Weed Control in Sunflowers 1980

Cooperative Extension South Dakota State University

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Weed Control in Sunflowers 1980
Weed Control in Sunflowers, 1980

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Weeds can seriously reduce sunflower yields even though the infestation may not be visually dramatic. Tillage before planting and cultivation after the crop is in will effectively control weeds. However, sunflowers should not be planted where perennial weeds are expected to be a major problem. Herbicides used in sunflowers are not effective on perennials.

Losses Due to Weeds

The most serious losses from annual weed competition occur the first 4 weeks after crop emergence.

Wild mustard is a vigorous competitor with sunflowers. Research in North Dakota indicated that 1, 2, 4, 8, and 16 mustard plants per foot of row reduced sunflower seed yield by 104, 287, 314, 334, and 407 lb/A respectively (3-year average).

Thirty foxtail plants per foot of row reduced the sunflower seed yield 179 lb/A (3-year average). Yellow foxtail is less competitive on a plant-for-plant basis but usually is present in larger numbers than wild mustard. The data in Table 1 show the effect of weeds on seed yield in North Dakota tests.

Seed yields from weed-free plots generally were higher in test weights, weight/100 seeds, percent oil and oil iodine value than from weedy plots (Table 2).

Table 1. Sunflower seed yield in pounds per acre as influenced by various weed infestations, 1966-68.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Lbs Seed/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weed-free (hand weeded)</td>
<td>1579</td>
</tr>
<tr>
<td>Cultivated (hoed)</td>
<td>1387</td>
</tr>
<tr>
<td>Weedy</td>
<td>739</td>
</tr>
</tbody>
</table>

Table 2. Influence of various weed infestations on sunflower seed characteristics, 1968.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Bu Wt Lb/Bu</th>
<th>Grams/100 Seeds</th>
<th>% Oil</th>
<th>Iodine Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weed-free</td>
<td>28.3</td>
<td>6.46</td>
<td>51.3</td>
<td>138</td>
</tr>
<tr>
<td>Cultivated</td>
<td>27.5</td>
<td>6.24</td>
<td>49.3</td>
<td>137</td>
</tr>
<tr>
<td>Weedy</td>
<td>27.9</td>
<td>6.05</td>
<td>50.6</td>
<td>137</td>
</tr>
</tbody>
</table>

Tillage and Cultivation

If possible, destroy one crop of weeds with tillage prior to planting. Seed immediately after tillage. If weeds emerge before the sunflowers, you can successfully cross-harrow. Sunflower seeds are large and the young seedlings have a strong root system and are not seriously damaged by harrowing.

Use a spike-tooth, flextine harrow or rotary hoe. Harrow when the weeds in the “white” stage but before the crop emerges. After crop emergence, harrowing should be delayed until the sunflowers have four leaves. The least crop damage and best weed control is obtained if harrowing is done on a warm, clear day.

Planting rate should be increased 10-15% to compensate for stand reduction due to harrowing. A firm seedbed will reduce the damage to the sunflower stand.

If weeds are still a problem after harrowing, row-cultivation will provide control for the remainder of the season. Avoid excessive soil moisture loss by leveling pronounced furrows near the row. Rows may be hilled in the final cultivation.

Herbicides

Many growers in South Dakota have experienced good results with herbicides and are continuing to use them for annual weeds. Results from research and demonstration tests in South Dakota are presented in Tables 3 and 4.

The herbicide treatments provided a high degree of annual weed control. Sunflower seed yield was increased over 500 lb/A compared to the cultivated check plot.

Table 3. Sunflower herbicide demonstration, Garden City, 1972.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Lb/A Act.</th>
<th>% Weed Control</th>
<th>Broadleaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>—</td>
<td>0</td>
<td>1008</td>
</tr>
<tr>
<td>Treflan</td>
<td>¾</td>
<td>99</td>
<td>90</td>
</tr>
<tr>
<td>Eptam</td>
<td>3</td>
<td>95</td>
<td>90</td>
</tr>
<tr>
<td>Amiben</td>
<td>2½</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td>Check</td>
<td>—</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Planted June 2, data recorded July 11.


<table>
<thead>
<tr>
<th>Lb/A Act.</th>
<th>% Grass Control</th>
<th>Yield/A (lb)</th>
<th>Crop Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>0</td>
<td>1008</td>
<td>0</td>
</tr>
<tr>
<td>Treflan</td>
<td>¾</td>
<td>91</td>
<td>1523</td>
</tr>
<tr>
<td>Eptam</td>
<td>3</td>
<td>89</td>
<td>1598</td>
</tr>
<tr>
<td>Amiben</td>
<td>3</td>
<td>92</td>
<td>1538</td>
</tr>
</tbody>
</table>

0% = no injury, 10 = complete kill.

