University of Kentucky
College of Agriculture,
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Cooperative Extension Service

Center for Crop Diversification Crop Profile
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Edible Flowers

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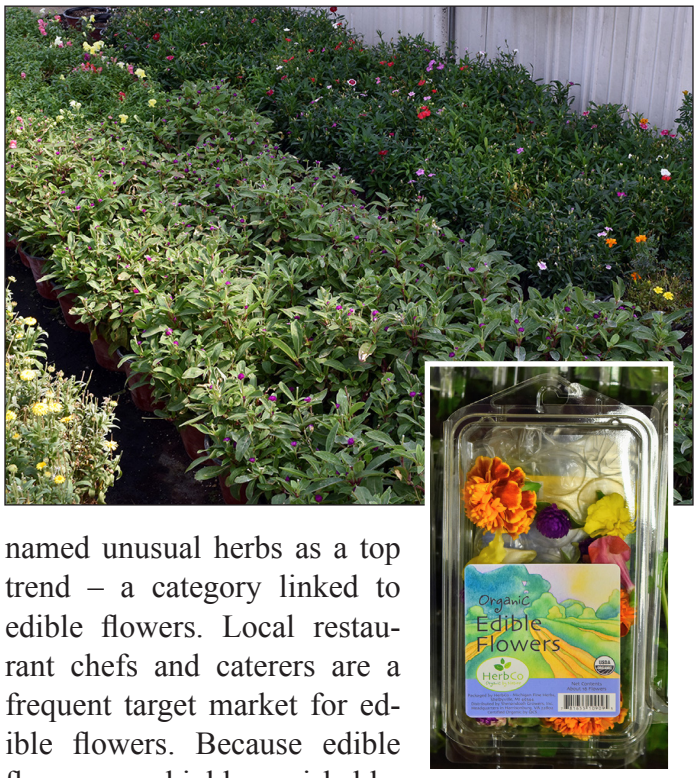
Introduction

Edible flowers, which have been used in the culinary arts for centuries, are experiencing renewed popularity. Flowers can serve as an essential ingredient in a recipe, provide seasoning to a dish, or simply be used as a garnish.



Marketing and Market Outlook

Edible flowers can be a profitable enterprise niche, especially for farms marketing to consumers and chefs interested in a novel use of edibles. Edible flowers can especially fit into a cut flower or herb business, providing additional opportunities for value-added products. Local market niches may be small, however, and specialized niche markets may take time to develop. Organic growers and others using pest control methods that are suitable for flowers intended for human consumption may have a marketing edge, as plant material obtained from most commercial florists, garden centers and nurseries are likely not pesticide-free.

Flowers may be marketed fresh, dried, candied, or in prepackaged salads. Research in Michigan indicated packaging different colors and varieties of fresh edible flowers in the same container appealed most to consumers. Including varieties with more appealing fragrances in the mix also encourages positive consumer reactions. Value-added products that feature edible flowers offer additional marketing opportunities. Minced flowers make a colorful and flavorful addition to herbal butters, cheese spreads, jellies and jams. Dried flowers could be used in teas or to add flavor to wines.

Restaurant trends, measured by the National Restaurant Association in 2018, named unusual herbs as a top trend – a category linked to edible flowers. Local restaurant chefs and caterers are a frequent target market for edible flowers. Because edible flowers are highly perishable, growers must be willing to frequently (usually daily) deliver smaller quantities to restaurants. Fine bakeries may be interested in candied flowers. Growers will need to be able to demonstrate an ability to provide a dependable supply of consistently high quality product to meet buyer demand. Producers commonly "break in" to this market by selling squash blossoms at farmers markets or to local chefs. Expanding to a colorful and diverse range of edible flower varieties is a way for a producer to increase offerings to existing customers.

Retail marketing through farmers markets or Community Supported Agriculture (CSA) shares is also a viable option.

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Fresh edible flowers or value-added edible flower products have the potential to perform quite well in some markets. Interested growers should visit local farmers markets and consult with their County Extension Office and others knowledgeable about local production to determine the market potential of edible flowers in their area.

Production Considerations

Plant selection

Many commonly cultivated annuals and perennials can be raised for their edible flowers. Because some flowers are edible but not palatable and others may be poisonous, it is important that only those known to be edible should be grown for this purpose. Differences in edibility may also exist between cultivars of the same species. Some popular edible flowers include calendula, chrysanthemum, daylily, dianthus, lilac, marigold, mint, nasturtium, orchids, pansy, rose, tulip and violet. Blossoms from various vegetable and fruit crops are also popular for culinary purposes. Refer to the resources at the end of this profile for information on additional edible flower species.

Site selection and planting

The cultural requirements for edible flowers are very similar to those of ornamental flowers. In general, for high tunnel or field production of edible flowers, fertile, well-drained soil, and full sun throughout the day are needed. Many producers prefer growing plants in raised beds to improve drainage and increase ease of harvest. A soil test is recommended before planting. Two to 3 inches of mulch will help to reduce weed pressure, maintain soil moisture and temperature, as well as reduce soil splashing in heavy rains. A source of water for irrigation is essential to production. Trickle or drip irrigation is preferred to overhead irrigation since keeping the foliage dry reduces the incidence of fungal and bacterial diseases.

