



Echinacea Cut Flower Production in Utah

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Overview

Echinacea, commonly known as coneflower, is an easy-to-grow, low-maintenance cut flower crop. As a perennial, plants can be expected to last up to 5 years in production before replacement is needed. Known for delicately arching petals and strong stems, echinacea comes in a wide range of colors that lend a wildflower look to floral design. Seed heads are also popular and can be harvested for their rust-orange cone shape.

Echinacea Cultivars

Although hundreds of hybrids and colors of echinacea exist, *Echinacea purpurea* is the most common species for cut flowers. There are many popular cutting cultivars, such as 'Bravado,' 'Magnus,' and 'White Swan' (Figure 1). See Table 1 for descriptions of these cultivars for cut flower production. When sourcing other cultivars, select the tallest available, as many hybrids are too short for cut flower production. This crop also attracts beneficial pollinators (Figure 2).



Figure 1. 'White Swan' echinacea.

Site Preparation

Echinacea grows in most soils but thrives in well-drained soil with full sun. Performing an initial soil test and incorporating compost or organic matter prior to planting is recommended for establishment and long-term plant health. [Utah State University's \(USU's\) Analytical Laboratories \(USUAL\)](#) perform soil tests, with pricing and sampling instructions available on their website. Till the soil to incorporate fertilizer or compost based on soil test recommendations. Rake the soil smooth, forming 3- to 4-foot beds. Beds wider than 4 feet make it difficult to reach the center for harvesting and plant maintenance. If desired, install drip irrigation and landscape fabric before planting.






Figure 2. Echinacea attracts beneficials to the farm.

Germination

Start seeds indoors 8 to 10 weeks before transplanting. Sow 1 to 2 seeds per cell in trays filled with high-quality peat/perlite soil-less media or seedling mix. Cover the

Table 1. Popular cultivars of echinacea for cut flower production.

		
<p>'Bravado' A gorgeous pale, dusky pink cultivar with 3- to 4-inch blooms and deep, rusty orange cones. This cultivar remains popular, as the seed is widely available and easily grown. This is a no-fuss cultivar and a great option for beginner growers.</p>	<p>'Magnus' This cultivar is excellent for cut flower production with large, 4- to 5-inch, vibrant, bright, rosy-mauve blooms. 'Magnus' has tall, straight stems reaching 30- to 36-inches in length. New blooms are more intense and lighten to a pale rose with age in the field, as well as in storage. Petals tend to remain more horizontal than other cultivars.</p>	<p>'White Swan' This is a creamy white cultivar with elegant drooping petals on coppery-brown cones. The plants reach heights of 28- to 36-inches tall, with 3- to 4-inch blooms. This cultivar is easy to harvest, as stems have small leaves or no leaves at all.</p>

seeds lightly with media or fine vermiculite to allow light penetration to the seed, which is essential for germination. Bottom water or mist trays to avoid displacing seeds. Keep the soil moist, but not saturated, until seedlings emerge. Germination occurs within 10 to 15 days at the optimal temperature range of 68 to 71 degrees. After the first true leaves appear (approximately 1 month after sowing), thin to the strongest plant and transplant into larger containers (Figure 3).

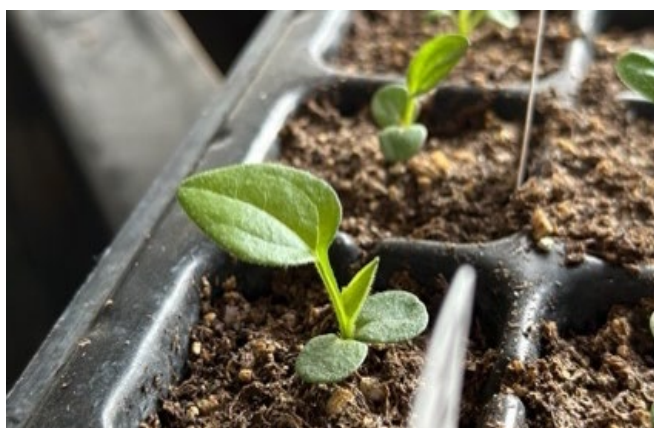


Figure 3. Echinacea seedling after thinning.

Transplanting and Spacing

To avoid transplant shock, harden off echinacea before planting outdoors in late spring or early summer. Planting in the morning, evening, or on a cloudy day is

also recommended. In a prepared bed or area, dig a hole to accommodate the plug or pot size, loosening the soil to assure roots can penetrate the soil. Remove the seedlings from their containers and separate compacted roots (Figure 4). Settle the plants into place by gently packing and firming the displaced soil. Water deeply and thoroughly after planting. To avoid overcrowding at maturity, space echinacea 16 to 24 inches apart. As with many cut flower perennials, spring-planted seedlings will not produce a marketable crop until mid-summer of the second year of growth.



