

ORGANIC CUT FLOWER PRODUCTION ON CALIFORNIA'S CENTRAL COAST: A Guide for Beginning Specialty Crop Growers



Introduction

Cut flowers have become a popular crop for small- and medium-scale mixed organic production farms. They can diversify and increase your income stream and offer an attractive option that draws consumers to your farmers' market stall or farmstand. Cut flowers are a value-added specialty crop that in general can be managed like many other row crops while generating increased income per acre compared to most vegetables.

Growing, processing, and marketing cut flowers is a labor-intensive undertaking that can tie up land for a longer portion of the season than many vegetable crops. If you are thinking about adding cut flowers to your operation, consider starting with a relatively small area to gain experience and establish markets before committing a large area to cut flowers.

This grower guide provides examples of how to select and grow cut flowers, with a focus on crop planning and selection, harvest efficiencies, equipment needs, and market bouquets.

Features of cut flower production

- Offers consumers a chance to support local flower production
- Taps into diverse markets: florists, weddings, other events
- Offers u-pick opportunities
- Attract customers to direct market venues, including farmers' market and roadside stands
- Provides biological benefits to a mixed cropping system, including attracting beneficial insects and offering crop rotation options
- Where possible, incorporating herbaceous perennials minimizes need for annual tillage

PRODUCTION PRACTICES – SUMMARY

Soil type and pH

- Varies by crop, but generally do well on a range of soil types from sandy loam to heavier clay soils with high organic matter content and pH 5.8 – 6.5.

Fertility requirements

- Fall/winter cover crop (bell beans, triticale, vetch).
- Compost as needed (5–10 tons/acre).
- Fertigation (foliar sprays; see page 7 for details).

Soil temperature for planting

- Cool season crops (e.g., stock, agrostemma, sweet peas, cornflower): high 40°s to low 50°s F.
- Warm season crops (e.g., dahlias, marigolds, zinnias): 60° in top 6" of soil for a week prior to planting.

Planting technique

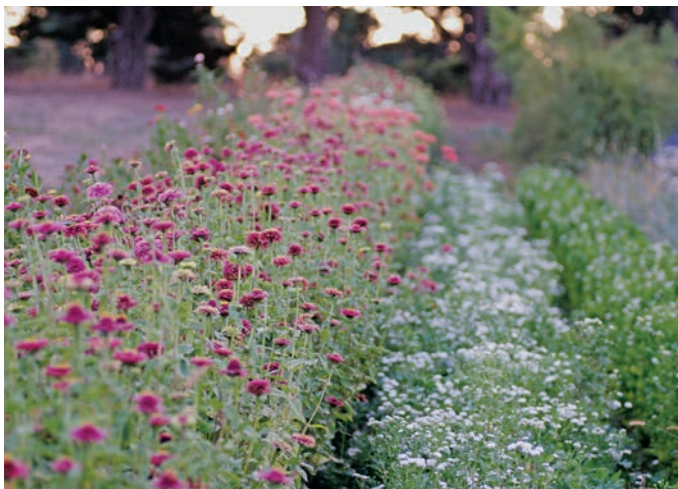
- Transplant most crops for season extension, weed management, protection from predators and environmental elements, and water and seed use efficiency.
- Some crops (e.g., sunflowers) can be direct sown successfully; requires consistent weed control and irrigation (see sidebar, page 6 for direct sow vs. transplant recommendations).

Bed spacing

- From 36–60" center to center; based largely on bed preparation equipment and farm system
- Wider beds = more land in production and less in paths or alleys
- Wider beds can accommodate 3–5 rows per bed. This makes staking more efficient and a thicker stand means the flowers support themselves.
- Narrower beds give easier bed access, e.g., for harvesting from both sides at once.

Plant spacing within row

- Most cut flowers do well 8–12" apart.



- Exceptions: sunflowers grown closer together result in smaller plants, which can be an advantage for bouquets. Single stem (non-branching) species such as stock can also be planted closer together; competition increases stem length in some species.
- Maintain balance between giving enough room to meet water and fertility needs and planting close enough that plants can help support each other.

Planting depth

- For direct seeding, varies according to species/variety.
- For transplants, must be able to identify growth tip; generally, plant at the same depth as the soil level in the container.
- Zinnias, marigolds, safflower, sunflower: transplant deep to encourage adventitious rooting.

