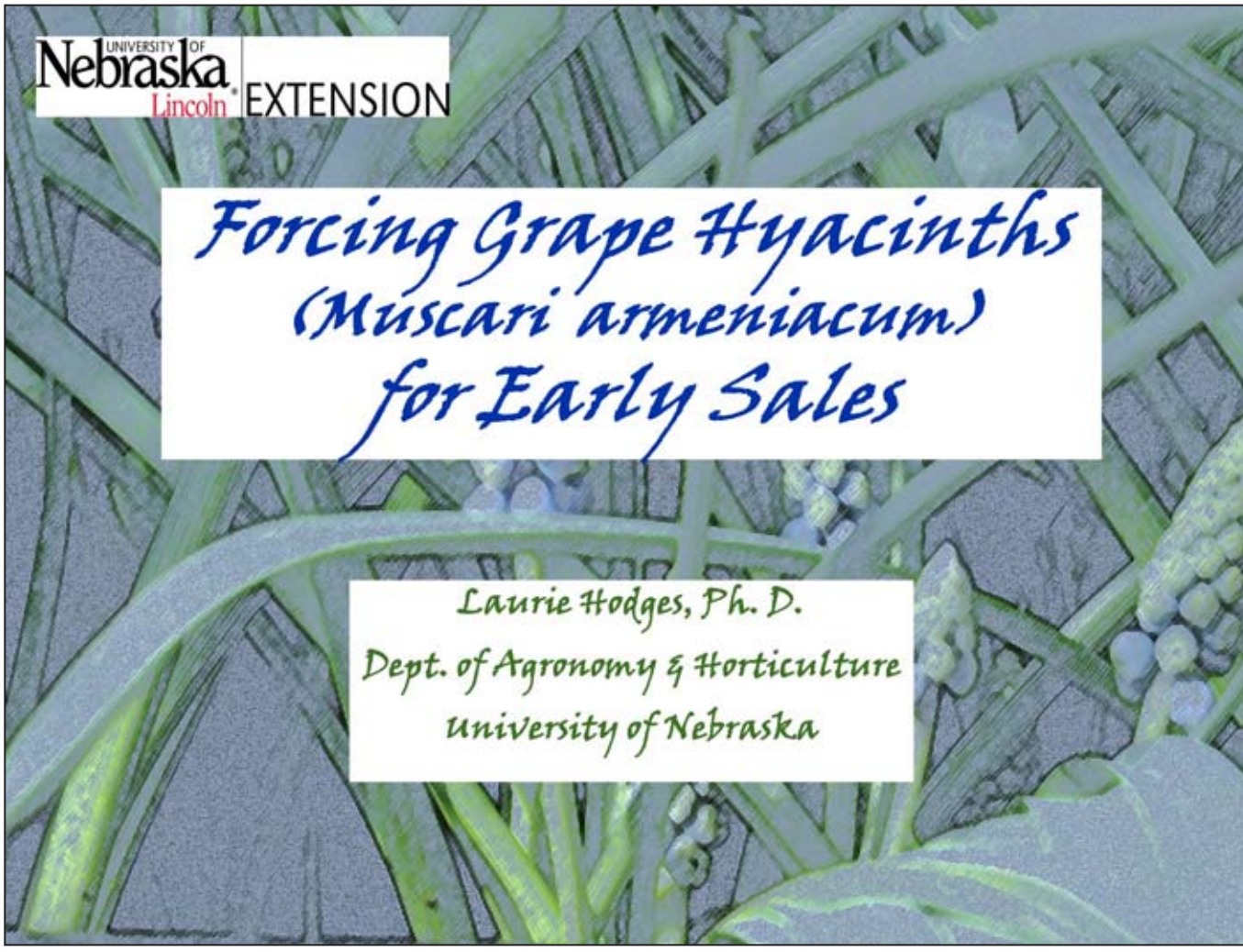
