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Growing Sunflowers in Missouri

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In Missouri, sunflowers may yield from 500 to 3,800 pounds per acre depending on the location, crop environment, and planting date. Yields of 800 to 1,500 pounds per acre are common on upland Missouri soils. Improved management may raise these averages.

Dwarf sunflower varieties show promise in reducing lodging problems. Like corn, however, lodging in sunflowers may be related to disease. Sunflower stalks are extremely brittle and light when they are mature and dry in the field. Stalk rots can level entire stands.

The sunflower seed is prized for its high oil content, which has promise in the food and fuel markets. Seed of the striped varieties (White African or Gray Mammoth) is widely used in the snack food industry. Also, sunflower seeds are appearing in salad bars and in packaged foods. They are also used in packaged bird feed.

The sunflower has attracted much attention because of escalating energy costs and the fact that its seed is greater than 40 percent oil by weight. (Late plantings, however, may fail to achieve this 40 percent oil content.)

To date, sunflowers are not known to be hosts for any type of nematode. In Missouri, the sunflower is likely to be more popular as a double-crop option, or it may be used in areas where soybean production is depressed by the cyst nematode.

Hybrid sunflowers are an alternative to soybeans for double cropping after wheat if you've found a suitable market. In Missouri, sunflowers are a viable choice when the weather has delayed the planting of soybeans or when soybean prices are low.

Sunflowers need about 90 to 100 days to mature. April-May plantings produce higher yields than June-July plantings. Sunflowers emerging after July 15 can withstand a frost. They will require field drying, though, before harvest is possible.

Sunflowers are not recommended for silage in Missouri if corn or sorghum can be grown.

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Adaptation

The sunflower is more tolerant to frost than corn; plants with fewer than six leaves are generally resistant to frost. Sunflowers are also more tolerant to drought and high temperatures than sorghum.

The sunflower will grow on most soil types that are suitable for corn or small grains. Like other crops, sunflowers produce better yields on fields with high fertility levels and adequate moisture. Avoid heavy soils with poor drainage, especially if there is danger of water standing on the field for long periods of time.

Soil fertility and preparation

For sunflower production, the soil should have a pH of 6.0 to 7.1. Studies conducted at Weldon Spring demonstrated no need to add nitrogen on bottomland soils with greater than 2.8 percent organic matter and good soil moisture. On upland soils, sunflowers may be grown if 50 pounds of nitrogen, 20 pounds of phosphorous and 40 pounds of potassium are available. Low potassium and phosphorous may delay maturity and cause lodging.

The seedbed should be moist, fine enough for good herbicide incorporation, and free of weeds.

Planting

Sunflowers tolerate a wide range of planting populations. They usually compensate for thin stands by producing larger heads and seeds. However, some varieties adjust to thin populations by producing undesirable branches and multiple flowers. Yields do not fall off significantly until field populations drop to less than 15,000 plants per acre. The larger heads in

thin stands take longer to dry, but lodging is generally less of a problem than with high populations.

In thick stands, heads and seeds are generally smaller. But you will not be concerned with the smaller seeds if you are growing sunflowers for oilseed production where the objective is high yields and not large seed size. In high populations, the small heads remain upright and dry faster than large heads.

Row spacings of 20 to 30 inches result in the best yields. Soil temperature should average 45 to 50 degrees F before planting.

As the plants approach maturity, the heads bend toward the east. So planting in rows running east and west will eliminate some of the tangling caused by plants leaning into adjacent rows.

From 4 to 8 pounds of seed are required to plant an acre. Seeds should be planted 1 to 2 inches deep. Weed control up to the time seedlings are 10 to 15 inches tall is critical.

Sunflowers often take longer to emerge than small grain crops because it takes soil moisture longer to penetrate through their thick hulls.

Sunflowers can be planted with a corn planter fitted with special sunflower plates. You could also use a drill with some of the grain box holes covered, so you get a suitable width for cultivation.

Depending on the variety, you will buy between 3,500 and 96,000 sunflower seeds per pound. The bag will identify the variety and tell you which planter plates will give you 15,000 to 30,000 plants per acre.

A planter-box fungicide will reduce soil-borne fungi.

Weed control

Pre-plant applications of EPTC (Eptam), trifluralin (Treflan), profluralin (Tolban), dinitramine (Cobex), chloramben (Amiben), and pendimethalin (Prowl) will control most weeds in sunflowers when applied at recommended rates.

The sunflower competes well with weeds after only four weeks of normal growth.

Post-emergence harrowing or cultivation can be accomplished when the seedling is deeply rooted and has reached the four- to six-leaf stage. You will break fewer plants if you cultivate during mid-day or when the temperature is greater than 70 degrees F. Cultivation when plants are greater than 12 to 15 inches tall is risky because it may cause root pruning.

Problems

- Birds may eat the sunflower seeds before they can be harvested.
- Sunflower head moths, midges, and stalk borers can cause significant damage in Missouri.
- Rust and downy mildew may reduce yields or destroy stands. Verticillium wilt is equally destructive.
- Harvest is hampered by shattering and lodged plants.
- Shattered seeds become pests in the following year's soybean crop. Early disking or treatment with 2,4-D will destroy volunteer sunflowers. If you will be rotating with corn, use atrazine because sunflowers are extremely sensitive to this chemical.

Harvesting

Sunflowers mature long before they are dry enough for combining. Threshing is relatively easy when the back portion of the head loses all traces of yellow and is a hard, crisp brown. As the tissues shrink, the head turns backward.

Often a post- or pre-harvest chemical is used to speed up drying and aid in harvesting. Paraquat is cleared for use on sunflowers used for oil seed production; however, it may not be used on striped varieties used for bird feed.

Harvesting without proper adjustments and attachments can result in recovery of less than 50 percent of the seed. If a standard combine is used, it will lose a minimum of 40 percent of the crop by shattering at the real or header. There are a variety of header attachments available that strip the heads. A sunflower header with pans will minimize these losses when cylinder speed is as slow as possible (300 to 450 rpm). Lodged plants are difficult to harvest with or without a header. Start with the concaves wide open and adjust slowly until all the seeds are removed from the heads. You've got the right adjustment if the header removes seeds without breaking the heads or dehulling the seeds.

Attempt harvesting when moisture in the seed is 18 percent or less; however, drying, aeration, or both are required if the seed has greater than 9 percent moisture.

Excessive trash and fiber mixed with the seeds may create a fire hazard, but 12 percent is permissible for short-term storage.

Caution

Temperatures of 24 degrees F will kill sunflowers. (Soybeans are usually killed by temperatures of 29 to 31 degrees F.)

Although frosted, sunflowers not killed by temperatures below 24 degrees F will continue to grow and reach maturity. Frozen heads retain a soggy, flexible disk which dries slowly and may be subject to heavy bird damage.

As a "frost cutter," plant short-season varieties (90 days or less), if available. Increase the planting rate by 30 percent, so you get smaller heads that take less field drying time.

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