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SUNFLOWERS (*Helianthus annuus*)

Single-stem sunflowers are widely used as a focal flower in early summer to fall bouquets. Although each stem produces only one flower and can only be cut once, the benefit is a high-quality flower borne on a long, sturdy stem. Additional benefits include the fast production time of single-stem varieties and ease of harvest.

VARIETY SELECTION:

- **Petals:** Multiple layers or rows of petals prevent the appearance of lost petals as the flowers age or are damaged. All of our single-stem varieties have multiple rows of petals.
- **Pollen:** Most modern varieties bred for use as cut flowers do not produce pollen. Sunflower pollen is quite abundant and messy. Pollenless varieties are a great advantage when handling, displaying, and caring for the flowers.
- **Day-length sensitivity:** For early and late season production indoors, select varieties that are day-length neutral or are noted as suitable for flowering under short days. We recommend the ProCut series for early and late season production.
- **Color:** Golden-yellow sunflowers are a classic feature of bright summer bouquets and bunches. For earlier season bouquets or specialized markets that might incorporate softer, muted tones, use varieties with fresh, green centers such as 'ProCut Gold' or varieties with lightly tinted petals such as 'Buttercream', 'ProCut Lemon,' or 'ProCut Red/Lemon Bicolor.' For late summer and early autumn bouquets dark reds and the classic golden yellow with a dark center complement the mood of that time of year.



ProCut Gold (F1)



Sunrich Gold (F1)

Full, pleated petals are the signature style of the ProCut series, while the petals of most other single-stem varieties or series generally have a more angular, graphic look as seen in the comparison above.

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SITE SELECTION:

Choose a site that receives full sun. Sunflowers perform best in light, well-drained loam soil with a pH of 6.5–7.5. Excessive nitrogen, especially during the summer, will result in plants that grow too vigorously with abnormal flower shapes.

Sunflowers require little or no fertilizer to produce flower stems of high quality. If the soil is poor, it is recommended to add a slow-acting, granular 20-5-30 fertilizer.

Irrigation is generally not necessary for crops of sunflowers, as they are relatively drought tolerant and have a deep-reaching taproot. Excessive moisture can cause overgrown and soft plants. If irrigation is needed, use drip irrigation to prevent water damage on the blooms. Plastic mulch is not necessary to prevent weeds; generally after 3 weeks of growth leaves will shade out any developing weeds.

FLOWER SIZE:

Flower size and stem diameter is controlled by plant density, temperature, soil type, and day length. Knowing and manipulating these factors can be used as a tool to grow the right size sunflowers to fit your market needs.

Small flowers: Smaller flowers are easier to work with in mixed bouquets and arrangements. We recommend spacing sunflowers as close as 6-inches by 6-inches to produce small flower heads with thinner, more manageable stems. Short days, high density, low E.C. levels, and cool temperatures promote smaller flowers.

Large flowers: Use wider spacing to grow larger flower heads with thicker stems which are well suited to be sold in bunches of five or more. Long days, low plant density, moderate E.C. levels, and warm temperatures promote large flowers. For large flowers, simply adjust the spacing to 9-inches by 9-inches or wider.

GERMINATION:

Seeds germinate in 7–14 days when kept at a temperature of 70–75°F/21–24°C.

Sow seeds into 50- or 72-cell plug flats, 3-4 weeks before transplanting. Maintain temperatures at 70–75°F/21–24°C. Seedlings that are held in the cells for an extended period will become root bound or leggy, resulting in poorly performing transplants

DIRECT SOWING:

After the last frost, when temperatures are at least 50°F/10°C, sow 2–3 seeds at the spacing recommended for your final flower size and cover with ¼ inch of soil. Water thoroughly. Thin seedlings 7–10 days after emergence, leaving only the strongest and sturdiest seedlings.

Transplant to the field, into a greenhouse, or into a tunnel at the spacing described above to achieve your desired final flower size.

TRANSPLANTING:

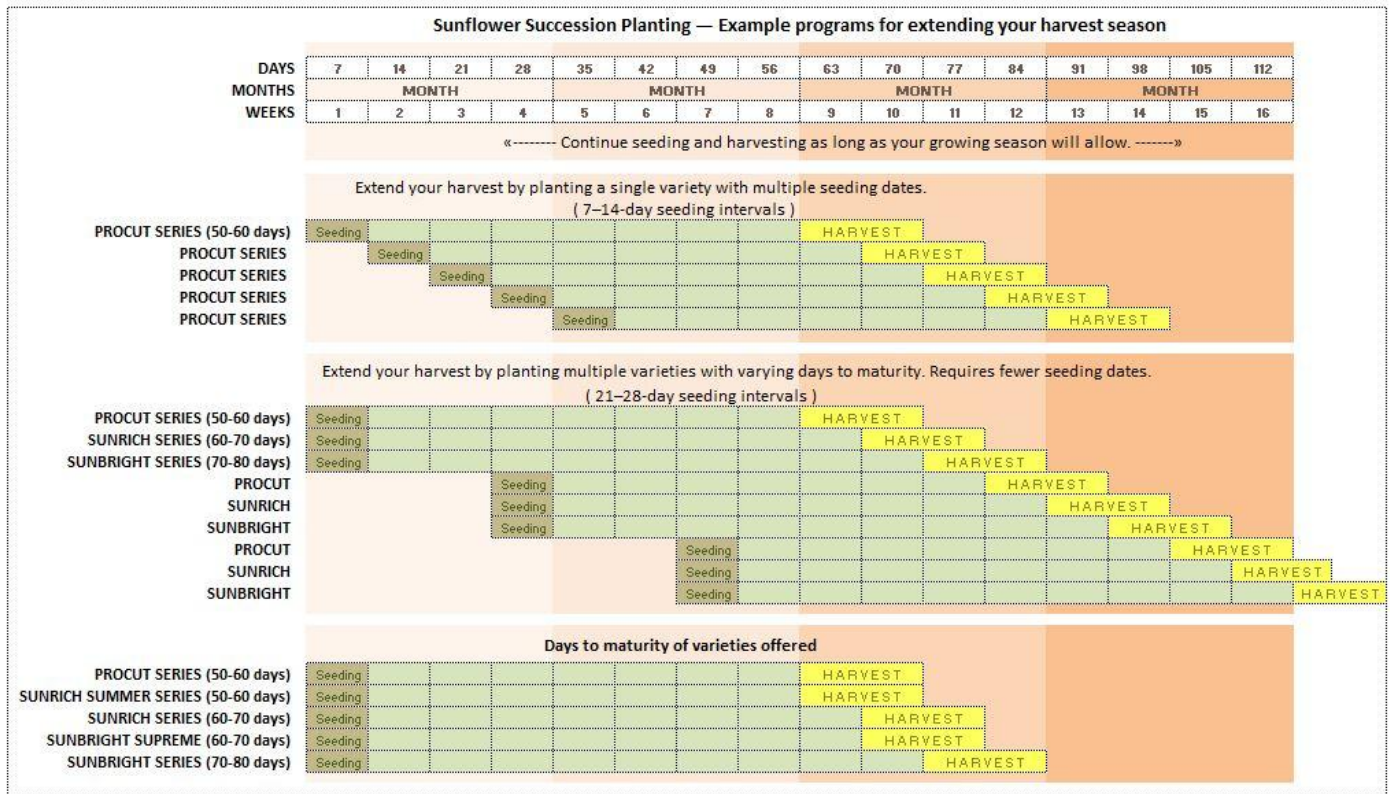
An earlier crop can be achieved by transplanting sunflowers rather than direct sowing. It is also recommended to transplant seedlings into protected-cropping environments, such as a high tunnel, to ensure an even stand.

TEMPERATURE:

After thinning or transplanting, an ideal air temperature of 50°F/10°C during the night and maximum of 75°F/25°C during the day is recommended.

SUCCESSION PLANTING:

A season-long harvest can be achieved through succession planting. There are two primary methods for planting for a successive harvest: planting more than one variety with different maturity times, or planting the same variety several times through the season. These methods can be used separately or in combination for a full season of blooms. The chart below is a guide, and dates may vary depending on variety and growing conditions.



INSECT PESTS:

Aphids are a common pest problem for Sunflowers. A strong spray of water will remove them or you can apply Safer® Insect Soap. Sticky Yellow Traps distributed throughout the field will lure and trap aphids, in addition to whiteflies and other pests.

Thrips damage can cause unsightly foliage. PyGanic®, which flushes out and kills thrips, is Johnny's preferred control. Reduce the pests' overwintering habitat by keeping fields free of weeds and crop debris. Combat serious infestations with spinosad, pyrethrin, or insecticidal soap (see our Insecticide Comparison Chart in the catalog or on our website).

Lygus bugs, also known as tarnished plant bugs, puncture plant tissue with piercing mouth parts and feed by sucking the sap out of the plant. Their saliva can cause damage to the plant, causing deformities to the flower heads such as missing

petals and twisted and distorted flower head. Prevent their occurrence by reducing weed pressure and control with applications of PyGanic®.

For nonchemical control of insect pests, the use of beneficial insects such as lady bugs, lacewings, and minute pirate bug are successful controls that will benefit your other crops, as well.

ANIMAL PESTS:

When direct sown or with newly transplanted seedlings, the first challenge is to prevent the seeds from being eaten by birds, mice, and other small rodents. Shield newly-sown seeds and seedlings with bird netting if birds are an issue. Repel rodents by applying Plantskydd®.

DISEASE:

Powdery mildew is a fungal disease causing gray-to-white spots on the leaves. Preventative measures can discourage disease problems before they have a chance to start. Provide good air circulation and, if over-head watering, avoid watering late in the day; leaves should be dry by night fall. If powdery mildew occurs, Mildew Cure® is effective in combating it.

Rust, caused by the fungal pathogen *Puccinia helianthi*, forms on the lower leaves and works its way up the plants. Red-brown spots with yellow halos are easily seen on the undersides of leaves. Spores appear in the summer and will overwinter in the soil. Destroy and remove infected plant material.

BORON DEFICIENCY:

Plants deficient in boron show symptoms first on the lower half of the plant that slowly move up the plant. Boron deficiency can cause the buds to dieback or to fall off, stems to break off, and leaves to curl downward. If these symptoms occur it is best to have your soil tested to determine the boron levels and amend the soil at planting time.

HARVEST:

Cut stems to desired length when the flowers are ¼ open with the petals perpendicular to the center discs. Strip the leaves and place immediately in a bucket of cool water. Harvesting at a later bloom stage results in reduced vase life. Morning or evening is considered the best time to harvest flowers, as harvesting in the heat of the day reduces flower quality and vase life.

For harvesting for dried-flower use, cut the stems when the flowers are ½ open. Hang to dry or place in silica gel to dry.

POST-HARVEST CARE:

Flowers can last 7–10 days, especially if the stems are re-cut and the water is changed regularly. Place flowers in a cool room and out of direct sunlight.