

2025 4-H Special Agronomy Newsletter



Sunflower Industry

There are two types of sunflower production in Nebraska. Some are grown for oil production, and those grown for human food consumption referred to as confectionery seeds. A portion of the oil seed production is also used in the birdseed industry.

Sunflowers are an important agricultural crop choice for US producers in the northern plains of the Dakotas to the panhandle of Texas. North and South Dakota are the leaders in sunflower production.

While the vibrant, strong sunflower is a recognized worldwide for its beauty, it is also an important source of food. Sunflower oil is a valued and healthy vegetable oil and sunflower seeds are enjoyed as a healthy, tasty snack and nutritious ingredient to many foods.



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- Evaluation

Nebraska currently ranks 4th in the U.S. in production (USDA NASS, 2024) and oil sunflower acres were at 24,000 acres with a 1,100 lbs/acre and non-oil sunflower production was 750 lbs/acre and 2,300 acres were planted.



Planting & Care

The variety we are using is **N4H521 CL** from nuseeds and is a high yielding, full season crop. It is a high oleic hybrid with an oil profile that combines a nice black seed color to ensure multiple market options. It is a medium to late maturing group, so the earlier weather conditions allow you to plant, the better.

Sunflowers may be planted during a wide range of dates. In the northern Great Plains, planting may extend from May 1 until late June, although late June plantings often result in lower yields and oil content. *It is recommended to plant the last two weeks in May for this project.* Germination does not occur until soil temperature reaches 50 F. Sunflowers will perform well in a wide range of plant populations and plant spacing. Plant seeds at least 9-12 inches apart if planted in rows and space rows at least 12-14 inches apart. Sunflower seed should be placed 1.5-2 inches deep.

Sunflower plants will compensate for differences in plant population by adjusting seed and head size. As the plant population decreases, seed and head size will increase.

(Source, NDSU Sunflower Production Guide)

Share pictures on social media:

Facebook: @UNLExtension211

Twitter: @UNLExtension

Instagram: @unl_extension

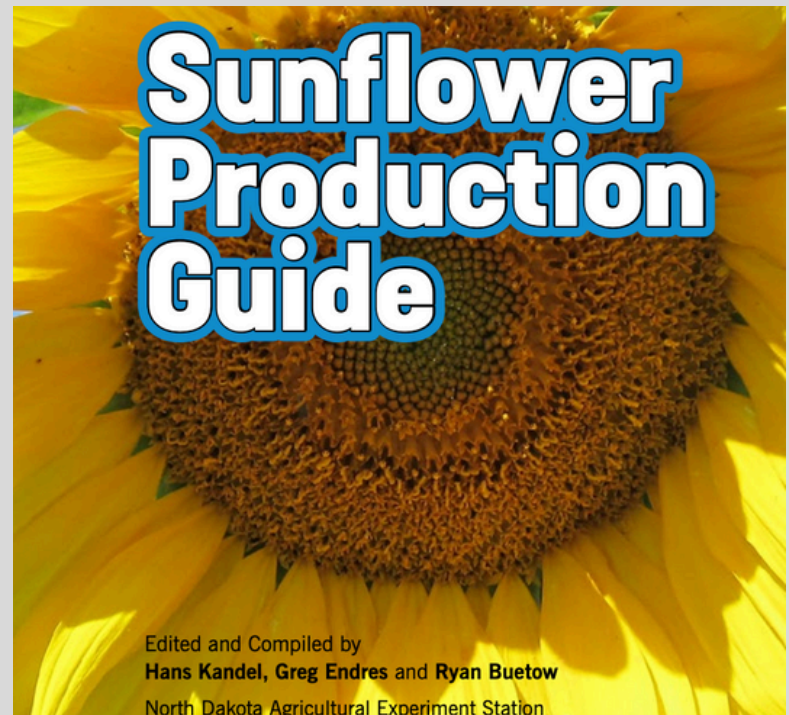
Insect Pests

Key Insect Pests

- Sunflower Moth
- Red Sunflower Seed Weevil
- Sunflower Stem Weevil
- Banded Sunflower Moth
- Gray Sunflower Seed Weevil
- Cutworm & Armyworm
- Wireworm
- Sunflower Head Clipping Weevil
- Grasshopper



(Source, UNL - Crop Profile for Sunflowers in NE)



If you have questions and need a reliable source, go to: NDSU Sunflower Production Guide

Sunflowers are a native species to North America and were used by American Indians for an important, high-energy food source.