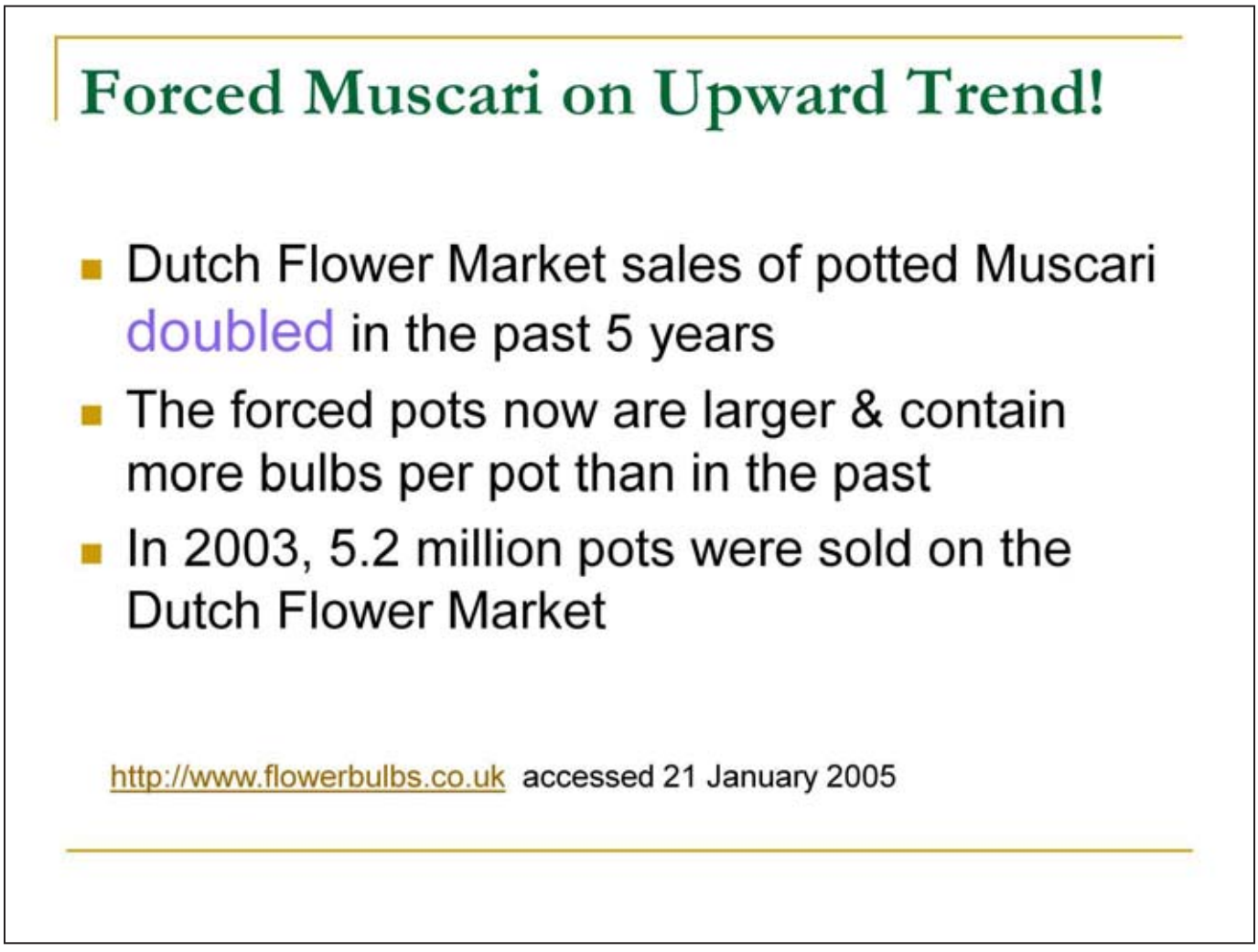