Irrigation

- Water overhead for first week or two after transplanting, then move to drip after weed flush and cultivation.
- Drip tape preferred to minimize disease incidence and conserve water.
- Overhead watering can cause lodging, damage flower blooms.

Weed management

- Control with mechanical tillage.
- May require additional hand weeding due to length of time in the ground.
- Weed cloth and plastic mulch can be used (and re-used).

Crop rotation

- Use in rotation with more disease-prone vegetables (e.g., solanum family species, strawberries) to break disease and pest cycles.
- Keep in a block for efficient management, as many flowers are in the ground longer than vegetables.

PRODUCTION SEQUENCE – OVERVIEW

(crop day -25*)

In spring, mow cover crop to facilitate breakdown.



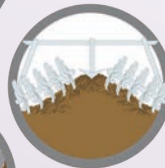
(crop day -25) Incorporate cover crop residue



(crop day -11) Form beds with rolling cultivator or listing shovels.



(crop day -10) Pre-irrigate beds with overhead irrigation (1–1.5"). Wait for dry down and weed emergence.



(crop day -1) Work beds surface lightly with cultivator to terminate weeds and re-form beds.



(crop day -1) Shape beds using bed shaper or rototiller/shaper combination. Mark planting rows.



(crop day 0) Plant transplants and direct seed crops



(crop days 0, 1, 4, 7) Irrigate (overhead) to water in and establish transplants



(crop day 11) Cultivate with sweeps and side knives when first weeds appear in furrow bottoms. Lay drip lines.



(crop day 11) Hoe out small weeds. Hand weed larger weeds as needed throughout cropping season.



(crop day 12) Initiate drip irrigation.



Drill cover crop seed.



Following completion of harvests, remove drip lines from field, mow crop residue, and undercut beds. Disc spent plants and prepare soil for next planting or fall cover cropping.



Initiate harvests when blooms develop. Harvests may extend for several weeks, depending on variety and weather.

Numbers in parentheses refer to crop day, with crop day 0 = planting day, based on a typical season at the CASFS/UC Santa Cruz Farm.

Production Practices — Special Considerations

In general, cut flowers are managed much like vegetable row crops in terms of soil fertility, bed preparation, planting, irrigation, and weed management (see, for example the pepper production information in this **Grower Guide** series). However, there are a number of considerations specific to cut flowers addressed here.

Successions and timing: determine a crop plan and planting schedule

To extend cut flower production through the season, plan for 3–4 successive planting blocks with distinct harvest windows, with 12–15 species for each block. Figure 1 shows an example

of seasonal planting blocks at the UCSC Farm. See page 6 for considerations in deciding what species/varieties to grow. Determine the following to create a planting schedule for successive blocks:

- sowing to transplant days (if sowing your own seeds) – how many days will plants be in the greenhouse before transplanting?
- days to maturity (DTM) – how many days does it take from transplant or direct sowing to harvest?
- length of harvest window – how many days can you expect to harvest each species/variety?

Use this information to calculate when to transplant or direct sow crops. Crop planning software programs can help you quickly and easily make these calculations to determine sowing and planting schedules. Examples of software

