

# SHAFEN STAR

**FOR CONTROL OF WEEDS IN COTTON, DRY BEANS,  
POTATOES, SNAP BEANS AND SOYBEANS**

**Active Ingredient:**

Sodium salt of fomesafen:

5-[2-chloro-4-(trifluoromethyl)phenoxy]-N-  
(methylsulfonyl)-2-nitrobenzamide . . . . . 22.1%\*

**Other Ingredients:** . . . . . 77.9%

**TOTAL:** . . . . . **100.0%**

\*Equivalent to 21.0% fomesafen or 1.88 lbs. fomesafen active ingredient per gal.

**KEEP OUT OF REACH  
OF CHILDREN  
WARNING / AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

**EPA Reg. No. 83529-25  
EPA Est. No. 70815-GA-002**

See label booklet for complete Precautionary Statements, Directions For Use, and Storage and Disposal.

**Manufactured For:**

**Sharda USA LLC** 

7217 Lancaster Pike, Suite A  
Hockessin, Delaware 19707

**FIRST AID**

**IF ON SKIN OR CLOTHING:**

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

**IF SWALLOWED:**

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to by a Poison Control Center or doctor.
- Do not give anything to an unconscious person.

**IF IN EYES:**

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor for treatment advice.

**NOTE TO PHYSICIAN:** Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a Poison Control Center or doctor or going for treatment.

**HOT LINE NUMBER**

For 24-hour medical emergency assistance (human or animal) call **1-800-222-1222**. For chemical emergency assistance (spill, leak, fire, or accident) call: CHEMTREC **1-800-424-9300**.

**Net Contents: 2.5 Gallons** (Unless Marked)

**265 Gallons**

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## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS WARNING / AVISO

This product contains fomesafen which has been determined to cause tumors in laboratory animals (mice). Risks can be reduced by closely following use directions and precautions and by wearing the protective clothing specified elsewhere on this label.

Causes skin irritation. Harmful if swallowed. Causes moderate eye irritation. Do not get on skin or on clothing. Avoid contact with eyes. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below.

##### Applicators and other handlers must wear:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber, or Viton®
- Chemical-resistant footwear plus socks
- Chemical-resistant apron when mixing, loading, or cleaning equipment
- Chemical-resistant headgear for overhead exposure

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

#### USER SAFETY RECOMMENDATIONS

##### Users should:

- Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

#### ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. Do not apply when weather conditions favor drift from target area.

##### Groundwater Advisory

This chemical is known to leach through soil into groundwater under certain conditions as a result of label use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

##### Surface Water Advisory

This product may impact surface water quality due to spray drift and run off of rain water. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface water via runoff for several months after application. A level well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce

the potential loading of fomesafen from runoff water and sediment. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. See the manual for "Conservation Buffers to Reduce Pesticide Losses" at the following internet address: <http://www.wsi.nrcs.usda.gov/products/W2Q/pest/core4.html>

### PHYSICAL OR CHEMICAL HAZARDS

Do not mix or allow coming in contact with oxidizing agents. Hazardous chemical reaction may occur.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

#### **Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 24 hours.**

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber, or Viton
- Chemical-resistant footwear plus socks
- Chemical-resistant apron when mixing, loading, or cleaning equipment
- Chemical-resistant headgear for overhead exposure

## PRODUCT INFORMATION

### **Read all label directions before using.**

Shafen Star is a selective herbicide which may be applied pre-plant, pre-emergence or post-emergence for control or suppression of broadleaf weeds, grasses, and sedges in cotton, dry beans, potatoes, snap beans, and soybeans.

### **Post-Emergence Applications**

Shafen Star is generally most effective and consistent when used post-emergence, working through contact action. Therefore, emerged weeds must have thorough spray coverage for effective control. Some bronzing, crinkling, or spotting of soybean leaves may occur following a post-emergent application, but soybeans soon outgrow these effects and develop normally.

Optimum weed control is achieved by post-emergent applications of Shafen Star to young actively growing broadleaf weeds that are not under stress from moisture, temperature, low soil fertility, mechanical or chemical injury.

## Pre-Plant Surface and Pre-Emergence Applications

Certain germinating broadleaf weeds, grasses, and sedges may be controlled or suppressed by soil residual activity from either pre-plant, pre-emergent or post-emergent applications if rainfall occurs shortly after application. The extent and consistency of soil activity is dependent upon soil characteristics, ground cover, amount of rainfall following application and the rate of Shafen Star used.

## Information on Weed Resistance

Naturally occurring biotypes of certain broadleaf species with resistance to this herbicide and related products (same mode of action) are known to exist. Selection of resistant biotypes, through repeated use of these herbicides, may result in control failures.

If poor performance cannot be attributed to adverse weather conditions or improper application methods, a resistant biotype may be present. In such a case, additional treatments with this herbicide or similar mode of action products are not recommended. Consult your local company representative or agricultural advisor for assistance.

## APPLICATION DIRECTIONS

### Application Timing

Best broad spectrum post-emergence control of susceptible broadleaf weeds is obtained when Shafen Star is applied early to actively growing weeds. This usually occurs 14 to 28 days after planting. Refer to the weed control tables for specific directions on weed growth stages and rates.

### Spray Additives

Only spray additives cleared for use on growing crops under 40 CFR 180.1001 may be used in the spray mixture. For best broad spectrum post-emergence control of susceptible broadleaf weeds in Regions 2, 3, 4, and 5 (see Regional Use Maps), Shafen Star should be used with 1.0-2.5% v/v liquid nitrogen (28% or similar) or a minimum of 8.5 lbs. ammonium sulfate per 100 gals. of spray volume.

### For Post-Emergence Applications Always Add One of the Following (except in tank-mix with products prohibiting spray additives - See Tank-Mix Directions for Use):

**Crop Oil Concentrate (COC) or Methylated Seed Oil (MSO):** Use a nonphytotoxic COC or MOS containing 15-20% approved emulsifier at 0.5-1% v/v (2-4 qts./100 gals.) of finished spray volume. COC or MSO can improve weed control but may slightly reduce crop tolerance.

**Non-ionic Surfactant (NIS):** Use NIS containing at least 80% active ingredient at 0.25-0.5% v/v (2-4 qts./100 gals.) of finished spray volume (Region 1 and East of Interstates 79 and 77 for Regions 2 and 3).

