

2015-2016 Texas Sunflower Weed Control & Desiccation Guide

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Using this document as a planning tool: This guide is a current listing of known brand name or original herbicides labeled for sunflower production. In many cases there are numerous generics that also may be available. See the end of the document about online searching for possible alternatives using the active ingredient or common name. This planning tool will assist producers seeking additional options for weed management in Texas sunflower production. It is tedious to study many different labels to determine application rates, timing, rotation restrictions, and other guidelines for herbicides. Thus many of these key points are listed. Once you decide to consider an herbicide on this list that you have not used before, be sure to thoroughly review the product label.

This information is provided as a general education guide only. The use of product names is not intended as an endorsement of the product or a specific manufacturer, other formulations containing the same active ingredient(s) may be equally effective. This guide is not a substitute for herbicide product labels. Refer to individual labels for specific instructions before using any herbicide listed, and consult the label for recent changes.

Sunflower Growth Stages: For assistance in determining differing sunflower growth stages noted below, consult NSA's summary at <http://www.sunflowernsa.com/growers/growth-stages/>

Pre-plant and Pre-emergence Broadleaf and Grass Herbicides

Trade Name (common name)	Product Rate/Acre (with applicable soil type)*	Major Crop Rotation Restrictions†	General Comments
Aim <i>carfentrazone-ethyl</i>	See label. Up to 6 oz. per season.	None if crop is on label (includes cotton, corn, sorghum, small grains) All others: 12 mo.	Labeled as pre-plant burndown (including tank mixes). Also labeled for hooded sprayer appl. between rows.
BroadAxe Spartan Elite <i>sulfentrazone + s-metolachlor</i>	<1.5% organic matter Fine: 21-30 oz. Medium: 19-25 oz. Coarse: 19-21 oz. 1.5-3.0% organic matter Fine: 25-32 oz. Medium: 21-32 oz. Coarse: 19-25 oz. >3.0% organic matter Fine: 32-38.7 oz. Medium: 25-32 oz. Coarse: 21-25 oz. Do not apply after sunflower seed germination.	Corn: 10 mo. Cotton: 18 mo. (12 mo.**) Peanuts: 4 mo. Sorghum: 10 mo. Soybeans: anytime Sunflower: anytime Wheat/barley/triticale: 4.5 mo. (Oats: 12 mo.) **See label for conditions which allow cotton planting at 12 months (soil pH, texture, rainfall + irrigation)	Plant minimum 1.5" deep with complete closure of seed furrow. Incorporate < 2" if no rain/irrigation within 7-10 days. Rate depends on pH and soil type; for soil pH > 7.2 use lowest rate of labeled range. Weed control potentially up to 6-8 weeks. Better as a pre-mix than activity from herbicides applied individually. Partial control under dry conditions, heavy weeds or at <25 oz./A thus consider labeled POST herbicide to improve control.

