

279-3189

9/28/2012

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D C 20460

OFFICE OF  
CHEMICAL SAFETY AND  
POLLUTION PREVENTION

Ms Shannon Yanocha  
FMC Corporation  
1735 Market Street  
Philadelphia PA 19103

SEP 28 2012

Subject Label Amendment to add new uses of Petition No 1F7838 (citrus fruit crop group low growing berry crop group tree nut crop group including pistachio) IR 4 Petition No 1E7890 (rhubarb turnip sunflower crop subgroup B spring wheat succulent cowpea lima bean) and IR 4 Petition No 2E8020 (edamame) to the herbicide product labels listed below containing the active ingredient Sulfentrazone  
EPA Reg Nos 279 3189 279 3149 279 3220 and 279 3370  
Decision Numbers 445542 445543 445544 445548 450876 450882 450885 450886 464038 464040 464041 464042

Dear Ms Yanocha

The labeling referred to above submitted in connection with registration under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) as amended is acceptable provided the following label revisions are made

- 1 For all new uses being added to the dry flowable formulation (279 3189) add the following chemigation prohibition to the restriction section Do not apply through irrigation equipment
- 2 For all of the IR 4 minor uses being added to the dry flowable formulation (279 3189) add the following aerial prohibition to the restriction section Do not apply by air
- 3 For all new uses being added to the liquid formulations (279 3370 and 279 3220) add the following prohibition to the restriction section Do not apply using a mechanically pressurized handgun

The Agency notes that FMC agrees to conduct a 28 day inhalation study in rats to establish a NOAEL for occupational inhalation exposure and risk assessment within 18 months of the date of this letter A study protocol will be submitted to EPA for review before conducting this study Depending on the results of this inhalation study the label mitigation for occupational uses may be revisited Until this study provides the Agency with a NOAEL for occupational inhalation exposure the label revisions listed above must be incorporated in the final printed labels for these products

*Continued on page 2*

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One copy of labeling for these products stamped Accepted with Comments is enclosed for your records Products released for shipment after 18 months from the date on this notice or the next printing of the label, whichever occurs first, must bear the new revised label Amended labeling will supersede all previously accepted ones

Per 40 CFR 156 10(6) submit one copy of your final printed labeling before you release the product for shipment If you have questions or concerns regarding this letter please contact Beth Benbow at (703) 347 8072 or email at [benbow.bethany@epa.gov](mailto:benbow.bethany@epa.gov)

Sincerely



Kathryn V Montague  
Product Manager 23  
Herbicide Branch  
Registration Division (7505P)

3/99

Group 14 Herbicide

# SPARTAN HERBICIDE

EPA Reg No 279 3189

EPA Est 279

**Active Ingredient**  
Sulfentrazone  
**Other Ingredients**

**By Wt**  
75 0 /  
25 0 /  
100 0 /

Contains 0.75 pounds of active ingredient per pound of formulated product

**ACCEPTED  
with COMMENTS  
In EPA Letter Dated**

SEP 28 2012

Under the Federal Insecticide  
Fungicide and Rodenticide Act  
as amended for the pesticide  
registered under EPA Reg No

279-3189

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

## FIRST AID

**If Inhaled**

Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth to mouth, if possible. Call a poison control center or doctor for further treatment advice.

**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 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 eye. 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 do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

## HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-331-3148 for emergency medical treatment information.

**FROM FMC**  
1735 Market Street  
Philadelphia, PA 19103

### ATTENTION

Although this label may appear similar to the label on a product you may have used, there may be important label differences. Users must read, understand and strictly follow all label directions, precautions and restrictions.

It is the user's responsibility to be sure the product is approved for sale or use on the intended crop and for use in the specific geographic area.

It is the user's responsibility to be aware of and to follow all State or local precautions or restrictions not appearing on this product label.

Prior to purchase or use of this product, read the Terms of Sale or Use and Limitation of Warranty and Liability on page 2 of this label. If the terms and conditions are unacceptable, return the product immediately in the original and unopened container.

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## PRECAUTIONARY STATEMENTS

### Hazards to Humans and Domestic Animals

#### Caution

Causes moderate eye irritation Harmful if inhaled swallowed or absorbed through skin Avoid breathing vapor or spray mist Avoid contact with skin eyes or clothing

#### Personal Protective Equipment (PPE)

Applicators and other handlers must wear long sleeved shirt and long pants chemical resistant gloves made of any waterproof material such as polyethylene or polyvinyl chloride and shoes plus socks

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product 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

**User Safety Recommendations**

Users should

Remove clothing immediately if pesticide gets inside Then wash thoroughly and put on clean clothing

**Environmental Hazards**

This pesticide is toxic to marine/estuarine invertebrates Do not apply directly to water to areas where surface water is present or to intertidal areas below the mean high water mark Drift and runoff may be hazardous to terrestrial and aquatic plants in neighboring areas Do not contaminate water when disposing of equipment washwaters or rinsate

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

**Do not use on coarse soils classified as sand which have less than 1 / organic matter**

Surface water advisory Sulfentrazone can contaminate surface water through spray drift Under some conditions sulfentrazone may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several to many months post application These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters frequently flooded areas areas overlying extremely shallow groundwater areas with in field canals or ditches that drain to surface water areas not separated from adjacent surface waters with vegetated filter strips and areas over lying tile drainage systems that drain to surface waters

**Physical/Chemical Hazards**

Do not use or store near heat or open flame

**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

Do not apply more than the allowed amount of Spartan Herbicide per acre per twelve month period as stated in Table 3 The twelve month period is considered to begin upon the initial Spartan 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 These requirements 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 12 hours**

Personal Protective Equipment (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 long sleeved shirt and long pants chemical resistant gloves made of any waterproof material and shoes plus socks

**STORAGE AND DISPOSAL**

Do not contaminate water food or feed by storage or disposal Do not use or store around the home

**Pesticide Storage**

Store product in original container only away from other pesticides fertilizer food or feed Store in a cool dry place and avoid excess heat

**In Case of Spill**

In case of spill avoid contact isolate area and keep out animals and unprotected persons Confine spills Call CHEMTREC (Transportation and spills) (800) 424 9300

**To Confine Spill**

To confine spill If liquid dike surrounding area or absorb with sand cat litter or commercial clay If dry material cover to prevent dispersal Place damaged package in a holding container Identify contents

**Pesticide Disposal**

Waste resulting from the use of this product may be disposed of at an approved waste disposal facility

**Container Disposal**

6/99

**Nonrefillable container** Do not reuse or refill this container Triple rinse container (or equivalent) promptly after emptying Triple rinse as follows (For containers greater than 5 gallons) Empty the remaining contents into application equipment or a mix tank Fill the container 1/4 full with water Replace and tighten closures Tip container on its side and roll it back and forth ensuring at least one complete revolution for 30 seconds Stand the container on its end and tip it back and forth several times Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal Repeat this procedure two more times (For containers 5 gallons or less) Empty the remaining contents into application equipment or a mix tank and 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 a mix tank or store rinsate for later use or disposal Drain for 10 seconds after the flow begins to drip Repeat this procedure two more times Triple rinse (or equivalent) Then offer for recycling if available or reconditioning or puncture and dispose of in a sanitary landfill or incineration or if allowed by state and local authorities by burning If burned stay out of smoke

**Returnable/Refillable Containers** Refill this container with pesticide only Do not reuse 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 refiller To clean the container before final disposal empty the remaining contents into application equipment or mix tank Fill the container about 10 / 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

## 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 beyond the control of FMC or Seller All such risks shall be assumed by Buyer and User and to the extent consistent with applicable law Buyer and User agree to hold FMC and Seller harmless for any claims relating to such factors

Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the Directions for Use when used in accordance with the directions under normal conditions of use TO THE EXTENT CONSISTENT WITH APPLICABLE LAW FMC MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTIES WITH RESPECT TO THE SELECTION PURCHASE OR USE OF THIS PRODUCT Any warranties express or implied having been made are inapplicable if this product has been used contrary to label instructions or under abnormal conditions or under conditions not reasonably foreseeable to (or beyond the control of) seller or FMC and to the extent consistent with applicable law buyer assumes the risk of any such use

To the extent consistent with applicable law FMC or seller shall not 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 FMC 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 FMC OR SELLER THE REPLACEMENT OF THE PRODUCT

This Conditions of Sale and Limitation of Warranty and Liability may not be amended by any oral or written agreement

## RESISTANCE MANAGEMENT

Some weeds are known to develop resistance to herbicides that have been used repeatedly While the development of herbicide resistance is well understood it is not easily predicted Therefore herbicides should be used in conjunction with the resistance management strategies in the area Consult the local or State agricultural advisors for details If herbicide resistance should develop in the area this product used alone may not continue to provide sufficient levels of weed control If the reduced levels of control can not be attributed to improper application techniques improper use rates improper application timing unfavorable weather conditions or abnormally high weed pressure a resistant strain of weeds may have developed

To reduce the potential for weed resistance use this product in a rotation program with other classes of chemistry and modes of action Always apply this product at the listed rates and in accordance with the use directions Do not use less than the listed label rates alone or in tank mixtures Do not use reduced rates of the tank mix partner For optimum performance scout fields carefully and begin applications when weeds are smaller rather than larger If resistance is suspected contact the local or State agricultural advisors

## PRODUCT INFORMATION

Spartan Herbicide is a selective soil applied herbicide for the control of susceptible broadleaf grass and sedge weeds Spartan Herbicide is formulated as a 75 / water dispersible granule containing the active ingredient sulfentrazone If adequate moisture (1/2 to 1 ) from rainfall or irrigation is not received within 7 to 10 days after the Spartan treatment a shallow incorporation may be needed to obtain desired weed control When activating moisture is received after dry conditions Spartan will provide a reduced level of control of susceptible germinating weeds Soil applications of Spartan must be made before crop seed germination to prevent injury to the emerging crop seedlings When applications after planting are delayed injury may occur if seeds are germinating or if they are located near the soil surface Under extended periods of dry weather adequate weed control may not be achieved

Observe all instructions crop restrictions mixing directions application precautions replanting directions rotational crop guidelines and other label information of each product when tank mixing with Spartan

**Proper handling instructions** Spartan Herbicide may not be mixed or loaded within 50 feet of any wells (including abandoned wells and drainage wells) sinkholes perennial or intermittent streams and rivers and natural or impounded lakes and reservoirs This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pads or properly diked mixing/loading areas

Operations that involve mixing loading rinsing or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad Such a pad shall be designed and maintained to contain any product spills or equipment leaks container or equipment rinse or washwater and rainwater that may fall on the pad Surface water shall not be allowed to either flow over or from the pad which means the pad must be self contained The pad shall be sloped to facilitate material removal An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad Containment capacities as described above shall be maintained at all times The above specific minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site States may have in effect additional requirements regarding wellhead setbacks and operational containment Product must be used in a manner that will prevent back siphoning in wells spills or improper disposal of excess pesticide spray mixtures or rinsates

### PRODUCT APPLICATION INSTRUCTIONS

Spartan Herbicide may be applied to soil as a preplant incorporated treatment or as a pre emergence (prior to weed and/or crop emergence) surface application Additional application methods include post plant treatments over the top and layby in various crops Application methods are defined in the following Crop Use Directions sections

Preplant incorporated treatments require a uniform surface application followed by incorporation Do not incorporate to a depth greater than 2 inches which may result in poor weed control Care must be taken not to create overlaps in treated zones due to soil movement which will result in excessive Spartan Herbicide rates that could result in adverse crop response

All soil applications and the residual activity of post plant applications of Spartan Herbicide require adequate moisture for herbicidal activation The ultimate amount of moisture whether supplied by rainfall or irrigation is dependent on several factors These factors include but are not limited to existing soil moisture at application soil type organic matter and tith In crop situations dependent on rainfall Spartan Herbicide can await activating moisture for extended periods (10 to 14 days or longer) depending on the soil parameters described above Once activated Spartan Herbicide will provide activity on existing weeds The level of activity will depend on the weed species and their size at time of activation Where irrigation is not available and rainfall has not provided activation particularly for surface applications of Spartan Herbicide a shallow incorporation is recommended for destruction of any germinating weeds and to incorporate Spartan Herbicide Herbicide incorporation will initiate the process of activation with existing soil moisture In circumstances where prolonged periods without rainfall and/or irrigation is not possible alternative or additional weed management practices (cultivation or post applied herbicides) may be required

Extreme care must be exercised and the Crop Specific Use Directions followed exactly in crops allowing post plant applications of Spartan Herbicide Over the top and lay by applications will provide contact and residual weed control depending on species The addition of surfactants may increase contact weed control performance but may also increase the risk of adverse crop response as well