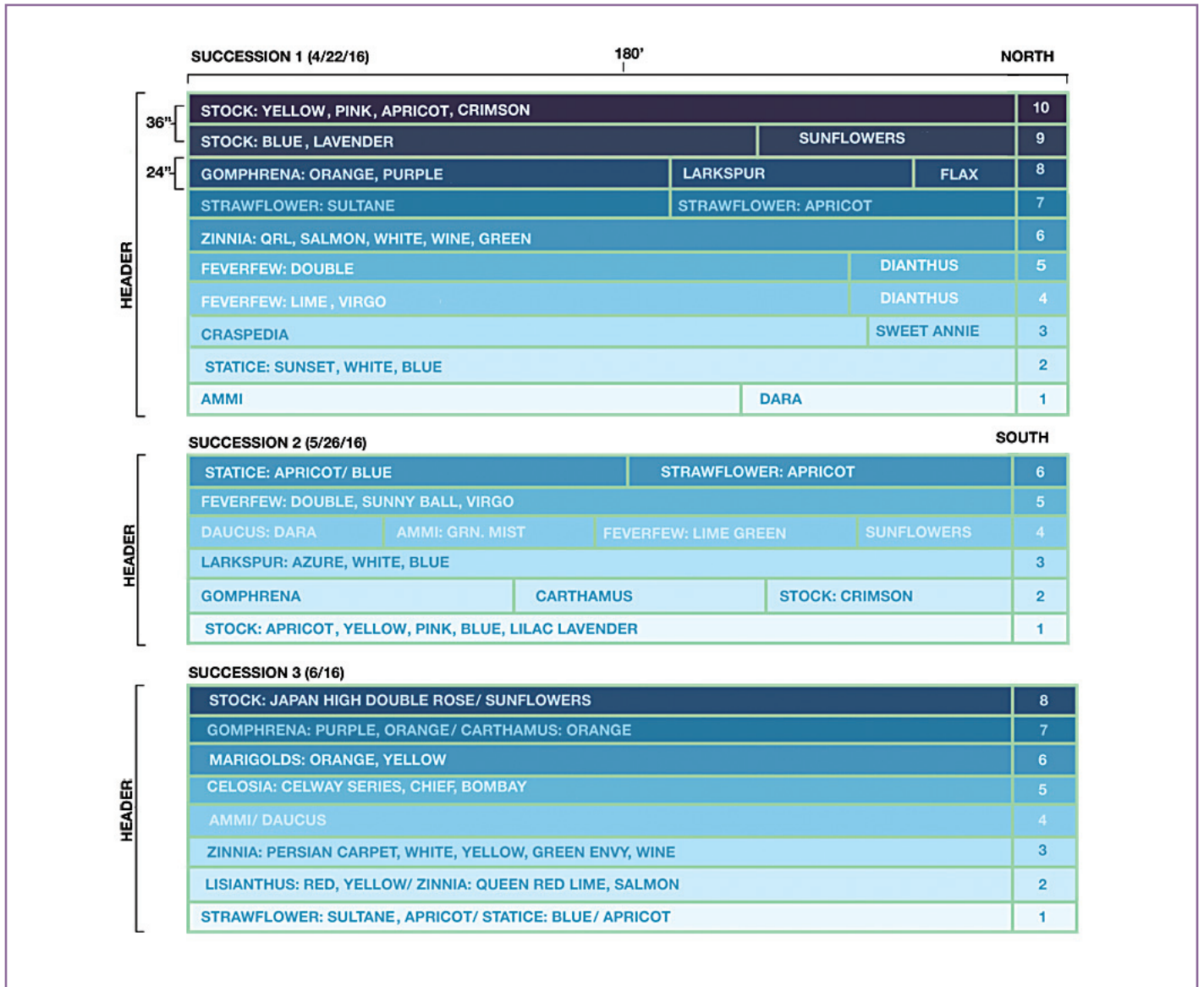


FIGURE 1. Example of seasonal planting blocks.

platforms include Tend (Figure 2) and AgSquared. If you're sowing your own seeds, keep careful greenhouse records to help inform future crop planning efforts.

Other information that will help you develop a crop plan and planting schedule include peak harvest period and yield on your site. See Table 1 for data on some of the species and varieties grown at the UC Santa Cruz Farm. Keep careful notes to develop your own dates and timelines to use in plans and schedules for future years.

Account for harvest windows when designing a block

When planning and planting flower blocks, group crops with long bloom and harvest windows together within the block to maximize harvest efficiency and field maintenance (Figure 3).

For example, statice and feverfew both have long harvest windows and can be mowed to encourage a second bloom from regrowth; they can be managed more easily if planted in adjacent beds. Separate these beds from shorter-lived crops with relatively short harvest windows, e.g. sunflowers and stock, which give only one cut, or larkspur, which has a narrow harvest window. A block of shorter-lived crops can be disked or tilled in to free up that ground for cover cropping, double cropping, etc.

Soil temperature for planting

Cool season crops, e.g., stock, agrostemma, sweet peas, cornflower, bells of Ireland, etc., need soil temperatures to reach high 40's–low 50's F to grow and crop. On the Central Coast, establish these plantings in late summer or early fall for late winter bloom, or December–January for spring blooms.