Hello. My name is Laurie Hodges and this presentation is on forcing Grape Hyacinths for early spring sales. The general methods can be used by those who want to force small pots for the home as well as those with commercial interest.



In the past five years, sales of forced grape hyacinths have doubled reflecting the growing interest in flowering bulbs by consumers. As design trends emphasize blocks of color, the forced pots are now larger and contain more bulbs than in the past.

Many small-scale growers are not aware of the ease of forcing grape hyacinths for early spring. They are the easiest of the small bulbs to force. Although bunched Muscari are available at the larger wholesale flower markets in the United States, and are available year around from Holland, wholesale florists may not make them available to the local florists. Small pots of Muscari sometimes are available through the big box stores, but quality may be low.

Forced Grape Hyacinths (*Muscari* sp.) Advantages for Grower

- Predictable scheduling
- Ease of transport
  - from rooting to holding
  - holding to forcing
  - transport to florist
- Labor savings
  - Florist can harvest stems as needed
- Cost effective with good mark-up potential

Forced grape hyacinths have many advantages for local production by small-scale growers. They are the most predictable of the forced bulb crops. The system I'll describe later is one that is very easy to move from place to place without damaging the crop. It saves grower labor and is very cost effective with good profit potential. This is based on our experience in Lincoln, Nebraska, USDA hardiness zone 5b.

Forced Grape Hyacinths (*Muscari* sp.) Advantages to Florist

- Harvest number and size of stems as needed
- Extended vase life
- Can re-pot into containers appropriate for the occasion
- Entire flat can be used for one event, and stems cut later for another use
- Convenient, eye-catching display item with fragrance
- Not paying for container (re-cycled to grower)

The system also has advantages for the florist.

He can harvest the number of stems at the stage of development needed for each design.

Since the flowers are harvested as needed, the flower life is longer than when bunched stems are taken to the florist.

The florist can re-pot into containers appropriate for the occasion or decorate the flat as desired. The florist may be able to sell the same stems twice by using the entire flat in an event and then cutting stems for bouquets. Also, one of the latest trends in floral design is to showcase the bulb and roots in a glass container. With care, the plants can be separated and used in this manner.

A container filled with 60 grape hyacinths in bloom catches the eye and the flowers of the species and several cultivars have a fragrance similar to grape juice.

The biggest advantage to the florist is that she is not paying for a container or the grower's labor to harvest and bunch individual stems.

The System

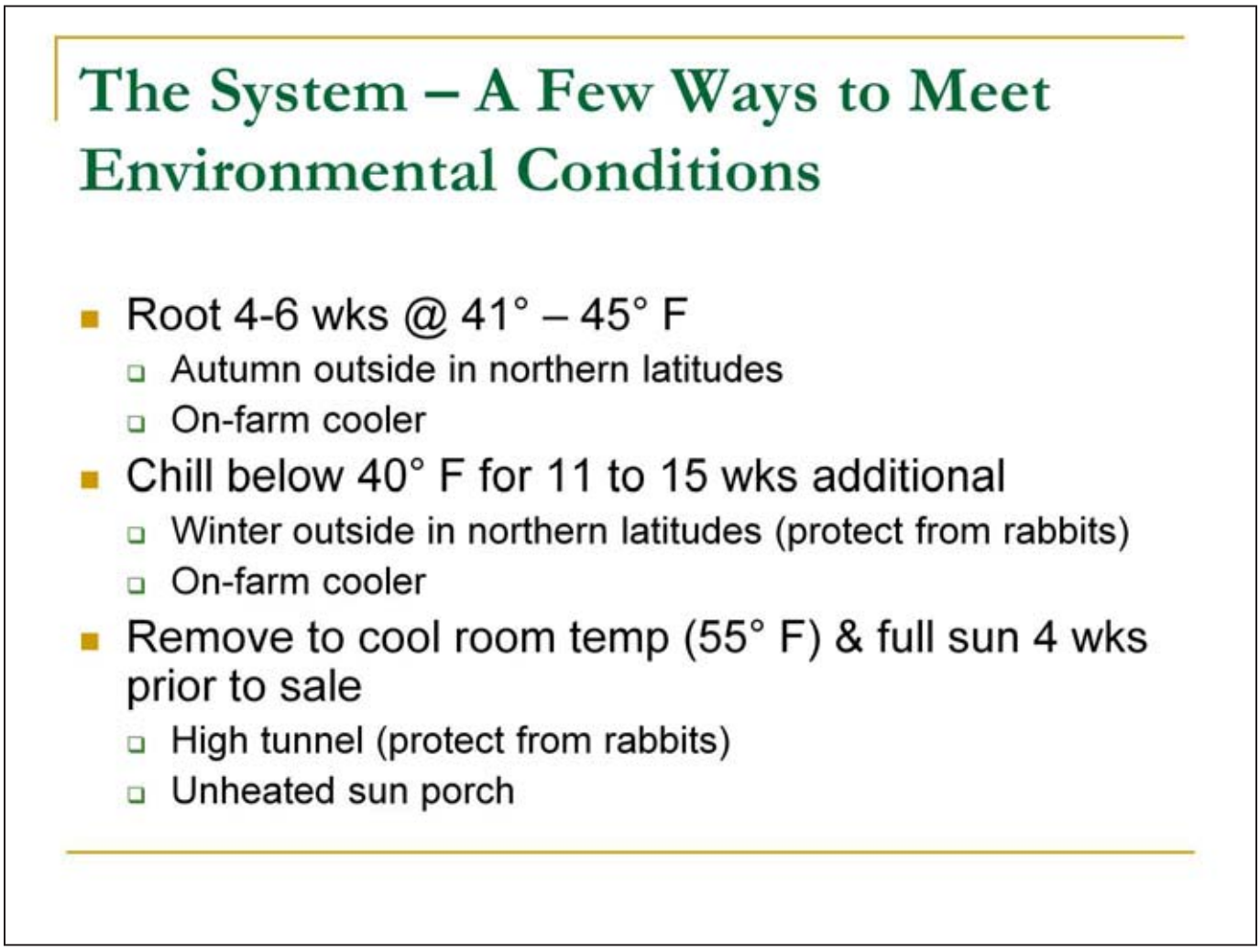
- 14 x 20 x 4 inch hard plastic flat
- Soil-less potting media
- 60 bulbs/flat Muscari armeniacum
- Root 4-6 wks @ 41° – 45° F (outdoors or cooler)
- Chill below 40° F for 11 to 15 wks additional
- Remove to cool room temp (55° F) & full sun 4 wks prior to sale