**Other Adjuvants:** Adjuvants other than COC or NIS may be used providing the product meets the following criteria:

1. Contains only EPA exempt ingredients.
2. Is nonphytotoxic to the target crop.
3. Is compatible in mixture. (May be established through a jar test.)
4. Is supported locally for use with Shafen Star on the target crop through proven field trials and through university and extension recommendations.

**Note:** No adjuvants are needed for pre-plant or pre-emergence applications unless Shafen Star is being used in a burndown.

### Recommended Mixing Order:

1. Fill spray tank with half the required amount of water and begin agitation.\*
2. Add fertilizer (UAN, AMS).
3. Add dry pesticide formulations.
4. Add Shafen Star.
5. Add liquid pesticide formulation.
6. Add adjuvant (MSO, COC or NIS).
7. Add remainder of water and then maintain constant agitation.

\*Compatibility agent, 1 gal./500 gals. of water or 0.2% v/v, may be added as needed.

### **Tank-Mix Compatibility Test**

A jar test is recommended prior to tank-mixing to ensure compatibility of Shafen Star with mixture partners. Add proportion amounts of tank-mixture components in a clear quart jar one at a time in the recommended mixing order. Gently shake or invert capped jar and let stand for 15-30 minutes. If the mixture clumps, forms flakes, oily films or layers or other precipitates, it is not compatible and the tank-mixture should not be used.

### **GROUND APPLICATION**

**Pre-Plant Surface and Pre-Emergence Application** - Use a minimum of 10 gallons per acre. Nozzle selection should meet manufacturer's gallonage and pressure recommendations for pre-plant surface or pre-emergence applications.

**Post-Emergence Application** - Use sufficient spray volume and pressure to ensure complete coverage of the target weed. A spray volume of 10-20 gallons per acre and 30-60 PSI at the nozzle tip is recommended. On large weeds and/or dense foliage, use 60 PSI and a minimum of 20 gallons per acre to ensure coverage of weed foliage.

The use of flat fan nozzles will result in the most effective post-emergence application of Shafen Star. The sprayer must be calibrated to provide the proper volume and rate per acre. In addition, the boom and nozzle height must be adjusted to provide complete coverage of target weeds.

**DO NOT USE FLOOD TYPE OR OTHER SPRAY NOZZLES, WHICH DELIVER COARSE, LARGE DROPLET SPRAYS.**

### **BAND APPLICATIONS**

Thorough weed coverage is important for post-emergent control. Best coverage is obtained with a minimum of two nozzles, one directed to each side of the planted row. Application with a single nozzle directed over the top of the row is not recommended for post-emergence applications but is suitable for pre-emergence applications. Cultivation of untreated areas may be needed following band applications. When making post-emergence band applications and cultivating in the same operation, position nozzles in advance of the cultivation device. This will reduce dust in the spray area. Dust can intercept spray, reducing weed coverage, resulting in less than adequate weed control.

Calculate the amount of herbicide and water volume needed for post-emergence band treatment by the following formulas:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast rate per acre} = \text{Band herbicide rate per acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast volume per acre} = \text{Band water volume per acre}$$

### **AERIAL APPLICATION**

Use sufficient spray volume and pressure to ensure complete coverage of the target. A minimum of 5 gals./A of spray mixture should be applied with a maximum of 40 PSI pressure. When broadleaf weed foliage is dense, use a minimum of 10 gals./A to ensure coverage of weed foliage.

**DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM, EXCEPT CENTER PIVOT SYSTEMS.**

### **CENTER PIVOT IRRIGATION APPLICATION**

Shafen Star alone or in tank-mixture with other herbicides on this label, which are registered for center pivot application, may be applied in irrigation water pre-emergence (after planting but before weeds or crop emerge) at rates directed on this label. Shafen Star also may be applied post-emergence to the crop and pre-emergence to weeds in crops where post-emergence applications are allowed on this label. Follow all restrictions (height, timing, rate, etc.) to avoid illegal residues. Apply this product only through a center pivot irrigation system. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension specialists, equipment manufacturers, or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label-prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

## Operating Instructions

- The system must contain a functional check-valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check-valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distributions adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump or piston pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.
- Prepare a mixture with a minimum of 1 part water to 1 part herbicide(s) and inject this mixture into the center pivot system. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of equipment. Maintain sufficient agitation to keep the herbicide in suspension.
- Meter into irrigation water during entire period of water application.
- Apply in ½ - 1 inch of water. Use the lower water volume (½ inch) on coarser soils and the higher volume (1 inch) on fine-textured soils. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

*Precaution for center pivot applications: Where sprinkler distribution patterns do not overlap sufficiently unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, crop injury may result.*

Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive area. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other locations affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2.5 inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

Posting required for chemigation does not replace other posting and reentry interval requirements for farm worker safety.

## Specific Instructions for Public Water Systems

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back-flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.

### **Soil Characteristics**

Application of Shafen Star to soils with high organic matter and/or high clay content may require higher rates than soils with low organic matter and/or low clay content. Refer to the Regional Use Map, weed control tables, and specific crop use sections for directions on use rates based on soil texture.

### **Environmental and Agronomic Conditions**

Always apply Shafen Star under favorable environmental conditions that promote active weed growth. Avoid applying Shafen Star to weeds or labeled crops which are under stress from drought, extreme temperatures, excessive water, low humidity, low soil fertility, mechanical or chemical injury as reduced weed control and/or increased crop injury may result.

### **Cultivation**

Cultivation prior to application is not recommended. Cultivation may put weeds under stress, reducing weed control. Timely cultivation 1-3 weeks after applying Shafen Star may assist weed control.

### **Rainfastness**

Shafen Star requires a 1 hour rain-free period for best results when applied post-emergence.

## **PRECAUTIONS**

- Thoroughly clean the spray system with water and a commercial tank cleaner before and after each use.
- Tank-mixes of Shafen Star with other pesticides, fertilizers or any other additives except as specified on this label or other approved Sharda USA LLC supplemental labels may result in tank-mix incompatibility, unsatisfactory performance and/or unsatisfactory crop injury.
- Apply post-emergence to actively growing weeds. Avoid applying Shafen Star to weeds or soybeans which are under stress from moisture, temperature, low soil fertility, mechanical or chemical injury, as reduced weed control and/or increased crop injury may result.
- Avoid overlapping spray swaths, as injury may occur to rotational crops.

