



Field Grown Cut Flowers

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Cut Flowers are a specialty crop well suited to small-scale and part-time farming operations. Increasing demand for a wide variety of fresh cut flowers has kept this market growing, but producing fresh cut flowers is not for everyone. They have special production requirements, a fairly short shelf life, and there is a relatively short field growing and marketing season in Pennsylvania.

Marketing

Fresh cut flowers are generally sold by the bunch, in prearranged bouquets, or individually. Six basic marketing alternatives are available to the cut flower grower: Wholesale, florists, pick-your-own, roadside stands, farm markets, and subscription sales. In some areas flower grower cooperatives, or auctions may be available for wholesale distribution. Because freshness

is always a consideration, the astute cut flower grower always seeks to streamline the process from farm to final consumer.

Wholesale: Wholesale distributors generally buy and resell your flowers for a predetermined price. These prices are available on the USDA website from specific market terminals. It is important to note that prices vary widely from region to region. This marketing alternative is subject to large price fluctuations as product rapidly moves in and out of the wholesale marketplace.

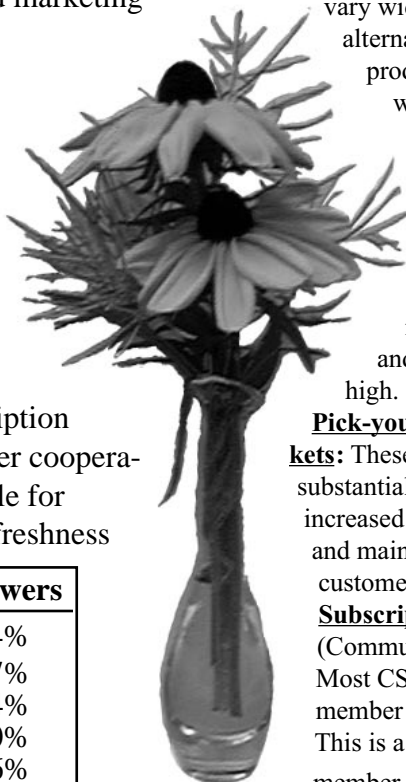
Florists: Market surveys have indicated that nearly 100% of the florists surveyed show at least some willingness to purchase locally grown cut flowers. The high quality and wide selection available through a florist's regular market channels, means that their expectations for service and quality from local producers are very high.

Pick-your-own, roadside stand and farm markets: These sales outlets have the potential to provide substantially higher prices per unit, but may have the increased costs for advertising, facility construction and maintenance, and providing service to your customers.

Subscription sales: This is an offshoot of the CSA (Community Supported Agriculture) movement. Most CSAs are based on produce sales with each member purchasing a share of a farm's production. This is a contract between the grower and each member which provides for a weekly portion of

fruit and vegetables based on production. If a crop is lost, everybody loses, if there is a bumper crop, everybody wins. Some CSAs provide flower shares as part of the contract or as an option.

Cooperatives: Groups of smaller growers pool their product so as to attract larger buyers or explore markets not readily accessible to small producers. A cooperative offers many of the advantages of wholesale marketing while still retaining some control of your product.



Distribution of Fresh Cut Flowers

Florist	65.4%
Supermarket	17.7%
Telephone	5.4%
Street Vendor	2.0%
Garden Center	1.6%
Chain Store	1.4%
Convenience Store	0.8%
Department Store	0.7%
Mail order Catalog	0.4%
Drug Store	0.1%
Warehouse/Price club	0.0%

Source (Cut Flower Quarterly 1999 11(3):15)

Most flowers are sold as bunches of ten although some large flowers like sunflowers or expensive items like orchids may be sold individually. Direct market growers need to provide the freshest, highest quality product possible to distinguish themselves in a positive way from sellers of low cost imported flowers.

Production Considerations

Site Selection

Most cut flowers prefer a well-drained site. Deep fertile soils will greatly simplify the process of developing the site, but soils can be improved through cover cropping, the application of composts, manures and other soil building practices. Preplant soil testing is highly recommended. Raised beds are fast becoming a standard practice in growing high value produce and flowers. The benefits of raised beds include: earlier crops because the sun can heat beds on the sides as well as the top; increased production and improved soil drainage from increased depth of the topsoil; and decreased weed pressure and simplified fertilizer application when raised beds are used with plastic mulch.