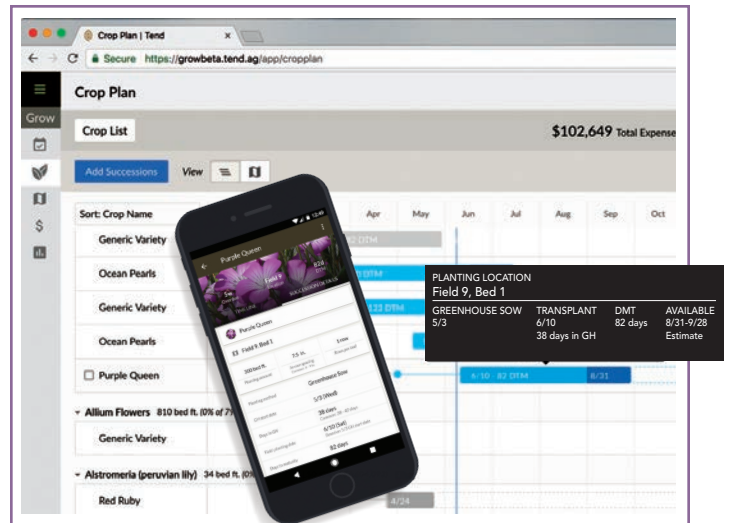


FIGURE 2. Example of Tend crop planning software.



FIGURE 3. Block plantings of cut flowers. Photo: Elizabeth Birnbaum

TABLE 1. Examples of cropping data from the UCSC Farm.

CROP	VARIETY	AVERAGE DAYS TO MATURITY*	AVERAGE HARVEST WINDOW IN TOTAL DAYS	PEAK HARVEST PERIOD IN CROP DAYS	AVERAGE YIELD STEMS/PLANTS
<i>Ammi visnaga</i>	Green Mist	75	40	75–85	1.5–2
<i>Craspedia</i>	Sun Ball	50	70–80	80–115	6
<i>Daucus</i>	Dara	85	40–60	95–120	7
<i>Feverfew</i>	Virgo	75	60–80	95–130	9
<i>Gomphrena</i>	Purple	75	60	n/a	14
<i>Larkspur</i>	Azure Blue	65–70	30	85–95	4
<i>Statice</i>	Apricot Mix	65	50–65	70–100	20
<i>Strawflower</i>	Apricot/Peach Mix	60	110	100–140	6
<i>Zinnia</i>	Queen Red Lime	60–70	70	60–90	8
<i>Zinnia</i>	Benary's Giant Mix	65	65–75	85–135	8–12

* (DTM) in crop days (from direct sowing or transplanting)

EXAMPLES OF DIRECTLY SOWN AND TRANSPLANTED CUT FLOWERS

DIRECT SOW

Ammi majus (thin to 12" between plants)
 Cerinthe (thin to 18")
 Daucus (thin to 12")
 Dill (thin to 8")
 Larkspur (pre-chill seed for 7–14 days)
 Sunflowers (thin to 10" for single heads, 6–8" for smaller varieties)

TRANSPLANT

Bachelor	Cosmos	Rudebeckia	Strawflower
Buttons	Delphinium	Scabiosa	Sweet Peas
Campanula	Feverfew	Snapdragons	Zinnia
Celosia	Gomphrena	Stock	

DIRECT SOW OR TRANSPLANT

Ammi majus, *Daucus*, Larkspur, Sunflowers

HOW DO YOU DECIDE WHAT TO GROW?

Factors to consider in deciding what species/varieties to grow:

- **What's trending?** Follow florists and farmer/florists on social media, talk to other flower growers, join groups such as the Association of Specialty Cut Flower Growers (ASCFG, ascfg.org).
- **What are your potential markets?** Grocery stores and farmers' market offer options for many species/varieties, while florists have more specific needs. If you plan on marketing flowers for weddings, the crop selection gets even narrower and potentially costly, as many brides and grooms have specific color schemes and species in mind; consider supplementing your own crops with bought-in flowers.
- **Are you growing for market bouquets?** If so, choose varieties that provide material for focal flowers, filler, foliage, and accent flowers (Figure 4). Consider planting different colors within species to expand your selections.



