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Field Day for Commercial Cut Flower Growers in Maryland

On September 27, we held the fall commercial cut flower tour, this year we visited the Hertzler Farm in St. Mary's County where Jacob Hertzler and Elvin Weaver demonstrated the use of their new steam device for controlling weeds, insects, and disease in cut flower fields.

We then visited Cindy Bliss at Zekiah Ridge Farm in LaPlata, MD. Both locations provided a great opportunity for cut flower growers to share their knowledge on cut flower production.

A special THANKS to the Hertzler, Weaver, and Bliss families for opening up their farms for the tour.



UMD-IPMnet

Cut flower tour group at Jacob Hertzler's Farm

Photo: Stanton Gill

Herbicides for Cut Flowers

By: Alan Leslie, UME-Charles County

Herbicide options for cut flowers are generally very limited. The high diversity of flower species and varieties grown in relatively small spaces makes it difficult to find chemicals labelled for use across entire fields. Additionally, research and industry support specific to cut flower production is generally lacking, and as a result growers find themselves somewhere in the middle between having cultural practices similar to annual vegetable production and a crop list similar to ornamental landscape plantings. Below we outline some of the herbicides that we feel are among the most useful for cut flower production, and describe their potential use in flower farming. Remember to always read and follow all label instructions when using pesticides, including wearing the proper personal protective equipment. Any mention of specific product names is for educational purposes only and is not meant as an endorsement by University of Maryland Extension.

An herbicide study was conducted at a Maryland cut flower farm. Below are a few photos of the project.



Grass-selective herbicides like clethodim can be very useful for killing annual grass weeds within crop rows, but make sure to first make applications on small areas to test for phytotoxicity.
Photo: Alan Leslie, UME



Area in foreground was treated with clethodim, area in background now has annual ryegrass weeds growing.
Photo: Alan Leslie, UME



Small grains and annual forages work well as cover crops between crop rows. Here, forage oats are competing with weeds and reducing erosion from bare soil.
Photo: Alan Leslie, UME

Glyphosate (active ingredient in Roundup and many other products) is a non-selective, broad-spectrum, and systemic herbicide that is a very useful tool for vegetation management. Formulations of glyphosate are labelled for in-season use for managing weeds between crop rows using hooded or shielded sprayers to minimize the risk of drift onto desirable crop plants. However, the use of glyphosate around flower crops is not recommended because of the high risk of injury from even minimal drift. Instead, we recommend that glyphosate be used as a pre-plant burndown application to kill any emerged weeds prior to planting the flower crop. This strategy works especially well when planting directly into bare-ground without the use of plastic mulch, as glyphosate will kill all emerged weeds without having any residual effect on the cash crop. In-season use of glyphosate should be limited to spot-treatment of especially problematic weeds, under conditions where drift can be minimized.

Glufosinate (active ingredient in Interline and other formulations) is a broad spectrum alternative to glyphosate, which is much safer to use around established flower crops. Glufosinate does not have the systemic activity that glyphosate has, so although glufosinate drift may cause localized injury to crop plants, it is less likely to severely stunt or kill crop plants when used as a directed spray. There are also organic alternatives to provide

complete burndown of weeds, such as d-limonene (Avenger), caprylic/capric acid (Homeplate), and acetic acid. Flaming weeds with a propane torch is another non-chemical alternative for pre-plant and row-middle weed control that would be compatible with cut flower production. The organic burndown options (including flaming) all work best on small weeds, under 3-4” in height, and all work best on broadleaf weeds as compared to grasses and sedges.

Although these options will kill all weeds within row middles, maintaining bare ground through the growing season is not necessarily recommended, as this leaves the row middles vulnerable to erosion. Many farmers using raised beds with plastic mulch will simply let the annual grasses and other weeds grow within the row middles and manage the resulting vegetation by mowing. However, planting cover crops in the row middles can reduce erosion of bare soil while reducing weed problems by seeding a small grain or annual grass forage species that will be easier to manage than the native weed community. Cover crops that we have trialed between rows of plastic include spring oats (early season), teff (mid-season), and cereal rye (fall/overwinter), however there are many other options that would work well with cut flower production.