Figure 4. An echinacea plug ready for transplant.

Table 2. Harvest stages of echinacea for cut flower production.



Pinching and Trellising

Pinching is not necessary. Due to strong stems, trellising is also not needed, except in high-wind regions.

Fertilizer

Echinacea has low nutrient requirements; a general recommendation is 0.1 to 0.15 lb. of nitrogen per 100 square feet each year. For example, up to ¼ lb. (about ½ cup) of conventional urea fertilizer (46-0-0) or 0.8 lb. (about 2 ¾ cups) of organic 12-0-0 fertilizer. Slow-release nitrogen sources are recommended because of the perennial habit. Phosphorous and potassium should be added before or at planting but should only be applied based on soil test results, as these nutrients can build up in the soil. [USU's Urban Garden Soils: Testing and Management](#) is a useful tool for calculating nutrient applications.

Irrigation, Pests, and Disease

Poor to average, well-drained soil is optimal for echinacea. While establishing roots, irrigate 2 to 3 times per week to ensure the soil stays hydrated for the new transplants. Once established, echinacea have low water needs, and irrigation may be reduced to once per week. Though research is needed to determine specific rates and is an area of research at USU, a maximum of 1 to 1.5 inches of water per week is generally recommended. Avoid overwatering, as this may lead to root rot. See Tables 3 and 4 for common diseases and pests. Identification of specific diseases and pests for this crop is another area of research at USU.

Harvest and Storage

Harvest when the stem is firm, with petals unfurled and

flat but not yet reflexing toward the stem (Table 2). Reflexed blooms can be harvested but storage and vase life decrease by several days. If harvesting for seed heads, harvest when the petals are completely reflexed toward the stem and the center is a bright rusty orange. Remove petals from the seed head and clean the stems before storing. For the best quality, harvest in the early morning or late evening. Cut individual stems, removing leaves and side shoots that may interfere with banding.

The acceptable market length for stems is 14 to 18 inches in local markets. Line up the flower heads carefully and cut the bunch evenly to the shortest stem, wrapping securely with a rubber band. Band in 10- to 15-stem bunches, depending on stem thickness (Figure 4). Stems are unmarketable (culls) if they are too short, deformed, or have damage. Immediately place bunches in clean buckets filled with several inches of cool water. Store between 36 and 45 degrees for no more than 5 days and expect a vase life of 5 to 8 days. Petals can be removed from unsold flowers, and seed heads can be stored for up to 7 days longer. Use of preservative varies, with some finding no extension of vase life, and others up to 3 days (Dole 2017).

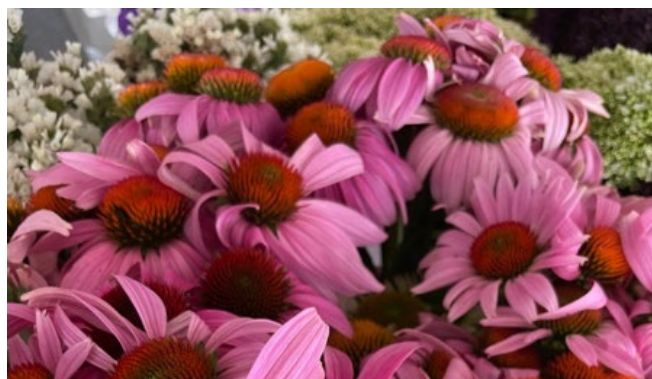


Figure 4. Harvested and bunched echinacea.

Perennial and End of Season Care

Growers can expect at least 4 years of strong production. The first-year crops may produce blooms; however, stems may not be a marketable length. Plants may slow production by year 5 and 6, with little to no growth in year 7. Growers may choose to replace old plants individually as they die or rotate in a new crop entirely. Echinacea can also be divided and moved every 3 to 4 years to prevent overcrowding.

To prevent seeds from spreading to unwanted locations, deadhead and discard the blooms. If this is not a concern, leaving the seed heads provides a food source for birds and winter interest in the landscape. Plants can also be cut down or mowed at the end of the season. For disease-free plants, spent clippings may be left as an overwintering mulch that can be raked off the following spring when aboveground growth emerges.