The picture shows the heavy black plastic flat we used. The trade name is “Dynaflat”. It has numerous small holes in the bottom for root aeration and drainage.

We filled the flat with about 2 inches of soil-less potting mix, planted 4 rows of 15 bulbs for a total of 60 bulbs in the flat and covered the bulbs with more potting mix. They were watered and placed in a cooler to root and then moved to a cold room for 11 to 15 weeks of chilling below 40 degrees. After the chilling, flats were moved to a cool, sunny area for flower development. Our florist wanted the plants to have the inflorescence just emerging rather than a fully emerged flower stalk. This made it even easier for us as we could move the plants quickly.

We wanted the foliage to look lush, like grass. If you want to avoid the long leaves which can conceal the early development of the flowers, most of the cold treatment can be given before planting. There is no cold requirement for leaf growth, so they start to elongate at planting. If you don’t want a lot of leaves, chill the bulbs below 40 degrees for at least 9 or 10 weeks. Then plant the bulbs and let root at about 45 F or below for a at least 6 weeks for a total of not less than 15 weeks before moving them to warmer conditions, about 55 degrees, to initiate flowers. For best color development of the flowers, high light is necessary.

Rees, A. R. 1992. Ornamental Bulbs, Corms and Tubers. p. 161.Chapter 6. CAB International. Wallingford, Oxon, UK



Growers often have all the conditions necessary to force Muscari already in place – a cool area for rooting the bulbs, a cold area for chilling the bulbs, and a moderately cool, well-lit area to force the flower stems.

For example, here in Nebraska, outdoors in the late fall would provide good rooting conditions or you could use your on-farm cooler or a refrigerator to root the bulbs. For the chilling period, either lower the temperature of the cooler or place outdoors if your weather is consistently cold during December and January. A high tunnel may be an excellent place to force the flowers, or even an unheated sun porch or breezeway.

Flats should be checked every week or two during the rooting and chilling time to be sure they stay evenly moist. A fungicide drench can be applied at planting, such as Banrot or Terrachlor/Subdue, to control Fusarium, Penicillium, and Botrytis. To control root and bulb rot, organic growers could select one the biological control agents approved by their certifying organization. We have used commercial OMRI certified products containing Trichoderma harzianum or Bacillus subtilis.