FIGURE 4. A mix of focal, filler, foliage, and accent flowers.
 Photo: Elizabeth Birnbaum

Examples of focal flowers

Dahlias	Lisianthus	Stock
Dianthus	Mums	Sunflowers
Larkspur	Roses	Zinnias
Lilies	Rudbeckia	

Examples of filler flowers

<i>Ammi</i>	Dill	Statice
Dara	Feverfew	Sweet Annie

Examples of foliage

Buplerum	Ferns	Hypericum
Cerinthe	Grasses	Safflower
Dusty Miller	Herbs (rosemary, mint, basil)	Scented Geranium
Eucalyptus		

Examples of accent flowers

Celosia	Gomphrena	Scabiosa
Crespedia	Lavender	Snapdragons
Echinops	Nigella	Strawflower

- **How much space do you have?** Cut-and-come again species, such as zinnia, dahlias, and strawflower will maximize available space. Single cut species, such as sunflowers, stock, and larkspur take up more space; to have consistent blooms you will need more successions.
- **What is your preferred palette?** Create your own "brand" by highlighting your unique color scheme as a way to stand out from the crowd.
- **What grows well in your climate?** Visit local farmers' markets, talk to other growers and local Cooperative Extension agents, contact the Association of Specialty Cut Flower Growers (ASCFG, ascfg.org) for regional resources.
- **See a list of recommended Hardy/Half Hardy/Tender annuals** for California's Central Coast on page 12.

Once sustained daily temperatures reach the high 70s°F, these cool-season crops fail or die, as they flower too quickly or don't establish vegetatively (roots dry and die off).

Warm season crops (of tropical or subtropical origins) such as zinnia, dahlias, and marigolds, need the top six inches of soil to reach 60°F for a week before it is safe to plant—usually by the first week of May on California's Central Coast, although it can be earlier or later depending on the year and influence of microclimates.

Supplemental fertility

Some flowers benefit from supplemental fertility in the form of a foliar spray or soil drench.

Applied early in the growth cycle following transplant, supplemental nitrogen (N) helps establish a vigorous plant that will generate more robust blooms. Phosphorus (P) promotes early root growth and flowering, and potassium (K) contributes to strong stems and quicker maturation; they are best provided by longer-term soil fertility management.

Liquid kelp promotes leaf and stem cell wall strength, leading to stronger, longer, sturdier stems and increased vigor. It is easy to use in combination with a liquid nitrogen source such as fish emulsion, or a soy-based product. Apply foliar sprays weekly via a backpack sprayer to most cut flowers. Stop fertilizing once vegetative growth is established so as not to delay bloom or develop stems and flowers that snap or bruise easily. Note that sunflowers should not receive supplemental fertility; they perform well in marginal soils and tend to grow too tall and "leggy" if overfertilized.

Staking and netting

Although cut flowers are bred and selected for naturally long, strong, straight stems, some species are worth growing but require extra support. Snapdragons, for instance, are famous for leaning, then self-correcting, resulting in bent stems.



FIGURE 5. Netting helps ensure straight stems on snapdragons (Hortonova trellis, Peaceful Farm Supply). *Photo: Elizabeth Birnbaum*

Staking and netting (Figure 5) will ensure straight stems, which are essential for cut flower production. At a minimum, use stakes and twine on the bed edges to prevent stalks from falling into the aisles (Figure 6).

Pinching

Many species of flowers benefit from having the growing tip (apical meristem) pinched off to encourage branching and multiple blooms. See Table 2 for a list of plants that should be pinched, as well as those not to pinch.



FIGURE 6. Stakes and twine support cut flowers. *Photo: Martha Brown*

TABLE 2

PINCH

Bachelor Buttons, Bells of Ireland, Celosia (plume type), Cosmos, Craspedia, Dahlias, Didiscus, Dusty Miller, Gomphrena, Marigolds, Nigella, Rudebeckia, Safflower, Scabiosa 'Black Night', *Scabiosa purpurea*, *Scabiosa stellate*, Strawflower, Sweet Peas (thin center branch), Zinnias (a few times)

DON'T PINCH

Ammi, Buplerum, Campanula, Cerinthe, Daucus, Delphinium, Dill, Eryngium, Flower Kale, Hyacinth Bean, Larkspur, Lisianthus (but pinch out center flower), *Rudebeckia triloba*, Stock, Sunflowers



BIOLOGICAL BENEFITS FOR VEGETABLE PRODUCTION SYSTEMS

In addition to making economic sense, cut flowers also make biological sense. Most Central California vegetable crops don't feature flowers prominently, if at all. By including cut flowers in a mixed vegetable cropping system you can increase the biodiversity of your system.

Showy flowers attract crop pollinators, usually winged insects. Flowers also provide shelter, moisture, and nutrition to various predators and parasitoids (beneficial insects) that in turn help control pests.