Economics

Echinacea is a profitable local cut flower crop. The petals easily bruise during transport, making the blooms difficult to ship. Floral designers appreciate the versatility of echinacea, as both the bloom and seed head can be used in arrangements, increasing its value. The color palette available across cultivars also adds a wildflower look to flower design and is currently on trend with weddings and other events (Figure 5). In wholesale markets along the Wasatch Front, echinacea can be sold for \$1.00 to \$1.20 per stem.



Figure 5. Echinacea blooms (left) and seed heads (right) incorporated into design.

Summary

Echinacea is an excellent choice for cut flower production. These long-lived perennial plants have low water needs once established and can thrive in poor soils. Plants begin producing marketable stems in year 2, and floral designers appreciate the versatility of the bloom and seed head.

References

- Armitage, A. and J. Laushman. (2015). *Specialty Cut Flowers* (2nd ed.). Timber Press.
- Bachman, G. and L. Kelly. (2020). [Purple Coneflowers for the Mississippi Gardener](#). Mississippi State University Extension. Agricultural Communications. Paper P2690.
- Burpee's Seeds. (2021). [Learn About Echinacea](#).
- Dole, J. 2017. *Postharvest Handling of Cut Flowers and Greens*. Association of Specialty Cut Flowers Growers.
- Johnny's Selected Seeds. (2024). [Echinacea purpurea](#).
- Stock, M., T. Maughan, and P. Grossl. (2020). [Urban Garden Soils: Testing and Management](#). USU Extension Fact Sheet. AG/Soils/01. Paper 2116.
- Stock, M., T. Maughan, and R. Miller. (2019). [Sustainable Manure and Compost Application](#). USU Extension Fact Sheet. Horticulture/Soils/2019-01pr. Paper 2047.
- University of Maryland Cooperative Extension. (2009). [Nutrient Recommendations for Commercial Cut Flower Production](#). Paper 15.20.08.05.
- Utah Climate Center. (2022). [Utah Freeze Dates](#).
- Utah State University Analytical Laboratories. (2023). [Utah State University Analytical Laboratories](#).

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Table 3. Common diseases of echinacea for cut flower production.

Disease	Identification	Control
TOSPOVIRUSES (<i>Tomato Spotted Wilt Virus, TSWV</i>)	Viral disease with many symptoms including stunted plants, yellowing of leaves, and necrotic spots on leaves. Spread by thrips.	Controlling thrips is vital in reducing spread of Tospoviruses. Keep plants suspected of virus isolated from healthy plants and dispose of any plants that are confirmed to carry Tospovirus.
PHYTOPLASMA (<i>Candidatus Phytoplasma sp.</i>)	Abnormal growth (leaves instead of flowers, witches' brooms) and yellowing of leaves. Symptoms can resemble herbicide damage or eriophyid mite infections. Phytoplasma are transmitted by leafhopper, including aster leafhopper and beet leafhopper.	Good weed and insect control and remove infected plants to minimize inoculum that can be moved to flowers. Insects have to acquire phytoplasma from a plant before they can start transmitting them.
POWDERY MILDEW	A fungal disease that produces a white or light gray powder on leaves, stems, and occasionally flowers.	Keep areas weeded and debris free. Control early-season infestations with sulfur-based products, potassium bicarbonate, or some fungicides. For late season, chemical control may not be needed. Remove aboveground plant material after fall freeze.
ROOT, STEM, CROWN ROTS (<i>Pythium sp., Rhizoctonia sp.</i>)	Fungi that infect roots and crowns, producing dull-colored foliage or wilting followed by yellowing. Roots are dark, soft, or decayed. Plants may be stunted and eventually die.	Plugs should be transplanted with well-developed roots that are not root bound. Plant in well-drained soil and avoid excessive irrigation/moisture. Dig out and destroy infected plants.

Note. Powdery mildew is not yet identified to a species. This is an area of research at USU.

Table 4. Common pests of echinacea for cut flower production.

