



Greenhouse TPM/IPM Weekly Report
University of Maryland Cooperative Extension
Central Maryland Research and Education Center

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The Association of Specialty Cut Flower Growers held its Mid-Atlantic Regional Meeting on July 28th at Oregon Ridge Park in Cockeysville, MD. Speakers included Bob Wollam, Wollam Gardens, Ko Klaver, Zabo Plant, and Dave Dowling, Farmhouse Flowers and Plants. The meeting ended with a tour of Mel Heath's operation, Bridge Farm Nursery. The following day, the University of Maryland Cooperative Extension organized tours of Harman's Farm Market and Brad's Produce in Churchville, MD.



Harman's Farm Market

Bob Wollam, Wollam Gardens

Bob opened the program stating that 80% of the cut flowers sold in the US are imported from overseas, another 10% come from California, and only the remaining 10% are being locally grown. He sees this as a great opportunity for growth, especially at a time when the demand for locally grown products is increasing. It means that there is the potential for cut flower growers to get \$9 more out of every \$10 being spent on cut flowers. He suggested that growers focus their attention on flowers that they can get \$1.50 or more per stem and that they put more emphasis on more unusual, high quality cuts that will go for \$2 or \$3 per stem.

Some plants that Bob showcased from his own farm were:

- Gladiolus 'Boone' is an apricot colored miniature gladiolus from Barry Glick at Sunshine Farm and Gardens.
- Cardoon (*Cynara cardunculus*), also known as artichoke thistle, is a member of the Aster family. It can be used in dried arrangements.
- Guardian series hybrid seed delphiniums. He sows the seed in January and plants the plugs out on fabric in the hoop house in mid-March. He starts cutting them in late April and harvests for up to two months.
- Double *Rudbeckia laciniata* resembles a coreopsis or helianthus. This perennial is easy to grow and will get very tall.
- Himalayan honeysuckle (*Leycesteria formosa*) is a fast-growing woody plant that makes a good filler. It can be cut down to 6" and will grow up to 6' over the course of one season. You can

get up to three weeks of vase life, but cut it before it gets berries. The purple berries, which resemble those of pokeweed, will drop and stain your customers' tablecloths.

Ko Klaver, Zabo Plant, Flower Bulbs and Perennials

Ko reminded the group that bulbs are like people because they need to 'breathe'! The first few weeks of bulb handling are the most important. When the box arrives, open it and place it in a barn or cooler for slow thawing. Plant the bulbs within three weeks of receipt, or you will start to lose quality. If you let the bulbs dry out in storage or in the field you will lose flower buds. It's still too hot to plant bulbs until late October or early November. You want the soil temperature to be at 55° F or below.



When growing tulips, it is always best to go with larger bulbs. You want your blooms to be bigger than the ones available at the grocery store. The large producers generally use smaller bulbs so they can pack them in tight to grow more per square foot and turn them over faster. Ko recommends that you stagger your planting in thirds so that all of the flowers aren't coming on at once. Space the bulbs 0.5- 1" apart and plant about 4-6" deep. You want the bulbs to be at least 4" deep because the top 3" of the soil has large fluctuations in temperature which can interrupt the required cooling period (generally 14-16 weeks). You can use a pre-emergent herbicide, as long as it is applied early enough in the season (February) before the bulbs are coming up!

Ko suggests using a 50% shade cloth for summer lily production to get good stem length (30% shade is not enough). The price that you can get per stem compared to cost of the bulbs definitely makes the shade cloth investment worthwhile. You don't want to handle lilies when the temperature is above 80°F or you will bruise the buds. Cool the flowers slowly, don't place them directly into the cooler. You need to have good rooting on the lily bulbs before the shoots emerge. Growing them in a cool rooting room is best. Lilies are light feeders (EC of 0.8-1.2). Be aware that lilies will yellow slightly when the buds are being set because the plant is putting so many resources into forming them.

Dave Dowling, Farmhouse Flowers and Plants

Dave said that you may want to think about investing in a cooler when you begin selling at more than one market or when you start to hire employees. A cooler allows you to harvest your flowers at their peak and hold them until market or delivery day. Traditional walk-in coolers are expensive because you need a refrigeration technician to install and repair them.