## **RESTRICTIONS**

- A maximum of 1.6 pts. of Shafen Star (or a maximum of 0.375 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre per year in Region 1 (see Regional Use Map).
- A maximum of 1.6 pts. of Shafen Star (or a maximum of 0.375 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in alternate years in Region 2 (see Regional Use Map).
- A maximum of 1.3 pts. of Shafen Star (or a maximum of 0.313 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in alternate years in Region 3 (see Regional Use Map).
- A maximum of 1 pt. of Shafen Star (or a maximum of 0.25 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in alternate years in Region 4 (see Regional Use Map).



- A maximum of 0.75 pt. of Shafen Star (or a maximum of 0.1875 lb. a.i./A of fomesafen from any product containing fomesafen) may be applied per acre in alternate years in Region 5 (see Regional Use Map).
- To provide adequate coverage, it is recommended that ground speed not exceed 10 mph during application.
- Do not graze treated areas or harvest for forage or hay.
- Do not apply within 45 days of soybean harvest.

### ROTATIONAL CROP RESTRICTIONS

The following rotational crops may be planted after applying Shafen Star at specified rates in soybeans:

<b>Crop To Be Planted</b>	<b>Minimum Rotation Interval (Months After Last Shafen Star Application)</b>
Dry beans, snap beans, soybeans, and cotton	0
Small grains such as wheat, barley, rye	4
Corn*, peanuts, peas, rice, seed corn	10
To avoid crop injury do not plant alfalfa, sunflowers, sugar beets, sorghum** or any other crop within:	18

\* Use a 12 month minimum rotation interval for popcorn in the states of Ohio, Kentucky, Illinois, Indiana, Iowa, and Region 4 when applied at a rate of 1.0 pt./A or more.

\* Use 18 month minimum rotation interval for sweet corn in the states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, and Region 5.

\*\*Sorghum may be planted back after 10 months in Region 1.

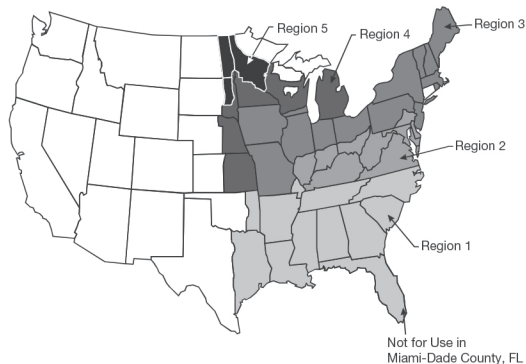
Do not graze rotated small grain crops or harvest forage or straw for livestock.

### **Replanting**

If replanting is necessary in fields previously treated with Shafen Star, the field may be replanted to cotton, dry beans, snap beans, or soybeans. Do not apply a second application of Shafen Star or other fomesafen-containing product as crop injury or illegal residues may occur in harvested crops. If tank-mix combinations were used, refer to product labels for any additional replanting instructions.

## SHAFEN STAR - USE RATES AND WEEDS CONTROLLED

REFER TO MAP FOR DEFINITION OF SPECIFIED GEOGRAPHIC REGIONS  
SHAFEN STAR REGIONAL USE MAP



### REGION 1

**(Maximum Rate 1.6 pts./A per year)**

**REGION 1:** Includes the following states or portion of states where Shafen Star may be applied: Alabama, Arkansas, Florida (except Miami-Dade county), Georgia, Louisiana, Mississippi, Missouri (counties of Bollinger, Butler, Cape Girardeau, Dunklin, Madison, Mississippi, New Madrid, Pemiscot, Perry, Ripley, Scott, Stoddard, and Wayne), North Carolina, Oklahoma (East of U.S. Highway 75 and East of Indian Nation Parkway), South Carolina, Tennessee, and Texas (all areas East of U.S. Highway 77 to State Road 239 including all of Calhoun County).



## REGION 2

### (Maximum Rate 1.6 pts./A, alternate years)

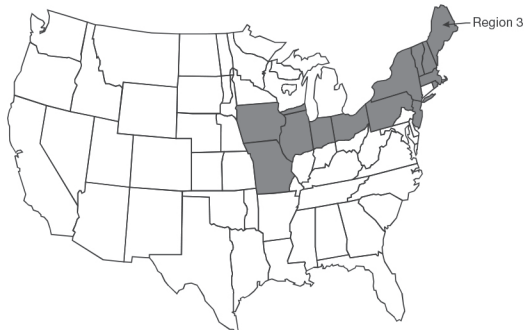
**REGION 2:** Includes the following states or portion of states where Shafen Star may be applied: Delaware, Kentucky, Maryland, Virginia, and West Virginia, South of Interstate 70 in the following states: Illinois, Indiana, and Ohio and in Pennsylvania (all areas South of Interstate 80 to the intersection of U.S. Highway 15 and East of U.S. Highway 15 and U.S. Highway 522).



## REGION 3

### (Maximum Rate 1.3 pts./A, alternate years)

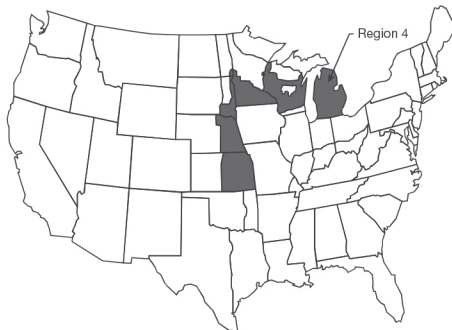
**REGION 3:** Includes the following states or portion of states where Shafen Star may be applied: Connecticut, Iowa, Maine, Massachusetts, Missouri (all counties except for those listed in Region 1), New Hampshire, New Jersey, New York, Pennsylvania (all areas except those listed in Region 2), Rhode Island, Vermont, and Wisconsin (South of U.S. Highway 18 between Prairie Du Chien and Madison, and South of Interstate 94 between Madison and Milwaukee), and North of Interstate 70 in the following states: Illinois, Indiana, and Ohio.