A number of plant families provide easy-to-access food for beneficial insects and include excellent cut flowers. Consider incorporating some of these when developing your planting plan (as your climate permits):

Adoxaceae (elderberry family): Elderberry

Apiaceae (carrot/dill family): Ammi, Angelica, Daucus, Didiscus

Asteraceae (aster family): Ageratum, Asters, Chrysanthemum, Coreopsis, Cornflower, Cosmos, Echinacea, Goldenrod, Marigold, Sunflower, Venidium, Yarrow

Brassicaceae (cabbage family): Iberis, Stock

Caryophyllaceae (carnation family): Carnation, Gypsophila, Saponaria, Sweet William

Dipsaceae (scabiosa family): Scabiosa

Polygonaceae (buckwheat family): Shrub Buckwheats

Plumbaginaceae (statice family): Statice/Limonium

Timing of harvest

Harvest cut flowers either early in the morning or in the late afternoon/early evening to avoid midday heat (Figure 7). Both times take advantage of minimum transpiration, when plants are not losing moisture at a high rate.

In the morning plants have a cooler core temperature and are most turgid, having had all night to recover from the moisture losses of the previous day. Flowers with a cool (<50°F) core temperature will keep longer post harvest.

Cutting at dusk or early evening takes advantage of high sugar levels in the plant, a byproduct of a day's worth of photosynthesis. These sugars keep the flower's metabolism going and contribute to vase life. The main disadvantage of afternoon or evening cutting is a high core temperature and low turgidity. You can overcome this by refrigerating the flowers (34°–50°F) and/or "pulsing" them.

Pulsing involves placing the stems in deep, tepid (90°–100°F) water for one hour, and then plunging them into cold water (40°F). In phase one (warm water) the stems rapidly absorb water and achieve maximum turgidity. Phase two (cold water plunge) reduces core temperature and thus slows transpiration (water loss).

If harvest takes place midday, keep plenty of water in the buckets, and get flowers quickly into a cooler or cool space to maintain them successfully.

Incorporating herbaceous perennial flowers

Herbaceous perennials (non-woody plants living more than 3 years) can complement annual cut flower production. Often the blooms (both form and color) are distinctive; even in small numbers they add a sophisticated look to bouquets, elevating both "eye appeal" and price. While all flowers are a draw at direct marketing venues, perennials really distinguish themselves.



FIGURE 7. Early morning harvests take advantage of the flowers' cooler core temperature. Photo: Martha Brown

EQUIPMENT AND TOOLS FOR HARVEST AND PROCESSING

- Clean buckets; keep separate from other operations.
- Transportation to move buckets from field to processing/storage area.
- Processing area: shaded, tables, stem cutter.
- Toolbelt/holster to carry pruners, snips, gloves, etc.
- Lightweight, sharp clippers. Look for those specially made for flowers or fruit, which are smaller and lighter than those made for pruning branches.
- Rubber bands for banding bouquets (#32 and #33s fit on wrist easily).
- Paper sleeves or brown paper for bouquets.
- Cold storage (at minimum, shade structure).

TIPS FOR HARVEST EFFICIENCIES

- Easier to harvest in a well maintained stand (staked, minimal or no “spent” blooms).
- Know optimal degree of openness and “cut to color,” i.e., maintain the block by cutting all that are ready.
- Use sharp snips and clean buckets.
- Wear gloves for sharp, spiny stems, and for stripping leaves
- Bunch and band in the field for single species bunches to sell; this can be helpful to avoid damage and tangled stems in the bucket, as well as to track data (Figure 8). Carry enough rubber bands if bunching in the field.
- Line up heads of flowers while picking, then trim stems to even height.
- Cut stems on a small diagonal to allow more surface area for water to be absorbed.
- Cut stems long (18–24”) and to a consistent length to minimize damage in bucket (Figure 9).
- In the bucket, line up flower heads on an even plane.
- Harvest into your hand, strip ½–¾ of foliage. Using pre-determined bunch size, band a group of stems together and place in furrow, or tuck under arm.
- Pick up bunches as you walk out of the field, carrying many bunches in fewer trips.
- Count bunches as you carry them out of the field and place them all into a bucket at the same time to decrease jostling and recounting later.
- Many flowers are hearty enough to stay out of water (ideally in partial or full shade) for up to 20–30 minutes before being placed in water, which can make harvest more efficient.
- Buckets should only be filled with enough water to cover stems during the harvest, as buckets are heavy and will be lifted many times. If needed, add water before placing in cooler or overnight storage.
- Use a truck, gator, or cart of some type to move buckets; this saves time and physical energy.