Planting

Most field grown cut flowers are best started from transplants or plugs. Plant spacings in the field vary among species and sometimes between individual cultivars. Most new growers plant by hand, but mechanical transplanting can greatly simplify and speed this process. Vegetable plug planters can easily do double duty to plant cut flowers as well.

Irrigation

Cut flower crops should be irrigated to insure reliable production. Most flower growers use a drip tape under plastic to maximize water use efficiency, keep water off of the leaves and flowers, and provide for fertilizer application.

Wind Protection and Support

Field grown cut flowers can be easily damaged by strong winds. Protection can be accomplished through careful site selection and the use of well-

designed windbreaks. Windbreaks can be live plants or fencing materials such as split bamboo. The effectiveness a windbreak diminishes with distance from the crop. Some cut flowers require support as well. There are several wide mesh plastic products available to provide a grid of support for the flowers that encourages straight stems and upright growth.

Pest Control

Many different plants which can attract a wide variety of pests can be used for cut flowers. When possible, select cultivars that are relatively pest free. Keep careful records and scout your plants often to detect pest problems early. Recognizing a pest problem early will usually make controlling it easier and less costly.

Insects

While many insects inhabit flower plantings, only a few are recognized as economically significant. Aphids, thrips, spider mites, leafhoppers, beetles, and caterpillars are common problems in many flower plantings. There are biological, biorational and more traditional chemical controls available. Pest populations can often be controlled by naturally occurring parasites and predators. Avoid cover sprays of long residual pesticides to protect predator populations. Beneficial insects such as lacewings can also be purchased from biological control companies. Biorational controls include horticultural oils, insecticidal soaps, and extracts of neem oil. These typically have short residuals and minimal impact on beneficial organisms. It may also be necessary to use synthetic chemicals for insect control at times. Always use products labeled specifically for the use you intend and seek to use materials that have the lowest toxicity to bees.

Diseases

Fungal diseases can have a major impact on a cut flower planting. While many do not kill the flowers, they can drastically reduce the salability. Common problems include powdery mildew, damping off, botrytis, leaf spots, several viruses

Common Cut Flowers for Field Production (Adapted from Cut Flower Quarterly 1999. 11(5):20-22)

Cut Flower	Latin Name	Harvest Stage	Vase Life	Comments
Annual Aster	<i>Callistephus chinensis</i>	75% flowers open	7-10	Use Silver
Astilbe	<i>Astilbe hybrids</i>	50-75% flowers open	5-8	Use STS. Place stems in 130F water, cool to room temperature and place in preservative
Bee Balm	<i>Monarda</i>	25% of blooms 50% open	5-7	Remove bottom leaves. Condition overnight in warm water
Butterfly Weed	<i>Asclepias tuberosa</i>	1/2 - 2/3 flowers open	5-8	Use STS. Plunge in cold water flowers don't open well after cutting
Celosia	<i>Celosia argentea</i>	Flowers fully developed	7+	Crested Types last longer than plumose types
Columbine	<i>Aquilegia hybrids</i>	50% flowers open	5	Use STS. Place stems cool water (45-50F)
Coneflower	<i>Rudbeckia</i>	Open but centers tight	7-10	Remove foliage. Condition overnight in warm water
Cosmos	<i>Cosmos bipinnatus</i>	Petals just opened	5	Use Preservative
Dahlia	<i>Dahlia</i>	Immediately after fully open	7	Use preservative. Remove lower leaves
Delphinium	<i>Delphinium hybrids</i>	1/2-1/3 flowers open	6-8	Use STS. Condition overnight in cold water
Globe Amaranth	<i>Gomphrena globosa</i>	75% fully opened	7	Condition overnight
Lavender	<i>Lavendula</i>	50% flower open fresh 75% open for dried		Condition overnight in warm water
Lisianthus	<i>Eustoma grandiflorum</i>	1 flower fully colored	10-15	Use preservative. Store in light to reduce fading. Sucrose (4%-10%) lengthens vase life.
Giant Onion	<i>Allium giganteum</i>	30% flowers open	14	Use preservative
False Indigo	<i>Baptisia australis</i>	1/3 of flowers are open	7	Condition overnight in cold water
Pincussion flower	<i>Scabiosa caucasica</i>	50% flowers open	8-12	Use STS. Condition overnight in cold water up to flower heads
Purple Coneflower	<i>Echinacea purpurea</i>	When petals expanding	7-10	Use STS
Salvia	<i>Salvia leucantha</i>	3-4 basal flowers open	7	Use STS. Always keep in water. Condition overnight in warm water
Sea Holly	<i>Eryngium spp.</i>	Fully open flowers	10-12	Store at 40F to intensify color
Snapdragon	<i>Antirrhinum majus</i>	50% flowers open	7-10	Use STS. Condition overnight in warm water (80-100F)
Statice	<i>Limonium sinuatum</i>	70 % flowers open	10-14	Condition in cold water
Stock	<i>Matthiola incana</i>	25-50% flowers open	7-10	Use STS. Condition in very cold water
Summer Phlox	<i>Phlox paniculata</i>	50% flowers open	5-7	Use preservative. Condition overnight in cold water
Sunflower	<i>Helianthus annuus</i>	Almost completely open	7-10	Strip off foliage
Yarrow	<i>Achillea filipendula</i>	Fully open	7-12	
Zinnia	<i>Zinnia elegans</i>	Flowers fully opened	7-10	Plunge in cold water - condition overnight.