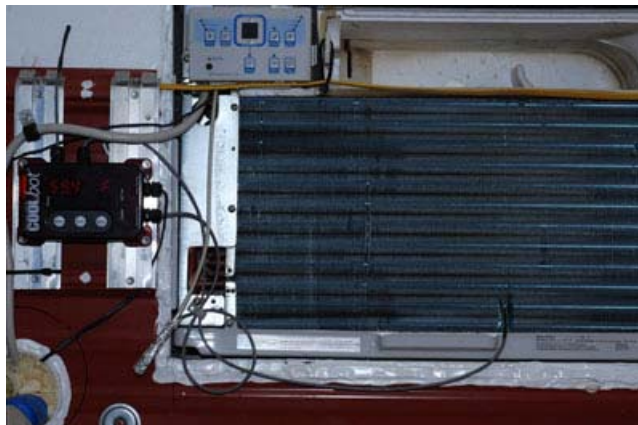
The USDA published instructions on how to retrofit an air conditioner to create a lower cost cooler. The problem with this system was that it required constant adjustments and oftentimes the air conditioner unit would freeze up. Now there is a product on the market called CoolBot which keeps the air conditioner from freezing up. With the CoolBot you don't have to modify the AC unit like you did before, so the warranty is still good.

Dave has put together a handout on How to Build a CoolBot Floral Cooler. In the handout, he explains that the “CoolBot uses a small heater that attaches to the AC unit’s thermometer and a frost probe that is inserted into the fins on the front of the unit. While the small heater calls for the AC unit to cool, the frost sensor will turn off the AC unit if it starts to freeze up.”

The CoolBot currently costs about \$300, and air conditioners are between \$300-\$400 depending on the size that you will need. For coolers from 6x8 up to 10x14 the size of the unit required ranges from 10,000 to 25,000 btu. When you purchase a larger air conditioner, often it will come with a 5 year in-home service plan. Some air conditioners don’t work as well with the CoolBot, however Samsung and LG models do. Dave also recommended checking out the end of summer sales for air conditioners.

The company’s brochure states that “Coolbot saves on installation, repair costs, and electricity.

When combined with Energy Star air conditioners, your operating costs are lowered by 50% compared to conventional compressors.” Check out their website: www.storeitcold.com or call 888-971-5723 for more information.



CoolBot unit on the left of air conditioner

Some other cooler tips from Dave:

- Use outdoor weather-resistant lights inside the cooler’s high humidity environment
- Put the light switch on the outside of the cooler so you don’t have to open the door to know whether or not the light is on.
- Put outlets on the outside of the cooler too so that you have more receptacles
- Coolbot has a thermometer that displays the current temperature, but it’s also a good idea to install a recording indoor/outdoor thermometer to know what the highs and lows were both inside and outside of the cooler without ever having to open the door.
- It’s very important that the cooler is airtight and insulated, including the floor. The floor must also be able to support heavy buckets. Metal floors are good for sliding buckets around and handling spills- you don’t ever want water to leak through to your insulation.
- Clean your cooler periodically with bleach water to prevent Botrytis.
- Get refrigerator shelving that won’t rust to increase your available cooler space.
- Be on the lookout for used coolers at restaurant auctions and florists that are going out of business. The fan on the air conditioner will always be running, so have it blow down the center aisle over the top of flowers and not directly on them if possible.
- It is crucial that the cooler be insulated with R-25 for the walls and R-35 for the floor. The cooler should be airtight with all seams caulked and weather stripping on the door.
- You can also use plastic curtains on the door, but they may get in your way and bang up the flowers as you carry them in and out. They might not be worth it when you take into consideration that the cooler only takes about 10 minutes to cool back down anyway.
- Dave recommends building the cooler at least 8 feet wide and 8 feet high. The length will depend on your specific needs. Multiples of 2 feet or 4 feet will make the most efficient use of your materials.

Mel Heath, Bridge Farm Nursery

Everyone commented on how neat and manicured Mel's farm looks. One reason for this is that he has grass strips between the rows to prevent problems with dust and erosion. That way if the stems touch the ground when it rains, they stay clean and are still marketable.



Mel has a professionally installed cooler with a compressor system. He said that it is costing 1/3-1/2 more to run it now with the increase in electric prices.

Mel fertilizes his newly planted annuals once with 20-20-20 through the irrigation system to get them going. Then he uses Omega foliar feed once a week for the rest of the season.

Mel has two Birchmeier backpack sprayers- he uses a separate one for herbicides. You can add a pressure regulator to pump type sprayers like this to ensure even coverage.

Mel uses plugs for everything. He plants in 6-9" raised beds and uses 3 mil plastic which lasts for 3 years rather than the 1.0 or 1.5 mil plastic. Mel commented that, while having a plastic mulch layer does make life much easier, it doesn't always do such a great job of covering the sides of the plastic with soil, especially when you're on a slope. You will need to have a minimum of a 46 horse power tractor for pulling the bed former and plastic laying equipment.

