

Setting Up an On-Site Cut Flower Demonstration

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Launching a new farming enterprise can be exciting, yet stressful for pre-commercial and commercial growers. In addition to specialists, agents are an important part of the team to support growers and contribute to their success. Setting up a demonstration or experimental plot is a great way to share production technologies and techniques with potential and existing growers (and enthusiasts) to establish a foundation for success or improve profitability by resolving a specific production challenge. Thought and planning are necessary to establish effective and impactful demonstration and research plots. This guide is intended to help you set up an impactful local cut flower demonstration area.

General Steps

1. Define Your Goals and Objectives

Prior to establishing a plot, it is essential to clearly define its intended purpose. For example, a demonstration plot designed to highlight a selection of crops that perform well as cut flowers is fundamentally different from a variety trial focused on comparing the performance of specific cultivars. Similarly, both differ from an experimental plot, where treatments are replicated, and data are collected for statistical analysis.

Clarifying objectives early will inform plot design, management practices, and evaluation methods.

Key questions to consider include:

- Is the plot being used for research purposes, such as comparing varieties or production practices?
- Is the goal to demonstrate what cut flower production could look like in a real-world setting?
- Is the plot intended for community access, education, or engagement?

When thinking about engagement, *identify your audience*. Demonstrations will have a different focus depending on who you are designing the project to benefit – established growers, pre-commercial growers, students, or Master Gardeners, for example.

What kind of budget do you have available? A demonstration doesn't have to be expensive, but there are input costs even for small demonstrations. Program funds, grants, and partnering with a local business to donate materials and supplies can be a way to financially support a project.

Will this be a single year or multi-year project? Keep in mind seasonal influences. Establish early on if you think you might want to repeat the demonstration in subsequent years. You can always decide to change things up for following seasons but preparing for the potential future plot can save you time and money in the long run.

2. Select the Right Location

Choose an appropriate site for the demonstration or research plot that is:

- Secure, safe, and visible (if that makes sense for your objectives).
- Easily accessible to your project team and the target audience (growers, students, enthusiasts, etc...).
- Representative of local conditions (soil, water, topography, microclimate).
- Accessible for irrigation and convenient to equipment and supplies storage.

3. Choose the Practices or Technologies You Want to Demonstrate or Test

Select the specific practice(s) and/or technologies you are interested in demonstrating. Make sure the demonstration is relevant, science-based, and suitable for the local conditions. Draft an experimental design, if data are to be collected. Several suggestions follow, but ultimately, the topic selected should be relevant to the target population.

- Demonstration of different crops suitable for cut flower production or growing on black plastic versus bare ground.
- Variety trials to evaluate different marigold, sunflower, or zinnia selections.
- Effect of fertilizer application or how pinching effects yield or quality.
- Product application to control powdery mildew on zinnias.
- How to setup drip irrigation systems for cut flowers.
- Best flowers for farmer's market bouquets.

4. Design the Plot Layout

Organize your demonstration or experimental plots so it is easy to compare treatments and understand the effects:

- Incorporate standard and/or local practice as a control (example: no irrigation vs. drip irrigation).

- Assign and label treatment(s), anticipating data to be collected (make sure labels are easily understood by your audience).
- For research plots, replicate treatments, if possible, for more persuasive evidence of preferred practices.
- Establish clear edges and use good labels and signage.
- Make sure rows are easily accessible to clientele. Paths between rows should be easily walkable for clientele.

5. Prepare the Plot

- Start by collecting soil samples for analysis.
- Prepare the planting area (breaking ground for cut flower demonstrations can be in fall or spring).
- Apply baseline inputs equally (unless one of the inputs is a variable that is part of the experimental design).
- Ensure uniform planting date, depth, and spacing.

6. Maintain and Record What is Happening in the Plot

- Follow good horticultural practices (IPM/scouting, irrigation, weed and pest control). This is a good way to include volunteers by developing a simple and uniform scouting sheet to be used.
- Have a calendar and staffing plan for timely recording of inputs, labor, and costs.
- Document plot performance regularly with photos, videos, and notes. Taking photos or videos about once a week is useful for programming.
- Create standard operating procedures (SOPs) and standard templates for data collection so the project team is consistent in descriptions and evaluation (examples include harvest logs and scouting sheets to record any environmental inconsistencies).
- Have a kit with everything needed – datasheets, pencils, clipboard, tape measure – to simplify data collection.
- Be sure there is a copy of the field map, just in case the flags or stakes are lost or become unreadable.