Selective herbicides are an option for managing vegetation between crop rows in-season while maintaining soil coverage with cover crops or annual grass weeds. Clethodim (active ingredient in Select Max and other formulations) is a grass-selective herbicide that can be used to suppress grass cover crops, without the risk of killing flower crops. Clethodim can be especially useful for managing grasses directly adjacent to the shoulders of plastic mulch, where mowers may not be able to reach. Carfentrazone (active ingredient in Aim) is a broadleaf-selective herbicide, which can be useful for managing pigweeds and other broadleaf weeds that emerge in cover crops grown between crop rows. Unlike other broadleaf-selective herbicides, carfentrazone has a low risk of drift when used as a directed spray, and will not cause systemic injury to adjacent crop plants. Finally, pre-emergence herbicides are another useful tool for cut flower production, especially for perennial flower species. Pre-emergence herbicides prevent weed problems by killing weed seeds as they germinate, which makes application timing very important for pre-emergence products; they do not work if weeds have already started to grow. Early season application of products like trifluralin or S-metolachlor around established perennial plants can greatly reduce the weed pressure that these crops face during the growing season. As mentioned previously, the wide diversity of crop species and varieties in the cut flower trade makes it impossible to guarantee that you won’t see crop injury from using these or any other products that may be labelled for use on your farm. We recommend that you test any new products over a limited area and check for crop response before applying any new herbicides over large areas, especially if the crops are actively flowering at the time of application. Additionally, many of these herbicides require surfactants or other adjuvants to maximize efficacy, which can also cause injury to crop plants, especially under hot and sunny conditions.

Preplant burndown

Glyphosate	Group 9	Roundup and other brand names
1 gallon = 2 fl oz glyphosate + 2 oz ammonium sulfate		
Notes: Broad-spectrum control of weeds, systemic herbicide that will cause stunting, deformation, or death in desirable plants. No residual activity. Glyphosate is labelled for use around existing crops with shielded sprayers, however this use is not recommended because of the risk of damaging flower crops.		

Post-emergence, row middles

Glufosinate	Group 10	Interline and other brand names
1 gallon = 2 fl oz glufosinate + 2 oz ammonium sulfate		
Notes: Thorough coverage is essential, ideally apply during hot, sunny conditions, do not allow to contact green tissue of desirable plants, no residual activity.		

D-limonene	Group N/A	Avenger (OMRI Approved)
1 gallon = 1 - 2 pt d-limonene		
Notes: Contact herbicide needs thorough coverage to kill weeds. Mostly effective on small, annual, broadleaf weeds.		

Caprylic/Capric acid	Group N/A	Homeplate (OMRI Approved)
1 gallon = 4 - 12 fl oz Caprylic/Capric acid		
Notes: Contact herbicide needs thorough coverage to kill weeds. Mostly effective on small, annual, broadleaf weeds. Rapidly kills weeds.		

Carfentrazone	Group 14	Aim and other brand names
1 gallon = 4 - 12 fl oz Caprylic/Capric acid		
Notes: Contact herbicide needs thorough coverage to kill weeds. Mostly effective on small, annual, broadleaf weeds. Rapidly kills weeds.		

Clethodim	Group 1	Select Max and other brand names
1 gallon = 1 fl oz clethodim + 0.35 fl oz non-ionic surfactant		
Notes: Grass-selective herbicide that will not kill broadleaf weeds. Works best on small grasses that are actively growing. Slow-acting herbicide, may take up to 2 weeks to kill grass weeds. Safe to contact crop plants, though surfactant may cause injury to sensitive plant parts like flowers, especially during hot, sunny conditions.		

Pre-emergence/Residual

Trifluralin	Group 3	Preen and other brand names
6 lbs trifluralin/1000 ft ² (dry prills)		
Notes: Use around established perennial plants to prevent weeds from emerging. Spread evenly with shaker, do not over-apply around base of crop plants. Water-in to activate. Will not control weeds that have already emerged. Do not use around vegetables or other edible plants.		

S-metolachlor	Group 15	Pennant Magnum and other brand names
1 gallon = 0.5 - 0.75 oz S-metolachlor		
Notes: Do not use with direct-seeded crops, use with transplanted annuals and established perennials only. Will control a broad range of broadleaf and grass weeds, including yellow nutsedge.		