Trade Name (common name)	Product Rate/Acre (with applicable soil type)*	Major Crop Rotation Restrictions†	General Comments
Dual Magnum (not Dual II Magnum) <i>s-metolachlor</i>	All soils <3% O.M. Fine: 1.33-1.67 pts. Medium: 1.33-1.67 pts. Coarse: 1.00-1.33 pts.	Corn, cotton, peanut, sorghum, soybean: next spring Small grains: 4.5 mo. to following spring	Preplant incorporate 0-14 days before seeding or pre- emerge (PRE).
Eptam 7E <i>EPTC</i> Eptam 20G	Fine: 3.0-3.5 pts. Medium: 2.5-3.0 pts. Coarse: 2.5 pts. Fine: 15 lbs. Medium: 15 lbs. Coarse: 10 lbs.	After harvest.	Apply and incorporate just before planting. Can also apply in fall at higher rates. Can tank-mix 7E with Prowl or Treflan.
ET ETX <i>pyraflufen ethyl</i>	0.5–2.0 oz. 0.3–1.25 oz.	Corn, cotton, soybean, wheat: none. Sorghum: 1 day Refer to label.	Preplant burndown only. Apply in a minimum of 10 GPA by ground or 5 GPA by air.
Micro-Tech <i>alachlor</i>	Incorporated: Fine: 3.5-4.0 pts. Medium: 3.0-3.5 pts. Coarse: 2.5 pts. Rates slightly lower if surface applied PRE.	Could not clearly identify rotational crop restrictions on the label (Preliminary)	Preplant incorporate 0-7 days before seeding or pre-emerge (PRE). Will not control emerged weeds.
Prowl 3.3EC Pendimax 3.3 <i>pendimethalin</i> Prowl H₂O	Fine: 2.4-3.6 pts. Medium: 1.8-3.6 pts. Coarse: 1.2-2.4 pts. Fine: 3.0 pts. Medium: 2.0 pts. Coarse: 1.5 pts. Up to 3.0 pts. on all soil types for no-till fields	Corn, sorghum: following year Soybeans: immediately Wheat: 4 mo.	Apply in spring 0-60 days prior to planting and incorporate within 7 days. Plant at a minimum of 1.5- 2.0" deep. See label for additional timing instructions for season and tillage practice.
Sonalan HFP Sonalan 10G <i>ethalfluralin</i>	Fine: 2.5-3.0 pts. Medium: 2.0-2.5 pts. Coarse: 1.5-2.0 pts. Fine: 9.5-11.5 lbs. Medium: 7.5-9.5 lbs. Coarse: 5.5-7.5 lbs.	Most crops: next season. Refer to label.	Apply preplant 0-21 days prior to planting. Incorporate within 2 days. For no-till, granules are preferred.
Spartan 4F <i>sulfentrazone</i>	<1.5% organic matter, Fine: 3.75-5.25 oz. Medium: 3.0-4.5 oz. Coarse: 3.0-3.75 oz. 1.5-3.0% organic matter Fine: 4.5-6.75 oz. Medium: 3.75-6.0 oz. Coarse: 3.0-4.5 oz. >3.0% organic matter Fine: 6.0-8.0 oz. Medium: 4.5-6.75 oz. Coarse: 3.75-6.0 oz.	Corn, sorghum: 10 mo. Cotton: 18 mo. Small grains: 4 mo. Refer to label.	Apply preplant 0-21 days prior to planting, or up to 3 days after planting. For PPI do not exceed 2" deep. If soil pH > 7 use lower range of labeled rate. **Coarse, sandy soils— apply at least 7-14 (preferably ≥ 14 days before planting). Adverse crop response may occur for coarse soils with OM < 1.5% and soil pH > 7.8—reduce rates, esp. if caliche or eroded soils.

Trade Name (common name)	Product Rate/Acre (with applicable soil type)*	Major Crop Rotation Restrictions†	General Comments
Spartan Charge <i>Sulfentrazone</i> + <i>carfentrazone-ethyl</i>	<1.5% organic matter: Fine: 5.0-6.5 oz. Medium: 3.75-5.75 oz. Coarse: 3.75-5.0 oz. 1.5-3.0% organic matter Fine: 5.75-8.5 oz. Medium: 5.0-7.75 oz. Coarse: 3.75-5.75 oz. >3.0% organic matter Fine: 7.75-10.2 oz. Medium: 5.75-8.5 oz. Coarse: 5.0-7.75 oz.	Corn: 4 mo. Cotton: 12 mo. Sorghum: 10 mo. Soybean: anytime Sunflower: anytime All small grains: 4 mo.	Apply preplant to 3 days after planting. Plant $\geq 1''$ to avoid injury. If soil pH > 7 use lower rate range. Adverse crop response may occur for coarse soils with OM < 1.5% and soil pH > 7.8—reduce rates, esp. if caliche or eroded soils. Best control req. 0.5-1.0" of rain/irrigation 7 to 10 days after planting.
Treflan HFP <i>trifluralin</i>	Fine: 1.5-2.0 pts. Medium: 1.25-1.5 pts. Coarse: 1.0 pt.	Most grass crops: 18 mo.	Apply as fall or spring preplant. Incorporate immediately. Prefer granular for heavy residue.
Treflan TR-10	Fine: 7.5-10.0 lbs. Medium: 6.25-7.5 lbs. Coarse: 5.0 lbs.		
Valor SX <i>flumioxazin</i>	1.0–2.0 oz.	Refer to label. Varies by product rate and tillage practices.	For preplant burndown only. A minimum of 30 days and 1 inch of rainfall or irrigation must occur between application and planting of sunflower. Use in combination with other labeled burndown herbicides. Provides residual control of many weeds.

*Product rates given for general soil type. **Fine** = silty clay loam, clay loam, sandy clay, silty clay, clay. **Medium** = loam, silt loam, silt, sandy clay loam. **Coarse** = sand, loamy sand, sandy loam.

