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COSMOS (*Cosmos bipinnatus*)

Cosmos is a classic garden favorite with elegant blooms that are iconic of summer. It is good in beds and containers and also attracts beneficial insects, making it a nice addition to pollinator gardens. *Cosmos* makes a useful and attractive cut flower for market gardeners and because it does not have a long shelf life, cosmos is an exclusively local offering. A self-seeding annual, cosmos is native to North, Central, and South America.

Depending on the cultivar, blooms may be single, semi-double, or fully double. The plants of *Cosmos bipinnatus* (also known as garden cosmos or lace cosmos) can range in height from 18" to 6 feet tall and have long stems good for cut flower production.

Note that *Cosmos sulphureus* (dwarf sulphur cosmos) is less appropriate as a cut flower because of its comparatively short stem length.

Cosmos is generally both easy to grow and prolific, but some care and attention to day length and succession planting can help boost your harvest.

PHOTOPERIOD & SUCCESSION PLANTING

Photoperiod (the number of hours of light per day) affects how *Cosmos* blooms. *Cosmos* is a short-day plant, which means it will bloom best when day length is 14 hours or less. With long days (over 14 hours of light per day), the plants are slower to bloom and the overall percentage of plants that produce flowers is decreased. The effect of photoperiod, however, is greatest with young plants. Mature plants will bloom regardless of photoperiod.

Take photoperiod into account when timing your plantings. For example, if you direct seed in the spring, the plants will still be immature during the long days of early summer and will not produce heavy blooms until the days shorten in late summer. However, if you start the plants early indoors and transplant them out into the field, the plants will have a jump start. They will be mature plants by early summer and will bloom even when the days are still long.

To ensure a long and productive harvest, you may wish to succession plant, starting with early spring plantings indoors, and staggering plantings at 14-day intervals. By succession planting, you can produce a continuous supply of mature plants and therefore a continuous harvest throughout summer and into early fall, regardless of day length.

SITE SELECTION

Cosmos prefers full sun. It will grow in any type of soil, but choose a plot with good drainage to avoid the risk of root and stem rot. Tall varieties may benefit from wind protection.



Single blooms in
['Versailles Mix'](#)



Semi-double and double
blooms in ['Double Click Mix'](#)

CULTURE (FIELD)

Cosmos is a heat-loving plant and does best above 60°F (16°C). Below 55°F (13°C), growth and flowering are inhibited.

To direct seed: after last frost, once soil temperature is above 60°F (16°C), sow seed thinly in rows, barely covering the seeds (planting seeds too deeply will hinder germination). Keep soil consistently moist until seeds have germinated. Seeds will germinate in 7–10 days at a soil temperature of 68–72°F (20–22°C). Thin to 9–12" apart when the first true leaves appear.

To transplant: sow seed thinly in flats, barely covering the seeds, 5–7 weeks before setting out. Keep soil at 68–72°F (20–22°C) and consistently moist until emergence. When the first true leaves appear, transplant into larger cell trays or containers. Harden off and transplant outdoors after the last frost, 9–12" apart. Wider spacing creates stronger, thicker stems. Planting in IRT (Infrared Transmitting) or black plastic mulch will aid in weed suppression and warming of soil.

To encourage longer lateral stems, some growers pinch out the central bud, also called growing tip, of young plants. As long as seedlings have developed several sets of true leaves, this can be done at the mature seedling stage, a few days before transplanting out in the field or garden. It is also possible to wait until plants reach 18" in height, then trim them with hedge shears to 10–12" tall. Pruning or pinching the plants in this way improves the branching habit and results in longer, more numerous and uniform lateral branching and an easier harvest. Plants that are not pinched or pruned tend to direct resources to the central growing point/stem rather than the lateral branches and can grow excessively tall, sometimes resulting in few harvestable blooms and plant lodging.

For a continued harvest, pinch (deadhead) expired blooms.

IRRIGATION AND FERTILIZING

Once plants are established, do not over water. *Cosmos* can tolerate dry conditions even in the heat of summer. Fertilize lightly, if necessary. Too much nitrogen can result in tall, spindly growth, and few blooms.

TRELLISING

To prevent bent stems and/or plant lodging, you may want to support plants with a horizontal trellis (such as Hortonova), particularly if growing one of

the taller cultivars. A trellis can be installed after transplanting but before plants reach 8-10" in height.

CULTURE (GREENHOUSE)

Cosmos can be grown indoors. Space plants 6–9" apart. If you are using supplemental lighting, apply long day treatment (14 hours or more of light per day) until plants have approximately 6 leaf pairs or until the stems are of adequate length. Then switch to less than 14 hours of light to initiate flowering. Maintain a temperature of 60–65°F (16°C–18°C).

PESTS AND DISEASES

Cosmos is generally easy to grow and not particularly susceptible to pests and disease. We have not had any pest or disease issues with *Cosmos* on our research farm in Albion, Maine.

Potential pests include aphids, Japanese beetles, and leafhoppers.

- **Aphids** are very small (1–3mm) soft-bodied insects that feed on plant sap, causing leaf damage and stunting plant growth. They secrete excess sugar as a waste product, called "honeydew." The honeydew can build up on leaves, attracting ants and leading to the growth of a black fungus called sooty mold. The best means of control for indoor growers are beneficial insects, which are available commercially and prey on aphids. Insecticidal soap is another control option.
- **Japanese beetles** are large beetles with brown, black, and green coloring. They eat voraciously through nearly any type of plant. Control with row cover until plants approach blooming. Once plants are blooming, control with PyGanic.
- **Leafhoppers** are small (1/4") long and slender, and can be confused with aphids, but are faster, run sideways, and jump. They feed on the underside of leaves, causing stippling and browning of the leaves. Control with row cover until plants approach blooming. Once plants are blooming, control with PyGanic.

Potential diseases include bacterial and fungal root and stem diseases. To avoid the risk of disease, do not overwater and plant in well-drained soils.

HARVEST

Harvesting often—even daily—is recommended to minimize the need for deadheading. Harvest fresh flowers when the petals on the first flower are just opening, but not yet flattened. You can also harvest

the flowers before they open, but when the bud is showing color—this technique may help prolong shelf life. Don't worry about cutting a long stem when harvesting flowers; the plant will branch below the cut and produce more long stems for subsequent harvest. *Cosmos* foliage is also useful and attractive in arrangements.

VASE LIFE & STORAGE

Vase life is relatively short (4–6 days in water). It can be extended with the addition of floral preservatives. Storage is not recommended but, if necessary, 36–40°F (2–4°C) is the recommended storage temperature.

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ACCESSIBILITY 10/12/21 LD