



Photo Source by NPS Photo by Jim Pizarowicz as seen on <http://www.nps.gov/wica/naturescience/images/Annual-Sunflower.jpg>

Sunflower is an annual plant native to the Americas in the family Asteraceae, with a large flowering head. What is called the flower is actually a head of many flowers crowded together. The outer flowers, or ray florets, can be yellow, maroon, orange, and are sterile. The florets inside the circular head are called disc florets. The disc florets mature into what are traditionally called “sunflower seeds”, but are actually the fruit of the plant. The true seeds are encased in an inedible husk.

- Taken from Wikipedia, The Free Encyclopedia; www.en.wikipedia.org, search Sunflowers.

Introduction

Classified as either oil type or confection (non-oil). Oil types made into vegetable oil or meal in livestock feed. Confection types sold for human consumption as snack foods (with or without the hull). Either can be used for birdseed.

Sunflower is native to North America, but its commercialization took place in Russia. In ancient times, seed was crushed or pounded into flour for cakes, mush or bread. Indian tribes mixed the meal with other vegetable like beans, squash and corn. Other uses that include non-food purposes are for purple dye in the textile market, body paints, and other decorations.

Market Information

In the Midwest most is sold to the birdseed market. Can sell to regional birdseed packer or local retail store or pet supply store. Can package and sell directly off the farm as part of a farm market also.

Demand is on the rise with sunflower being a healthy oil and used in many preparing many fried snack foods like potato chips.

Oilseeds used for the production of oil also

generate a meal byproduct. Sunflower meal does have the lowest protein percentage (28%) of the five main oilseeds used as an ingredient in livestock feed (soybean, cottonseed, sunflower, corn, and canola).

It is also the premium ingredient in bird seed and receives higher prices than other birdseed components.

Sunflower oil crushers supply three types of oil; NuSun, Linoleic, and High Oleic sunflower oil.

- NuSun is mid range – 65% monounsaturated sunflower oil, no hydrogenation needed and has 9% saturated fat level. Great for frying applications w/ good balance of linoleic acid (f.a. that enhances the flavor of products). Has a longer shelf life than other oils because of the chemical make up.
- Linoleic – contains 69% polyunsaturated fat, 20% monounsaturated fat, and 11% saturated fat, An excellent cooking oil with neutral taste. Requires light hydrogenation to remain stable for frying.
- High Oleic – contains 80% or more oleic acid (monounsaturated). It is a unique oil and has specialty applications.

Confection sunflowers are divided into three areas according to the size of the sunflower seeds.

Processors sell them based on their size.

- Large size – into the in-shell market for roasting, chewing/spitting snack
- Medium size – hulled for kernel market, snacks and baking
- Small size – bird and pet feed market

About 60% of annual confection sunflower production is exported to Spain, Netherlands, Germany, and Canada where demand is higher for quality seeds and products. The largest market for confection sunflower seeds is consumer retail as a snack.

Confection sunflower seed is processed accordingly:

1. Seed is prepared and cleaned
2. Seeds are graded into small, medium, and large size
3. In shell marketed seeds are bagged
4. Kernel seeds are hulled and bagged
5. Seeds are then stored

Oil-type seed is processed accordingly:

1. Seed is prepared and cleaned
2. Seeds are dehulled
3. Seeds are physically pressed with subsequent hexane extraction of remaining oil in the meal
4. Degumming
5. Refining

6. Bleaching
7. Dewaxing
8. Deodorization
9. Storage

Production Considerations

Planting

Sunflowers grow well in a variety of soils as long as good drainage is present. Sunflowers can be planted with a conventional corn planter. Crop rotation is essential with sunflowers as they should not be planted more than once every 3-4 years in the same field. Sunflowers have deep root systems and can withstand some drought conditions and cultivation. It is important that they are not water stressed 20 days before and after flowering.