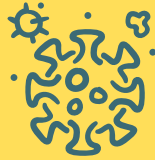
Share pictures of your project to
brandy.vandewalle@unl.edu



Diseases

Diseases Caused by Viruses

- Bacterial Leaf Spot
- Bacterial Head Rot
- Charcoal Rot
- Downy Mildew
- Fusarium Root & Stem Rot
- Powdery Mildew
- Rhizopus Head Rot
- Phoma Black Stem
- Phomopsis Stem Canker
- Rust
- Sclerotinia Wilt/Basal Stalk Rot, Sclerotinia Mid-stem Rot and Sclerotinia Head Rot
- Septoria Leaf Spot & Blight
- Stem/Wilt Diseases
- Seedling Blight & Seed Rot
- Verticillium Wilt



(Source, NDSU Sunflower Production Guide)

Water Use

Sunflower plants have deep roots and extracts water from depths not reached by most other crops; thus, sunflower is perceived to be a drought-tolerant crop. Sunflower has an effective root depth of around 4 feet but can remove water from below this depth.

Seasonal water use by sunflower averages about 19 inches under irrigated conditions. Under dryland conditions, sunflower will use whatever stored soil moisture and rain that it receives during the growing season. When access to water is not limited, small grains use 2 to 3 inches less total water than sunflower during the growing season, whereas soybean water use is slightly greater. Corn uses 1 to 4 inches, and sugarbeet use 2 to 6 inches more than sunflower during the growing season.

(Source, NDSU Sunflower Production Guide)

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Growth Stages

Table 2. Description of sunflower growth stages.

Stage	Description
V (number) Vegetative Stages (e.g., V1, V2, V3, etc.)	These are determined by counting the number of true leaves at least 4 centimeters (cm) in length beginning as V1, V2, V3, V4, etc. If senescence of the lower leaves has occurred, count leaf scars (excluding those where the cotyledons were attached) to determine the proper stage.
R1 Reproductive Stages	The terminal bud forms a miniature floral head rather than a cluster of leaves. When viewed from directly above, the immature bracts have a many-pointed starlike appearance.
R2	The immature bud elongates 0.5 to 2 cm above the nearest leaf attached to the stem. Disregard leaves attached directly to the back of the bud.
R3	The immature bud elongates more than 2 cm above the nearest leaf.
R4	The inflorescence begins to open. When viewed from directly above, immature ray flowers are visible.
R5 (decimal) (e.g., R5.1, R5.2, R5.3, etc.)	This stage is the beginning of flowering. The stage can be divided into substages dependent upon the percent of the head area (disk flowers) that has completed or is in flowering. Ex. R5.3 (30%), R5.8 (80%), etc.
R6	Flowering is complete and the ray flowers are wilting.
R7	The back of the head has started to turn a pale yellow.
R8	The back of the head is yellow but the bracts remain green.
R9	The bracts become yellow and brown. This stage is regarded as physiological maturity.

From Schneider, A.A., and J.F. Miller. 1981. Description of Sunflower Growth Stages. Crop Sci. 21:901-903.



Harvest

The sunflower plant is physiologically mature when the back of the head has turned from green to yellow and the bracts are turning brown (Stage R9), about 30 to 45 days after bloom. Harvesting sunflower at higher moisture contents normally results in higher yields due to less field loss. Early harvest also reduces exposure to late-season wet and cold weather. As moisture is removed from the sunflower seed, the hull dries first and the kernels dry last.

(Source, NDSU Sunflower Production Guide)



It's important to recognize when the sunflower seeds are close to harvest. Here are the cues:

- The large heads begin to droop and turn down. The backside of the head should turn yellow-brown. If it's still green, it's not close to ready.
- The tiny petals covering the developing seeds have dried and fallen off, exposing tightly packed mature seeds. If most of the petals are still attached, leave the sunflower alone.
- The seeds are hardened and turn black with white stripes. If they are still milky white, they are not mature. Pull a few seeds to see if they have developed.
- The foliage has turned yellow.