Water Testing

By: Andrew Ristvey, UME

Testing your water for mineral content is an essential management practice. While pH is an important consideration for substrate and soil characteristics, it is not as important as the measurement of carbonates or alkalinity in water. Your water alkalinity will determine the types of fertilizers (nitrogen based) you use. Many soluble fertilizer companies will have specific fertilizers based on your water alkalinity. Water alkalinity can increase the pH of your container substrate and soil over time and higher alkalinity water requires acid fertilizers that can neutralize the carbonates. The nitrate and ammonium ratios will determine the alkalinity neutralizing capability of a fertilizer.

If you are growing in a high tunnel, the minerals in the soil will build up and high alkalinity water will increase the soil pH. Be sure to get your water tested for minerals and especially for alkalinity. If your alkalinity is over

100 ppm, consider looking into acid fertilizers for at least some of your nitrogen fertility. For more information, contact Andrew Ristvey at aristvey@umd.edu. The following laboratories offer water testing.

Agri Analysis, Inc.

(now Waypoint Analytical)

280 Newport Road

PO Box 483

Leola, PA 17540

Phone: 717-656-9326 or

1-800-464-6019

<https://waypointanalytical.com>

Agrolab Inc/Matrix Sciences

101 Clukey Drive

Harrington, DE 19952

302.566.6094

www.agrolab.us

J.R. Peters Horticultural Labs

6656 Grant Way

Allentown, PA 18106

<https://www.jrpeters.com/lab-testing-services>

Pennsylvania Agricultural Analytical Services,

Penn State University

University Park, PA 16802

Phone: 814-863-0841

<http://agsci.psu.edu/aasl>

Steam to Control Weeds, Insects, and Diseases

By: Stanton Gill

Back in June, as part of the Biological Control Conference, we held a field day at Emory Knoll Farms to see Ed Snodgrass's steaming device that their staff uses to control weeds in their production nursery. The device worked beautiful but is a little slow to apply to large areas.

At the field day for commercial cut flower growers on September 27, Elvin Weaver and Jacob Hertzler gave a demonstration of a large steaming device. Elvin and his family purchased a 350-gallon steaming device made by Sioux Company of South Dakota. With this device, water is heated up under pressure, then released through a tube system that is covered with a 10 ft wide sheet of polyethylene. Elvin said he can treat up to 150 linear feet that is 10 ft wide with each treatment. It takes about 2 hours to bring the soil up to 160 – 180 °F at a 6-inch depth. They thoroughly till the soil before placing over the stem tube and sheet of plastic. They weigh down the plastic edges with metal weights. Jacob and Elvin both commented that it provides weed control for several weeds, besides killing most insects and diseases in the soil.

Spectrum Analytic Inc.

PO Box 639

1087 Jamison Road NW

Washington Court House

OH 43160

Phone: 800-321-1562

www.spectrumanalytic.com

University of Delaware Soil Testing Program

531 S. College Avenue

152 Townsend Hall

Newark, DE 19716-2170

Phone: 302-831-1392

<http://extension.udel.edu/dstp/> <https://www.udel.edu/canr/cooperative-extension/environmental-stewardship/soil-testing/>

Waypoint Analytical Virginia, Inc.

(Previously A & L Eastern Agricultural Lab)

7621 Whitepine Road

Richmond, VA 23237

Phone: 804-743-9401

<https://waypointanalytical.com>



Steaming device at cut flower field day
Photo: Stanton Gill

Sioux Company, founded in South Dakota in 1939, initially manufactured steam cleaners for automobile engines. The company expanded over the years to manufacture pressure washers, water heaters, discharge and circulation pumps, water storage tanks, and control systems.

This machine is not inexpensive, but if you look at it as a long-term expense or something that could be shared among growers, then it might be a worthwhile investment.

For more information:

For technical information on steaming, contact:
University of Maryland Extension, St. Mary's County
Ben Beale, 301-475-4484, bbeale@umd.edu

Contact Elvin and Jacob if you are interested in this service:
Write to: Loveville Steaming Service, 25964 Loveville Road, Mechanicsville, MD 20659



Steaming device demonstration at cut flower field day
Photos: Stanton Gill

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Read labels carefully before applying any pesticides.

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