Chapter 8: Harvesting Sunflowers

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Harvesting

Harvesting sunflowers is a challenge. As one sunflower producer relayed "changes in temperature, humidity and plant moisture make setting the combine (to harvest sunflowers) a moving target from day to day and even from hour to hour."

Sunflowers are usually ready for harvest around 120 days after planting. This varies with climate and genetics. Therefore, although there are usually fields that are harvested in September and some as late as November, the bulk of sunflower harvest in South Dakota occurs in October.

Sunflowers are physiologically mature at growth stage R9 or when the back of the head has turned yellow and the bracts have turned yellow or brown. At this stage, seed moisture is around 35% or below.

Some growers may choose to desiccate their sunflowers in order to speed up harvest timing. The sunflowers should be at physiological maturity before application of a desiccant to avoid reduced yield and quality. There are numerous benefits to early harvest including reduced losses from lodging, shatter and bird damage. It can also allow producers the flexibility to spread harvest out and alleviate demands on time, labor and equipment. Early harvest can also help facilitate winter wheat planting if desired. For information on products labelled for desiccation on sunflowers, refer to the South Dakota Pest Management Guide for Alfalfa & Oilseeds. Application timing for desiccants is important. A video clip on desiccants by K. Howatt (NDSU) is posted on the https://www.sunflowernsa.com/growers/HarvestingStorage/Desiccant-Considerations/. Sunflower seed harvested at higher moisture will need to be dried prior to storage. Moisture level considered safe for seed storage is 9.5%.

It is possible to combine sunflowers with a row header, corn or small grain platform header fitted with pans. Traditionally the use of row crop headers has been common. However, in recent years, numerous companies have developed header options for sunflowers. Now it is also common to see combine headers designed specifically for sunflowers. Producers may also choose to use harvest attachments or special conversion kits fitted to their corn head.

With any header, it is very important to gather as many heads as possible with minimal stalk entering the combine and with as little shattering and seed loss as possible. Threshing sunflower heads results in fewer losses if the cylinder speed is only fast enough to thresh the seeds, the concaves are kept open, and seed moisture is in the low teens. Ideally, whole sunflower heads should leave the combine with only unfilled seeds in them.

Sunflower seeds are relatively light compared to other crops. Adjust the fan so there is only enough wind to keep the trash floating across the sieve. The upper sieve should be open enough to allow an average seed to pass through on end. The lower sieve should be adjusted to provide a slightly smaller opening. The final adjustments will depend on the amount of material returning through the tailings elevator and an estimation of the amount of dockage in the grain tank. Proper setting is critical, especially during harvest of larger, lighter confection type seeds. Always refer to the combine manual for initial settings.

Improper combine settings that contribute to harvest losses can be costly. Sunflowers sold at $0.16/lbs., with 5 percent harvest losses in a field yielding 2400 lbs./acre will cost producers $19.00/acre. Field losses prior to harvest and during harvest can be assessed by counting seed on the ground ahead and behind the combine. The rule of thumb is that ten seeds per square foot represents a loss of 100 lbs. per acre. Seed counts taken behind the combine will need to be adjusted to account for the reduction from the width of the header to the width at the rear of the combine. Be sure NOT to count unfilled seeds. More information on calculating harvest losses is found in the NDSU Sunflower Production Guide (www.sunflowernsa.com/growers/Production-Resource-Books/).

Sunflowers present a real fire hazard during harvest. Removing all old crop material (chaff) and starting with a very clean combine prior to harvest can reduce the risk of fire. Additionally, using compressed air (or a leaf blower) regularly to remove the dust that collects, especially around the engine compartment and exhaust, will keep the fire hazard to a minimum. Early harvest, with higher moisture plants and seeds, and late harvest, with much cooler ambient temperatures, can help mitigate the fire risks.

Drying

Harvesting sunflowers that are dry enough to put directly into storage is the best scenario. However, weather conditions and other factors will determine if this happens. Natural air, bin, batch and continuous flow dryers can all be used to dry sunflowers.

Natural air and low temperature bin drying are energy efficient methods to bring the grain moisture down to levels acceptable for storage. These methods can work well in the fall when weather is conducive. They are, however, less efficient in cool wet conditions and when the moisture content of the grain is above 15%. As with any grain crop, drying will become harder as air temperatures cool and relative humidity levels increase later in the fall.

It can be easy to over dry sunflowers as they weigh less per bushel than other grain crops such as corn. Therefore, they will dry faster because there are smaller quantities of water to be removed. Another concern that involves drying sunflowers is the high risk of fire hazard. The very fine hairs or fibers on sunflower seeds can be rubbed off during handling. These hairs, along with other plant material can be drawn through the drying fan and open burner, igniting and causing a fire. The hazard can be reduced if the fans are turned into the wind, giving them access to clean air. Daily cleaning of the dryer, air ducts, and other surrounding areas and surfaces, can also help reduce the fire hazard. In the case of a fire, producers should immediately shut off the fan to reduce the oxygen supply, douse small fires with water, and keep a fire extinguisher for oil type fires on hand. Dryers should not be left unattended when running.

The sunflower seed hull will dry faster than the meat or kernel. This can lead to lower initial moisture readings when the seed is removed from the dryer. The moisture of the seed can “rebound” a percent or two as the hull and kernel reach an equilibrium. For an accurate reading on moisture, the seed should be placed in a sealed container for 6-12 hours and then retested. This allows the moisture to equalize throughout the seeds.

Storage

Sunflower seed that has significant amounts of chaff and trash should be cleaned before drying or storage. This will improve airflow through the stored grain. Grain stored with high amounts of fines, trash or other material will be more susceptible to problems. Oil type sunflowers are considered safe for short-term storage at 10% moisture, and long-term storage at 8% moisture. Confection type sunflowers can be safely stored for less than six months at 10% moisture and for longer at 9% moisture. Sunflowers should be cooled to 40°F or below when they are put into the bin and to about 25°F during the winter. These cooler temperatures will help prevent moisture accumulation and insect and mold damage. Bins should be checked weekly for moisture

accumulation, crusting or temperature changes within the pile.

The use of polybags to store sunflowers is becoming more common. Bags are a viable option to store sunflowers for the short term or even through the winter. Bag storage can be a solution if bin space is short, trucks limited and/or transport costs high. The benefit of bags is the sunflowers can be stored where they are harvested as long as the moisture of the grain is 10% or less. Successful storage of sunflowers in bags is dependent on the grain going into the bags dry and temperatures remaining cool. Bags should be placed on clean ground with good drainage and monitored regularly for wildlife damage.

Selected References

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