## REGION 4

### (Maximum Rate 1 pt./A, alternate years)

**REGION 4:** Includes the following states or portion of states where Shafen Star may be applied: Kansas (all counties East of or intersected by U.S. Highway 281), Michigan (Southern Peninsula), Minnesota (all areas South of Interstate 94), Nebraska (all counties East of or intersected by U.S. Highway 281), and Wisconsin (all areas, except those in Region 3, South of Interstate 94 from Minnesota state line to Eau Claire and South of U.S. Highway 29 from Eau Claire to Green Bay plus Barron, Chippewa, Clark, Door, Dunn, Eau Claire, Kewaunee, Marathon, Menominee, Oconto, Polk, Shawano, and St. Croix counties. The following counties are excluded: Adams, Marquette, Portage, Waupaca, Waushara, and Wood). North Dakota (all areas East of Interstate 29 from Fargo South to the South Dakota state line). South Dakota (all areas East of Interstate 29 from the North Dakota state line to Watertown, all areas East of Highway 81 from Watertown to Madison and all areas East and South of State Road 34 and U.S. Highway 281 to the Nebraska state line).



## REGION 5

### (Maximum Rate 0.75 pt./A, alternate years)

**REGION 5:** Includes the following states or portion of states where Shafen Star may be applied: North Dakota (all areas East of U.S. Highway 281 except those areas in Region 4), South Dakota (all areas East of U.S. Highway 281 except those areas in Region 4), and Minnesota (all areas South of U.S. Highway 2 except those areas in Region 4).



### WEEDS CONTROLLED

Weeds Controlled or Partially Controlled\* by Pre-Emergence Activity of Shafen Star at 1 - 1.6 Pints/A<sup>1</sup>.

<b>Broadleaf Weeds Controlled</b>	<b>Soil Texture</b>	<b>Organic Matter</b>		
Amaranth Palmer	All Soil Types	Up to 5%		
Croton, topic <sup>2</sup>				
Eclipta				
Galinsoga spp.				
Lambsquarters, common				
Morningglory, smallflower				
Nightshade, black				
Nightshade, Eastern black				
Pigweed, redroot				
Pigweed, smooth				
Poinsettia, wild				
Purslane, common				
Ragweed, common <sup>2</sup>				
Sida, prickly <sup>2</sup>				
Starbur, bristly				
<b>Broadleaf Weeds Partially Controlled*</b>				
Anoda, spurred				
Cocklebur, common				
Morningglory, entireleaf				
Morningglory, ivyleaf				
Morningglory, pitted				
Morningglory, red/scarlet				
Morningglory, tall				
Nightshade, hairy				
Ragweed, giant				
Waterhemp, common				
<b>Sedges Partially Controlled*</b>				
Nutsedge, yellow				

\*Partial control means significant activity but not always at a level considered acceptable for commercial weed control.

<sup>1</sup>Use the higher end of the rate range when heavy weed populations are anticipated.

<sup>2</sup>Rates less than 1.6 pints/A will provide only partial control of this weed.

**APPLICATION RATES FOR WEED GROWTH STAGES**

<b>Weed</b>	<b>Shafen Star Rate (pts./A) Maximum Growth Stage Controlled At</b>			
	<b>0.75 pt./A # of True Leaves</b>	<b>1 pt./A # of True Leaves</b>	<b>1.25 pts./A # of True Leaves</b>	<b>1.5 pts./A # of True Leaves</b>
Anoda, Spurred	-	2*	2	4
Balloon Vine	-	-	2	4
Carpetweed	-	8" Diameter Size	Unlimited Size	Unlimited Size
Citron (Wild Watermelon)	-	2	4	4
Cocklebur, Common	2	4	6	8
Copperleaf, Hophornbeam	-	4	4	6
Copperleaf, Virginia	-	4	4	6
Crotalaria, Showy	-	6	6	8
Croton, Tropic	-	4	4	6
Cucumber, Volunteer	-	4	6	8
Eclipta	-	2	4	4
Groundcherry, Cutleaf	-	4	6	8
Hemp	-	4	6	6
Horsenettle	-	2*	4*	4*
Jimsonweed	4	6	8	8
Ladysthumb	2*	2	4	6
Lambsquarters, Common	2*	2*	2*	2*
Mexicanweed	-	2*	2	4
Morningglory				
Cypressvine	2	4	6	6
Entireleaf var.	3*	3	4	5
Ivyleaf	3*	3	4	5
Purple Moonflower	3*	3	5	6
Red (Scarlet)	3*	3	6	6
Smallflower	3*	3	4	6
Pitted (Small White)	4*	4	6	6
Tall (Common)	2*	2	3	5
Palmleaf (Willowleaf)	3*	3	6	6
Mustard, Wild	4	6	8	8
Nightshade, Black	2	4	6	6
Nutsedge, Yellow	-	-	*	*

\*Suppression Only

(continued)

**APPLICATION RATES FOR WEED GROWTH STAGES (Continued)**

Weed	Shafen Star Rate (pts./A) Maximum Growth Stage Controlled At			
	0.75 pt./A # of True Leaves	1 pt./A # of True Leaves	1.25 pts./A # of True Leaves	1.5 pts./A # of True Leaves
Pigweed, spp.				
Amaranth, Palmer	2	4	6	6
Amaranth, Spiny	2	2	4	6
Redroot	2	4	6	8
Smooth	2	4	6	6
Waterhemp, Common	2*	2	4	6
Waterhemp, Tall	2*	2	4	6
Poinsettia, Wild	-	2	4	6
Purslane, Common	-	Multi-Leaf 6" Diameter	Multi-Leaf 8" Diameter	Multi-Leaf 8" Diameter
Pusley, Florida	-	2	2	4
Ragweed, Common	4*	4	6	8
Ragweed, Giant	4*	4	6	8
Redweed	-	-	2*	3*
Sesbania, Hemp	-	8	12	12
Sicklepod	-	-	Cotyledon*	Cotyledon*
Sida, Prickly	-	2*	2	4
Smartweed, Pennsylvania	4*	4	6	6
Smellmelon	-	2	2	4
Spurge, Prostrate	-	-	1" Diameter*	2" Diameter*
Spurge, Spotted	-	-	2*	2*
Starbur, Bristly	-	4	4	6
Sunflower, Common	-	-	2	4
Velvetleaf	-	2	4	4
Venice Mallow	4	6	6	8
Witchweed	-	Multi-Leaf Up to 7"	Multi-Leaf Up to 10"	Multi-Leaf Up to 10"
Yellow Rocket	4	4	6	8