Some flowers Mel is growing at his farm include:

Peonies- when buying peonies, the number of eyes is more important than the size of the root system. You want to have at least 3-5 eyes per plant. Mel only irrigates his peonies when they are young- they mature in about 4-5 years. He recommends growing early and late season varieties so they don't all come in at once. Mel begins cutting his peonies back in September. He said that he does not get too concerned about the *Cladosporium* leaf spot that peonies sometimes get during the summer months after the crop has been harvested.



Cladosporium leaf spot on peony

Plant *Crocosmia* 'Lucifer' in the fall to get the roots established, otherwise they will freeze. The corms should be planted about 6" apart and 4" deep. He orders his *Crocosmia* from Choice Bulbs.

Hydrangeas- Mel grows quite a few of the ‘Limelight’ and ‘Annabelle’ varieties. He said that ‘Annabelle’ was larger this year because of all the rain we had. He also noted that his foxtail lilies (*Eremurus*) were better this year because of the rain.

Millet- Mel grows ‘Purple Majesty’ and ‘Purple Mist’. He cuts disks from the seed heads and uses those to grow his own plugs.

Bletilla- Chinese ground orchid. This is a semi-hardy perennial and should be mulched for overwintering.



‘Annabelle’ hydrangea’

Mel recommends watering Nandina regularly to keep the berries from dropping. This plant can be grown for the foliage too.

Mel really likes sterile *Viburnum opulus* ‘Roseum’ because it can be harvested at three different stages. He sells it early in the season with many small green balls on a stem, then half green and half white, and finally the larger all white flowers. It is a very productive crop- he gets over \$1 per stem to the florists for a solid month. He cuts them 1 foot from the ground in the spring after he has sold the last one.

Variegated Soloman’s seal- Mel sells this for \$1 per stem to florists. They like to use it for making boutonnieres. His got hit hard by slugs this year though. He gets the tubers from Walter’s Gardens.



Variegated Soloman’s Seal

Lisianthus- when there are 3 flowers open on a stem, Mel pulls the entire plant up from the ground. He says that it’s much faster to harvest them that way.

Delphinium- Mel likes ‘Magic Fountains’ because they don’t need netting. He plants them in late February or early March. He recommends having irrigation on them.

Viburnum setigerum- the orange berries are harvested from September through October.

Phlox- white ‘David’ is mildew resistant, but Mel says the deer at his place love it.

Baptisia- this plant can be grown for the flowers, foliage, and seed pods. The white varieties are much slower to establish than the regular false indigo. Mel also grows the creamy yellow ‘Carolina Moonlight’.



Viburnum setigerum

Sedum 'Neon' and 'Autumn Beauty' (selection of 'Autumn Joy'). Florists like these just as they start to turn pink.

Annual blue salvia- Mel says that this can actually be overwintered for a second year. After the flowers begin to turn brown, they can still be cut and used for drying.

Eupatorium 'Little Joe' Joe Pye weed. Mel likes this one and says that it can take a little frost.

Asclepias- in addition to *Asclepias tuberosa* Mel also grows *A. incarnata* 'Ice Ballet' (white) and 'Soulmate' (pink). These should be harvested as early in the morning as possible and put in hot water. This is also true of other sap producing plants like Euphorbia.

German bearded iris- Mel loves these and said that everyone should try growing them.



Eupatorium 'Little Joe'

Dahlias- Bill Preston said that you can plant dahlias up until July 1. However, June 15th is safer because of the danger of frost. The earliest recent frosts have been from Oct 3rd-Oct 13th. You don't pinch Karma dahlias but you should disbud them up until 3 weeks before harvest. Mel will net his dahlias in the next couple of weeks. Be on the lookout for powdery mildew on your dahlias at this time of year.

Tuberose- Mel waters his tuberose 2-3 times a week. Weeding is crucial when growing this plant. Dig them up in the fall and store in a cool basement. Place them in bulb crates lifted up off the floor for air circulation.



Tuberose

Physocarpus Ninebark- Mel likes this one but he did mention that the florists don't seem to like it as well as predicted.

Paula & Tom Harman, Harman's Farm

When she first started growing cut flowers, Paula read not to over-fertilize them or you would get floppy stems. She has followed this rule of thumb and has been successful. They do a broadcast application of 15-15-15 or 20-20-20 once in the early spring when preparing the beds. Some years there were even blocks that didn't get any fertilizer and were ok. They have everything on drip, so if problems do start to develop they can always just run it through the irrigation system. They said that



fertilizer cost them three times as much this year as it did last year. Another very good reason not to over-fertilize! The Harmans sell bouquets for \$10 at their farm stand and at the farmer's

market. They charge customers an extra dollar for the Mason jar (wide mouth kind works best). The jars are transported in 2 liter soda crates- 3 arrangements will fit in an 8-hole tray. They stop doing arrangements in late September when they get busy with pumpkin season and school tours.