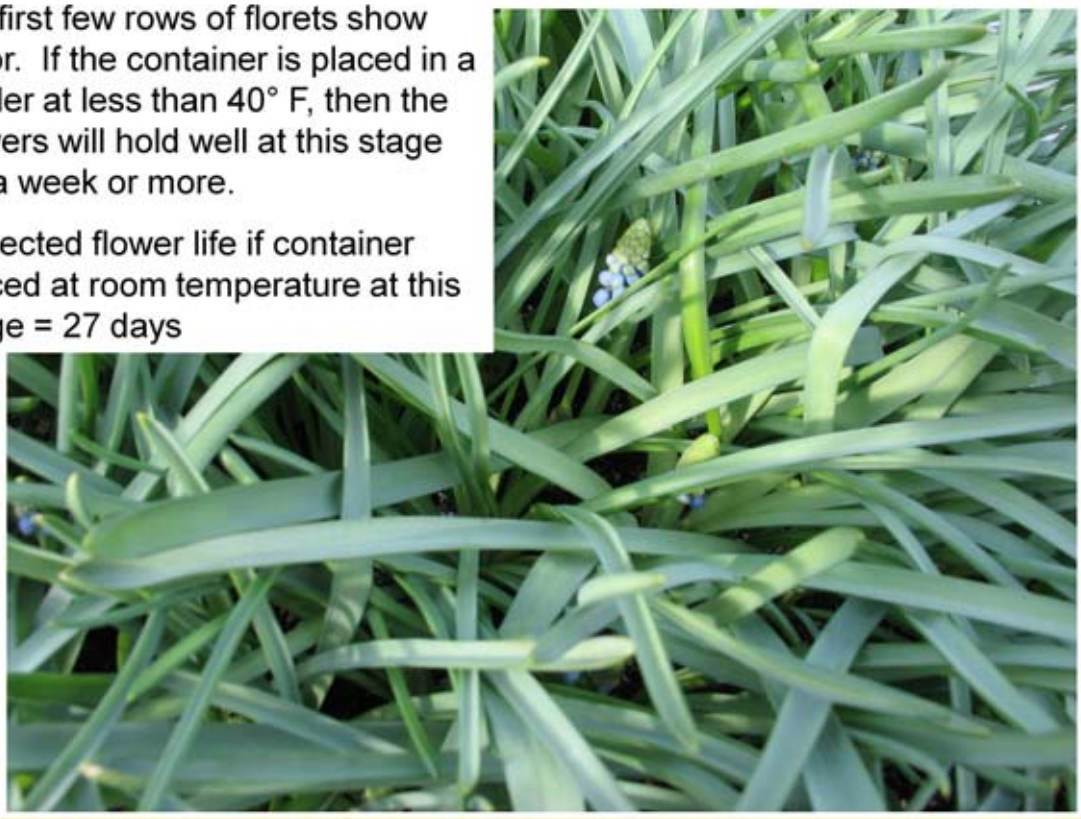
Forced Muscari Spring 2004

- 14 x 20 in Dynaflat with 60 Muscari (4 rows of 15), 4 weeks after removing from 34° F cooler

This shows a flat 4 weeks after removing from the chilling conditions. You can see the green cone-shaped budded inflorescence in the lower left side of this picture.