### SPARTAN HERBICIDE PRODUCT USE RATES

The following directions for the selection of Spartan Herbicide application rates are critical to achieve maximum performance and to insure maximum crop safety The user is required to read and follow the specific Spartan use directions and restrictions for each crop as defined in subsequent sections of this label The user is cautioned that some crops respond differently to Spartan Herbicide This response is governed by the Spartan Herbicide application rate various soil factors and inherent crop sensitivity The Crop Specific Use Directions have been designed to minimize the risk of adverse crop response while maintaining optimum weed control

#### Mode of Action

Sulfentrazone the active ingredient in Spartan Herbicide is a potent inhibitor of the enzyme Protoporphyrinogen Oxidase IX (PPO IX) required for the formation of chlorophyll Inhibition of PPO IX enzyme results in the liberation of singlet oxygen (O) that in turn disrupts cellular membranes and causes cellular leakage The ultimate manifestation of the process is cellular death leading to plant death The selective herbicidal activity of sulfentrazone is based on its greater affinity for the PPO IX enzyme in weed species versus crop plants

#### Mechanism of Action

Following the application of Spartan Herbicide to soil germinating seeds and seedlings take up sulfentrazone from the soil solution The amount of sulfentrazone in soil solution and available for weed uptake is determined primarily by soil type organic matter and soil pH Sulfentrazone adsorbs to the clay and organic matter (OM) fractions of soils effectively limiting the amount of active ingredient immediately available to control weeds Soils typically increase in clay content through the series from coarse to fine as noted in the following Soil Classification Chart Table 3

### SOIL CLASSIFICATION CHART

Table 1

<u>COARSE</u>	<u>MEDIUM</u>	<u>FINE</u>
---------------	---------------	-------------

Sand	Sandy clay loam	Silty clay loam
Loamy sand	Sandy clay	Silty clay
Sandy loam	Loam	Clay loam
	Silt loam	Clay
	Silt	

#### **Influence of Soil type organic matter and pH on Spartan Use Rates and Crop Response**

Soil organic matter content can vary widely and independently of soil type and requires an accurate analysis of representative soil samples to determine its content

Soil pH also exerts a dramatic affect on sulfentrazone availability in the soil solution As soil pH increases sulfentrazone availability increases Accurate soil pH information will require an accurate analysis of representative soil samples

The total amount of sulfentrazone available in solution in any given soil is determined by the interaction of soil type (particularly clay content) / organic matter and pH The application timing (relative to the emergence of the crop and weeds) and amount of rainfall and/or irrigation received will ultimately determine in conjunction with the soil parameters and pH the amount of sulfentrazone in soil solution It is important to note that Spartan Herbicide can await activating moisture However diminished weed control may result due to the successive increase in weed growth versus timing of activation

It is important to note that irrigation with highly alkaline water (high pH) following a Spartan Herbicide soil application can also significantly increase the amount of sulfentrazone available in the soil solution Irrigation with water having a pH greater than 7.5 could result in adverse crop response This response will ultimately depend on initial Spartan Herbicide application rate timing amount and pH of irrigation water and sensitivity of the crop and it's growth stage when irrigated The risk of adverse crop response will lessen with the advance in growth stage among most crops

The following Crop Specific Use Directions have been designed with specific Spartan Herbicide instructions for each crop based on the soil type soil organic matter and soil pH interactions described above The user is cautioned that crop tolerance and weed control performance are based on strict adherence to these instructions

## **APPLICATION INFORMATION**

### **Ground Application**

Utilize a boom and nozzle sprayer equipped with the appropriate nozzles spray tips and screens and adjusted to provide optimum spray distribution and coverage at the appropriate operating pressures Utilize nozzles that produce minimal amounts of fine spray droplets to avoid spray drift or inadequate foliar and/or soil coverage Apply a minimum of 10 gallons of finished spray per acre by ground Be aware that overlaps and slower ground speeds while starting stopping or turning while spraying may result in excessive application and subsequent crop response

Do not apply when wind speed favors drift beyond the area intended for treatment

### **Aerial Application**

Use nozzle types and arrangements that will provide optimum coverage while producing a minimal amount of fine droplets Apply sufficient spray volume to achieve adequate coverage Apply a minimum of 5 gallons of finished spray per acre

Do not apply when wind speed favors drift beyond the area intended for treatment

### **Chemigation Application**

Spartan Herbicide may be applied through sprinkler irrigation systems including center pivot lateral move end tow solid set or hand move irrigation systems Do not apply this product through any other type of irrigation system Do not connect any irrigation system (including greenhouse systems) used for pesticide application to a public water system Crop injury lack of effectiveness or illegal residues on or in the crop can result from non uniform distribution of treated water If you have questions about calibration you should contact State Extension Service specialists equipment manufacturers or other experts 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

It is important to note that irrigation with highly alkaline water (high pH) following a Spartan Herbicide soil application can also significantly increase the amount of sulfentrazone available in soil solution Irrigation with water having a pH greater than 7.5 could result in adverse crop response This response will ultimately depend on initial Spartan Herbicide application rate application timing amount and pH of the irrigation water and the sensitivity of the crop and the growth stage when irrigated The risk of adverse crop response will lessen with advancing growth stages of most crops

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 also 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 distribution is adversely affected

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



Spartan Herbicide should be metered into the irrigation system continuously for the duration of the water application. Spartan Herbicide should be diluted in sufficient volume to insure accurate application over the area to be treated. Use the appropriate amount of water to carry the product to the soil surface. Continuous agitation is required to maintain product suspension in the solution tank. A jar test should be conducted to ensure that phase separation would not occur during dilution and application. Failure to achieve a uniform dilution throughout the time of application may result in undesirable residues or less than desirable weed control. Flush the lines at the completion of the application and then turn the water off promptly.

When using water from public water systems, DO NOT APPLY SPARTAN HERBICIDE THROUGH ANY IRRIGATION SYSTEM PHYSICALLY CONNECTED TO A PUBLIC WATER SYSTEM. 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 of the year. Spartan Herbicide may be applied through irrigation systems which may be supplied by a public water system only if water from the water system is 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 to top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. Before beginning chemigation, always make sure that the air gap exists and that there is no blockage of the overflow of the reservoir tank.

**Application with Dry Fertilizers**

Spartan Herbicide may be applied impregnated on dry fertilizers. When applied as directed with adequate soil coverage, Spartan dry bulk fertilizer mixtures will provide satisfactory weed control.

Follow all Spartan label directions regarding product use rates per acre, registered crops, incorporation, special instructions and precautions.

**Apply Spartan/dry fertilizer mixtures with ground equipment only**

All individual state regulations relating to dry bulk fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company preparing, storing, transporting, selling or applying the Spartan/dry fertilizer mixture.

**Impregnation Directions**

To impregnate Spartan Herbicide on dry bulk fertilizer, use a closed rotary drum mixer or other commonly used dry bulk fertilizer blender equipped with suitable spray equipment.

Prepare a slurry of Spartan Herbicide in a clean container using clear water. Slowly add the Spartan/water slurry to the impregnation spray tank and finish filling as needed with clear water. Spray nozzles must be placed to provide uniform coverage of Spartan onto the fertilizer during mixing.

Refer to the SPRAYER EQUIPMENT CLEAN OUT section for directions for cleaning impregnation equipment, transport equipment, loading equipment and application equipment.

Apply the Spartan Herbicide dry bulk fertilizer with an accurately calibrated dry fertilizer spreader. The Spartan Herbicide dry bulk fertilizer mixture must be spread uniformly on the soil surface. Uneven spreading leaving untreated areas can cause poor weed control or overlapping areas with potential increased Spartan Herbicide use rates could result in possible crop response.

A minimum of 200 pounds of dry bulk fertilizer impregnated with the listed amount of Spartan must be applied per acre to achieve adequate soil coverage for satisfactory weed control.

DO NOT impregnate Spartan onto coated ammonium nitrate or limestone because these materials will not absorb the herbicide.

Refer to the appropriate crop section of the Spartan label to determine the rate of Spartan to be applied per acre. Use the following table to determine the amount of Spartan to be impregnated on a ton (2000 pounds) of dry bulk fertilizer based on the rate of fertilizer that will be applied per acre.

For those rates not listed in the following table, calculate the amount of Spartan to be impregnated on a ton of dry bulk fertilizer using the following formula:

$$\begin{matrix} 2000 & & \text{Spartan use rate} & & \text{dry ounces of Spartan} \\ \text{Pounds dry fertilizer} & \times & \text{in dry ounces} & = & \text{to be applied per} \\ \text{per acre} & & \text{per acre} & & \text{ton of fertilizer} \end{matrix}$$

**RATE CHART FOR IMPREGNATION OF DRY BULK FERTILIZERS WITH SPARTAN HERBICIDE**

Table 2

Dry Fertilizer Rate (lb/acre)	Dry Ounces Spartan Herbicide per ton of fertilizer		
	Spartan Herbicide Use Rate Per Acre		
	5.3 Dry Ounces per Acre	6.7 Dry Ounces per Acre	8.0 Dry Ounces per Acre
200	53	67	80
250	42.4	53.6	64
300	35.3	44.7	53.3
350	30.3	38.3	45.7
400	26.5	33.5	40
450	23.6	29.8	35.6

**Application with Liquid Fertilizer**

Spartan Herbicide may be applied using liquid fertilizer solutions as the carrier. The fertilizer solutions may either be concentrate formulations as blended or diluted with water. When applied as directed with adequate soil coverage, Spartan Herbicide applied with liquid fertilizer mixtures will provide satisfactory weed control. However, adequate soil coverage is essential to achieve acceptable levels of weed control.

Herbicide mixing, solution stability and/or compatibility problems can occur when liquid fertilizers are used as a carrier. Compatibility tests must be conducted prior to mixing to insure tank mixture compatibility and stability. The use of compatibility agents may be beneficial to achieve and maintain a homogenous solution.

**Mixing Instructions for Liquid Fertilizer Applications**

Fill the clean spray tank to one half of the total volume with the fertilizer solution. Start the spray tank agitation system. Prepare a slurry of Spartan Herbicide in a clean container with clean water using equal volumes of Spartan Herbicide and clean water. Slowly add the Spartan/water slurry to the spray tank. Carefully rinse the slurry container, adding the rinsate to the spray tank. Better mixing of the Spartan Herbicide/water slurry may be achieved if the slurry is added using induction systems on the sprayer fill plumbing system.

Complete filling the spray tank to the desired level. Sufficient and continuous spray tank agitation is required at all times to maintain a homogenous spray solution. The spray system must be designed such that there is sufficient flow capacity to uniformly apply the spray mixture and maintain adequate tank agitation. Some systems may require separate pumps to simultaneously supply the spray system and the spray tank agitation system. Insure the Spartan Herbicide slurry is thoroughly mixed before application.

For tank mixtures with other herbicide(s), a compatibility test must be conducted to insure product compatibility before mixing. Read and follow all the directions, precautions and restrictions of the tank mixture products prior to mixing.

Apply the Spartan Herbicide spray mixture immediately after mixing. Do not store the sprayer overnight or for any extended period of time with the Spartan Herbicide spray mixture remaining in the tank.

Do not premix Spartan Herbicide spray solutions in nurse tanks.

Follow all Spartan Herbicide label directions regarding product use rates per acre, registered crops, application instructions, incorporation directions, special instructions and all precautions.

All individual state regulations relating to liquid fertilizer blending, storage, transportation, registration, labeling and application are the responsibility of the individual and/or company preparing, selling or applying the Spartan Herbicide and fertilizer mixture.

**SPRAY DRIFT REDUCTION ADVISORY**

To avoid drift, do not apply when wind speeds exceed 10 mph. Do not exceed spray pressures of 40 psi unless specified by the manufacturer of drift reducing spray tips and nozzles.

**Spray Drift Management**

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR AND THE GROWER.

The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are 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. These requirements do not apply to forestry applications, public health uses or to applications of dry materials.

- 1 The distance of the outermost nozzles on the boom must not exceed 1/3 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.
- 3 Observe the regulations of the State where applications are made.
- 4 Applicators must observe and abide by the requirements of the Aerial Drift Reduction Advisory.

**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 for pesticide performance. Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions. (See information on Wind, Temperature and Humidity and Temperature Inversions in subsequent sections).

**Controlling Spray Droplet Size**

**Volume** – Use high flow rate nozzles to apply the greatest practical spray volume. Nozzles with higher rated flow generally produce larger droplets.

**Pressure** – When higher flow rates are needed, use higher flow rate nozzles rather than increasing spray pressure.

Do not exceed the nozzle manufacturer's recommended pressures. Lower pressure produces larger droplets in many types of nozzles.