†For possible crop rotation restrictions to other crops review the label.

Additional Pre-plant and Burndown Herbicides

In addition to the pre-emerge herbicides above several other herbicides are labeled for pre-plant burn down applications in sunflower including:

- Glyphosate
- Paraquat dichloride
- Pelargonic acid (Scythe)

Assert (imazamethabenz) is labeled for sunflower in the Northern Plains (MN, ND, SD—mustard control), but is not currently labeled in Texas.

Post-emergence Broadleaf Herbicides

Trade Name (common name)	Product Rate per Acre*	Major Crop Rotation Restrictions†	General Comments
Beyond (also grass) only for imi-tolerant Clearfield or Clearfield Plus sunflower (supplemental label) <i>imazamox</i>	4 oz. for Clearfield sunflower 4-6 oz. for Clearfield Plus sunflower NIS and N fertilizer required for application. Clearfield Plus hybrids allow replacement of NIS with stronger COC or MSO but there is no change in timing of Beyond.	Clearfield crops, soybean: anytime. Non-Clearfield canola: 18-26 mo. Corn, cotton, sorghum, peanut: 9 mo. Wheat: 3 mo. Other small grains: 4-18 mo.	Apply at 2-8 true leaf stage (V2-V8), e.g. within ~3 weeks of planting. Apply for broadleaves ≤3" and grasses ≤4-5 leaves. Label recommends that grass herbicide such as pendimethalin be used before Beyond
Express only for ExpressSun tolerant sunflower (developed by Pioneer, also licensed to Croplan, Nuseed, Terral) <i>tribenuron methyl</i>	0.25-0.50 oz. 1% methylated crop oil. Maximum 1.0 oz./A if more than one application (minimum 14 days apart).	Express tolerant crops: anytime. Corn, cotton, sorghum, soybean: 14 days. Wheat, barley, triticale: anytime. Most other crops: 45 days	Temporary yellowing may occur after application. Apply when sunflower is 2-leaf stage to just prior to bud initiation (R-1, may be up to ~40 days after planting if growth is slow). Minimum 70 days interval to harvest.

Post-emergence Grass Herbicides (also Beyond in the Clearfield system)

Trade Name (common name)	Product Rate per Acre	Major Crop Rotation Restrictions†	General Comments
Assure II Targa <i>quizalofop-P-ethyl</i>	5-12 oz. 1 qt. NIS	Corn, sorghum: 120 days. Cotton, soybean, small grains: immediate.	60 day PHI. Best applied when most grasses are 2-6 inches tall.
Poast (Not Poast Plus) <i>sethoxydim</i>	Up to 2.5 pts./A in one application, maximum 2.5 pts./A season long + 1.0 qt. COC	No restrictions.	Apply to actively growing grasses at sizes and rates specified in label. Sun-flowers are tolerant to Poast at all stages. Do not apply within 70 days of harvest.
Select 2EC Prism, Arrow 2EC Intensity One <i>clethodim</i>	6.0-16.0 fluid ounces/A + 1.0 qt. COC + 1-2 qts./A AMS See label for reduced rates when treating small annual grasses.	No restrictions.	Apply to actively growing grasses at sizes and rates specified in label. Sun-flowers are tolerant to clethodim at all stages. Do not apply within 70 days of harvest. AMS gives improved grass control for johnsongrass, other grasses. Labeled for application with Asana or Warrior T insecticide.
Select Max (weaker formulation)	Annual grasses, 9-16 oz. Perennial grasses, 12-32 oz.; NIS, 0.25% or COC/MSO at 1 qt./A		

Desiccation, Drying, and Harvest Aids

Herbicide use for drying and desiccation of sunflower as a **harvest aid** at or after physiological maturity is more common in Texas than in the past. Label directions state that applications should be made at physiological maturity (R-9, back of head lemon yellow and bracts turning brown) with seed moisture <35% and at least 7 days before harvest, nor should applications be made to seed sunflowers.

See labels for recommended rates. Check for generics with the same active ingredient that are also labeled for sunflower.