Paula does succession plantings of zinnias at 2-3 week intervals as a method of dealing with powdery mildew (spray some chlorothalonil too). The last sowing of zinnias is in Mid-July. She would keep planting zinnias if they had more time in the fall. They will continue to plant sunflowers every week until mid August. Those are a 50-60 day crop so there is a frost risk by that point.



They spray their cover crops in late March and start laying plastic in early April. The plastic is finished by May when they begin transplanting their cut flowers. They use a waterwheel transplanter for vegetables, but hand-plant all of the cut flower plugs. All of their seeds are started in the greenhouse- they don't like to direct sow anything.

Some flowers that the Harmans grow at their farm include:

Heliopsis 'Summer Sun' is an ok variety for them, they but really liked the semi-double flowering 'Ballerina' from North Creek with its long, stiff stems and second flush of growth.

Agastache 'Blue Fortune'- highly attractive to bees. Paula noted that any blue flower is always a welcome addition to a bouquet. She is always looking for blues to add to arrangements. Also grows 'Blue Horizon' ageratum and 'Blue Better' annual salvia.

Buddleia- you need to get this into the cooler right away and hydrate it overnight. If handled properly, you can get 6 days of vase life out of it.

Rudbeckia triloba- has smaller flowers but make good fall filler. They also grow *Rudbeckia hirta* 'Prairie Sun' and 'Indian Summer'. Be sure to wait until the stems are stiff to harvest this one.

Ornamental peppers- 'Cappa Topfruit' and 'Capa Conic'. Always strip the leaves on these, they are extremely droopy.

Basil- they are using 'Ararat' purple instead of cinnamon basil. The aroma it adds to an arrangement is highly attractive to customers. Paula also likes to incorporate mountain mint into her bouquets.

Celosia- they grow Cramer's 'Burgundy', and 'Hi-Z'. Paula also likes a bright red plume type called 'Forest Fire'. She noted that the yellow and pink Kurume celosias seem to have longer, stiffer stems than the red Kurume. Sylphid celosia is new for them this year and they seem to really like it so far.

Bells of Ireland is very productive and makes a good filler. They do have stickers and are difficult to germinate. Right now they only support their dahlias and snaps, but next year they will also do the bells or Ireland. They use stakes and string instead of netting.

Zinnias- Paula said that the stems on 'Uproar Rose' aren't quite as long and that it does get powdery mildew, but her customers seem to be really drawn to the color. 'Uproar Rose' goes especially well with lime colors in her arrangements. She also likes 'Zowie Yellow Flame' but again the stems are not very long. Paula also grows Benary Giants and the Oklahoma series. The stems on the lime green Benary Giants stiffen quickly. The blooms on the Oklahoma series are smaller, but the whites don't seem to turn brown as fast as Benary whites.



Zinnia 'Uproar Rose'



Celosia 'Sylphid'

Other crops grown include Phlox which they like the purple 'Nicky' but it does get powdery mildew; Leucanthemum shasta daisy 'Becky' has the most stem length for them; Solidago is a perennial that makes a nice fall filler; Penstemon 'Husker Red' - is also used for the seed pods in arrangements; and Gladiolus- Paula likes 'Atom' a red miniature glad with a white edge on the petals; Kharma dahlia which can't be carried over from year to year, but the plugs only cost about a \$1 each and are easier to plant; and Echinacea- when the blooms are spent, they pick the petals off and use the cones in arrangements.

Brad Milton, Brad's Produce

Brad gave the group a tour of his walk in cooler and described the construction process. One reason he likes the CoolBot system is that it's inexpensive enough that you can have backup parts on hand in case of an emergency. Brad has a 24,000 btu air conditioning unit which runs on a 220 current (it actually costs less to run a 220 volt). Brad reinforced what Dave had said, that when building a cooler the most important things to take into consideration are sealing and insulation. He has insulation under the concrete because the ground is 55°F and you lose energy to cooling the floor. It's a good idea to build the cooler inside an already existing structure. This helps to protect it from moisture and sun and provides you with extra insulation. Brad has also lined his cooler with metal barn siding to prevent any punctures in the insulated walls. The air conditioner does pull moisture out of the air that can dehydrate produce. Cut flower growers have buckets of water in their cooler and don't have this dilemma. To solve this problem, Brad runs the water from the air conditioner back into the cooler into a bucket.