\*Suppression Only

## SPECIAL USE DIRECTIONS FOR ADDITIONAL WEED PROBLEMS

### Suppression of Annual Grasses:

The grasses listed below may be suppressed by post-emergence applications and controlled or suppressed by pre-emergence applications of Shafen Star at 1-1.5 pts./A. Consult Use Rate Table for maximum rate in each region. For full-season broad-spectrum annual grass control, Fusilade® DX or Fusion® herbicide should be used alone or in tank-mix with Shafen Star. Consult tank-mix section.

- Barnyardgrass
- Broadleaf Signalgrass
- Crabgrass,
  - Foxtail
  - Giant
  - Green
  - Yellow
- Goosegrass
- Johnsongrass, Seedling
- Panicum, Fall
- Panicum, Texas

### Suppression of Perennial Weeds:

Use of Shafen Star at post-emergence rates of 1-1.5 pts./A will aid in suppressing the above-ground portions of the weeds listed below until crop canopy can assist in suppression. Perennial weeds continue to regrow from underground rootstocks even if above-ground foliage is temporarily controlled or retarded. Even though Shafen Star and crop competition can suppress perennial weeds for a growing season, the rootstocks will continue to live and reestablishment will occur in subsequent years.

- Milkweed, Climbing
- Milkweed, Honeyvine
- Bindweed, Field
- Bindweed, Hedge
- Trumpet Creeper

## COTTON USE DIRECTIONS

Pre-Emergence Application: Apply Shafen Star pre-emergence at 1 - 1.6 pts./A in cotton in Region 1 for control or partial control of the weeds listed in **"WEEDS CONTROLLED"** table of the container label. Apply as a pre-emergence treatment only to coarse textured soils (sandy loam, loamy sand, sandy clay loam).

To broaden the weed control spectrum, Shafen Star may be tank-mixed with other pre-emergence herbicides such as Caparol®, Cotoran®, Direx®, Karmex®, Solicam®, or Staple®.

For control of emerged weeds, Shafen Star may be tank-mixed with a burndown herbicide such as Gramoxone Inteon™ or glyphosate brands (such as Touchdown®, Roundup®) labeled in cotton. In reduced tillage plantings, Shafen Star can be applied up to 14 days prior to planting or at planting with a burndown herbicide. Refer to the tank-mix partner label for use directions, restrictions and limitations. The most restrictive product labeling applies.

Cotton plants are tolerant to pre-emergence applications of Shafen Star when applied at directed rates and to coarse textured soil types. Some crinkling or spotting of cotton foliage or stunting may occur, especially if heavy rainfall occurs during or soon after cotton emergence, but cotton plants normally outgrow these effects and develop normally. Cotton foliage is not tolerant to Shafen Star. Do not apply Shafen Star over the top of emerged cotton as unacceptable cotton injury will occur.



**Post-Directed Application:**

Apply Shafen Star in emerged cotton as a post-directed treatment using precision post-directed, hooded or shielded application equipment to provide complete coverage of emerged weeds. Apply Shafen Star at 1 - 1.6 pints per acre in a minimum of 10 gallons spray solution per acre.

Post-directed applications of Shafen Star will provide contact control of labeled emerged weeds and residual pre-emergence control of labeled weeds (once activated by rainfall or irrigation). See container label sections for a list of weeds controlled, directed application rates, weed growth stages, and application directions.

Shafen Star should be applied with a non-ionic surfactant at 0.25 to 0.5% v/v, or crop oil concentrate at 1% v/v to emerged weeds. Do not add liquid nitrogen (28% or similar) to Shafen Star, or Shafen Star tank-mixes in cotton.

To broaden the weed control spectrum, post-directed applications of Shafen Star may be tank-mixed with other labeled post-directed herbicides such as Caparol, Direx, Dual MAGNUM®, Envoke®, Karmex, Layby™ Pro, Sequence®, or Suprend®. When applied with hooded or shielded sprayers, Shafen Star and Shafen Star tank-mixes may be applied with burndown products such as Gramoxone Inteon, Sequence or glyphosate brands (such as Touchdown, Roundup) labeled for in crop application in cotton. Refer to the tank-mix partner label for use directions, restrictions and limitations. The most restrictive product labeling applies.

Cotton foliage is not tolerant to Shafen Star applications. Avoid contact to cotton foliage as unacceptable injury will occur. Application equipment should be calibrated (spray pressure, nozzle type and configuration, and orifice size) to avoid fine spray droplets contacting green cotton stems and foliage.

**Post-Directed Application Timing In Cotton:**

Shafen Star may be applied to cotton at least 6 inches in height through lay-by as a post-directed application. All post-directed applications should avoid spray contact with any green non-barked parts of the cotton plant or foliage as unacceptable injury will OCCUR. Follow the application timing directions below for post-directed applications in cotton.

**Shield and Hooded Applications:**

Make a precision post-directed Shafen Star application to the base of the cotton plant avoiding contact with the cotton stem or foliage when cotton is at least 6 inches in height to avoid cotton injury. Use only hooded or shielded spray equipment to apply Shafen Star in cotton that is 6 inches to 12 inches in height. Adjust nozzles to provide full coverage of emerged target weeds.

**Layby Applications:**

Make a post-directed Shafen Star application to the base of the cotton plant avoiding contact with any non-barked portion of the cotton plant or foliage. Use precision post-directed equipment or hooded or shielded sprayers on cotton that has developed a minimum of 4 inches of brown bark through layby. Application equipment should be configured to provide full coverage of emerged target weeds.

**Restrictions - Cotton:**

- Do not apply Shafen Star later than 70 days before harvest.
- Do not apply more than 1.6 pints per acre of Shafen Star in any year.
- Do not make more than one application of Shafen Star per year.
- If two consecutive year applications are made, allow a 2 year interval before another application.
- Do not apply as a pre-emergence treatment to medium or fine-textured soils as crop injury will likely occur.