and aster yellows. Good crop rotations, careful selection of cultivars, maintaining optimal growing conditions, and keeping weeds and insects under control will significantly reduce the incidence of diseases.

Weeds

Weeds are best controlled through good preplant preparation. Cereal rye cover crops add valuable organic matter to the soil and can provide significant weed suppression by smothering weed seedlings and through allelopathic effects from natural herbicides in the rye. There are only a handful of herbicides currently labeled for flower production. See the Penn State guide "Controlling Weeds in Nursery and Landscape Plantings" for suggestions. Be sure to read the actual product label carefully. In general, it is easy to find an herbicide to control grasses in flowers, but the choices for broadleaf control are very limited. Many growers use plastic mulch for weed control. Until recently, the only choice was black plastic. New research is exploring the use of colored plastics. In vegetable production some colored plastics have been shown to increase crop yield and decrease pest populations. Results to-date in the Penn State cut flower trials do not suggest any significant benefit to colored mulches.

Harvest and Post Harvest Handling

Harvest flowers in the morning after the dew has dried but before the heat of the day. Remove dead leaves and spent flowers to prevent Botrytis (grey mold) from reducing future harvests. Place flowers in water as quickly as possible after cutting and cool rapidly to reduce water loss and flower aging. Many flowers respond well to floral preservatives. Some flowers such as yarrows are best harvested as soon as pollen is evident, while sunflowers are best harvested when the flower is almost completely open.

Know the blooming habits and bloom life of each flower you decide to grow to provide your customers with flowers with the maximum possible vase life.

Cultivars and test results

Many plants are suitable for use as field grown cut flowers. Primary considerations in selecting cultivars should be flower color and form, post-harvest longevity, stem length, ease of production including disease and insect resistance, and potential marketability, not necessarily in that order. Trial new cultivars before incorporating them into your production. Visit public gardens and commercial trial sites like the Penn State Horticulture Trial Garden to see new cultivars or visit our web site at <http://garden.cas.psu.edu>.

For More Information

Publications

Production of Celosia as Cut Flowers, FS 684: Production of Yarrows as Cut Flowers, FS 685: Production Annual Sunflowers as Cut Flowers, FS 686: Production of Asiatic and Oriental Lilies as Cut Flowers, FS 687: Gill, S., Dutky, E., Balge, R., MacLachlan, W., and Klick, S., University of Maryland Cooperative Extension Service, Agricultural Duplication & Distribution Services, 6200 Sheridan St. Riverdale, MD 20737, ph. 301-403-4263

Specialty Cut Flowers. Alan Armitage., 1993 Timber Press. Portland Or.

Field Grown Cut Flowers: A Practical Guide and Sourcebook. Alan Stevens. 1997. Avatar's World. Ph. 800-884-4730.

Controlling Weeds in Nursery and Landscape Plantings, Penn State CES, 1997

Periodicals

Growing for Market, Monthly newsletter covering many small farm issues, very strong in cut flower production and marketing. PO Box 3747, Lawrence, KS 66046. \$27 / yr.

The Cut Flower Quarterly. Published by the Association of Specialty Cut Flower Growers.

Associations

Association of Specialty Cut Flower Growers, 155 Elm St. Oberlin, Ohio 44074.

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