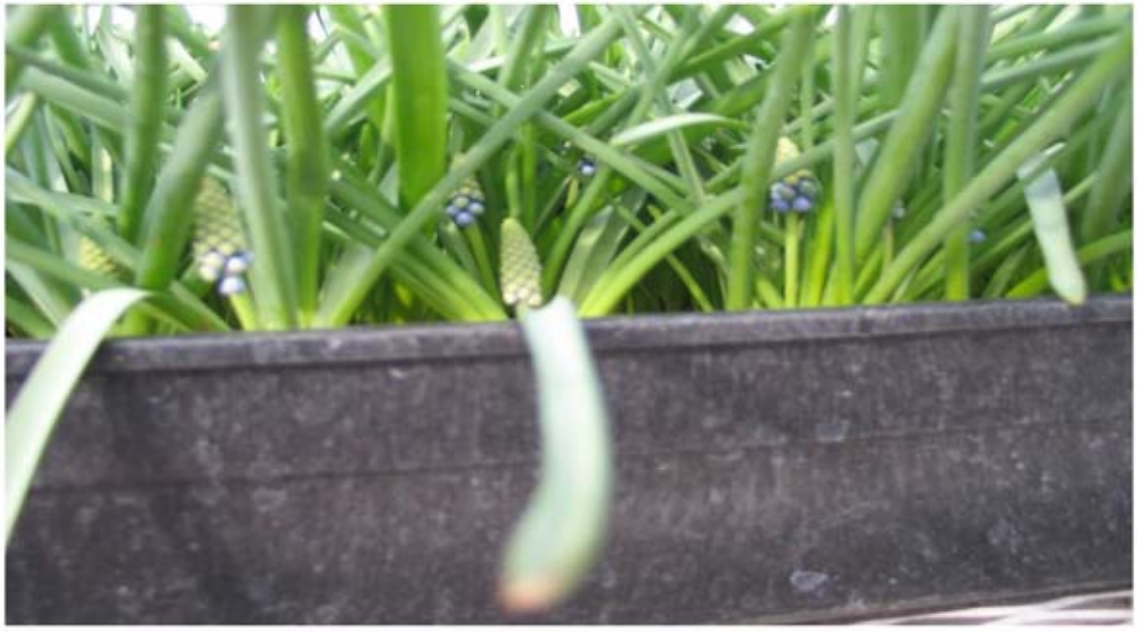
The muscari are marketable when the first few rows of florets show color. If the container is placed in a cooler at less than 40° F, then the flowers will hold well at this stage for a week or more.

Expected flower life if container placed at room temperature at this stage = 27 days