7. Label and Communicate with Your Target Audience

Be sure the demonstration area is easy to understand for the target audience.

- Use clear, legible signage for each treatment (make sure they are weather resistant).
- Include and identify test variables such as variety, planting date, fertilizer rate, and consumer preference, etc.
- Consider laminated info sheets or QR codes, as appropriate, to share project information or other details about the project.

8. Schedule and Host a Field Day or Plot Tour

Invite pre-commercial and existing growers, other extension agents, specialists, extension associates, technical service providers, and enthusiasts to local events featuring the demonstration. Consider timing the event based on what is important to demonstrate:

- Early season is a good time to show site setup and strategies for growers to prepare for success.
- Mid-season allows visitors to see plant development and/or effects of experimental inputs .
- At harvest, yield differences and harvest techniques can be shown.
- Incorporate live demonstrations or hands-on activities to engage participants. A hands-on activity can be a fun and impactful way for attendees to build skills (i.e. trellising, pinching, weed identification, bouquet building).
- Prepare and have on-hand educational materials to distribute.
- Use a simple survey to collect feedback and information about how growers would use what they learned from the demonstration.
- For County Extension Agents, invite your County Extension Council, local dignitaries, and other key stakeholders to show off the program and local impact.

9. Collect Data, Analyze, and Share Results

Even with demonstration plots, you will want to collect some data about performance.

- Measure yields, costs, labor inputs, and potential profitability. This will be useful when talking to new growers or home gardeners.
- When making a comparison, ensure that a control or standard practice is included.

- Share findings through grower events, factsheets, infographics, reports, social media, etc.

10. Document Observations and Generate Ideas for Continuous Improvement

Make frequent notes about what you observe and evaluate what worked with the demonstration and what didn't:

- Was the scale of the demonstration appropriate?
- Did the demonstrated method or technique show what you intended? Were the treatments effective?
- What are the economic impacts of the demonstrated technique? How did the technique affect expenses or impact revenue? Consider thinking about it along the lines of, *while the installation of a drip irrigation system may require a higher capital investment upfront, the practice improves water efficiency, lowers disease pressure, and translates into higher marketable yields and improved product quality.*
- Was the demonstration practical and something local farmers could reasonably implement?

Use your observation and feedback from the project team and growers as a basis to make recommendations to growers or consumers and improve future demonstration and/or experimental plots.

Basic Tools and Inputs Needed

Below is a list of common items needed for establishing and managing a demonstration plot. It is not intended to be an exhaustive list as your unique situation may require additional tools and supplies.

- Measuring tape, rope, stakes, flags (for laying out the plot).
- Journal, recording sheets, or other simple means to collect data and observations.
- Durable, waterproof signs and labels.
- Seeds or plugs, fertilizer or soil amendments, tools and equipment, supplies like irrigation lines or trellises, as needed.
- Camera or smartphone to easily take photos, voice memos, and videos to document activities and observations during the season and grower education events.

Tips:

- Involve local prospective and existing growers and specialists during all phases of the project.
- Keep the design simple so the plot is easy to manage and understand.
- Make sure any treatments or technologies used are practical and implementable on farms.
- Post good signage.
- Track and share information about costs and benefits.
- Be prepared for the unexpected. For example, weather, unexpected expenses, and wildlife predation can negatively impact well-organized projects.

An Example Sunflower Demonstration Trial

Sunflowers are one of the most common commercial cut flower crops because they are easy to grow, thrive in most environments, bloom prolifically, and require minimal management during the growing season. The crop is appealing to customers and popular in wholesale and direct-to-consumer markets. Additionally, farms and agritourism locations use this crop for photoshoots, which can be a gateway to growing and marketing other cut flower crops.