**Number of Nozzles** – Use the minimum number of nozzles that provide uniform coverage.

**Nozzle Orientation** – For aerial application, the recommended practice is to orient nozzles so that the spray is released parallel to the airstream. This orientation usually produces larger droplets as compared to other nozzle orientations. Significant nozzle 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 for both ground and aerial applications. Solid stream nozzles oriented straight back usually produce the largest droplets and the lowest drift potential in aerial applications.

**Boom Length** – For some aerial use patterns reducing the effective boom length to less than 1/3 of the wingspan or rotor length may further reduce drift without reducing swath width

**Application Height** Aerial applications should not be made at a height greater than 10 feet above the top of the target plant canopy 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 aerial applications are made with a crosswind the swath will be displaced downwind Therefore on the upwind and downwind edges of the field the applicator must compensate for this displacement by the path of the aircraft upwind Swath adjustment or offset distance should increase when conditions favor increased drift potential (higher winds smaller droplets etc)

**Wind** – Drift potential is lowest between wind speeds of 3-10 mph However many factors including droplet size and equipment type determine drift potential at any given wind speed Application should be avoided below 3 mph due to variable wind direction and high inversion potential NOTE Local terrain can influence wind patterns Every applicator should be familiar with local wind patterns and how they may potentially 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 should 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 low speed and variable winds common during inversions Temperature inversions are characterized by increasing temperatures with altitude and are common during conditions of limited cloud cover and little to no wind They often begin to form as the sun sets and may often continue into the morning The presence of a temperature inversion may be indicated by ground fog However if fog is not present the movement of smoke from a ground source or an aircraft smoke generator can also identify inversions Smoke that remains in layers and moves laterally in a concentrated cloud (under low speed wind conditions) indicates an inversion while smoke that moves upward and rapidly dissipates indicates good vertical air mixing

**Sensitive Areas** – The pesticide should only be applied when the wind is blowing away from sensitive areas (e.g. residential areas bodies of water known habitat for threatened or endangered species non target crops)

**Off Target Movement of Spartan Herbicide**

Drift of dilute spray mixtures containing Spartan Herbicide must be prevented Observation of the preceding environmental conditions correct application equipment design calibration and application practices will significantly diminish the risk of off target spray drift Spartan Herbicide can cause significant symptomology by drift on to sensitive crops and other plants This symptomology may manifest initially as discreet localized spots where contacted by Spartan Herbicide drift mixtures Depending on concentration of the spray solution and droplets size (effectively determining the dosage of sulfentrazone) and also depending on the inherent sensitivity of the plants involved these spots or lesions may or may not coalesce These effects will usually not have lasting effects on plant growth but will likely reduce the value of affected fruit or foliage where grade or quality is associated with appearance In severe drift instances with particularly sensitive crops defoliation of affected foliage could result Failure to follow these guidelines and environmental prohibitions that then result in off target movement or drift of Spartan Herbicide on to unintended crops or plants irrespective of severity constitutes misapplication of this product FMC accepts no responsibility or liability for potential crop effects that may result from such misapplication of Spartan Herbicide

**MAXIMUM ALLOWABLE SPARTAN HERBICIDE USE PER ACRE PER 12 MONTH PERIOD \***

Refer to the crop section of this label for specific product use directions  
Table 3

Crop	Dry Ounces Spartan Herbicide Per Acre	Pound Active Sulfentrazone Per Acre
<b>Row Crops</b>		
Corn	8.0	0.375
Fallow	5.3	0.25
Peanuts	6.3	0.30
Potatoes	5.3	0.25
Soybeans	8.0	0.375
Sugarcane	8.0	0.375
Sunflower subgroup 20B	5.3	0.25
Tobacco	8.0	0.375
Wheat spring (Pacific Northwest only)	4.0	0.1875
<b>Vegetable Crops</b>		
Asparagus	8.0	0.375
Brassica Head and Stem (broccoli and	8.0	0.375

cabbage)		
Brassica leafy greens	4 3	0 20
Cowpea succulent (Tennessee only)	4 0	0 1875
Dry Beans & Peas	5 3	0 25
Fruiting Vegetables and Okra (except cucurbits)	8 0	0 375
Horseradish	5 3	0 25
Lima beans succulent (Tennessee only)	4 0	0 1875
Melons	5 3	0 25
Rhubarb	5 3	0 25
Strawberry	8 0	0 375
Succulent Peas	4 0	0 1875
Turnips	5 3	0 25
<b>Oil Crops</b>		
Flax	8 0	0 375
Mint	8 0	0 375
<b>Permanent Crops</b>		
Berries (Crop Group 13 07)	8 0	0 375
Citrus (Crop Group 10)	8 0	0 375
Grapes	8 0	0 375
Tree Nuts (Crop Group 14)	8 0	0 375

The total allowed usage per twelve month period includes all applications made to the field per twelve month interval. This includes fallow treatments burndown treatments planting time and all in season treatments. The twelve month period is considered to begin upon the initial Spartan application.

## CROP ROTATIONAL RESTRICTIONS

The following Table 4 shows the minimum interval in months from the time of the last Spartan Herbicide application until Spartan Herbicide treated soil can be replanted to the crops listed. When Spartan Herbicide is tank mixed with another herbicide, refer to the partner label for recropping instructions following the directions that are most restrictive.

For all other crops not listed below, the rotational interval is a minimum of 12 months. Some crops have rotational intervals greater than 12 months after a Spartan Herbicide application due to potential crop injury. A representative bioassay of the field shall be completed with the rotational crop to accurately determine the planned crop's sensitivity to sulfentrazone.

## CROP ROTATIONAL RESTRICTIONS

Table 4

Crop	Interval (Months)
Alfalfa	12
Asparagus	Anytime
Barley	4
Berries (Crop Group 13 07)	Anytime
Brassica head and stem (Broccoli and Cabbage)	Anytime
Brassica leafy greens	Anytime
Canola	24
Cereal Grains (Buckwheat Oats Pearl Millet Proso Millet Teosinte Wild Rice)	12
Citrus	Anytime
Corn Field	10
Corn Pop	18
Corn Sweet	18
Cotton	18
Cowpea succulent	Anytime
Dry Shell Peas and Beans	Anytime
Flax	Anytime
Fruiting Vegetables and Okra (except cucurbits)	Anytime
Grapes	Anytime

Horseradish	Anytime
Lima beans (succulent)	Anytime
Melons	Anytime
Mint	Anytime
Peanuts	Anytime
Potatoes	Anytime
Rhubarb	Anytime
Rice	10
Rye	4
Sorghum	10
Soybeans	Anytime
Strawberry	Anytime
Succulent peas	Anytime
Sugar Beets	36
Sugarcane	Anytime
Sunflower subgroup 20B	Anytime
Sweet Potatoes	12
Triticale	4
Tobacco	Anytime
Tree Nuts (Crop Group 14)	Anytime
Turf	Anytime
Turnips	Anytime
Wheat	4
Wheat spring (Pacific Northwest only)	Anytime

Sorghum – 18 month rotation for rates above 8 0 oz/acre  
 For all other crops not listed the rotation interval is a minimum of 12 months

### BAND TREATMENT APPLICATIONS

For band treatments apply the broadcast equivalent rate and volume per acre To determine these

Band Width Inches	X	Broadcast Rate Per Acre	=	Band Rate
Row Width Inches				
Band Width Inches	X	Broadcast Volume Per Acre	=	Band Volume
Row Width Inches				

### MIXING AND LOADING INSTRUCTIONS

Spartan Herbicide may be applied alone or in tank mixtures with other herbicides for the control of additional weed species Mixtures with some other pesticides have not been tested Conduct appropriate compatibility tests prior to tank mixing with other pesticides Follow all precautions and restrictions on the tank mix partner label

It is important that spray equipment is clean and free of existing pesticide residues before preparing Spartan spray mixtures Follow the spray tank clean out procedures specified on the label of the product or products previously applied

For best results fill spray tank with one half of the volume of clean water needed for the field to be treated Start agitation system Prepare a slurry of Spartan Herbicide in a clean container using clean water Slowly add the Spartan/water slurry to the spray tank Carefully rinse the slurry container adding the rinsate to the spray tank Complete filling the spray tank to the desired level Continuous spray tank agitation is required at all times to maintain a uniform spray solution Make sure Spartan is thoroughly mixed before application or before adding another product to the spray tank

Use the Spartan spray mixture immediately after mixing Do not store the sprayer overnight or for any extended period of time with the Spartan spray mixture remaining in the tank

Do not premix Spartan spray solutions in nurse tanks

If Spartan is tank mixed with other herbicides all additional directions restrictions and precautions for the tank mixture herbicides must be followed

### SPRAYER EQUIPMENT CLEAN OUT

As soon as possible after spraying Spartan Herbicide and before using sprayer equipment for any other applications the sprayer must be thoroughly cleaned to avoid potential crop affects using the following procedure Residues left in mixing equipment spray tanks hoses spray booms and nozzles can cause crop effects if they are not properly cleaned In addition users must take appropriate steps to ensure proper equipment clean out for any other products mixed with Spartan Herbicide as required on the other product labels More complete cleaning can be achieved if the spray system is cleaned immediately following the application

1 Drain sprayer tank hoses spray boom and spray nozzles Use a high pressure detergent wash to remove physical sediment and residues from the inside of the sprayer tank and thoroughly rinse Then thoroughly flush sprayer hoses spray boom and spray

nozzles with a clean water rinse Remove and clean spray tips and all filters and screens (tank spray hose and spray tips) separately in the ammonia solution of Step 2

2 Prepare a sprayer cleaning solution by adding three gallons of ammonia (containing at least 3% active) per 100 gallons of clean water Prepare sufficient cleaning solution to allow the operation of the spray system for a minimum of 15 minutes to thoroughly flush hoses spray boom and spray nozzles

3 Convenient and thorough cleaning of the sprayer can be achieved if the ammonia solution or fresh water is left in the spray tank hoses spray booms and spray nozzles overnight or during storage

4 Before using the sprayer completely drain the sprayer system Rinse the tank with clean water and flush through the hoses spray boom and spray nozzles with clean water Remove and clean spray tips and all filters and screens (tank spray hose and spray tip) separately in an ammonia solution

5 Properly dispose of all cleaning solution and rinsate in accordance with Federal State and local regulations and guidelines Do not apply sprayer cleaning solutions or rinsate to sensitive crops

Do not store the sprayer overnight or for any extended period of time with Spartan Herbicide spray solution remaining in the tank spray lines spray boom plumbing spray nozzles or strainers

If the sprayer has been stored or idle purge the spray boom and nozzles with clean water before beginning any application

Should small quantities of Spartan Herbicide remain in inadequately cleaned mixing loading and/or spray equipment they may be released during subsequent applications potentially causing effects to certain crops and other vegetation FMC accepts no liability for any effects due to inadequately cleaned equipment

Do not drain or flush equipment on or near desirable trees or plants

Do not contaminate any body of water including irrigation water that may be used on other crops

## WEEDS

The following weeds are listed with their common and scientific names for clarification and are found in the various crop sections Refer to the specific crop section for product use information

Table 5

Common Name	Scientific Name
Amaranth livid	<i>Amaranthus lividus</i>
Amaranth Palmer	<i>Amaranthus palmeri</i>
Amaranth Powell	<i>Amaranthus Powellii</i>
Amaranth spiny	<i>Amaranthus spinosus</i>
Amaranth spleen	<i>Amaranthus dubius</i>
Anoda spurred	<i>Anoda cristata</i>
Bedstraw catchweed	<i>Galium aparine</i>
Carpetweed	<i>Mollugo verticillata</i>
Chickweed common	<i>Stellaria media</i>
Copperleaf hophornbeam	<i>Acalypha ostryeafolia</i>
Copperleaf Virginia	<i>Acalypha virginica</i>
Crabgrass large	<i>Digitaria sanguinalis</i>
Crabgrass smooth	<i>Digitaria ischaemum</i>
Crabgrass Southern	<i>Digitaria ciliaris</i>
Croton tropic	<i>Croton glandulosus</i>
Crownbeard golden	<i>Verbesina encelioides</i>
Cupgrass woolly	<i>Erchloa villosa</i>
Cyperus hedgehog	<i>Cyperus compressus</i>
Daisy American	<i>Eclipta alba</i>
Devilsclaw	<i>Proboscidea louisiana</i>
Dock curly	<i>Rumex crispus</i>
Eclipta	<i>Eclipta prostrata</i>
Filaree redstem	<i>Erodium cicutarium</i>
Flixweed	<i>Descurainia sophia</i>
Galinsoga hairy	<i>Galinsoga ciliata</i>
Goosegrass	<i>Eleusine indica</i>
Groundcherry clammy (seedling)	<i>Physalis heterophylla</i>
Groundcherry cutleaf	<i>Physalis angulata</i>
Jimsonweed	<i>Datura stramonium</i>
Kochia (ALS and Triazine Resistant)	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters common	<i>Chenopodium album</i>
Lettuce miners	<i>Montia perfoliata</i>
Mallow common	<i>Malva neglecta wall r</i>
Mayweed Chamomile	<i>Anthemis cotula l</i>
Milkweed honeyvine	<i>Ampelamus albidus</i>
Morningglory entireleaf	<i>Ipomoea hederacea integruscula</i>

