



MANITOBA
CROP
ALLIANCE

SUNFLOWER HYBRID TRAITS EXPLAINED

Hybrid selection in sunflower can be difficult. Seed companies provide an abundance of information on specific traits, but all this information can be overwhelming during the selection process. This document can be used as a supplemental resource during hybrid selection, when further trait information is helpful. While selecting trait packages for each field is an integral part of crop success, it is important to note that choosing a hybrid with the best agronomic traits will not necessarily result in higher yields. Choose appropriate traits based on each field's agronomic needs, manage that field properly and yield should reflect those decisions. Another useful reference is results from the Sunflower Variety Performance Trials, available at mbcropalliance.ca.

OILSEED-ONLY TRAITS

1. HERBICIDE TOLERANCE

a. ExpressSun

Refers to the trait in sunflowers for resistance to tribenuron-methyl herbicide (Express SG is the only herbicide on-label) in-crop application. This provides exceptional weed control of many broadleaf weeds, including Canada thistle, good tank-mix options, and gives flexibility to apply herbicides from burndown to bud formation.

Off-label tank-mixes and tribenuron product applications may not be supported by the seed company and it is recommended to discuss all options with both chemical and seed company representatives prior to any herbicide use. Tribenuron-methyl product must be applied with appropriate surfactant or adjuvant according to label.

b. Clearfield

Refers to the trait in sunflowers for resistance to imazamox herbicides (only those registered for use on Clearfield sunflowers). Provides broad spectrum residual control of both grasses and broadleaf weeds, including ACC-ase Inhibitor (Group 1)-resistant weeds.

There are no registered tank-mix options available for sunflowers. Off-label tank-mixing and/or herbicide use may not be supported, and it is recommended to discuss all options with both chemical and seed company representatives prior to any herbicide use.

2. OIL CONTENT

a. NuSun/Mid-Oleic

Oleic (monounsaturated) acid is an omega-9 fatty acid. Mid-oleic is considered to be the standard sunflower oil in North America. Mid-oleic sunflower oil will have oleic acid levels between 55 and 75 per cent, with the remaining ratio consisting of linoleic acid and saturated fats.

b. High Oleic

There is commonly a minimum crush requirement of 82 per cent oleic acid to be considered high oleic, with some hybrids producing oleic levels close to 90 per cent. With greater oleic acid content, there are lower concentrations of both linoleic and saturated fats.

CONFECTION-ONLY TRAITS

1. DMR (DOWNY MILDEW RESISTANT)

Resistance to multiple races of downy mildew.





CONFECTION & OILSEED TRAITS

1. DOWNY MILDEW GENE/RATING

Different downy mildew races exist, and most hybrids exhibit resistance to specific races. Some seed companies specify which race a hybrid carries resistance to, identified by a number. Testing would be required to identify downy mildew race present in a field to plan for future sunflower crops and hybrid choices.

2. MATURITY

Expressed as ultra-early, early and mid-maturity, or a variation of the terms. The primary piece of information when starting the hybrid search for any operation.

3. DISEASE RATINGS

Disease resistance ratings do not exist for all hybrids or seed companies, which could either mean that there is very little tolerance of a hybrid to the given disease or that the research has not been completed. Sunflowers are susceptible to several plant diseases, so these ratings are important for hybrid selection. "Resistance" does not mean that the plant cannot be infected, especially under severe disease pressures.

4. EMERGENCE

Ability of a crop to emerge evenly and quickly under stressful conditions. An important agronomic trait when planting early and under adverse growing conditions immediately following planting. Measurements are taken when the first true leaf is visible, at growth stage VE. Approximately 206 GDD are required for a sunflower seedling to emerge after planting.

5. DROUGHT TOLERANCE

Hybrid's ability to withstand drought conditions for an extended period.

6. DRY DOWN

Hybrid's capacity for full-plant and seed dry down following physiological maturity as harvest approaches. An early maturing hybrid is preferred in short growing regions, but dry down needs to be heavily considered for ease of harvest and potential drying costs.

7. ROOT STRENGTH

Ability of the hybrid to prevent root or ground-level lodging and to support large plants.

8. STALK STRENGTH

An important hybrid quality with regards to plant health and late season stalk diseases that weaken the sunflower stalk. With larger head size and weight, stalk strength is also critical.

9. TEST WEIGHT

Some sunflower seed markets take higher test weights (e.g., birdseed markets).

10. YIELD

High yield is often prioritized during hybrid selection, but yield is also a sum of all the above hybrid qualities.

11. PLANT HEIGHT

May be rated on a different number scale than the above or by letter (i.e., S – short, M – medium, T – tall). Short-statured hybrids are preferred, as they should offer improved stalk strength to taller hybrids and less residue post-harvest.

The following rating scales are largely at the discretion of the seed company.

Pioneer® brand and Nuseed use a 1-9 scale, with 1 being a "poor" rating and 9 being "excellent," or the equivalent. CROPLAN has a 1-5 scale, with 1 also being "excellent" and 5 being "poor." It is important to refer closely to each company's rating system when reviewing hybrid details.

