PLANTING

Optimal Time to Plant

The optimal time to plant sunflowers will vary each spring based on soil and weather conditions. Planting of sunflower typically begins in early May depending on soil and weather conditions. The table below shows the percent of sunflowers planted by week in Manitoba for confection and oilseed type sunflowers.

Table 3. Percentage of Manitoba sunflower crop planted per week. MASC.

	Confectionary	Oilseed
	1989-2008	**1989-2008**
1st week May	12.96	8.50
2nd week May	24.04	23.75
3rd week May	31.11	32.70
4th week May	19.58	24.39
1st week June	7.98	6.89
2nd week June	1.83	1.69

Soil temperature -Optimal germination and emergence of plants is at 10^0C at the planting depth (1.5 to 2.5 inches). If seeds are planted when soil temperature is below 7^0C, seeds may re-enter dormancy causing delayed germination. Even if the seeds do germinate, the seedlings may exhaust seed nutrient reserves in attempt to emerge. If planting in the deeper end of this range (2 inches and deeper), consider increasing the planting population. Percent emergence decreases as planting depth is increased, especially for smaller seeds.

If plants emerge into cold air temperatures, plant stress is compounded and the plants are not going to advance quickly and yield loss could be a result. Furthermore, the insecticidal portion of the seed treatment is only effective against target insects for a defined period of time (14-28 days). If plants cannot develop to a point where they are no longer targeted by these insects before the seed treatment has degraded, then the plants will be more susceptible to insect predation.

Risk of Frost – Sunflowers are most frost tolerant when emerging and in the cotyledon stage. During this early growth stage, plants can withstand temperatures in the 25 to 26^oF (-3.3 to -3.8^{o}C) range for short periods. As the plants develop through the vegetative stages, V2-, V4-, V6- they become progressively more sensitive to frost and terminal bud damage can occur. At the V2- stage, the lowest temperature plants can withstand is 26 to 27^oF (-2.7to -3.3^{o}C) degrees, but for the V4-, V6- stages, 28-29^oF (-1.6 to -2.2^{o}C) degrees is the lower limit. If planted early, the crop could be getting established with a high possibility of a deep frost in mid-May.

Days to Maturity – If planting is delayed because of soil and environmental conditions, changing variety might be required to ensure that the crop will reach maturity. By considering the days to maturity rating of the varieties (see tables 1 and 2), changing variety might be optimal to prevent frost damage by an early season frost. Oilseed hybrids are typically reach maturity before confection type sunflowers.

Plant about 10% above the desired final plant population. Desired plant populations:

Oilseeds—20,000-22,000 plants/ac
Confection in-shell—17,000-19,000 plants/ac
Dehull—18,000—20,000 plants/ac
Birdfood—21,000-23,000 plants/ac

Sunflowers need to have excellent seed to soil contact. This is important in all crops, but particularly for sunflower. Moisture first needs to penetrate the woody hull and then the seed. Poor seed to soil contact will result in uneven emergence. Make sure the soil slice is pressed firmly against the seed at planting and the furrow is closed following seed placement. Sunflower stands usually benefit from using a row crop planter. Planters offer improved seed singulation, depth control and seed spacing. An air seeder can be used to plant sunflowers. Target plant populations should remain the same when using an air seeder. Blocking every other shoot is an option to obtain wider rows.

If planting into a no-till field, it is important to stop and check incrementally that the planter is knifing into the soil. Planting into a field with wet

residue can cause ‘hair-pinning’ - pushing straw into the seed slot instead of slicing through it. It is usually more of a problem with air drills. Solution—may have to wait until residue dries until slicing become easier, sharpen drill discs/blades or adjust down pressure.

Calibrate and pay attention to speed. Calibration is crucial to achieving an even plant stand, not only when changing from one variety to another, but also between different seed lots of the same seed size designation due to differences in seed size, shape and weight. Speed is often more of an issue with plate and finger-type planters. Driving too fast results in inconsistent seed placement and uneven emergence. As speed increases, vibration increases. Proper air/vacuum pressure and properly calibrated seed meters lessen the impact of increased speeds. Many new style planters have a minimum speed requirement to keep the seed disk at the optimal rpm to ensure proper seed singulation.

Utilize Graphite or Talc lubricant. Most operator manuals recommend that a lubricant is used. Seed treatments may cause deterioration in seed singling, spacing accuracy, and seed flow into the vacuum seed meter. The options are graphite or talc; they are not interchangeable. Generally talc is used in vacuum and air planters, and graphite in finger pick-up planters. If the manual calls for a seed lubricant, be sure to use it and at the specified rate.

Seed Treatments - Sunflowers are typically sold pre-treated. The most common seed treatment currently applied is CruiserMaxx. CruiserMaxx contains 4 active ingredients (Cruiser, Apron Maxx, Maxim and Dynsaty) targeting diseases and early season insects. Other seed treatments are currently being developed and tested for sunflowers.

Seed treatments are only designed to last for about 14 days on the seed once planted. If planting early into cold soil, germination may be slow and the seed treatment may breakdown. Once the seed finally germinates it may no longer be protected by the seed treatment and will be at higher risk of Downy Mildew, wireworms, cutworms and sunflower beetle.

Re-planting Sunflower - Sunflowers are a late crop, and planting for the first time late into the season can come with a yield drag. If you feel the need to replant, it becomes essential to use a short maturing variety. Sunflowers are typically planted at relatively low plant populations to increase head size, seed size and improve yield. Because of this, replanting should only be considered for extreme early stand loss, i.e. if there is only a 5% drop from target the population the plants can compensate for this to an extent due to increasing head size and seed size. Some agronomists advise only to replant if the plant population falls below the threshold of about 12,000 to 15,000 plants, or more than 25% of your yield goal. Otherwise, you are losing a minimum of two weeks crop maturity and are still not guaranteed a successful stand establishment of the new crop either.