Chapter 3: Hybrid Selection

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Hybridized sunflower plants emerged in the 1960's when researchers noted strains of wild species could be readily crossed with *H. annuus* and produce fertile progeny.

Hybrid selection by producers is an important part of sunflower production. Each producer will want to select hybrids that do well in their particular location. There are numerous characteristics for producers to consider when making hybrid selection including yield, maturity, stalk strength, height and pest resistance. Producers of oilseed hybrids will want to look for oil content if they want to market their product to crushers, while producers of confection sunflowers will select for seed size. Other characteristics may come into play, depending on grower location.

Results from sunflower performance trials should be carefully analyzed, particularly those managed by local universities or other unbiased organizations where results are based on replicated studies. Some weight should also be given to performance or strip trials performed by seed companies and producers when the information is generated close to the production area.

SDSU runs crop performance trials on sunflowers at several locations each year. Results can be downloaded at the SDSU Extension website (https://extension.sdstate.edu/tags/crop-performance-testing) or picked up at SDSU Extension Regional Centers.

Yield

Data from NASS places average sunflower yields between 1600 to 2100 lbs./acre. However, yields have been reported up to 3000 lbs./acre in some areas of SD.

Maturity

It is important for producers to select hybrids that balance yield and maturity for their geographic area. Later maturing varieties usually yield greater than earlier maturing varieties. However, yield, oil content and test weight will be impacted when a long season hybrid is damaged by frost prior to full maturity.

Oil Content

Oil content is an important trait that is typically monitored and published in variety trial results. Approximately 55% of the sunflowers produced in the U.S. go to the oil market, 25% are slated for birdseed and between 10 and 20% go into snack foods. The oilseed market pays a premium for oil type sunflowers with oil content above 40%. Discounts can occur for oil content below 40%. Markets may also pay a premium based on the type of oil a hybrid produces depending on demand. Oilseed sunflower varieties fall into three categories, traditional or linoleic types, NuSun or mid-oleic types and high oleic varieties. NuSun varieties are now the most common type of oilseed sunflower grown. NuSun varieties produce a healthier oil that contains

20% lower saturated fats than the traditional linoleic types. NuSun oil does not have to be hydrogenated which makes it excellent for use in frying and gives it a long shelf life. High oleic varieties have a higher proportion of oleic acid in the oil along with a longer shelf life.

Pest Resistance

Diseases, insects and weeds are concerns for sunflower producers. Many hybrids now have resistance to downy mildew and sunflower rust. Other hybrids show partial resistance to Phomopsis stem canker and Sclerotinia head rot. Plant breeders are selecting and breeding hybrids with disease tolerance when possible. Information regarding disease tolerance or resistance specific to different varieties is usually available upon request from seed companies. Clearfield and ExpressSun hybrid sunflowers are bred for resistance to specific herbicides. This is covered in more detail in the herbicide section of this manual.

Selected References

Mathew, F., and N. Braun. 2019. South Dakota Sunflower Variety Trial Results. South Dakota State University Extension.

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