Morningglory ivyleaf	<i>Ipomoea hederacea hederacea</i>
Morningglory palmleaf	<i>Ipomoea wrightii</i>
Morningglory purple	<i>Ipomoea turbinata</i>
Morningglory red	<i>Ipomoea coccinea L</i>
Morningglory scarlet	<i>Ipomoea coccinea</i>
Morningglory smallflower	<i>Jacquemontia tamnifolia</i>
Morningglory tall	<i>Ipomoea purpurea</i>
Mustard tumble	<i>Sisymbrium altissimum</i>
Nightshade black	<i>Solanum nigrum</i>
Nightshade Eastern black	<i>Solanum ptycanthum</i>
Nutsedge purple	<i>Cyperus rotundus</i>
Nutsedge yellow	<i>Cyperus esculentus</i>
Orchardgrass	<i>Dactylis glomerata</i>
Panicum fall	<i>Panicum dichotomiflorum</i>
Pigweed redroot	<i>Amaranthus retroflexus</i>
Pigweed smooth	<i>Amaranthus hybridus</i>
Plantain blackseed	<i>Plantago rugelii decne</i>
Plantain narrow leaved	<i>Plantago lanceolata</i>
Poorjoe	<i>Diodia teres</i>
Porophyllum	<i>Porophyllum rederule</i>
Poinsettia wild	<i>Euphorbia heterophylla</i>
Purslane common	<i>Portulaca oleracea</i>
Redmaids	<i>Calandrinia ciliata</i>
Redweed	<i>Melochia corchorifolia</i>
Sedge annual	<i>Carex spp</i>
Senna coffee	<i>Cassia occidentalis</i>
Shepherdspurse	<i>Capsella bursa pastoris</i>
Sida prickly	<i>Sida spinosa</i>
Sida Southern	<i>Sida acuta</i>
Signalgrass broadleaf	<i>Brachiana platyphylla</i>
Smartweed PA (seedling)	<i>Polygonum pennsylvanicum</i>
Smellmellon	<i>Cucumis melo</i>
Starbur bristly	<i>Acanthospermum hispidum</i>
Stinkgrass	<i>Eragrostis cilianensis</i>
Toadflax yellow	<i>Linana vulgaris</i>
Tassleflower red	<i>Emilio sonchifolia</i>
Thistle Russian	<i>Salsola kali</i>
Waterhemp common	<i>Amaranthus rudis</i>
Waterhemp tall	<i>Amaranthus tuberculatos</i>
Waterprimrose winged	<i>Ludwigia decurrens</i>
Witchgrass	<i>Panicum capillare</i>

### REPLANTING INSTRUCTIONS

If initial planting of labeled crops fails to produce a stand only labeled crops for Spartan Herbicide or the tank mix partner whichever is most restrictive may be planted Do not retreat field with Spartan Herbicide or other herbicide containing sulfentrazone Do not plant treated fields with any crop at intervals that are inconsistent with the Rotational Crop Guidelines on this label When replanting use minimum soil tillage to preserve the herbicide barrier and achieve maximum weed control

## ROW CROPS

**CORN (Field Corn Seed Corn Popcorn) (For Use Only with GMO Varieties Tolerant to PPO Herbicides)**

Spartan Herbicide Use Rate Table (Corn)			
Fall Spring Early Preplant Preemergence and Preplant Incorporated Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	2.0 - 3.0	2.0 - 3.0	2.5 - 3.5
1.5 - 3.0	2.0 - 3.0	2.5 - 4.0	3.0 - 4.5
>3.0	2.5 - 4.0	3.0 - 4.5	4.0 - 5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preplant (Fall Applications)**

Spartan Herbicide may be applied in the fall as a preplant treatment prior to corn planting the following spring

Spartan Herbicide can be used alone or in a tank mixture with other herbicides to control susceptible broadleaves sedges and grasses in corn Apply Spartan Herbicide in conventional tillage or conservation tillage (reduced tillage or no tillage) cropping systems using rates listed in the table above Spartan Herbicide should be applied to the stubble or soil surface and allow moisture from rainfall or snow to move the product into the soil Do not mechanically incorporate in the fall or spring as this operation can destroy the herbicide barrier allowing weed escapes to occur Do not apply to frozen soils or existing snow cover to prevent Spartan Herbicide runoff from rain or snowmelt that may occur following application Spartan Herbicide may be tankmixed with other burndown herbicides to control emerged weeds in the fall or residual soil herbicides that are labeled for fall use on corn Select the correct Spartan Herbicide use rate for corn from the table above for your soil type and organic matter Due to the extended period of time between the fall application and corn planting the use rate of Spartan Herbicide should be the mid to high rate within the rate range for the appropriate soil type and organic matter

**Early Preplant and Preemergence (Spring Applications)**

Spartan Herbicide may be applied preplant on the soil surface in the spring to control weeds in conventional and conservation tillage systems Spartan Herbicide can be applied from 45 days prior to planting until 3 days after planting as a preemergence broadcast or banded soil application if corn seedlings have not broken the soil surface and if the seed furrow is completely closed For preemergence applications 14 to 45 days prior to planting use the mid to high rate in the appropriate rate range for the soil and organic matter type listed in table above Spartan Herbicide can be tank mixed with other herbicides labeled for use in corn To control insect pests such as cutworm or armyworm that may be present Spartan Herbicide may be tankmixed with insecticides including Mustang Max or Capture 2EC If dry conditions persist following preemergence application of Spartan Herbicide a shallow incorporation may be needed to activate the herbicide If weeds are emerged at the time of Spartan Herbicide application use a burndown herbicide in conjunction with Spartan Herbicide as needed When planting into soil treated preplant with Spartan Herbicide minimize soil disturbance to maintain the herbicide barrier on the soil surface to achieve maximum weed control Observe all precautions instructions and rotational cropping guidelines of each product's label when tank mixing including all references to potential carryover and crop injury warnings or restrictions

**Preplant Incorporated**

Spartan Herbicide may be applied as a Preplant Incorporated treatment in the spring prior to planting in reduced and conventional tillage corn Spartan Herbicide should be shallowly incorporated or mixed thoroughly into the soil to a maximum depth of 2 inches using a correctly adjusted implement such as a field cultivator field finisher or disk harrow Incorporating Spartan Herbicide deeper than 2 inches may result in inconsistent weed control Use the appropriate rate from table above for the soil texture organic matter and pH level of the soil Spartan Herbicide can be tankmixed with other soil applied herbicides and insecticides labeled for preplant incorporation in corn Observe all precautions instructions and rotational cropping guidelines of each product's label when tank mixing including all references to potential carryover and crop injury warnings or restrictions

Spartan Herbicide may be applied more than once to the same crop in split or sequential applications to provide season long control of difficult to control existing or late emerging weeds

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per twelve month period The twelve month period is considered to begin upon the initial Spartan application

**Do not use on soils classified as sand which have less than 1% organic matter**

Do not apply to frozen soils or existing snow cover to prevent Spartan Herbicide runoff from rain or snowmelt that may occur following application

**FALLOW/POST HARVEST BURNDOWN**

Spartan Herbicide may be applied in the fall following crop harvest or in existing fallow fields of asparagus cabbage corn dry shell peas and beans horseradish limas mint peanuts potatoes soybeans sugarcane sunflowers and tobacco

**Spartan Herbicide Use Rate Table  
(Fallow or Post Harvest Burndown)  
Fall and Spring Fallow Applications**



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Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	2.0 – 2.5	2.0 – 3.0	2.5 – 3.5
1.5 – 3.0	2.5 – 3.5	2.5 – 4.0	3.0 – 4.5
>3.0	3.0 – 4.0	3.0 – 5.3	3.5 – 5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Fall Application (MN ND SD MT CO NE WY ID WA, OR WI MI)**

Spartan Herbicide may be applied in the fall following crop harvest or in existing fallow fields to control or suppress weeds the following season. The Spartan Herbicide Rotational Crop Guidelines in Table 4 must be followed if crops are planted the next season. Spartan Herbicide should be applied to the harvested crop stubble or soil surface without incorporation. Moisture in the form of rain or snow will move and activate the product. Do not mechanically incorporate in the fall or spring after application because this activity may destroy the herbicide barrier and weed escapes can occur. Do not apply to frozen soils to prevent Spartan Herbicide runoff from rain or snow that may occur following application. Spartan Herbicide may be tankmixed with herbicides to control emerged weeds. Sequential applications may be needed depending on weed size. In situations where weed size may interfere with Spartan Herbicide reaching the soil surface, a separate burndown application prior to the application of Spartan Herbicide will be required. Use listed rates of burndown herbicides in combination with Spartan Herbicide or sequential applications as needed. Higher aerial spray volumes are required when there is a dense weed population or canopy.

Spartan Herbicide can be tankmixed with other herbicides. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Spring Preemergence Application**

Spartan Herbicide may be applied as a fallow treatment early in the spring provided the application is made prior to weed emergence and adequate moisture is available to activate the Spartan Herbicide. Follow the same use rate specifications and application guidelines listed under the Fall Application section above.

**Weeds Controlled**

When applied according to directions, Spartan Herbicide will provide control of

Filaree redstem	Pigweed redroot
Kochia (ALS and Triazine Resistant)	Pigweed smooth
Lambsquarters common	Thistle Russian
Morningglory ivyleaf	Waterhemp common
Morningglory tall	Waterhemp tall
Nightshade Eastern Black	

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Use Restrictions**

Do not apply more than 5.3 dry ounces (0.25 lb active) per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

**Do not use on soils classified as sand which have less than 1% organic matter**

Do not apply to frozen soils or existing snow cover to prevent Spartan Herbicide runoff from rain or snowmelt that may occur following application.

**PEANUTS**

**Southeastern United States Only (AL GA MS NC SC VA)**

Apply Spartan Herbicide alone or in combination with other registered herbicides for the control of key grass and broadleaf weeds in peanut production. Refer to the information below for specific use directions. Spartan Herbicide is registered for use on peanuts only in the following states: AL, GA, MS, NC, SC, and VA.

**Application Instructions**

Spartan Herbicide may be preplant incorporated (to a depth no greater than 2 inches) up to 14 days prior to planting. Alternatively, Spartan Herbicide may be applied to the soil surface at planting or within 12 hours after planting. Incorporation of Spartan Herbicide deeper than 2 inches can result in adverse crop response and/or inconsistent weed control. Do not use Spartan Herbicide for at crack type applications or apply to exposed peanut tissue. Such use can result in significant adverse crop response. For optimum

performance a combination of Spartan Herbicide plus a grass herbicide labeled for peanuts is recommended Under conditions of exceptionally high weed populations or when weeds not controlled by Spartan Herbicide are anticipated the use of suitable post emergent peanut herbicides is recommended Broadcast apply the correct Spartan Herbicide use rate from table below in a minimum of 10 gallons of water per acre of finished spray Banded Spartan Herbicide application rates must be adjusted in proportion to the broadcast rate

**Spartan Herbicide Use Rates and Weeds Controlled in Coarse Soils<sup>1</sup>**

**When applied as directed at 3.2 dry ounces (0.15 pound active ingredient) per acre Spartan Herbicide will provide Control of the listed weeds**

Amaranth sp. green	Jimsonweed
Copperleaf hophornbeam	Lambsquarters common
Croton tigris	Morningglory entireleaf
Crownbeard golden	Morningglory red
Devilsclaw	

**When applied as directed at 4.24 dry ounces (0.2 pound active ingredient) per acre Spartan Herbicide will provide Control of the listed weeds**

<b>All the weeds controlled at 3.2 dry ounces plus</b>	
Amaranthus Palmer	Morningglory smallflower
Crabgrass large	Poinsettia wild <sup>2</sup>
Crabgrass Southern	Redweed
Eclipta	Senna coffee
Goosegrass	Signalgrass broadleaf
Morningglory pitted	Smartweed PA (seedling)

**When applied as directed at 5.3 dry ounces (0.25 pound active ingredient) per acre Spartan Herbicide will provide Control of the listed weeds**

<b>All the weeds controlled at 4.24 dry ounces plus</b>	
Anoda spurred	Purslane common
Cocklebur common	Sida prickly
Nutsedge yellow	Starbur prickly
Nutsedge purple <sup>3</sup>	