FIGURE 8. Bunching and banding single-species bunches.
 Photo: Martha Brown



FIGURE 9. Long stems minimize damage in bucket.
 Photo: Martha Brown

POST-HARVEST HANDLING, STORAGE TIPS

- Clean buckets with soap and water (occasionally a small amount of bleach) before water and flowers are placed inside.
- Re-trim stems right before submerging in water to reopen tissue for maximum water absorption.
- All cut flowers should be kept out of direct sunlight, ideally in shade or under cover.
- Most flowers will respond well to refrigeration (35–45°F). Avoid freezing temperatures.
- Many flowers benefit from conditioning overnight in a cooler, and can hold for several days up to a week in a cooler at the proper temperature. Note: flowers need to be kept in a cooler without fruit crops that produce ethylene gas (e.g., apricots, avocados, tomatoes), which will make petals drop prematurely.
- Zinnias do not do well in a cooler—petals tend to turn brown. Certain crops, e.g., poppies, euphorbia, cerinthe, need other conditioning, such as singeing stems.

Once established, herbaceous perennials eliminate the need for annual tillage and outcompete weeds more effectively than annuals. Maintain them with a top dressing of compost and regular weeding plus irrigation.

Herbaceous perennials also present challenges. Quality organic seed may be difficult to source, and is more expensive than that of annuals. Perennials take two to three years to begin blooming and generally produce fewer blooms over a shorter time span than annuals. They also tie up the ground for a number of years.

Despite these limitations, herbaceous perennials can enhance your cut flower operation. Some relatively easy-to-grow perennials to consider:

Alstromeria	Erigeron
Aquilegia	Eryngium
Asclepias	Euphorbia (perennial species)
Aster (perennial species)	Gypsophila (perennial species)
Carnation	Helenium
Caryopteris	Heliopsis
Centaurea	Heuchera
Chrysanthemums	Michaelmas daisies
Coreopsis	Phlox (perennial species)
Dahlia	<i>Salvia farinacea</i>
Delphinium	Solidago
Echinops	Veronica

Marketing

There are numerous options for marketing cut flowers, including —

- Florists
- U-pick operations
- Farmers' markets
- Grocery stores
- Restaurants
- Community Supported Agriculture (CSA) flower shares (Figure 10)
- Special events (e.g., weddings, corporate meetings)
- Value-added options: dried flower wreaths and everlasting bouquets, medicinal, salves, edible flowers

Before committing ground to cut flowers, analyze potential markets in your area.

So much of marketing is relationship building, branding, and consistency of quality product. Develop relationships with local florists, caterers, event centers, spas, restaurants, and hotels. Once you've started growing, take buckets of flowers to potential clients and give samples to the managers.

Farmers' markets can be a great way to make connections and get your face and your product out there. Bringing flowers to market will naturally attract customers who want to support local growers for their special events. This type of word of mouth and networking can be the best marketing strategy.



FIGURE 10. CSA members' bouquets ready for pick up.
Photo: Elizabeth Birnbaum

TIPS FOR MAKING BOUQUETS FOR MARKET



FIGURE 11. Stack flowers on clean surface.
Photo: Elizabeth Birnbaum.

- You need to make many bouquets in a short amount of time (20–30/hour) in order to be profitable.
- Standardize bouquet size and number of stems.
- Consider how buckets of bouquets will look together at market and design accordingly.
- Come up with a “design recipe,” and know how many of each ingredient to include before you start (see at right for examples).
- Include high levels of contrast and bright colors in your design.
- Organize ingredients into neat piles on a clean flat surface, for quick, easy handling (rather than pulling each stem out of a bucket; Figure 11).
- Have everything close at hand, and minimize amount of body movement to increase speed and efficiency.
- Cut stem lengths so that they are equal and proportional to size of bouquet—large bouquets should have long stems (Figure 12).
- Arrange blooms at the same level at the top of the bouquet (rather than a rounded globe shape), as customers will look at them from above.
- Place rubber bands, stem cutter, and paper sleeves at end of table closest to buckets where finished bouquets will be placed.
- Prefill clean buckets with water.