**Special Use Directions for the Suppression of Woollyleaf Bursage (Lakeweed), Ambrosia gray, in Texas:**

Apply Shafen Star to cultivated areas of cropland in the fall or spring as a spot treatment at a rate of 1.6 pints per acre and incorporate to a depth of 2-3 inches for suppression of woollyleaf bursage.

Applications should be made with ground equipment.

The use of adjuvants, as specified under the Spray Additives section, will significantly improve the initial burndown of any emerged woollyleaf bursage, but this effect is only temporary. Therefore, an adjuvant may be used if desired, but is not necessary.

Significant suppression may not be seen until 6-8 months after application, but should then continue for at least 2 years after application. Cotton or soybeans may be planted in treated areas. Under certain conditions, significant damage may occur to cotton planted within 18 months of application. A 3-year interval from last application to planting is required for all other crops.

## DRY BEANS AND SNAP BEANS

### Pre-Plant Surface and Pre-Emergence Application

Apply Shafen Star as a pre-plant surface or pre-emergence application in Regions 1, 2, 3, and 4 only for control or partial control of the weeds listed in “**WEEDS CONTROLLED**” table. Shafen Star can be applied alone, or tank-mixed or followed sequentially with other labeled dry bean or snap bean herbicides to broaden the weed control spectrum or control newly emerged weeds. Refer to the Tank-mix and Sequential Application section for additional information.

**NOTE:** Treated soil that is splashed onto newly emerged seedlings may result in temporary crop injury but plants normally outgrow these effects and develop normally.

### Post-Emergence Application

Apply Shafen Star as a post-emergent broadcast application in Regions 1, 2, 3, 4, and 5 for control or partial control of the weeds listed in “**APPLICATION RATES FOR WEED GROWTH STAGES**” table and in the “**SPECIAL USE DIRECTIONS FOR ADDITIONAL WEED PROBLEMS**” section. Application rate depends on weed species and growth stage. Two applications may be made if necessary but not to exceed the maximum rate specified per geographic region. (Refer to map for definition of specified geographic regions). Refer to the Spray Additive section for recommended spray additives. Use of crop oil concentrate can improve weed control but may slightly reduce crop tolerance.

Apply when dry beans or snap beans have at least one fully expanded trifoliate leaf.

Shafen Star can be applied alone or in tank-mix with other labeled dry bean or snap bean post-emergence herbicides to broaden the weed control spectrum. Refer to the Tank-mix and Sequential Application section.

Some bronzing, crinkling or spotting of dry bean or snap bean leaves may occur following post-emergent applications, but dry beans and snap beans soon outgrow these effects and develop normally.

### Tank-Mix and Sequential Applications for Dry Beans and Snap Beans

Shafen Star can be used sequentially or in tank-mix with the following products:

Dry Beans and Snap Beans	Dry Beans Only
Assure II® Basagran® Dual MAGNUM Eptam® Poast® Prowl® Sharda Imazethapyr 2 Raptor® Trifluralin 4E	Frontier® Clethodim 2E Sonalan®

Under certain conditions, the mixture of Shafen Star with one or more of the above mentioned broadleaf herbicides may cause a reduction in activity of any post-emergence grass herbicide in the mixture.

For sequential applications allow 2-3 days after the application of the post-emergence grass herbicide before applying Shafen Star or Shafen Star mixtures. Where Shafen Star or the Shafen Star mixture is applied first, apply the grass herbicide when the grass weeds begin to develop new leaves (generally around 7 days).

**NOTE:** Tank-mix applications can result in increased crop injury as compared to either product used alone.

Always read and follow the directions, restrictions and limitations for all products whether used alone, sequentially or in a tank-mix. The most restrictive labeling of any product used applies.

### **Restrictions - Dry Beans and Snap Beans**

- Refer to Shafen Star Regional Use Map for the maximum rate of Shafen Star (or other fomesafen containing products) that may be applied in each geographic region.
- Do not apply to any field in Regions 2, 3, 4, or 5 more than once every two years.
- For Snap Beans: Do not exceed 1.6 pints of Shafen Star per acre in any one year and also adhere to the maximum rate that may be applied in each geographic region (refer to the Shafen Star Regional Use Map). Do not graze treated areas or harvest for forage or hay. Do not utilize hay or straw for animal feed or bedding. Do not apply within 30 days of harvest.
- For Dry Beans: Do not exceed 1.6 pints of Shafen Star per acre in any one year and also adhere to the maximum rate that may be applied in each geographic region (refer to the Shafen Star Regional Use Map). Do not graze animals on green forage or stubble. Do not utilize hay or straw for animal feed or bedding. Do not apply within 45 days of harvest.
- Do not use UAN (28% or similar) or ammonium sulfate on dry beans or snap beans as severe crop injury may occur.

## **POTATOES**

Apply Shafen Star at 1 pt./A as a broadcast pre-emergence application after planting but before potato emergence for control or partial control of weeds listed in "**WEEDS CONTROLLED**" table. Effectiveness will be reduced if later cultural practices expose untreated soil. For application by center pivot irrigation, see the Center Pivot Irrigation Application section of this label.

**NOTE:** Potato varieties may vary in their response to Shafen Star. When using Shafen Star for the first time on a particular variety, always determine crop tolerance before using.

### **Tank-Mixtures With Other Products Registered for Use in Potatoes**

For pre-emergence applications in potatoes, Shafen Star may be tank-mixed with other pesticide products registered for use in this way and timing in potatoes. Follow the directions for use, observe the stated precautions, and abide by the limitations and restrictions on the most restrictive of the product labels. If you have no previous experience mixing these products under your conditions, perform a compatibility test before attempting large-scale mixing (see **Tank-Mix Compatibility Test** section of this label).

### **Restrictions - Potatoes**

- Do not exceed 1 pt./A of Shafen Star per season. Refer to Regional Use Map for the maximum rate of Shafen Star (or other fomesafen containing products) that may be applied per year or alternate year in each geographic region.
- Do not harvest potatoes treated with Shafen Star within 70 days of application.
- Do not apply Shafen Star to sweet potatoes or yams.
- Do not apply Shafen Star as a pre-plant incorporated application in potatoes or crop injury may occur.
- Do not apply to emerged potato plants or severe crop injury will occur.