Use rates are Spartan Herbicide dry ounces per acre Specified weeds are controlled in coarse (sand and loamy sand) soils Medium and fine soils (sandy loam clay loam clay) or soils with organic matter greater than 1.0% should use the next higher rate in table above The next higher rate for 5.3 dry ounces (0.25 lb ai) should not exceed 6.3 dry ounces (0.3 lb ai) per acre Controls initial and several continuing flushes (germinations) of wild poinsettia<sup>3</sup> Purple nutsedge activity is based on preplant incorporated applications of Spartan Herbicide Pre emergence surface applications may provide control (>85%) under certain circumstances Otherwise purple nutsedge will be partially controlled (71 to 84%)

In soils with pH greater than 7 use the next lower Spartan Herbicide application rate Irrigation with alkaline (pH 8 to 9) water can result in adverse crop response The extent of crop response is dependent on Spartan Herbicide application rate soil type (including OM and pH) timing (after Spartan application relative to crop emergence) amount and pH of irrigation water Do not irrigate with water greater than pH 9

After peanuts are established (4 to 6" across in size) the alkalinity of irrigation water has minimal impact on crop growth

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 6.3 dry ounces (0.3 lb ai) of Spartan Herbicide per acre per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not feed treated peanut forage or peanut hay to livestock

**Do not use on soils classified as sand which have less than 1% organic matter**

Do not irrigate with water having a pH higher than 9

Do not apply at cracking time

**POTATOES**

<b>Spartan Herbicide Use Rate Table (Potatoes)</b> Preemergence Application
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Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	2.0 - 3.0	2.0 - 3.0	2.5 - 3.5
1.5 - 3.0	2.0 - 3.0	2.5 - 4.0	3.0 - 4.0
>3.0	3.0 - 4.0	3.5 - 4.5	4.0 - 5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Ground and Aerial Applications**

Apply Spartan Herbicide by aerial application as a preemergence treatment following planting and after dragoff but prior to potato emergence. Optimum performance can be achieved if Spartan Herbicide is applied to the soil surface and either rainfall or overhead irrigation is used to activate the product. If no moisture is received within 7 days following application in areas without irrigation, a shallow incorporation (less than 2 inches) may be needed prior to weed and potato emergence to activate the product. Select the appropriate use rate based on soil texture and organic matter as shown in table above. For control of emerged weeds at the time of the Spartan application, an appropriate burndown herbicide and adjuvants labeled for potatoes may be tankmixed with Spartan to control these weeds. Do not apply Spartan Herbicide if the potatoes have emerged from the soil as undesirable crop response may occur. Spartan Herbicide may be tankmixed with other soil applied herbicides labeled for use in potatoes to improve weed management and increase weed control spectrum.

Apply Spartan Herbicide in a minimum of 10 gallons of spray by ground application and 5 gallons of spray by air.

**Chemigation Applications**

Spartan Herbicide may be applied to potatoes through sprinkler irrigation systems including center pivot, lateral move, end tow, solid set or hand move irrigation systems. Apply Spartan Herbicide prior to potato emergence using sufficient water (0.25 to 0.5 inch per acre) to provide thorough soil surface coverage but to avoid runoff of irrigation water. Spartan Herbicide may be applied with other products labeled for chemigation use in potatoes.

It is important to note that irrigation with highly alkaline water (high pH) following a Spartan Herbicide soil application may significantly increase the amount of sulfentrazone available in soil solution. Irrigation with water having a pH greater than 7.5 could result in adverse crop response. This response will ultimately depend on initial Spartan Herbicide application rate, application timing, amount and pH of irrigation water, the sensitivity of the crop and the crop growth stage when irrigated. The risk of adverse crop response will lessen with advances in the crop growth stage.

**Weeds Controlled**

When applied according to directions, Spartan Herbicide will provide control of

Amaranth Palmer	Nightshade Eastern black
Filaree redstem	Pigweed redroot
Kochia (ALS and Triazine Resistant)	Pigweed smooth
Lambsquarters common	Thistle Russian
Morningglory ivyleaf	Waterhemp common
Morningglory tall	Waterhemp tall

**Precautions**

Potato varieties may vary in their response to herbicide applications. When using Spartan Herbicide on an untested variety, always determine the crop tolerance before planting. Some potato varieties including Sangre, Shepody and Snowden have shown sensitivity to Spartan Herbicide. Caution should be used when planting these varieties on marginal coarse soils.

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not use on soils classified as sand which have less than 1% organic matter.

Do not apply Spartan Herbicide after potato emergence from the soil as undesirable crop response may occur.

Do not apply more than 5.3 dry ounces (0.25 pound active) per acre per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

**SOYBEANS**

Spartan Herbicide Use Rate Table (Soybeans)	
Fall, Spring, Early Preplant, Preemergence and Preplant Incorporated Applications	
Broadcast Rate	Dry Ounces Spartan Herbicide per acre
Soil Texture	

Organic Matter	Coarse	Medium	Fine
<1.5	3.0 - 4.0	4.0 - 5.3	5.3
1.5 - 3.0	4.0 - 5.3	5.3 - 6.7	6.7
>3.0	5.3 - 6.7	6.7 - 8.0	8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Ground and Aerial Applications**

Apply Spartan Herbicide in conventional tillage conservation tillage reduced tillage or no tillage cropping systems using rates listed in the Spartan Herbicide Use Rate table above Spartan Herbicide may be applied with ground or aerial sprayers calibrated to deliver a minimum of 10 gallons of finished spray by ground application and 5 gallons of finished spray by air Use nozzle types and arrangements that will provide optimum coverage while producing a minimal amount of fine droplets Apply sufficient spray volume to achieve adequate coverage

**Preplant Incorporated and Preemergence Applications (24.2)**

Spartan Herbicide can be applied prior to planting or up to 3 days after planting When applications after planting are delayed greater than 3 days after planting injury may occur if seeds are germinating Spartan Herbicide may be applied preemergence or preplant incorporated For preplant incorporated applications incorporation must be uniform and no deeper than 2 inches Improper soil incorporation may result in erratic weed control and/or crop injury Spartan Herbicide applied near or after crop emergence may cause severe injury to the crop Spartan Herbicide can be applied alone or in combination with other labeled soybean herbicides Spartan Herbicide may be followed by labeled postemergence soybean herbicides for increased control of grass and broadleaf weeds Always follow the most restrictive label when tank mixing When using Spartan Herbicide in no till or minimum till cropping systems tank mix with an appropriate burndown herbicide for improved control of existing weeds

**Fall Applications**

Spartan Herbicide may be applied as a fall treatment to the stubble of harvested crops for the burndown of existing vegetation and preemergence control of labeled weeds the following spring in no till and conservation tillage production systems Fall applications of Spartan Herbicide must be made in weed control programs that include as needed spring applications of preplant preemergence or postemergence herbicides for the following crop season Spartan Herbicide can be applied to the stubble of a harvested crop in no till or to the soil surface of conservation tillage fields after harvest when the sustained soil temperature is 55 degrees F and falling at a soil depth of 4 inches Apply after September 30 in those areas North of Interstate 90 and after October 15 in those areas North of Interstate 70 Do not apply Spartan Herbicide as a fall treatment South of Interstate 70 Applications to ridge till production systems must be made after the formation of ridges or bedded

If weeds are emerged at the time of application utilize a tank mixture with a suitable burndown herbicide at labeled rates Fall applied burndown treatments should be made with a minimum of 20 gallons per acre to achieve adequate coverage of the weeds being treated When making burndown applications to emerged weeds the addition of adjuvants such as COC or MSO to the spray mixture can be used to enhance the burndown activity of the application

**Weeds Controlled**

When Applied according to directions Spartan Herbicide will provide control of

Amaranth Palmer	Nightshade
Copperleaf hophornbeam	Pigweed spp
Kochia (ALS and Triazine Resistant)	Sida prickly
Lambsquarters common	Thistle Russian
Morningglory spp	Waterhemp spp

**Precautions**

When applying Spartan Herbicide with other registered herbicides refer to specific label information on precautions instructions limitations application methods and timings and weeds controlled

Spartan Herbicide is especially effective against a wide range of economic broadleaf and grass weeds The same processes that sulfentrazone affects in these weeds can under certain conditions be affected in soybeans These conditions include high pH (7.5 and above) cool weather prolonged and excessive moisture seedling diseases and any other condition including poor agronomic practices that are unfavorable to vigorous crop growth Such effects in soybeans are often observed as stunting and discoloration The duration of these effects are somewhat dependent on the duration of the adverse growing conditions These effects lessen and generally diminish with the return to normal growing conditions

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 lbs active) per acre of Spartan Herbicide per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not use on soils classified as sand which have less than 1% organic matter

Do not apply to frozen soils or existing snow cover to prevent Spartan Herbicide runoff from rain or snowmelt that may occur following application

Do not apply after crop seed germination

**SUGARCANE**

<b>Spartan Herbicide Use Rate Table (Sugarcane)</b>			
Planting Time and Lay by Applications			
<b>Broadcast Rate</b>	<b>Dry Ounces Spartan Herbicide per acre</b>		
	<b>Soil Texture</b>		
<b>/ Organic Matter</b>	<b>Coarse</b>	<b>Medium</b>	<b>Fine</b>
<1.5	3.0 - 4.0	4.0 - 5.3	5.3
1.5 - 3.0	4.0 - 5.3	5.3 - 6.7	6.7
>3.0	5.3 - 6.7	6.7 - 8.0	8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

Apply Spartan Herbicide as a broadcast or banded preemerg soil applied treatment for the control of broadleaf weeds grasses and sedges in sugarcane Refer to the Spartan Herbicide Product Use Rate Section and table above specific use information

**Planting Time Applications**

Apply Spartan Herbicide preemerg to newly planted or ratoon sugarcane Use the higher rate on clay soils and/or soils with organic matter content higher than 2 percent Apply either by air in a minimum of 5 gallons of spray per acre or by ground equipment in a minimum of 15 gallons of spray per acre Spartan Herbicide may be applied with other herbicides registered for use in sugarcane

**Aerial Applications**

Spartan Herbicide may be applied by air in a minimum of 5 gallons of finished spray per acre Spartan Herbicide may be applied with other herbicides or insecticides registered for aerial application in sugarcane

**Lay by Applications**

Apply Spartan Herbicide as a directed spray to sugarcane at lay by timing Use the higher rate on clay soils and/or soils with organic matter content higher than 2 percent Apply as a directed spray with ground equipment in a minimum of 15 gallons of spray per acre Spartan Herbicide may be applied with other herbicides registered for use in sugarcane

**Weeds Controlled**

When applied according to directions Spartan Herbicide will provide control of

Morningglory entireleaf	Morningglory tall
Morningglory ivyleaf	Pigweed red root
Morningglory red	Nutsedge yellow

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Pre harvest interval (PHI) Do not apply within 120 days of harvest

**Do not use on soils classified as sand which have less than 1 / organic matter**

Do not allow spray to contact crop leaves

Do not apply more than 8.0 dry ounces (0.375 lbs active) per acre of Spartan Herbicide per acre per twelve month period The twelve month period is considered to begin upon the initial Spartan application

**SUNFLOWER SUBGROUP 20B (26.0)**

Calendula Castor oil plant Chinese tallowtree Euphorbia Evening primrose Jojoba Niger seed Rose hip Safflower Stokes aster Sunflower Tallowwood Tea oil plant Vernonia cultivars varieties and/or hybrids of these

<b>Spartan Herbicide Use Rate Table</b>	
<b>(Sunflower subgroup 20B)</b>	
Fall Early Spring Preplant Preemergence and Preplant Incorporated Applications	
<b>Broadcast Rate</b>	<b>Dry Ounces Spartan Herbicide per acre</b>
	<b>Soil Texture</b>

/ Organic Matter	Coarse	Medium	Fine
<1.5	2.0-2.5	2.0-3.0	2.5-3.5
1.5-3.0	2.0-3.0	2.5-4.0	3.0-4.5
>3.0	2.5-4.0	3.0-4.5	4.0-5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Fall Applications (For use only in ND SD MT MN WY CO NE KS)**

Spartan Herbicide may be applied in the fall as a preplant treatment to control or suppress weeds prior to planting sunflowers the following spring Spartan Herbicide should be applied to the stubble or soil surface and allow moisture from rainfall or snow to move the product into the soil Do not mechanically incorporate in the fall or spring as this can destroy the herbicide barrier and allowing weed escapes to occur Do not apply to frozen soils or to existing snow cover to prevent Spartan Herbicide runoff from rain or snow melt that may occur following application Spartan Herbicide may be tank mixed with other residual soil herbicides that are labeled for fall use on sunflowers or other crops in subgroup 20B If weeds are emerged at the time of Spartan Herbicide application use a burndown herbicide such as glyphosate or paraquat at the full labeled rate in combination with Spartan Herbicide or split application as needed Select the appropriate rate from table above within the correct soil type and organic matter range When applying Spartan Herbicide in the fall use a mid to high rate within the rate range for the appropriate soil type and organic matter