Crop: Sunflowers (*Helianthus annuus*)

Demonstration Goals:

- 1) Show growers different types of sunflowers suitable for cut flower production in the local area.
- 2) Provide an educational program on harvest stage and post-harvest handling.

Planning the Demonstration:

- 1) Site Selection. The planting location will be at the local county extension office campus. The planting area is in full sun, has access to water, and is similar to local conditions (topography, soil texture, weather patterns).
- 2) Variety Selection. The primary traits of interest are that the varieties are easy to establish, have a bloom interval when markets are available, stem length is appropriate for selling in bunches, and vase life is acceptable to customers. Ten different varieties will be planted including a selection of:
 - a. Single Stems (non-branching types) that produce one flower. These varieties are appealing to growers because of the short interval to harvest and long, straight stems. ProCut series fall into this category and are widely available

in several colors. Spacing should be tight to keep stems from getting too large (i.e. 4" – 6" between plants).

- b. Branching Stems (branching types) that produce many blooms over a long period of time. These varieties can get quite large so wider spacing (i.e. 18" – 24") will be used for these varieties.
 - c. Pollenless varieties are recommended for the cut flower industry.
- 3) Purchase Inputs. Several potential seed sources will be identified. Many national seed companies offer a range of varieties, and seeds will be ordered early to get the varieties of interest for demonstrating. Other inputs and rates will be determined based on soil testing.
 - 4) Establishment. Start seeds for transplants in early to mid-April, anticipating an early May transplant date. (Direct seeding could be any time after threat of frost). Single stem sunflowers can be planted up until mid-August in most areas of Kentucky. For consistent supply of stems, aim to seed a portion of the area every 1-2 weeks.
 - 5) Prepare for full-season management, including control plans for wildlife and weeds. All blocks will be irrigated and fertilized equally.
 - 6) A member of the project team will be designated to record performance using a standard data collection template at each evaluation date. Data collectors will be trained on harvest protocols. For example:
 - a. Harvest stems in the morning as soon as the first petals start to unfurl;
 - b. Strip bottom three-fourths of leaves from stem and cut stems at a 45-degree angle;
 - c. Immediately place stems in water (no flower preservative is needed);
 - d. Ensure water in the containers is changed every other day.
 - 7) Data will be entered into an Excel spreadsheet and used to determine bloom interval, average yield, and potential profitability for each variety.

Developing a Project Budget

Below is a general template to assist in developing a budget for a demonstration project. Customize this basic list based on your site and intended project. Enter the estimated quantity needed and the price. The units may change based on needs and availability. Calculate the total price for each line item and sum for the total estimated project budget.

Sample Starting Budget				
Establishment & Equipment Costs	Quantity	Unit	Price	Total Price

Backpack (or other) Sprayer		Each		
Breaking Ground		Plot		
Drip & Plastic Layer		Plot		
Irrigation Infrastructure (line/pump/filter)		Plot		
Labor: Planting		Hours		
Pre-Planting Weed Control		Lbs.		
Pre-Planting Soil Amendments		Lbs.		
Soil Test		Plot		
Tools: Weed Management		Each		
Tools: Data Collection		Each		
Cut Flower Production Costs	Quantity	Unit	Price	Total Price
Drip Tape		Feet		
In-Season Fertilization		Lbs.		
Irrigation Fittings		Each		
Irrigation Tubing/Lay-flat		Feet		
Labor: In-season (management/data)		Hours		
Landscape pins (to secure weed mat)		Box		
Pest Barrier or Exclusion Fencing		Foot		
Pest Control Products		Lbs.		
Plant Supports (trellising/rebar)		Each		
Row Identification Signage/Stakes		Each		
Seeds (direct seeding or for transplants)		Lbs.		
Transplants		Plants		
Water		Gallons		
Weed Mat or Black Plastic		Feet		
Cut Flower Harvest Costs	Quantity	Unit	Price	Total Price
Bouquet Sleeves or Craft Paper		Each		
Harvest Containers		Each		
Labor: Harvest		Hours		
Post-Harvest Preservative		Gallon		
Rubber Bands		Package		
Tools: Harvest		Each		
Vases or Jars (for vase-life data collection)		Each		
Total Estimated Budget				