## **SOYBEANS**

### **Pre-Plant Surface and Pre-Emergence Application**

Apply Shafen Star as a pre-plant surface or pre-emergence application in Regions 1, 2, 3, and 4 only for control or partial control of the weeds listed in "**WEEDS CONTROLLED**" table. Shafen Star can be applied alone or tank-mixed or followed sequentially with other labeled soybean herbicides to broaden the weed control spectrum or control newly emerged weeds. Refer to the Tank-Mix and Sequential Application section for additional information.

For control of emerged weeds, Shafen Star may be tank-mixed with a burndown herbicide such as Gramoxone Inteon or glyphosate brands (such as Touchdown or Roundup) labeled in soybeans. In reduced tillage plantings, Shafen Star can be applied up to 14 days prior to planting or at planting with a burndown herbicide.

### **Post-Emergence Application**

Apply Shafen Star as a post-emergence broadcast application in Regions 1, 2, 3, 4, and 5 for control or partial control of weeds listed in “**APPLICATION RATES FOR WEED GROWTH STAGES**” and in the “**SPECIAL USE DIRECTIONS FOR ADDITIONAL WEED PROBLEMS**” section. Application rate depends on weed species and growth stage. Refer to the Spray Additive section for recommended spray additives. To enhance post-emergence control of susceptible broadleaf weeds (soybeans only) in Regions 2, 3, 4, and 5 (see Regional Use Map), Shafen Star can be used with a minimum of 2.5% liquid nitrogen (28% or similar) or a minimum of 10 pounds ammonium sulfate per 100 gallons of spray volume.

Shafen Star can be applied alone or in combination with other labeled soybean post-emergence herbicides to broaden the weed control spectrum. Refer to the “**TANK-MIX AND SEQUENTIAL APPLICATIONS FOR SOYBEANS**” section.

Some bronzing, crinkling or spotting of soybean leaves may occur following post-emergent applications, but soybeans soon outgrow these effects and develop normally.

## **TANK-MIX AND SEQUENTIAL APPLICATIONS FOR SOYBEANS**

Shafen Star can be used sequentially or in tank-mix with one or more of the following products: Assure II<sup>®</sup>, Basagran<sup>®</sup>, Butyrac<sup>®</sup>, Classic<sup>®</sup>, FirstRate<sup>®</sup>, Fusilade DX, Fusion, Ignite<sup>®</sup>, Glyphosate (such as Touchdown<sup>®</sup>, Roundup<sup>®</sup>, Glyphomax<sup>™</sup>), Gramoxone<sup>®</sup> Inteon, Harmony<sup>®</sup>, Poast<sup>®</sup>, Poast Plus<sup>®</sup>, Pursuit<sup>®</sup>, Raptor<sup>®</sup>, Resource<sup>®</sup>, Scepter<sup>®</sup>, Select<sup>®</sup>, and Synchrony<sup>®</sup> STS<sup>®</sup>.

Under certain conditions, the mixture of Shafen Star with one or more of the above mentioned broadleaf herbicides may cause a reduction in activity of any post-emergence grass herbicide in the mixture.

For sequential applications allow 2-3 days after the application of the grass herbicide before applying Shafen Star or Shafen Star mixtures. Where Shafen Star or the Shafen Star mixture is applied first, apply the grass herbicide when grass weeds begin to develop new leaves (generally around 7 days).

Tank-mix applications can result in increased crop injury as compared to either product used alone. Always read and follow the directions, restrictions and limitations for all products whether used alone, sequentially or in a tank-mix. The most restrictive labeling of any product used applies.

## **GLYPHOSATE TOLERANT SOYBEAN TANK-MIXES**

Shafen Star at 6-12 oz./A, can be tank-mixed with glyphosate products (such as Touchdown or Roundup) that are labeled for glyphosate tolerant soybeans for improved post-emergence control of many weeds such as morning-glory spp., hemp sesbania, waterhemp, and black nightshade which are known to have tolerance to glyphosate, but are susceptible to Shafen Star.

### **FOLLOW THE DIRECTIONS ON THE GLYPHOSATE PRODUCT LABEL FOR THE USE OF SPRAY ADDITIVES IN THIS TANK-MIX.**

Do not allow this tank-mix to move off target as contact by even minute quantities can cause severe damage or death to any non-target vegetation.

**Note:** Post-emergence application of this tank-mix on soybean varieties which do not contain the glyphosate tolerant gene will result in severe crop injury or death of the soybean crop. Always read and follow the directions, restrictions and limitations for all products used. The most restrictive labeling of any product applies.

### **Restrictions - Soybeans**

- Do not exceed 1 fl. oz. of Butyrac per acre in mixture with Shafen Star.
- Do not exceed 0.25 oz./A of Synchrony STS herbicide in the tank with labeled rates of Shafen Star on non-STS varieties. This tank-mix can be applied

post-emergence to any soybean variety for additional broadleaf weed control. Refer to the Synchrony STS label for more information and crop rotation restrictions.

- Refer to Regional Use Map for the maximum rate of Shafen Star (or other fomesafen containing products) that may be applied in each geographic region. Do not apply to any field in Region 2, 3, 4, or 5 more than once every two years.
- Do not exceed 1.6 pints of Shafen Star per acre in one year and also adhere to the maximum rate that may be applied in each geographic region (refer to the Regional Use Map).
- Do not graze treated areas or harvest for forage or hay.
- Do not apply within 45 days of harvest.

## AERIAL SPRAY DRIFT MANAGEMENT

### SPRAY DRIFT MANAGEMENT

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator needs to be familiar with and take into account the information covered in the **AERIAL DRIFT REDUCTION** section.

## AERIAL DRIFT REDUCTION

### INFORMATION ON DROPLET SIZE

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (See **Wind**, **Temperature and Humidity**, and **Temperature Inversions**).

### CONTROLLING DROPLET SIZE

- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure:** Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles:** Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation:** Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type:** Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lower drift.

### BOOM LENGTH

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

### APPLICATION HEIGHT

Applications should not be made at a height greater than 10 ft. above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

### SWATH ADJUSTMENT

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator

needs to compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance needs to increase with increasing drift potential (higher wind, smaller drops, etc.).