FIGURE 12. Cut stems to equal length for banding.
Photo: Elizabeth Birnbaum.

- Consider having one person arranging hand off of completed bouquets to another person who bands, trims, sleeves, and places in bucket.

Example of market bouquets from the UCSC Farm:

LARGE BOUQUETS

- 20–30 stems, 16” stem length (below the bloom)
- 4–6 species total (e.g., dahlia, feverfew, snapdragons, strawflower, flax, statice)
- 5–10 higher-value “focal” flowers per bunch (as opposed to filler)

SMALL BOUQUETS

- 15–16 stems, 12” stem length (below bloom)
- 3–4 species total (e.g., zinnia, statice, strawflower)
- 3–5 “focal” or higher value flowers per bunch (as opposed to filler)

SEASONAL EXAMPLES

Spring: Agrostemma, Dianthis, Mignonette, Roses, Sweet Peas

Summer: Ammi, Artichoke leaves, Celosia, Dahlias, Dusty Miller or Feverfew, Statice, Strawflower, Sunflower, Zinnia

Fall: Amaranth, Flowering Basil, Gomphrena, Rudbeckia, Sweet Annie



Fall bouquets. Photo: Elizabeth Birnbaum.

USEFUL HARDY (H) AND HALF HARDY (HH) ANNUAL CUT FLOWERS**Hardy**

Calendula
 Centaurea (Cornflower)
 Clarkia
 Cynoglossum (Chinese Forget Me Not)
*Dianthus barbatus** (Sweet William)
 Godetia
 Larkspur
 Nigella
 Scabiosa (Pincushion Flower)
 Snapdragon
 Statice
 Sweetpeas
 Sweet mignonette

Half Hardy

Canterbury Bells (biennial species)
 Didiscus
Gypsophila elegans (Annual Baby's Breath)
 Iberis (Candytuft)
 Linaria
 Saponaria (a bigger Gypsophila)
 Stocks

*biennial species

TENDER ANNUAL CUT FLOWERS

Ageratum
 Amaranthus
 Asters
 Calliopsis
 Carthamus (Safflower)
 Celosia
 Cosmos
 Dahlias
 Gomphrena
 Marigold
 Phlox
 Rudbeckia (perennial treated as annual)
 Salpiglosis
Salvia coccinea
Salvia farinacea (tender perennial often treated as annual)
Salvia horminum/viridis (annual Clary sage)
 Sunflowers
 Tithonia
 Venidium
 Zinnias

EASY TO GROW, FLORIFIC PERENNIAL CUT FLOWERS

Alstromeria
 Asters (Michaelmas Daisies, *Aster novi-belgii*)
Aster alpinus
Aquilegia spp. (Columbines)
Campanula persicifolia
Caryopteris clandonensis
Catanache caerulea (Cupid's Dart)
Centaurea montana, *C. dealbata*, *C. macrocephala*
Chrysanthemum spp.
 Coreopsis
 Delphiniums
Dianthus spp. (Carnations)
 Echinacea
 Echinops ritro (Globe Thistle)
 Erigeron (Fleabane)
 Eryngium planum (Sea Holly)
 Helenium
 Heliopsis
Heuchera rubescens (Coral Bells)
Lilium spp.
Limonium caspia and *L. tatarica* (Statice species)
Nicotiana sylvestris
 Perennial cornflowers
Physostegia virginiana (basically a perennial snapdragon)
Stachys lanata (Lamb's Ear)

ADDITIONAL RESOURCES

Choosing, growing, and harvesting cut flowers, by Orin Martin. *News & Notes of the UCSC Farm & Garden*, Issue #127, Fall 2010. Available online: casfs.ucsc.edu/about/publications/news_notes.html

The Cut Flower Quarterly, a publication of the Association of Specialty Cut Flowers, www.ascfg.org

Floret Farm's Cut Flower Garden: Grow, Harvest, and Arrange Stunning Seasonal Blooms, by Erin Benzakein. Chronicle Books, 2017.

Floret Flowers blog and website, www.floretflowers.com

The flower farmer: An organic grower's guide to raising and selling cut flowers, by Lynn Byczynski. Chelsea Green Publishing, 2008.

Growing for Market (trade publication), www.growingformarket.com

Slow flowers: Four seasons of locally grown bouquets from the garden, meadow, and farm, by Debra Prinzing. St. Lynn's Press, 2013

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