A conventional corn planter or drill can be used to plant sunflower seeds. Using plastic plates with filler rings matching the seed size indicated on the bag is best. Seeds should be planted 1-2 inches deep, 12 inches apart, and in 2-2.5 foot spaced rows. Ohio's climate can allow for planting in early to mid-May. Germination usually occurs within 7-12 days and plants mature in 80-90 days in ideal growing and environmental conditions. Fertilization efforts are similar to corn and soybeans with regard to phosphorus and potassium. Fifty pounds of phosphorus and 100 pounds of potassium per acre with no more than 100 pounds of nitrogen are recommended.

Diseases and Pests

As with all plants, sunflowers are subject to a few pests and diseases. A common disease that infects sunflower plants is Sclerotinia or white mold. This causes stalk and head rots. Other common diseases include downy mildew, rust, and verticillium wilt. Proper sanitation and crop rotation can assist with controlling these issues. The major insect pest is the sunflower head moth, which attacks at flowering time. Larvae feed on floral parts and tunnel into the developing seed. Aphids and white flies can also present some problems in sunflowers. Birds are a major pest at harvest time due to their love of the mature seeds. Using frightening devices and or coving heads with plastic netting or cheesecloth usually helps.

Harvest

Sunflowers are mature and ready for harvest when the heads are downturned and brown on their back. Typically this happens around mid-September-October. A conventional grain combine with sunflower head attachment can be used for harvest. Some growers harvest with a higher moisture content to avoid bird damage. It is approximated that one can expect 1,000-2,000 pounds per acre from harvest. Seeds then need to be cleaned and dried before storing.

If harvesting for the home garden, cut flowers with about a foot of stem and hang in a warm, dry, well-ventilated, rodent and insect free area. A paper bag with holes or cheesecloth can be

placed over heads to catch the falling seeds. If roasting for personal use, cover seeds with salted water (2 qts. Water to ¼-1/2 c. salt), bring to a boil, simmer two hours, or soak overnight. Drain and dry on paper. Place in shallow pan and roast at 300 degrees for 30-40 minutes, or until golden, stir occasionally. Remove and add one teaspoon melted butter or olive oil to one cup of seeds. Stir, place on absorbent towel and salt to taste.

Oil Crushing

When oil is extracted from sunflower seeds, sunflower meal results as a byproduct. While this is worth some value as a feed supplement for livestock, 80 percent of the sunflower's value comes from oil. When crushing seeds, the process removes the hulls. These hulls can then be used to create steam for power. For each 100 pounds of seed, approximately 40 pounds of oil, 35 pounds of meal, and 20-25 pounds of byproducts are produced.



Economics

Generally sunflowers return \$50-75 above variable costs to land, capital, and management. Because present price and yield potential are not as high as other field crops (corn, soybeans), sunflower production should be reserved for fields that have lower yields for corn and soybeans; 100 bushels or less and 20 bushels or less per acre respectively. With proper management, sunflower production on these soils should result in 1,500-1,800 pounds per acre. Ohio State University Extension notes that Ohio producers receive \$8-\$12 per cwt. Some grain elevators do not purchase sunflower seed so it is best to make arrangements with a market or find an elevator who will purchase seed before planting begins.

Sunflower prices for April 2008 reported from the National Sunflower Association indicated the following: (Price is per hundred weight)

NuSun
Fargo, ND – 25.55

Enderlin, ND – 25.15
Goodland, KS – 29.45

Linoleic Sunflower
Fargo, ND – 25.55
Goodland, KS – 28.95

Confection Sunflower Processor
CHS, Inc.: Grandin, ND – 32.00
CHS, Inc.: Hazel, MN – 32.00
Dahlgren & Co.: Crookston, MN – 30.00
Dahlgren & Co.: Fargo, ND – 30.00
Dahlgren & Co.: Grace City, ND – 29.50
Proseed: Karlstad, MN – 23.00
RR Commodities: Fargo, ND – 31-32.00
SunOpta: Goodland, KS – 30.00

References and More Information

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- AgMRC – Agricultural Marketing Resource Center
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