

Chapter 9: Weeds in Sunflowers



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Weeds compete well with sunflowers in South Dakota. Heavy weed pressure has been noted to reduce yield by as much as 60 to 90 percent. Early season weeds like kochia (*Kochia scoparia*), marestail (*Conyza canadensis*), lambsquarter (*Chenopodium album*), and red root pigweed (*Amaranthus retroflexus*) are commonly observed in sunflower fields. Other weeds like field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), wild buckwheat (*Polygonum convolvulus*), and wild sunflower (*Helianthus annuus*) can also be difficult to control but are usually not widespread across all production acres.

Wild Sunflowers

If wild sunflowers are a problem (Fig. 9.1) they will need to be controlled and the seed bank reduced before sunflowers are planted.



Figure 9.1. Fields with heavy infestations of wild sunflowers are not good areas to grow sunflowers as a crop due to the weed pressure from the wild sunflowers. Photo courtesy of Paul O. Johnson.

Weed Control Program

To control weeds in sunflower production, a comprehensive management plan is needed. Weeds are not just controlled with chemicals, but cultural practices also play a big role in weed management. Early season weed control in sunflowers is very important. The first month of growth is slow. This is when sunflowers do not compete as well as compared to later in the season. Weeds that are there longer than the first month can cause important yield loss if they are not removed. Chemical weed control recommendations are provided in the South Dakota Pest Management Guide for Alfalfa & Oilseeds (<https://extension.sdstate.edu/south-dakota-pest-management-guides>). These guides are updated yearly and list all products labeled for use in South Dakota.

Important cultural practices that can help manage weeds in sunflowers include crop rotation and time of planting. Tillage can also be considered a cultural practice that helps with weed management. However, most non-organic production of sunflower in South Dakota utilizes no-till management practices.

A chemical weed management plan should be prepared before sunflower is added into the crop rotation. The first consideration is whether the previous crop set the field up for low weed pressure? If weed problems existed during the previous growing season, these

will need to be addressed the fall before planting sunflowers. Second, depending on rainfall, is a preemergent herbicide planned for the fall, early spring or close to planting? Third, are there weeds growing that require a burn down treatment at or before planting time? For the best weed control there should be no weeds actually growing when the crop begins to emerge. Sunflowers have limited post emergent chemical products available and for some weeds, there are no products available. This is why having a planned weed control program is critical. Identifying existing weed problems in a field and what products are available to control them is an important part of that program.

Rotate Herbicide Chemistries

Rotation of herbicide chemistries where possible or using more than one chemistry is important to reduce the chance of developing more resistant weeds. Presently there are eight chemistries labeled in sunflowers and they include groups 1, 2, 3, 8, 9, 14, 15, and 22.

Group 1 are ACCase inhibitors. Examples are clethodim or sethoxydim. They provide postemergence grass control.

Group 2 are ALS inhibitors. An example is tribenuron. In order to use this herbicide, use Express tolerant Sunflowers and then spray the Express post-emergent for broadleaf weed control.

Group 3 are microtubule inhibitors. Examples are pendimethalin or trifluralin. These are used early preplant in fall or spring, preplant incorporated, or preemergence. They provide both grass and broadleaf weed control.

Group 8 are lipid synthesis inhibitors. An example is EPTC. It is used preplant incorporated in the fall or spring and gives grass and broadleaf weed control. EPTC needs to be incorporated to work.

Group 9 is an EPSP inhibitor. Glyphosate is used for burn down, hooded sprayer or pre-harvest weed control. It controls all weeds except those that have developed resistance to glyphosate.

Group 14 are cell membrane disrupters (PPO inhibitor). Examples are sulfentrazone or flumioxazin. Group 14 herbicides mainly control broadleaf weeds. They are used in the fall or as an early preplant. Some products are also labeled for preemergent and harvest aid use.

Group 15 herbicides are seedling shoot inhibitors. Examples are metolachlor or pyroxasulfone. These are used from early preplant to preemergence, and some are also labeled for early post emergence application. However emerged weeds are not controlled. They are used for both broadleaf and grass control.

Group 22 are cell membrane disrupters (PSI inhibitor). An example is paraquat. Paraquat is used as a burndown or a harvest aid. It kills all weeds and will also kill the sunflowers as a way to speed up harvest in the fall.



Figure 9.2. Kochia can be a difficult weed to control in sunflowers. Heavy infestations will reduce yield. Photo courtesy of Paul O. Johnson

Selected References

Johnson, P. O., D. Vos, J. Alms, L. J. Wrage. 2021 South Dakota Pest Management Guide, Alfalfa & Oilseeds, SDSU Extension



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