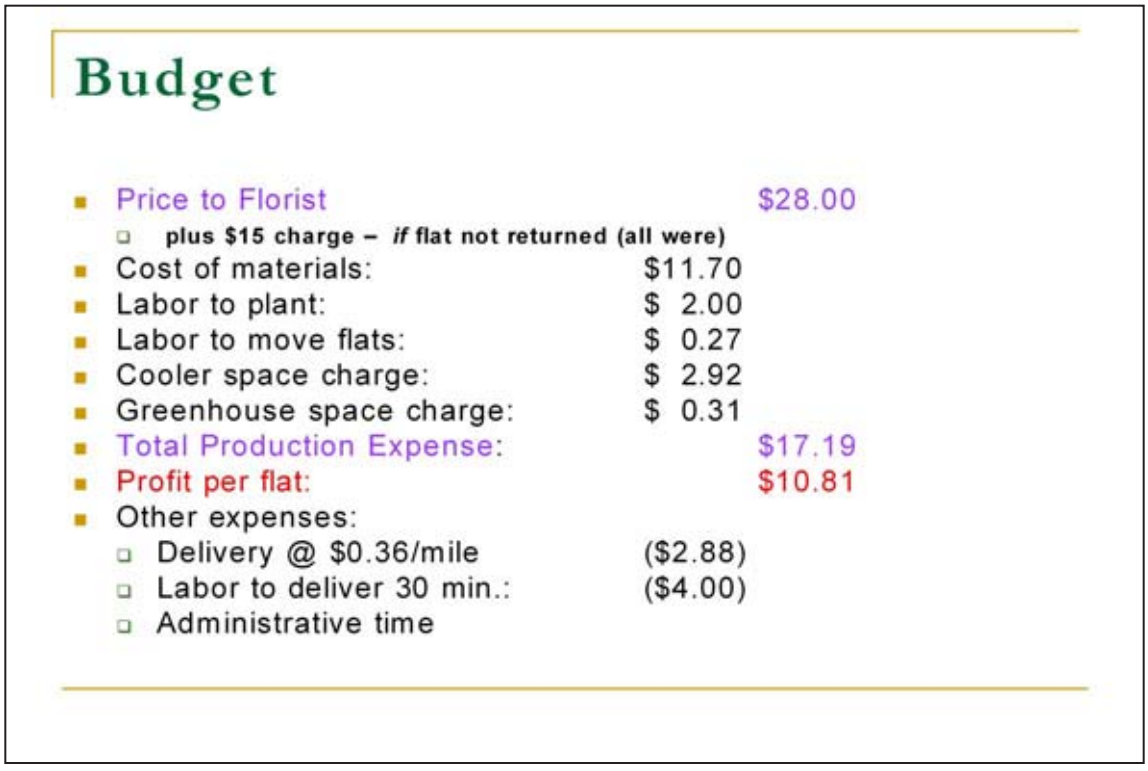


The Muscari are marketable when the first few rows of florets show color. If the container is placed in a cooler at less than 40° F at this stage of growth, then the flowers will hold well for a week or more. If the container is placed at room temperature at this stage, the expected flower life is 27 days.

Although small, each bulb is producing one or more flowering stems A larger sized bulb (10/11 cm diameter) was ordered, which was expected to produce 3 flowers per bulb, which was true. Florists were amazed at productivity.



Although small, each bulb is producing one or more flowering stems. The standard bulb size is a 9/10 which was priced at 11 cents each. We ordered a larger size (10/11 cm diameter) was ordered at 15 cents each, which was expected to produce 3 flowers per bulb, which was true. We actually averaged 5 stems per bulb. Florists were amazed at productivity.



Can we make money at this?

We sold the flats for $28.00 each, although as you'll see on the next slide, I think we could easily raise the price based on value to the florist. The value to the florist will vary with the dynamics of each particular market so you'll want to see what your market can bear. At this time, no one was supplying grape hyacinths to florists in eastern Nebraska so opportunity knocked!

The cost of materials includes bulbs, potting mix, fungicide treatment, and a pot label.

Labor is based on $8.00/hr. Time to plant per flat= 15 min; time to move per flat= 2 min.

Cooler space charge was estimated as the equivalent of one day cooling costs associated with a typical small-farm walk-in cooler or $2.92/day. If allocated on a per unit or per flat basis, it would probably be much less. You can figure your costs by taking the electrical cost to run the cooler for one week, multiply by the number of weeks of cooling, and divide by the total number of containers in the cooler during that period. Muscari require 15 to 20 weeks of cooling. Of course, if you are not using a cooler, then this is not an expense.

My actual greenhouse rental space for the square footage of the one flat.

So the sale price was $28.00, production expenses were $17.19 for a gross profit per flat of $10.81 for a gross profit margin of roughly 38 percent.

There are of course other expenses associated with producing and selling the crop. Our delivery was 8 miles round trip and I estimated that the total trip takes 24 minutes plus 6 minutes to load & drop a flat off & prepare the invoice for the florist.

Other administrative time might include ordering supplies, crop scheduling, pre-selling or marketing, and preparing invoices or billing. Undocumented labor time might include preparing to plant by organizing supplies, cleaning up or preparing solutions.

Value to Florist

- Estimated number of stems: 120+
- Wholesale to florist price/stem: $ 0.35
- Minimum stem value: $ 42.00
- Ready to go to event
  - Decorate flat; re-pot bulbs; cut stems
  - Can re-use plants (multiple charges for same flower)
- Continuous emergence with some control of timing
- Cut as needed with guaranteed freshness
- No fussy environmental conditions required
- "Last for weeks"

The bulbs purchased were supposed to produce 2 to 3 stems/bulb. Conservatively, if the each bulb produced two stems, the florist would have 120 stems to work with. The wholesale price to the florist based on the San Francisco Terminal Market Report price of 35 cents per stem, gives a stem value of $42.00.

However, forced potted muscari have value to the florist beyond just the number of stems. You have something that is basically ready to go to an event and that requires very little on the part of the florist. Flowers will continue to emerge and these can be harvested as needed. The flats can be kept in the florist cooler or in a window of the shop. The best part is that it "lasts for weeks."

Instructions for Florist

- Keep potting mix like a slightly moist sponge
- Provide ample light for best color – sunny window is fine
- Higher temperatures = faster emergence & more stem elongation, shorter flower life
- Can hold in coldest cooler or outside (35° F)
- Avoid ethylene
- Pull stems from the bulbs for maximum stem length rather than cutting stems
- Stems continue to elongate after harvest when kept at room temperature
- Use a commercial flower preservative for long vase life
- Avoid ethylene

Florists generally appreciate information on how best to handle a flower. Here are some guidelines:

A similar practice was successful with the small daffodil ‘Tete-a-tete’. The name is French for “Head to Head” as there are two flowers per stem which appear to be talking to each other. On most of the stems in this picture the second flower has not yet opened.