- Drexel Defol (*sodium chlorate*)
 - ✓ When to Apply—Backside of sunflower heads are yellow and bracts turning brown; seed moisture content below 35%.
 - ✓ Remarks—For use on confection and oil-type varieties. Thorough coverage of plant is essential. Apply aerially at five to 10 gpa, or at 20 to 30 gpa by ground sprayer.
- Gramoxone Inteon (*paraquat*)
 - ✓ When to Apply—Backside of sunflower heads are yellow and bracts turning brown; seed moisture content below 35%.
 - ✓ Remarks—For use on confection and oil-type varieties. Apply with NIS. Randomly sample 10 average heads for seed moisture. Allow a seven day post-harvest interval.
- Roundup (*glyphosate*)
 - ✓ When to Apply—Backside of sunflower heads are yellow and bracts turning brown; seed moisture content is less than 35%.
 - ✓ Remarks—This is registered for late season weed control but functions like a desiccant.
- Sharpen (Kixor, *saflufenacil*), Additional information at <http://www.sunflowernsa.com/media/news/details.asp?NewsID=229>
 - ✓ When to Apply—When sunflower seed moisture is 36 percent or less.
 - ✓ Remarks—For optimum desiccation an adjuvant must be used such as methylated seed oil and an ammonium nitrogen-based adjuvant for best burndown (see main Sharpen label for rates). Sharpen can be tank mixed with other labeled herbicides such as glyphosate. Apply at least seven days prior to harvest. Not a restricted use pesticide.
 - ✓ Unlike other desiccants, saflufenacil has crop rotation restrictions that could affect double cropping after sunflower. However, for late season applications at the single application rate of 2 fluid ounces per acre, all rotation restrictions are 5 months or less (3 months for cotton) for the subsequent year.

Managing Herbicide-Resistant Weeds

Occasionally, biotypes of weeds may exist that are resistant to specific herbicides. In order to prevent the spread of these resistant biotypes, proper management strategies must be implemented:

- Combine herbicide use with mechanical, cultural, or biological control methods,
- Rotate or mix herbicides with different modes of action within a season.
- Where feasible, rotate crops, which will allow for rotation of herbicides.
- Scout fields regularly, if resistant weeds are suspected, control weed escapes in a timely manner before they produce seed.

For Ready Online Access to Multiple Chemical Labels:

- Chemical Management Data Systems, <http://www.cdms.net> To use the free database (which also works well on a smart phone) access the webpage then:

- 1) Starting at the top click 'Label Database'.
 - 2) You then have two options. A) The primary one is to click "Search" then type your brand name in the box then click "Search" again (keep the name simple, for example 'Treflan' rather than 'Treflan HFP' or 'Treflan TR-10' to ensure you return all labels for branded Treflan products). B) You can also click "Manufacturers" then select an individual company to obtain a list of all chemicals that company markets.
 - 3) To search by active ingredient: Like #2A above click on "Search" but instead of entering a brand name, click 'Other Search Options'. You will be prompted to either register for a free UserName and Password, or if you have already done so enter your information. Once logged in you can check several options for the type of chemical you want, what kind it is, the target crop, etc.
 - 4) To learn more about how to use CDMS, review "Ready On-Line Access to Chemical Labels for Agricultural Production" at <http://publications.tamu.edu>
- Greenbook, <http://www.greenbook.net>, where your search category includes product name, active ingredient, crop, or pest (registration required).

Chemical & Worker Safety

Herbicide safety is paramount. For emergency medical treatment information call the emergency number listed on your chemical label, or your local 9-1-1 if you can't get the label. If you have an accident and must require examination and possible treatment take the chemical label with you. For emergency chemical information for any material, call American Association of Poison Control Centers, (800) 222-1222, www.poisoncontrol.org Answered 24/7. Enter this number in your phone. Your product label will also have an emergency number, but you might be in no shape to read it if you get chemical in your eyes. Take the label with you if you go for emergency medical care.

Additional Texas A&M AgriLife Extension weed control expertise may be obtained from the following:

- Dr. Peter Dotray, Texas A&M AgriLife Extension, Lubbock, (806) 746-6101, pdotray@ag.tamu.edu
- Dr. Paul Baumann, Texas A&M AgriLife Extension, College Station, (979) 845-4880, p-baumann@tamu.edu

For additional production information for Texas sunflower view

<http://lubbock.tamu.edu/programs/crops/sunflowers/> and in summer 2015, <http://sunflower.tamu.edu>

This publication is no substitute for herbicide product labels! It is intended to serve only as a guide for controlling weeds in sunflower. Because labeled rates and restrictions may change, consult a current product label before use.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas A&M AgriLife Extension Service is implied.

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