Pest	Identification	Control
APHIDS	Green, yellow, or black soft-bodied, sap-sucking insect. Populations can build up rapidly. Sticky honeydew from the aphids can accumulate on leaves and stems.	Encourage natural predators by avoiding broad-spectrum insecticides. Ladybeetles released inside a high tunnel can be effective but will leave the area over time. Applying insecticidal soaps and oils is often the best choice.
CATERPILLARS	Caterpillar is the general term for the larval stage of moths and butterflies. Size, color, pattern, and life cycle are dependent on the species and instar. Damage severity is correlated to population numbers and host presence. Feeding damage primarily occurs on the foliage but may extend to other plant parts.	Reduce weed pressure (alternate hosts) in production areas. Handpick and remove larva when spotted. Till or disk soil when not in production to disrupt overwintering life stages. Purchase or encourage natural enemies (predators and parasites) of caterpillar species. Spray for early instars with insecticides containing zeta-cypermethrin, spinosad, <i>Bacillus thuringiensis</i> , permethrin, cyfluthrin, etc.
EUROPEAN EARWIG (<i>Forficula auricularia</i>)	Elongated, brown bodies with a prominent pair of rear cerci. Hide in tight and dark spaces on the plant. Damage severity is correlated to population numbers and host presence. Feeding damage primarily occurs in the foliage, but may extend to other plant parts.	Populations tend to peak in mid-summer but monitor throughout the season. Scout in the morning when they are often in leaf crevices or blooms. Hand removal or pellets with spinosad are most effective. Other options: containers with bait (soy sauce, oil, etc.) and a perforated lid that are buried up to the lid and emptied periodically.

Table 4 continued.

GRASSHOPPERS	Highly mobile and characterized by their large hind legs. Size, color, pattern, and life cycle are dependent on the species and instar. Damage severity is correlated to population numbers and host presence. Feeding damage primarily occurs on the foliage but may extend to other plant parts.	Manage over a large area due to their high mobility. Bait (wheat bran with carbaryl or <i>Nosema locustae</i>) used by late May/early June is effective, as are insecticides with acephate, beta-cyfluthrin, or bifenthrin. Physical exclusion using insect netting often works best.
LEAF MINERS	Masses of eggs laid on plants will hatch into small, white/yellowish maggots that tunnel into leaves. The winding tunnels look white to necrotic. The lifecycle repeats at least three times per year without management.	Avoid irrigation stress. Check young transplants often, crush eggs, and remove infested leaves. Some wasps are natural predators. Spinosad is effective when applied to plants as eggs hatch. It cannot kill larvae feeding inside the leaves. In fall, remove crop residue and till the soil.
THRIPS	Very small (1.5mm) slender insects with fringed wings. Plant feeding damage is caused by puncturing and scraping of plant tissue, resulting in silvery scars and distorted growth. Also transmits viruses and hides in blooms.	Chemical control is difficult; Malathion only protects for 2 days and will kill beneficial insects. Keep weeds (often host plants) clear of the area.
TRUE PLANT BUGS	Small true bugs (~6mm), mottled brown with a distinctive triangular shape on their back. Adults and nymphs frequently damage plants by piercing them with their piercing-sucking mouthparts, causing stippling, distortion, and discoloration of plant tissues.	Populations tend to be greatest mid-summer to fall, but monitor throughout the season. Reduce weed pressure (alternate hosts) in production areas. If populations reach damage threshold, consider insecticides containing permethrin, gamma-cyhalothrin, or malathion.
TWO SPOTTED SPIDER MITES (<i>Tetranychus urticae</i>)	Very small, feed primarily on the underside of leaves, and cause the leaves to turn brown and fall off. Sometimes confused for leaf burn. Thin webbing forms that cover leaves.	Avoid water stress. Minimize conditions in and around planting that cause dust to collect on plants (i.e., bare soil). Control surrounding weeds. Avoid or limit broad-spectrum insecticide, as mite outbreaks often follow. Spray plants with water, insecticidal oil or soap.
SLUGS AND SNAILS	Soft, slimy bodies with a distinct head and sensory tentacles. Snails have a spiral shell, while slugs lack a shell.	Reduce excess moisture and standing water. Set up copper-based barriers around plants. Place traps or bait containing iron phosphate or metaldehyde
SPITTLE BUGS	Small, sap-feeding insects. Nymphs produce a protective foam or “spittle” to shield themselves from predators. Both adults and nymphs have piercing-sucking mouthparts that cause stippling, distortion, and discoloration of plant tissues.	Only consider management if confirmed populations are causing economic damage.
VARIOUS MAMMAL PESTS	Deer, rabbits, and rodents (mice, voles, gophers) are all mammal wildlife that can cause destruction to cut flower production in home landscapes or farms. Damage may include feeding on above or below ground plant parts or plant trampling.	Larger mammal pests are best prevented through physical exclusion (i.e., fences). Rodent populations fluctuate season to season. Monitor for activity (e.g. burrows, feeding, etc.) Use lethal or non-lethal trapping mechanisms. Bait stations can be used with pelleted products labeled for control of specific species.

Note. Most pests are general classifications and research is ongoing for further classification.