While you wait for your sunflowers to mature enough to harvest, you may want to protect them from critters. Once you notice the petals wilting, cover the sunflower heads with brown paper bags, fine netting, mesh, perforated plastic bags, or cheesecloth. Use a twist tie or rubber band to secure the bag so the seeds don't fall out.

Source: *Farmers Almanac*

Fair Exhibits

Be eligible to enter an exhibit at both the County and/or State Fair in the agronomy project area:



G750011 Special Agronomy Project - Educational Exhibit (SF259) - Educational exhibit based on what was learned from the project. Present information on a poster 14 inches x 22 inches either vertical or horizontal arrangement or in a clear plastic report cover. The 4-H member's name, age, and county must be on the back of the poster or report cover. Refer to Scoresheet SF259 Each display must have a one-page essay (minimum) explaining why the exhibitor chose the area of display and what they learned from their project. Include any references used.

G750012 Special Agronomy Project - Video Presentation - 4-H exhibitor designs a multimedia presentation related to the crop. This could include narration of the growing process, presenting facts about the crop or any other innovative multimedia practices. The presentation should be at least 2 minutes in length and no more than 5 minutes in length, appropriate graphics, sound and either a video clip, animation or voice over and/or original video clip. Any of the following file formats will be accepted: mp4, .mov, .ppt, or .avi. Email a link of the video to the superintendents to anygren2@unl.edu or brandy.vandewalle@unl.edu by August 10th.

G750013 Special Agronomy Project (Freshly Harvested Crop) - Plant exhibits must be the result of the current year's project. Supporting documentation (1/2 to 1-page in length) must accompany this which has details outlined in the fairbook.

(Two sunflower plants or heads)

<https://4hfairbook.unl.edu/fairbookview.php/exhibits>



Resources & Fun Activities



Sunflower kernels are rich in healthy fats, protein, fiber, minerals, vitamin E, and phytochemicals - all important to the nutritional quality of our diet

There are two types of sunflower oil available; linoleic and high oleic sunflower oil. Both are developed with standard breeding techniques. They differ in oleic levels and each one offers unique properties.



Resources:

NDSU Sunflower Production Guide

<https://cropwatch.unl.edu>

Best Management Practices for Sunflower Production – South Dakota State Extension

National Sunflower Association
<https://www.sunflowernsa.com>

Sunflower Recipes & Nutrition Information

Sunflower Recipes for fun
<https://go.unl.edu/0xcm>



Nutritional Power of Sunflowers
<https://go.unl.edu/dufo>



See how commercial sunflower harvest is done...

<https://go.unl.edu/h87y>



Fun Fact:

Sunflower oil comes in mid oleic and high oleic formats; however, the demand for high oleic sunflower oil is growing, due to its superior stability and longer shelf life, compared to other oils.



2025 Special Agronomy Project

Oil-based Sunflowers

Because I enrolled in the Special Agronomy Project about Sunflowers: (please check all that apply):

- I took a 4-H agronomy project for the first time
- I grew Sunflowers (for oil production) for the first time
- I grew beans for the first time
- I learned new information about agronomy

Please list three new things you learned by taking this project:

1.

2.

3.

Because I enrolled in the Sunflower project this year, next year I plan to: (please check all that apply)

- enroll in a regular 4-H agronomy, weed or range project
- grow sunflowers (for oil production) again
- try a new cultivar of a plant I currently grow
- amend garden soil with organic matter
- change an agronomy method I used or use a new method

What change/s do you plan to make or new methods do you plan to use?

Because I enrolled in the Special Agronomy Project this year: (please check all that apply)

- I am learning skills that can be used in the future
- I can think of ways this project could be a business
- I found a connection between my interests and a career
- I learned about a new career

Would you enroll in the Special Agronomy Project again? Yes No Maybe

If yes, what plant would you like to grow and learn more about?



Complete online or send to Fillmore County Extension at 1340 G Street – Geneva, NE 68361.