## WIND

Drift potential is lowest between winds speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application must be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator needs to be familiar with local wind patterns and how they affect spray drift.

## TEMPERATURE AND HUMIDITY

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

## TEMPERATURE INVERSIONS

Applications must not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

## SENSITIVE AREAS

The pesticide must only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

## APPENDIX

Scientific names are listed for those weeds referred to in the Shafen Star label.

COMMON NAME	SCIENTIFIC NAME
Amaranth, Palmer	<i>Amaranthus palmeri</i>
Amaranth, Spiny	<i>Amaranthus spinosus</i>
Anoda, Spurred	<i>Anoda cristata</i>
Balloon Vine	<i>Cardiospermum halicacabum</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Bindweed, Field	<i>Convolvulus arvensis</i>
Bindweed, Hedge	<i>Calystegia sepium</i>
Broadleaf Signalgrass	<i>Brachiaria platyphylla</i>
Carpetweed	<i>Mollugo verticillata</i>
Citron (Wild Watermelon)	<i>Citrullus vulgaris</i>
Cocklebur, Common	<i>Xanthium strumarium</i>
Copperleaf, Hophornbeam	<i>Acalypha ostryifolia</i>
Copperleaf, Virginia	<i>Acalypha virginica</i>
Crabgrass	<i>Digitaria</i> spp.

(continued)

**APPENDIX (Continued)**

<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>
Crotalaria, Showy	<i>Crotalaria spectabilis</i>
Croton, Tropic	<i>Croton glandulosus</i>
Cucumber, Volunteer	<i>Cucumis sativus</i>
Eclipta	<i>Eclipta prostrata</i>
Foxtail, Giant	<i>Setaria faberi</i>
Foxtail, Green	<i>Setaria viridis</i>
Foxtail, Yellow	<i>Setaria pumila</i>
Goosegrass	<i>Eleusine indica</i>
Groundcherry, Cutleaf	<i>Physalis angulata</i>
Hemp	<i>Cannabis sativa</i>
Horsenettle	<i>Solanum carolinense</i>
Jimsonweed	<i>Datura stramonium</i>
Johnsongrass, Seedling	<i>Sorghum halepense</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters, Common	<i>Chenopodium album</i>
Mexicanweed	<i>Caperonia castaneifolia</i>
Milkweed, Climbing	<i>Sarcostemma cynanchoides</i>
Milkweed, Honeyvine	<i>Ampelamus albidus</i>
Morningglory, Cypressvine	<i>Ipomoea quamoclit</i>
Entireleaf	<i>Ipomoea hederacea</i> var. <i>integriuscula</i>
Ivyleaf	<i>Ipomoea hederacea</i> var. <i>hederacea</i>
Purple Moonflower	<i>Ipomoea turbinata</i>
Red (Scarlet)	<i>Ipomoea coccinea</i>
Smallflower	<i>Jacquemontia tamnifolia</i>
Pitted (Small White)	<i>Ipomoea lacunosa</i>
Tall (Common)	<i>Ipomoea purpurea</i>
Palmleaf (Willowleaf)	<i>Ipomoea wrightii</i>
Mustard, Wild	<i>Brassica kaber</i>
Nightshade, Black	<i>Solanum nigrum</i>
Nutsedge, Yellow	<i>Cyperus esculentus</i>
Panicum, Fall	<i>Panicum dichotomiflorum</i>
Panicum, Texas	<i>Panicum texanum</i>
Pigweed, Redroot	<i>Amaranthus retroflexus</i>

*(continued)*

**APPENDIX (Continued)**

<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>
Pigweed, Smooth	<i>Amaranthus hybridus</i>
Poinsettia, Wild	<i>Euphorbia heterophylla</i>
Purslane, Common	<i>Portulaca oleracea</i>
Pusley, Florida	<i>Richardia scabra</i>
Ragweed, Common	<i>Ambrosia artemisiifolia</i>
Ragweed, Giant	<i>Ambrosia trifida</i>
Redweed	<i>Melochia corchorifolia</i>
Sesbania, Hemp	<i>Sesbania exaltata</i>
Sicklepod	<i>Cassia obtusifolia</i>
Sida, Prickly	<i>Sida spinosa</i>
Smartweed, Pennsylvania	<i>Polygonum pensylvanicum</i>
Smellmelon	<i>Cucumis melo</i>
Spurge, Prostrate	<i>Euphorbia humistrata</i>
Spurge, Spotted	<i>Euphorbia maculata</i>
Starbur, Bristly	<i>Acanthospermum hispidum</i>
Sunflower, Common	<i>Helianthus annuus</i>
Trumpet Creeper	<i>Campsis radicans</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Venice Mallow	<i>Hibiscus trionum</i>
Waterhemp, Common	<i>Amaranthus rudis</i>
Waterhemp, Tall	<i>Amaranthus tuberculatus</i>
Witchweed	<i>Striga asiatica</i>
Yellow Rocket	<i>Barbarea vulgaris</i>



## STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**Prohibitions:** Open dumping is prohibited. Do not reuse empty container.

**Pesticide Storage:** Store above 32°F in original containers only. If product solidifies, return to room temperature and agitate to reconstitute. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with sand, earth or synthetic absorbent. Remove to chemical waste area.

**Pesticide Disposal:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

**Container Handling [Less Than 5 Gallons]:** Non-refillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank. Drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Container Handling [For Bulk and Mini-Bulk Containers]:** Refillable container. Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the person refilling. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

**CONTAINER IS NOT SAFE FOR FOOD, FEED OR DRINKING WATER.**

### **CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY**

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of Sharda USA LLC or Seller. To the extent consistent with applicable law, Buyer and User agree to hold Sharda USA LLC and Seller harmless for any claims relating to such factors.

Sharda USA LLC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent consistent with applicable law: (1) this warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or Sharda USA LLC, and (2) Buyer and User assume the risk of any such use. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, SHARDA USA LLC MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL SHARDA USA LLC BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SHARDA USA LLC AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SHARDA USA LLC OR SELLER, THE REPLACEMENT OF THE PRODUCT.

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