For greenhouse production, a soilless substrate can be used. Edible flowers can also be grown hydroponically. Provide plants with 75 to 200 parts per million (ppm) nitrogen (N) through irrigation by injecting a complete water-soluble fertilizer that is best suited for your irrigation water quality. In general, maintain an average daily temperature and light integral of 68 to 72 degrees Fahrenheit and 10 to 12 moles per meter per day, respectively. Monitor the greenhouse environment and make adjustments to promote crop growth and development thereby optimizing flowering and yield. Scout for pests and diseases daily, and nutritional disorders weekly.

Planting dates depend on the market and type of plant being grown. Annuals are planted as soon as danger of frost has passed in the spring, and staggered plantings are common. Because transplants come into flower sooner than direct-seeded plants, growers may choose to use transplants to capture the early market and then direct-seed later plantings. Transplants can be started in a greenhouse or high tunnel. Perennials, such as daylily, should be planted in late summer or fall for the best yield of blooms.

Pest management

Buyers of edible flowers will want their product to be free of diseases and insect pests. This could present a challenge since edible flowers must be grown without the use of any chemical pesticide. Insect control consists of hand picking harmful insects and the use of beneficial insects to help decrease insect populations. Following good cultural practices and diversifying plantings will aid in the control of both insect and disease problems. Weed control is critical since weed competition not only reduces plant quality and quantity, but also raises labor costs by increasing the time required for harvest.

Harvest and storage

Edible flowers are harvested in the early morning during the peak of bloom. Only flowers free of insect and disease problems should be selected. Generally, unopened flowers or those past their prime are not suitable. To maintain freshness, flowers should be cooled

immediately after harvest and placed in clamshells.

The stems, sepals, pistils and stamens of most flowers are removed prior to use. Pollen may detract from the flower's flavor and may cause allergies in some people. The sepals should be removed from all flowers except Johnny-jump-ups, pansies and violas. In many flowers (including calendula, chrysanthemum, lavender, rose and tulip), only the petals are edible. If the petals have a white base, this area should be removed as it may have a bitter taste. For example, chrysanthemum, dianthus, marigold and rose have bitter petal bases.

To produce value-added flower products, the flowers must be dried or utilized immediately after harvest. Flowers can be used in a number of products to add aesthetic value in addition to flavor. As a general rule, flowers from herbs have a flavor similar to the leaves and may be used in the same way. Candied flowers are prepared by painting each petal with pasteurized egg white, then sprinkling with granulated sugar. Once the sugar has crystallized, flowers are stored in an airtight container.

Labor requirements

Edible flower production is labor and management intensive. Planting, weeding and harvesting all require some level of experience and/or training. Since an edible product is being handled, extra time and care will be needed to transport the product from field to market. Packaging different edible flower varieties and/or colors together will require additional packing labor.

Economic Considerations

Profitability from edible flowers will range widely due to differences in species, handling, marketing and delivery. Startup costs will include soil and seedbed preparation, as well as the costs of seeds or plant material for planting and irrigation. Additional costs may include weed and pest control, including wildlife control. The time and cost of labor for harvesting, preparing and packaging edible flowers for market can also be a substantial cost. Producers should prepare a detailed list of their projected costs, including labor time or hired labor costs, to calculate the breakeven price needed for edible flowers. Producers can then target markets willing to pay a price per pound that will result in positive grower returns.

Past University of Kentucky (UK) estimates indicated a price of $6 per pound or higher was required for an edible flower mix in order to generate positive returns to land and management, including operator labor. Producers may adjust budget templates for cut flowers and produce, such as the small-scale vegetable budgets available from UK, to estimate total production costs.

Presenting a mix of different varieties may be important to making an edible flower enterprise successful. Edible flower market research conducted in Michigan in 2004 showed consumers were most willing to pay $2.99 for an 8-ounce plastic container with varying colors of six nasturtiums and 14 violas. The addition of other edible varieties to a mix, especially those with desirable fragrance, enhanced consumer interest. A $3 per 8-ounce retail price ($6 per pound) would return about $1 to land, labor and management per 20 flowers.

In summary, edible flowers can be a profitable business when the needs of the clients are thoroughly researched to make a mutual beneficial business.

Selected Resources

- Edible Flowers (University of Kentucky School of Human Environmental Sciences, 1997) https://fcs-hes.ca.uky.edu/sites/fcs-hes.ca.uky.edu/files/fn-ssb.025.pdf

- Edible Flowers (ATTRA, 2004) https://attra.ncat.org/attra-pub/summaries/summary.php?pub=38
- Small-Scale Vegetable Budgets (University of Kentucky, 2017; available as Excel spreadsheets or PDFs) https://www.uky.edu/ccd/tools/budgets
- Choosing and Using Edible Flowers (N.C. State Extension, 2019) https://content.ces.ncsu.edu/choosing-and-using-edible-flowers-ag-790
- A Consumer's Guide to Edible Flowers (Penn State Extension, 2007) https://extension.psu.edu/a-consumer-s-guide-to-edible-flowers
- Edible Flowers (Colorado State University, 2020) https://extension.colostate.edu/docs/pubs/garden/07237.pdf
- The Market for Edible Flowers: A Case Study (University of Georgia) http://ageconsearch.umn.edu/record/8556/files/37010189.pdf
- Edible Flowers (University of Minnesota Extension, 2018) https://extension.umn.edu/flowers/edible-flowers
- Specialty Cut Flower Production and Marketing (ATTRA, 2006) https://attra.ncat.org/attra-pub/summaries/summary.php?pub=39

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Photos courtesy of W. Garrett Owen **April 2021**