Herbicides for Use in Sunflowers

Chloramben (Amiben) is the only preemergence herbicide registered for use in sunflowers. It can be applied in a band or broadcast as a spray or granule.

Chloramben will control most common annual grasses and annual broadleaved weeds if ½-1 inch of rainfall is received within 5-10 days after application. Shallow harrowing or hoeing will improve results if rainfall is not received.

Kochia and Russian thistle control is good to excellent. Control of wild mustard is marginal. Wild oats, cocklebur, and wild sunflower are not controlled.

Apply 2-3 lb active (4-6 qt or 20-30 lb granules) per acre on a broadcast basis. The rate for most South Dakota soils is 2½ to 3 lb/A active. The higher rate is for heavy clay, high organic matter soils. There is no carryover effect on succeeding crops.

EPTC (Eptam) must be applied before planting and incorporated immediately with a tandem disk set to cut 4-6 inches deep followed by harrowing. Two tandem diskings ensure thorough incorporation.

EPTC gives excellent control of most annual grasses and some annual broadleaved weeds. Wild oat control has been satisfactory in some tests. Wild mustard, wild sunflower, and kochia are not controlled.

Apply 3 lb active (1¼ qt) per acre. There is no carryover effect on succeeding crops.

Trifluralin (Treflan) must be applied and incorporated before planting. For best results, incorporate immediately with two tandem diskings set to cut 4-6 inches deep. In dry soil and low wind velocity conditions, incorporation can be delayed up to 8 hours.

Trifluralin gives excellent control of most annual grasses and good control of some annual broadleaves such as pigweed and lambsquarters. Higher rates give fair to good kochia control. It does not control wild mustard, wild sunflower, or cocklebur. Wild oat control may not be consistent but has been fair in some tests.

FOLLOW THE LABEL

Federal regulations make it unlawful for any person to use an herbicide in a manner inconsistent with its labeling. This includes the kind of crop and weed; rate, carrier and other application directions; storage, disposal and protective clothing; or other precautions stated.
Apply ½ to 1 lb active (1-2 pt) per acre. For most soils ¾ lb/A active provides satisfactory results. Lower rates are for low organic matter, sandy soils; higher rates are for high organic matter, clay soils. Carryover can be a problem, especially in dry seasons. Oats or sorghum should not be planted the following year.

Profluralin (Tolban) must be applied and incorporated before planting. Incorporate with a tandem disk set to cut 4-6 inches deep. Immediate incorporation is preferred for best results; however, incorporation may be delayed up to 4 hours if the soil is dry and wind velocity is low.

Weed control is similar to that obtained with trifluralin. Apply ¾ to 1 lb/A active (1½-2 pt) per acre. The higher rate is for most soils in South Dakota. There are no carryover limitations for crops that can be planted the following year.

Trifluralin (Treflan) and chloramben (Amiben) may be applied as a tank-mix and incorporated before planting as for trifluralin alone. It may be also be applied as a split application with chloramben spray or granules applied preemergence at planting over preplant incorporated trifluralin.

This combination provides broad spectrum annual weed control. Chloramben improves broadleaved control, especially kochia and Russian thistle. Wild mustard control is fair. Cocklebur and wild sunflower are not controlled. Follow limitations as for trifluralin alone.

Barban (Carbyme) is labeled for post-emergence control of wild oats. It has not been included in SDSU trials; however, control has been satisfactory in small grain.

Apply when the majority of the wild oats are in the 2-leaf stage and not later than 14 days after crop emergence. Use 45 psi pressure and 5 gallons of water per acre.

Apply 1/4 to 3/8 lb active (1/4-3/8 gal) per acre. Use the higher rate with unfavorable growing conditions.

Paraquat (Parquat) is labeled for use as a harvest aid desiccant for use in oil seed varieties only.

Apply when the majority of the wild oats are in the 2-leaf stage and not later than 14 days after crop emergence. Use 45 psi pressure and 5 gallons of water per acre.

Apply the higher rate with unfavorable growing conditions.

Herbicide Drift and Carryover

Use caution to prevent droplet or vapor drift to the sunflower crop when spraying nearby small grain or row crop fields. Sunflowers are highly sensitive to herbicides such as 2,4-D, MCPA or dicamba. Very small amounts of drift can cause serious damage. Also, avoid planting sunflowers where atrazine carryover may cause damage.

Herbicides of the Future

Several herbicides appear promising for future use in sunflowers. Lasso, Dual, and Prowl have been tested and may be registered for use. Consult the product label for the most recent registration status. Until approved, these herbicides are not recommended for use in sunflowers.

Every effort has been made to avoid mechanical error in preparation of this publication. The label should be considered the final guide. Trade names are used for reader convenience and do not imply product endorsement.