**Early Preplant and Preemergence (Spring Applications)**

Spartan Herbicide may be applied preplant on the soil surface in the spring to control weeds in sunflowers Spartan Herbicide can be applied early preplant prior to planting up to 3 days after planting as a preemergence soil application if seedlings have not broken the soil surface and if the seed furrow is completely closed For preemergence applications greater than 3 weeks prior to planting use the high rate within the appropriate rate range for the soil and organic matter type listed in the use rate chart above (Table 13) If applying Spartan Herbicide to coarse textured soils with less than 1.5% organic matter wait a minimum of 7 days after application before planting Spartan Herbicide can be tank mixed with other preemergence herbicides labeled for sunflower or other crops in subgroup 20B If dry conditions persist following preemergence application of Spartan Herbicide a shallow incorporation may be needed to incorporate and activate the herbicide If weeds are emerged at the time of Spartan Herbicide application use a burndown herbicide at the full labeled rate in combination with Spartan Herbicide or split application as needed

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a Preplant Incorporated treatment in the spring prior to planting in reduced and conventional tillage Spartan Herbicide should be shallowly incorporated in the soil no deeper than 2 inches Incorporating Spartan Herbicide deeper than 2 inches can result in inconsistent weed control Use the appropriate rate from table above for the soil texture organic matter and pH level Spartan Herbicide can be tankmixed with other soil applied herbicides labeled for preplant incorporation in sunflowers or other crops in subgroup 20B

**Weeds Controlled**

When applied according to directions Spartan Herbicide will provide control of

Amaranth Palmer	Pigweed red root
Filaree redstem	Pigweed smooth
Kochia (ALS and Triazine Resistant)	Sida prickly
Lambsquarters common	Thistle Russian
Morningglory ivyleaf	Waterhemp common
Morningglory tall	Waterhemp tall
Nightshade Eastern black	

**Precautions**

Under extended periods of dry weather adequate weed control may not be achieved

Some adverse crop response may occur on coarse textured soils with low organic matter (less than 1.5%) and pH of 7.8 or higher or on highly eroded soils or in areas of calcareous outcroppings Spartan Herbicide use rates should be reduced in those areas Inadequate seed furrow closure or shallow planting (less than 1.0 inch) may result in undesirable crop response As expected poor growing conditions such as excessive moisture low temperatures soil compaction and diseases may also cause undesirable crop response

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 5.3 dry ounces (0.25 pound active) of Spartan Herbicide per twelve month period to sunflowers The twelve month period is considered to begin upon the initial Spartan application

Do not apply to frozen soils or existing snow cover to prevent Spartan Herbicide runoff from rain or snowmelt that may occur following application

**Do not use on soils classified as sand which have less than 1% organic matter**

Do not incorporate greater than 2 inches deep

**TOBACCO (Burley Flue Cured and Dark)**

<b>Spartan Herbicide Use Rate Table (Tobacco)</b>			
Preemergence and Preplant Incorporated Applications			
<b>Broadcast Rate</b>	<b>Dry Ounces Spartan Herbicide per acre</b>		
	<b>Soil Texture</b>		
<b>/ Organic Matter</b>	<b>Coarse</b>	<b>Medium</b>	<b>Fine</b>
<1.5	3.0 - 4.0	4.0 - 5.3	5.3
1.5 - 3.0	4.0 - 5.3	5.3 - 6.7	6.7
>3.0	5.3 - 6.7	6.7 - 8.0	8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

Spartan Herbicide may be surface applied or preplant incorporated (to a depth no greater than 2 inches) from 14 days to 12 hours days prior to transplanting tobacco. Incorporating Spartan Herbicide deeper than 2 inches can result in inconsistent weed control. Broadcast apply the appropriate Spartan Herbicide rate from table above in a minimum of 10 gallons per acre of water to the soil prior to transplanting.

**Non Bedded (Fields where raised beds are NOT formed prior to transplanting)**

Perform all accepted cultural practices for land preparation, fertilizer/fungicide incorporation, etc. prior to the application of Spartan Herbicide. Once the field has been prepared for planting, Spartan Herbicide may be surface applied or lightly preplant incorporated from 14 days to 12 hours prior to transplanting.

If Spartan Herbicide is surface applied and it is necessary to remove equipment tracks from the field after application but prior to transplanting, any light finishing equipment may be used providing the soil is not disturbed to a depth greater than 2 inches.

If timely cultivations are not performed following a pre-transplant surface application, reduced/unacceptable weed control may occur in the drill.

**Bedded (Fields where raised beds ARE formed PRIOR to transplanting)**

Apply Spartan Herbicide to formed beds as a surface application from 14 days to 12 hours prior to transplanting. If it is customary to drag/knock down beds prior to transplanting, this procedure must be performed prior to the Spartan Herbicide application.

When incorporating prior to bedding, Spartan Herbicide must be thoroughly and uniformly incorporated to a depth no greater than 2 inches to avoid concentrating Spartan Herbicide in the bed.

If initial transplanting fails to produce a uniform stand, tobacco may be replanted. DO NOT re-treat field with a second application of Spartan Herbicide or any other herbicide containing sulfentrazone. DO NOT re-bed. Re-transplant into previously formed, treated beds.

For broad spectrum and optimum grass weed control, a grass herbicide application will be required.

**Weeds Controlled**

**When Applied according to directions, Spartan Herbicide will provide control of**

Amaranthus livid	Pigweed redroot
Filaree redstem	Pigweed smooth
Galinsoga hairy	Sida prickly
Lambsquarters common	Signalgrass broadleaf
Morningglory ivyleaf	Smartweed Pennsylvania
Morningglory tall	

**Precautions**

Poor agronomic practices, unfavorable pH soils, diseases, cold weather, excessive moisture, drought, or other conditions unfavorable to normal plant growth may adversely affect the growth of tobacco transplants. Weakened transplants may be more susceptible to herbicide response and diseases, particularly under poor drainage or compacted soil conditions or when the soil has been saturated for long periods of time. Contact your State Agricultural Extension Service Specialist for consultation as to the agronomic recommendations suited for your tobacco varieties and local conditions. Temporary stunting of tobacco may occur if transplants are set too shallowly or if heavy rainfall occurs immediately following transplanting. Splashing of treated soil onto tobacco leaves may cause some localized and inconsequential necrosis. Use sound transplanting practices that insure treated soil will not wash or crust over tobacco plants.

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not use on Shade Grown Tobacco.

**Do not apply Spartan Herbicide to soils classified as sands containing less than 1% organic matter.**

Do not use Spartan Herbicide in tobacco seeding beds or greenhouses.

Do not apply Spartan Herbicide post-transplant as unacceptable injury may occur.

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Do not perform tillage practices that concentrate Spartan Herbicide into the bed or crop injury may occur  
Do not apply more than 8.0 dry ounces (0.375 lbs active) per acre of Spartan Herbicide per acre per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.  
Do not incorporate greater than 2 inches deep

**WHEAT (SPRING), (Pacific Northwest states – ID, OR, WA only)**

Apply 0.188 lbs active ingredient (4 dry ounces) per acre of Spartan Herbicide. Make one pre plant or pre emergence application at 40-60 days before forage cutting and 120 days before grain harvest. Apply in 10-40 gallons of water per acre. (This use is limited for areas in the Pacific Northwest only)

**Weeds Controlled**

When Applied according to directions Spartan Herbicide will provide control of

Kochia (ALS and Triazine Resistant)	<i>Kochia scoparia</i>
Thistle Russian	<i>Salsola kali</i>

For information on other weeds not listed above refer to Weed Controlled section (Table 5) in this label

**Restrictions**

Do not apply more than 4.0 dry ounces (0.188 pound active) per acre per season  
Do not make more than one Spartan Herbicide application per acre per 12 month period. The twelve month period is considered to begin upon the initial Spartan Herbicide application

Do not use on soils classified as sand which have less than 1% organic matter

**VEGETABLE CROPS**

Before applying Spartan Herbicide to vegetable crops users, producers, and/or applicators must read and follow the information presented in the CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY section on page 2 of this label

**ASPARAGUS**

Spartan Herbicide Use Rate Table (Asparagus)			
Spring Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	3.0 – 4.0	4.0 – 5.3	5.3
1.5 – 3.0	4.0 – 5.3	5.3 – 6.7	6.7
>3.0	5.3 – 6.7	6.7 – 8.0	8.0

Refer to the use rate information on soil types under the COARSE, MEDIUM, and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

Apply Spartan Herbicide as a broadcast treatment to crowns established for one or more years  
Apply in the spring before the crop and weeds emerge. Spartan Herbicide should be applied at 4.5 to 12 dry ounces (0.141 to 0.375 pound active) per acre in 10 to 40 gallons of finished spray per acre. Spartan Herbicide may be applied with other pesticides registered for use with asparagus

**Weeds Controlled**

When Applied according to directions Spartan Herbicide will provide control of

Amaranth Palmer	Nightshade Eastern black
Galinsoga hairy	Nutsedge yellow
Lambsquarters common	Pigweed redroot
Morningglory ivyleaf	Pigweed smooth

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply within 14 days prior to harvest



Do not apply more than 8.0 dry ounces (0.375 pound active) per acre per 12 month period

Do not make more than one Spartan Herbicide application per acre per 12 month period. The twelve month period is considered to begin upon the initial Spartan application.

Do not use on soils classified as sand which have less than 1% organic matter

**BRASSICA, HEAD AND STEM**

Broccoli Chinese broccoli brussels sprouts Chinese (napa) cabbage Chinese mustard cauliflower cavalo broccoli kohlrabi)

Spartan Herbicide Use Rate Table (Head and Stem Brassica)			
Fall or Spring Early Preplant, Preemergence, and Preplant Incorporated Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5%	1.5 - 2.0	2.0 - 3.0	2.0 - 4.0
1.5 - 3.0%	2.0 - 4.0	4.0 - 6.0	4.0 - 6.0
>3.0%	4.0 - 6.0	4.0 - 8.0	4.0 - 8.0

Refer to the previous information on soil types under the COARSE, MEDIUM, and FINE categories.  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range.

**Early Preplant and Preemergence (Fall Application or Spring Application)**

Spartan Herbicide may be applied in the fall or spring preceding the growing season up to 72 hours prior to transplanting head and stem brassica. Spartan Herbicide should be applied to the harvested crop stubble or soil surface without incorporation. Moisture in the form of rain or snow will move and activate the product into the soil. Do not mechanically incorporate in the fall or spring after application as this may destroy the herbicide barrier and weed escapes can occur. Do not apply to frozen soils to prevent Spartan Herbicide runoff from rain or snow that may occur following application. Spartan Herbicide may be tank mixed with other burndown herbicides to control emerged weeds in the fall or spring or with residual soil herbicides that are labeled for use on head and stem brassica. Use the listed rates of burndown herbicides in combination with Spartan Herbicide or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a preplant incorporated treatment in the spring prior to transplanting head and stem brassica. Do not incorporate to depths greater than 2 inches. Spartan Herbicide can be tank mixed with other burndown or soil applied herbicides labeled for use in head and stem brassica. Use the listed rates of burndown herbicides or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Weeds Controlled**

When Applied according to directions, Spartan Herbicide will provide control of

Galinsoga hairy	Waterhemp common
Lambsquarters common	Waterhemp tall
Pigweed redroot	

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

Do not use on soils classified as sand which have less than 1% organic matter

Do not incorporate to depths greater than 2 inches

**BRASSICA, LEAFY GREENS**

Broccoli raab Chinese (bok choy) cabbage collards kale mizuna mustard greens mustard spinach rape greens

**Spartan Herbicide Use Rate Table (Leafy Brassica)**  
Fall or Spring Early Preplant Preemergence and Preplant Incorporated Applications

Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<15 /	15 - 20	20 - 30	20 - 40
15 - 30 /	20 - 40	40 - 43	40 - 43
>30 /	40 - 43	40 - 43	40 - 43

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Early Preplant and Preemergence (Fall Application or Spring Application)**

Spartan Herbicide may be applied in the fall or spring preceding the growing season up to 72 hours prior to planting leafy brassica. Spartan Herbicide should be applied to the harvested crop stubble or soil surface without incorporation. Moisture in the form of rain or snow will move and activate the product into the soil. Do not mechanically incorporate in the fall or spring after application as this may destroy the herbicide barrier and weed escapes can occur. Do not apply to frozen soils to prevent Spartan Herbicide runoff from rain or snow that may occur following application. Spartan Herbicide may be tank mixed with other burndown herbicides to control emerged weeds in the fall or spring or with residual soil herbicides that are labeled for use on leafy brassicas. Use the listed rates of burndown herbicides in combination with Spartan Herbicide or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a preplant incorporated treatment in the spring prior to planting leafy brassica. Do not incorporate to depths greater than 2 inches. Spartan Herbicide can be tank mixed with other burndown or soil applied herbicides labeled for use in leafy brassica. Use the listed rates of burndown herbicides or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Weeds Controlled**

When Applied according to directions, Spartan Herbicide will provide control of

Galinsoga hairy	Waterhemp common
Lambsquarters common	Waterhemp tall
Pigweed redroot	

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 4.3 dry ounces (0.20 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

Do not use on soils classified as sand which have less than 1% organic matter.