2004 - 2005 Changes

- Grow in Re-Creations™ Designer #11 Bowls & Bricks
  - More decorative
  - Direct to retail customer
  - Easier for customer to manage drainage
  - Fewer bulbs/container
  - Cost of container - adjust price to maintain profit
- Other cultivars and small bulbs

Pots were planted Oct 1, 2004. Photos were taken Dec. 19, 2004. On the smaller bricks shown on the top photo, which are about 9" x 5", break-even is about $7.50 and for the larger #11 Designer Bowls, break-even is about $11.00 when planted with grape hyacinths. The difference is in the number of bulbs in relation to the container cost, something that is not a factor in the returnable plastic flats. However, the market or customer use of each is different.

Estimate of Actual Price per ReCreations Brick 2005			
Recreations Brick @ 1.44 to 2.20 (used $1.66 price)			**$ 1.66**
potting mix for 41 sq. inches, est. 2" deep or 82 cu inch			$ 0.13
muscari bulbs 9 bulbs@ 0.15	$ 1.35		
shipping on bulbs			
Banrot	$ 0.03		
total materials cost:	$ 1.51		
Labor to plant 1 flat 15 min	$ 2.00		
Labor to move 1 flat 2 min	$ 0.27		
cooler space	$ 2.92		
greenhouse bench space per brick per 4 wks			$ 0.04
subtotal production space	$ 2.96		
subtotal production costs per brick	$ 6.74		
Pre-delivery profit if 2.5X:	$ 16.85		
Profit per brick if sold to florist for $15.00			$ 8.26
Delivery roundtrip = 8 miles 24 minutes	$ 2.88		
Delivery time = 24 minutes round trip + 6 min to drop off			$ 4.00
Estimated price to produce & market Recreations Brick Standard Muscari			**$ 7.43**
Muscari 'Valerie Finnis', a pale light blue grape hyacinth			**$ 8.33**

Estimate of Production Costs for each ReCreations #11 Design Bowl 2005 prices

Recreations #11 Bowl @ 5.60		$ 5.60
Potting mix for bowl = 0.74 cu. Ft or X gal @36 cents/gal		$ 1.99
Muscari bulbs 20 bulbs@ 0.15		$ 3.00
shipping on bulbs ?		
Banrot $ 0.03		
total materials cost:		$ 5.02
Labor to plant 1 flat 15 min		$ 2.00
Labor to move 1 flat 2 min		$ 0.27
Cooler space		$ 2.92
Greenhouse bench space per brick per 4 wks		$ 0.10
Subtotal production space		$ 3.02
Subtotal production costs per Bowl		**$ 10.31**
Pre-delivery profit if 2.5X =$25.77		
Profit per bowl if sold for $25.	**$ 14.69**	
Delivery round trip = 8 miles 24 minutes	$ 2.88	
Delivery time = 24 minutes round trip		
+ 6 min to drop off	$ 4.00	

Estimate to produce & market Recreations #11 Bowl with Standard Muscari $ 11.00
Valerie Finnis $ 13.00

What we found was that it was hard to market the bowls at the price point we wanted in our market. In a high end market or selling direct to the end customer, the use of the ornamental bowls may be more promising. Another possibility is custom growing the pots as pre-sold for a spring event.

A Few of the Many Sources for Supplies

- Bulbs – many wholesale suppliers
  - www.DeVroomen.com
  - www.bulbmark.com
- Heavy plastic flats with holes in bottom (Dynaflats™)
  - www.hummert.com

Dynaflats come with either solid bottoms or with holes. For good root growth and root aeration, the container must be well drained and have air holes. The Dynaflats are expensive, but they will last forever and you'll find many other uses for them.

Thank you for your interest in this presentation and the research projects here at the University of Nebraska. If you have questions or comments, I can be contacted by e-mail to LHodges1@unl.edu.

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