Do not incorporate to depths greater than 2 inches.

**CABBAGE (Transplanted Only)**

**Spartan Herbicide Use Rate Table (Cabbage)**  
Fall or Spring Early Preplant Preemergence and Preplant Incorporated Applications

Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<15 /	15 - 20	20 - 30	20 - 40
15 - 30 /	20 - 40	40 - 60	40 - 60
>30 /	40 - 60	40 - 80	40 - 80

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Early Preplant (Fall Application or Spring Application)**

Spartan Herbicide may be applied in the states of MN ND SD MT CO NE WY ID WA OR WI or MI only in the fall or spring preceding the growing season to control weeds prior to or up to the planting or transplanting of cabbage. Spartan Herbicide may be applied in the spring from 60 days prior to planting up to planting time. Spartan Herbicide should be applied to the harvested crop stubble or soil surface without incorporation. Moisture in the form of rain or snow will move and activate the product into the soil. Do not mechanically incorporate in the fall or spring after application as this may destroy the herbicide barrier and weed escapes can occur. Do not apply to frozen soils to prevent Spartan Herbicide runoff from rain or snow that may occur following application. Spartan Herbicide may be tankmixed with other burndown herbicides to control emerged weeds in the fall or spring or with residual soil herbicides that are labeled for fall use on cabbage. Use the listed rates of burndown herbicides in combination with Spartan Herbicide or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a preplant incorporated treatment in the spring prior to transplanting of cabbage. Do not incorporate to depths greater than 2 inches. Spartan Herbicide can be tankmixed with other burndown or soil applied herbicides labeled for use in cabbage. Use the listed rates of burndown herbicides or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Transplant Cabbage**

Spartan Herbicide may be applied pre emergence as a broadcast or banded treatment to transplanted cabbage only. Applications should be made broadcast or banded treatment prior to transplanting. Spartan Herbicide may be applied as a banded treatment into the row middles within 72 hours after transplanting.

**Weeds Controlled**

**When Applied according to directions Spartan Herbicide will provide control of**

Galinsoga hairy	Waterhemp common
Lambsquarters common	Waterhemp tall
Pigweed redroot	

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

**Do not use on soils classified as sand which have less than 1/ organic matter**

Do not incorporate to depths greater than 2 inches.

**COWPEAS, Succulent (TENNESSEE ONLY)**

<b>Spartan Herbicide Use Rate Table</b>			
<b>(Succulent Cowpeas – Tennessee Only)</b>			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	1.5 – 2.5	2.0 – 4.0	2.5 – 4.0
1.5 – 3.0	2.0 – 3.0	2.5 – 4.0	3.0 – 4.0
>3.0	2.5 – 4.0	3.0 – 4.0	3.5 – 4.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence (36.1)**

Spartan Herbicide may be applied to succulent cowpeas as a preemergence treatment at 4.0 dry ounces (0.1875 pounds active) per acre. Applications should be made with ground equipment in a minimum of 10 gallons of finished spray per acre.

**Weeds Controlled**

**When applied according to directions Spartan Herbicide will provide control of**

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Copperleaf hophornbeam	Pigweed redroot
Morningglory entireleaf	Pigweed smooth
Morningglory ivyleaf	

**Precautions**

If applying Spartan Herbicide to coarse textured soils allow a minimum of 7 days from application to planting Best results are achieved with Spartan Herbicide when applications are made early preplant and greater than 14 days before planting

Under extended periods of dry weather adequate weed control may not be achieved

Some adverse crop response may occur on coarse textured soils with low organic matter (less than 1.5%) and pH of 7.8 or higher or on highly eroded soils or in areas of calcareous outcroppings Spartan Herbicide use rates should be reduced in those areas Inadequate seed furrow closure or shallow planting (less than 1.0 inch) may result in undesirable crop response As expected poor growing conditions such as excessive moisture low temperatures soil compaction and diseases may also cause undesirable crop response

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 4.0 dry ounces (0.1875 pound active) per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not apply to coarse soils classified as sand which have less than 1% organic matter

Do not incorporate

**DRY SHELLED BEANS AND PEAS**

Dried cultivars of bean (*Lupinus*) bean (*Phaseolus*) (includes field bean kidney bean lima bean (dry) navy bean pinto bean tepary bean) bean (*Vigna*) (includes adzuki bean blackeyed pea catjang cowpea crowder pea moth bean lentil mung bean rice bean southern pea urd bean) broad bean (dry) chickpea guar lablab bean pea (*Pisum*) (includes field pea) and pigeon pea

Spartan Herbicide Use Rate Table (Dry Shelled Beans Peas)			
Fall or Spring Early Preplant Preemergence and Preplant Incorporated Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	1.5 - 2.0	2.0 - 3.0	2.0 - 3.0
1.5 - 3.0	2.0 - 3.0	2.5 - 4.0	3.0 - 4.0
>3.0	2.5 - 4.0	3.0 - 4.5	3.5 - 5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Early Preplant and Fall Applications (For use only in ND SD MT MN WY CO NE KS WI MI OR ID WA, OR MT)**

Spartan Herbicide may be applied in the fall as a preplant treatment to control or suppress weeds prior to planting the following spring Spartan Herbicide should be applied to the stubble or soil surface and allow moisture from rainfall or snow to move the product into the soil Do not mechanically incorporate in the fall or spring as this can destroy the herbicide barrier and weed escapes can occur Do not apply to frozen soils or to existing snow cover to prevent Spartan Herbicide runoff from rain or snow melt that may occur following application Spartan Herbicide may be tank mixed with other residual soil herbicides that are labeled for fall use on dry bean and dry peas If weeds are emerged at the time of Spartan Herbicide application use a burndown herbicide such as glyphosate or paraquat at the full labeled rate in combination with Spartan Herbicide or split application as needed Select the appropriate rate from table above within the correct soil type and organic matter range When applying Spartan Herbicide in the fall use a mid to high rate within the rate range for the appropriate soil type and organic matter

**Early Preplant and Preemergence (Spring Applications)**

Spartan Herbicide may be applied preplant on the soil surface in the spring to control weeds in dry bean and dry peas Spartan Herbicide can be applied early preplant prior to planting up to 3 days after planting as a premerge soil application if seedlings have not broken the soil surface and if the seed furrow is completely closed For premerge applications greater than 3 weeks prior to planting use the high rate within the appropriate rate range for the soil and organic matter type listed in the use rate chart above Table 17 If applying Spartan Herbicide to coarse textured soils with less than 1.5% organic matter wait a minimum of 7 days after application before planting Spartan Herbicide can be tank mixed with other premerge herbicides labeled for dry bean and dry peas use If dry conditions persist following premerge application of Spartan Herbicide a shallow incorporation may be needed to

incorporate and activate the herbicide If weeds are emerged at the time of Spartan Herbicide application use a burndown herbicide at the full labeled rate in combination with Spartan Herbicide or split application as needed

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a Preplant Incorporated treatment in the spring prior to planting in reduced and conventional tillage dry bean and dry pea Do not incorporate to depths greater than 2 inches Spartan Herbicide use rates for PPI applications are similar to those used in preplant and preemergence applications Spartan Herbicide can be tankmixed with other burndown or soil applied herbicides labeled for use in dry bean or dry pea Use the listed rates of burndown herbicides or split applications as needed Observe all precautions instructions and rotational cropping guidelines of each products label when tank mixing including all references to potential carryover and crop injury warnings or restrictions

**Weeds Controlled**

When applied according to directions Spartan Herbicide will provide control of

Amaranth Palmer	Pigweed red root
Filaree redstem	Pigweed smooth
Kochia (ALS and Triazine Resistant)	Sida prickly
Lambsquarters common	Thistle Russian
Morningglory ivyleaf	Waterhemp common
Morningglory tall	Waterhemp tall
Nightshade Eastern black	

**Precautions**

Under extended periods of dry weather adequate weed control may not be achieved

Some adverse crop response may occur on coarse textured soils with low organic matter (less than 1.5%) and pH of 7.8 or higher or on highly eroded soils or in areas of calcareous outcroppings Spartan Herbicide use rates should be reduced in those areas Inadequate seed furrow closure or shallow planting (less than 1.0 inch) may result in undesirable crop response As expected poor growing conditions such as excessive moisture low temperatures soil compaction and diseases may also cause undesirable crop response

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 5.3 dry ounces (0.25 pound active) total per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not apply after crop emerges or if the seedling is close to the soil surface

Do not incorporate to depths greater than 2 inches

Do not apply to frozen soils or to existing snow cover to prevent Spartan Herbicide runoff from rain or snow melt that may occur following application

Do not use on soils classified as sand which have less than 1% organic matter

**FRUITING VEGETABLES (EXCEPT CUCURBITS) AND OKRA**

African eggplant bush tomato cocona currant tomato eggplant garden huckleberry goji berry groundcherry martynia naranjilla okra pea eggplant pepino bell pepper nonbell pepper (chili pepper cooking pepper pimento sweet pepper) roselle hibiscus scarlet eggplant sunberry tomatillo tomato tree tomato and cultivars varieties and/or hybrids

Spartan Herbicide Use Rate Table (Fruiting Vegetables except cucurbits and Okra)			
Preplant Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5%	1.5 - 2.0	2.0 - 3.0	2.0 - 4.0
1.5 - 3.0%	2.0 - 4.0	4.0 - 6.0	4.0 - 6.0
>3.0%	4.0 - 6.0	4.0 - 8.0	4.0 - 8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preplant Banded Applications**

Spartan Herbicide may be applied preemergence as a broadcast or banded treatment on fruiting vegetables. Applications must be made prior to transplant.

**Weeds Controlled**

When applied according to directions, Spartan Herbicide will provide control of

Lambsquarters common	Pigweed redroot
Morningglory ivyleaf	Waterhemp common
Nutsedge yellow	Waterhemp tall

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled, and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

Do not use on soils classified as sand which have less than 1% organic matter.

**HORSERADISH**

<b>Spartan Herbicide Use Rate Table (Horseradish)</b>			
Fall or Spring Early Preplant, Preemergence, and Preplant Incorporated Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
/ Organic Matter	Soil Texture		
	Coarse	Medium	Fine
<1.5	1.5 - 3.0	2.0 - 3.0	2.0 - 3.0
1.5 - 3.0	3.0 - 4.0	4.0 - 5.3	4.0 - 5.3
>3.0	4.0 - 5.0	4.0 - 5.3	4.0 - 5.3

Refer to the previous information on soil types under the COARSE, MEDIUM, and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

Spartan Herbicide may be applied as a preplant preemergence or preplant incorporated treatment by ground in a minimum of 15 gallons of finished spray.

**Early Preplant (Fall Application or Spring Application) (MN ND SD MT CO NE WY ID WA OR WI MI)**

Spartan Herbicide may be applied in the fall or spring preceding the growing season to control or suppress weeds prior to or up to the planting of horseradish. Spartan Herbicide may be applied in the spring from 60 days prior to planting up to planting. Spartan Herbicide should be applied to the harvested crop stubble or soil surface without incorporation. Moisture in the form of rain or snow will move and activate the product into the soil. Do not mechanically incorporate in the fall or spring after application as this may destroy the herbicide barrier and weed escapes may occur. Do not apply to frozen soils to prevent Spartan runoff from rain or snow that may occur following application. Spartan Herbicide may be tankmixed with other burndown herbicides to control emerged weeds in the fall or spring or with residual soil herbicides that are labeled for use on horseradish. Use listed rates of burndown herbicides in combination with Spartan Herbicide or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Preplant Incorporated (PPI)**

Spartan Herbicide may be applied as a preplant incorporated treatment in the spring prior to planting of horseradish. Do not incorporate to depths greater than 2 inches. Spartan Herbicide can be tankmixed with other burndown or soil applied herbicides labeled for use on horseradish. Use the listed rates of burndown herbicides or split applications as needed. Observe all precautions, instructions, and rotational cropping guidelines of each product's label when tank mixing, including all references to potential carryover and crop injury warnings or restrictions.

**Preemergence**

Spartan Herbicide may be applied pre emergence as a broadcast or banded treatment on horseradish. Applications should be made broadcast prior to planting, broadcast soon after planting but at least 5 days before crop emergence. Spartan Herbicide may be applied as a banded treatment into the row middles after crop emergence. Use the higher Spartan Herbicide rates on clay soils.

and/or soils with greater than 1 / organic matter Spartan Herbicide may be applied with other pesticides registered for use on horseradish

**Weeds Controlled**

**When applied according to directions Spartan Herbicide will provide control of**

Lambsquarters common	Pigweed redroot
Morningglory ivyleaf	Waterhemp common
Nutsedge yellow	Waterhemp tall

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 5.3 dry ounces (0.25 pound active) per acre of Spartan Herbicide per application or per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not apply directly on the crop after the crop emerges or if the seedling sprouts are close to the soil surface

Do not use on soils classified as sand which have less than 1 / organic matter

Do not incorporate to depths greater than 2 inches

**LIMA BEANS, Succulent (TENNESSEE ONLY)**

Spartan Herbicide Use Rate Table (Succulent Lima Beans – Tennessee Only)			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	1.5 – 2.5	2.0 – 4.0	2.5 – 4.0
1.5 – 3.0	2.0 – 3.0	2.5 – 4.0	3.0 – 4.0
>3.0	2.5 – 4.0	3.0 – 4.0	3.5 – 4.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence (36.1)**

Spartan Herbicide may be applied to succulent lima beans as a preemergence treatment at 4.0 dry ounces (0.1875 pounds active) per acre Applications should be made with ground equipment in a minimum of 10 gallons of finished spray per acre

**Weeds Controlled**

**When applied according to directions Spartan Herbicide will provide control of**

Copperleaf hophornbeam	Pigweed redroot
Morningglory entireleaf	Pigweed smooth
Morningglory ivyleaf	

**Precautions**

When applying Spartan Herbicide to coarse textured soils it is recommended that growers allow a minimum of 7-14 days from application to planting Best results are achieved with Spartan Herbicide when applications are made early preplant and greater than 14 days before planting

Under extended periods of dry weather adequate weed control may not be achieved

Some adverse crop response may occur on coarse textured soils with low organic matter (less than 1.5 /) and pH of 7.8 or higher or on highly eroded soils or in areas of calcareous outcroppings Spartan Herbicide use rates should be reduced in those areas Inadequate seed furrow closure or shallow planting (less than 1.0 inch) may result in undesirable crop response As expected poor growing conditions such as excessive moisture low temperatures soil compaction and diseases may also cause undesirable crop response

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under

treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 4.0 dry ounces (0.1875 pound active) per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not apply to coarse soils classified as sand which have less than 1% organic matter

Do not incorporate

**MELONS**

Citron melon muskmelon watermelon

<b>Spartan Herbicide Use Rate Table (Melons)</b>			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
/ Organic Matter	Soil Texture		
	Coarse	Medium	Fine
<1.5	2.0 – 2.5	2.0 – 3.0	2.5 – 3.5
1.5 – 3.0	2.0 – 3.0	2.5 – 4.0	3.0 – 4.5
>3.0	2.5 – 4.0	3.0 – 4.5	4.0 – 5.3

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence**

Spartan Herbicide can be applied 48 hours prior to planting to anytime after planting but before seedlings have emerged Spartan Herbicide applied after crop emergence may cause severe injury to the crop Spartan Herbicide can be applied alone or in combination with other labeled melon herbicides Spartan Herbicide may be followed by labeled postemergence melon herbicides for increased control of grass and broadleaf weeds Always follow the most restrictive label when tank mixing When using Spartan Herbicide in no till or minimum till cropping systems tank mix with an appropriate burndown herbicide for improved control of existing weeds

**Weeds Controlled**

When applied according to directions Spartan Herbicide will provide control of

Lambsquarters common	Pigweed redroot
Morningglory ivyleaf	Waterhemp common
Nutsedge yellow	Waterhemp tall

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops The user is required to observe the instructions and guidance previously presented under Product Application Instructions Spartan Herbicide Product Use Rates Rotational Crop Guidelines Replanting Instructions Weed Controlled and any other section of this label pertinent to the anticipated crop use It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions

**Restrictions**

Do not apply more than 5.3 dry ounces (0.25 pound active) per acre of Spartan Herbicide per application or per twelve month period The twelve month period is considered to begin upon the initial Spartan application

Do not apply directly on the crop after the crop emerges or if the seedling sprouts are close to the soil surface

Do not use on soils classified as sand which have less than 1% organic matter

**RHUBARB**

Apply 0.25 lbs active ingredient (5.3 dry ounces) per acre of sulfentrazone Make one post emergent broadcast application (just prior to rhubarb plants breaking dormancy) at 80 (+/- 5) days before harvest Use a minimum of 10 gallons of water per acre

**Weeds Controlled**

When Applied according to directions Spartan Herbicide will provide control of

Galinsoga hairy	Waterhemp common
Lambsquarters common	Waterhemp tall
Pigweed redroot	



For information on other weeds not listed above refer to Weed Controlled section (Table 5) in this label

**Restrictions**

Do not apply more than 5.3 dry ounces (0.25 pound active) per acre per 12 month period  
 Do not make more than one Spartan Herbicide application per acre per 12 month period. The twelve month period is considered to begin upon the initial Spartan Herbicide application  
 Do not use on soils classified as sand which have less than 1% organic matter

**STRAWBERRY**

<b>Spartan Herbicide Use Rate Table (Strawberry)</b>			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
/ Organic Matter	Soil Texture		
	Coarse	Medium	Fine
<1.5 /	1.5 - 2.0	2.0 - 3.0	2.0 - 4.0
1.5 - 3.0 /	2.0 - 4.0	4.0 - 6.0	4.0 - 6.0
>3.0 /	4.0 - 6.0	4.0 - 8.0	4.0 - 8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence**

Spartan Herbicide can be applied prior to planting and before seedlings have emerged. Spartan Herbicide applied after crop emergence may cause severe injury to the crop. Spartan Herbicide can be applied alone or in combination with other labeled strawberry herbicides. Spartan Herbicide may be followed by labeled postemergence strawberry herbicides for increased control of grass and broadleaf weeds. Always follow the most restrictive label when tank mixing. When using Spartan Herbicide in no till or minimum till cropping systems, tank mix with an appropriate burndown herbicide for improved control of existing weeds.

**Weeds Controlled**

When applied according to directions, Spartan Herbicide will provide control of

Lambsquarters common	Pigweed redroot
Morningglory ivyleaf	Waterhemp common
Nutsedge yellow	Waterhemp tall

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.  
 Do not apply directly on the crop after the crop emerges or if the seedling sprouts are close to the soil surface.

**SUCCULENT PEAS**

*Cajanus cajan* (includes pigeon pea) *Cicer* spp (includes chickpea and garbanzo bean) *Lens culinans* (lentil) *Pisum* spp (includes dwarf pea, garden pea, green pea, English pea, field pea, and edible pod pea)

<b>Spartan Herbicide Use Rate Table (Succulent Peas)</b>			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
/ Organic Matter	Soil Texture		
	Coarse	Medium	Fine
<1.5	1.5 - 2.5	2.0 - 4.0	2.5 - 4.0
1.5 - 3.0	2.0 - 3.0	2.5 - 4.0	3.0 - 4.0
>3.0	2.5 - 4.0	3.0 - 4.0	3.5 - 4.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence**  
 Spartan Herbicide may be applied to succulent peas as a preemergence treatment at 4.0 dry ounces (0.1875 pounds active) per acre. Applications should be made with ground equipment in a minimum of 10 gallons of finished spray per acre.

Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**  
 Do not apply more than 4.0 dry ounces (0.1875 pound active) per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.  
 Do not apply to coarse soils classified as sand which have less than 1% organic matter.  
 Do not incorporate.

**TURNIPS**

Apply 0.25 lbs active ingredient (5.3 dry ounces) per acre of sulfentrazone. Make one post emergent application at 46-60 days before harvest. Apply in 10-40 gallons of water per acre.

**Weeds Controlled**  
 When Applied according to directions Spartan Herbicide will provide control of

Galinsoga hairy	Waterhemp common
Lambsquarters common	Waterhemp tall
Pigweed redroot	

For information on other weeds not listed above refer to Weed Controlled section (Table 5) in this label.

**Restrictions**  
 Do not apply more than 5.3 dry ounces (0.25 pound active) per acre per 12 month period.  
 Do not make more than one Spartan Herbicide application per acre per 12 month period. The twelve month period is considered to begin upon the initial Spartan Herbicide application.  
 Do not use on soils classified as sand which have less than 1% organic matter.

**OIL CROPS**

**FLAX**

Spartan Herbicide Use Rate Table (Flax)			
Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5 /	1.5 - 2.0	2.0 - 3.0	2.0 - 4.0
1.5 - 3.0 /	2.0 - 4.0	4.0 - 6.0	4.0 - 6.0
>3.0 /	4.0 - 6.0	4.0 - 8.0	4.0 - 8.0

Refer to the previous information on soil types under the COARSE MEDIUM and FINE categories  
 Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range

**Preemergence (37.1)**  
 Spartan Herbicide can be applied prior to planting to anytime after planting but before seedlings have emerged. Spartan Herbicide applied after crop emergence may cause severe injury to the crop. Spartan Herbicide can be applied alone or in combination with other labeled flax herbicides. Spartan Herbicide may be followed by labeled postemergence flax herbicides for increased control of grass and broadleaf weeds. Always follow the most restrictive label when tank mixing. When using Spartan Herbicide in no till or minimum till cropping systems, tank mix with an appropriate burndown herbicide for improved control of existing weeds.

**Weeds Controlled**

When applied according to directions Spartan Herbicide will provide control of

Copperleaf hophornbeam	Pigweed redroot
Morningglory entireleaf	Pigweed smooth
Morningglory ivyleaf	

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 8.0 dry ounces (0.375 pound active) per acre of Spartan Herbicide per application or per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

Do not apply directly on the crop after the crop emerges or if the seedling sprouts are close to the soil surface.

**MINT**

<b>Spartan Herbicide Use Rate Table (Mint)</b>			
For Dormant and New Planting Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
/ Organic Matter	Coarse	Medium	Fine
<1.5	3.0 - 4.0	4.0 - 5.3	5.3
1.5 - 3.0	4.0 - 5.3	5.3 - 6.7	6.7
>3.0	5.3 - 6.7	6.7 - 8.0	8.0

Refer to the previous information on soil types under the COARSE, MEDIUM, and FINE categories. Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range.

**Dormant Applications**

Apply Spartan Herbicide to established stands of dormant mint after post harvest and/or spring land cultivation has been completed and before emergence of new mint growth.

Split applications of Spartan Herbicide may be used for preemergence sequential control of winter annuals and summer annuals. Fall applications must be applied after post harvest cultivation has been completed and spring application made after spring cultivation has been completed and before emergence of new mint growth.

Apply Spartan Herbicide in tank mixtures with a registered burndown herbicide to control emerged weeds at the time of application. A surfactant is recommended with these tank mixtures to improve control of the emerged weeds.

Spartan Herbicide may also be applied in tank mixtures with other products registered for use in mint.

**New Planting Applications**

Spartan Herbicide may be applied to new mint plantings preemergence to the weeds and mint. The rate of application should be reduced approximately twenty five percent of the rate listed for established plantings for particular soil characteristics. Refer to Spartan Use Rate table above for the appropriate use rate for the soil type and organic matter content. The higher rates in the range are recommended for soils of pH less than 7.0.

**Weeds Controlled**

When Applied according to directions Spartan Herbicide will provide control of

Amaranth Powell	Nutsedge yellow
Bedstraw catchweed	Pigweed redroot
Chamomile mayweed	Shepherdspurse
Kochia (ALS and Triazine Resistant)	Toadflax yellow
Lambsquarters common	Thistle Russian
Morningglory ivyleaf	Waterhemp common
Nightshade Eastern black	Waterhemp tall

**Precautions**

Applications made to mint that has emerged will result in severe injury to exposed plant tissue.

Only apply to healthy mint fields. Applications to mint under stress from disease, pests, and cultural or environmental conditions may result in crop injury.

Moisture in the form of rainfall or overhead irrigation is required after application to activate the herbicide.

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Apply Spartan Herbicide only to dormant mint or new mint plantings before new growth emerges.

Do not use on soils classified as sand which have less than 1% organic matter.

Do not apply more than 8.0 dry ounces (0.375 pound active) per twelve month period. The twelve month period is considered to begin upon the initial Spartan application.

**SOD PRODUCTION**

Spartan Herbicide may be applied to established seeded, sodded or sprigged turfgrasses following the second mowing for the control of key grass, sedge and broadleaf weeds. Turf grasses must have developed to a uniform stand with healthy root systems prior to application. Applications must be avoided to grasses weakened by stresses of weather, disease or mechanical influences.

**Turf Grass Tolerance**

When applied as directed, the following established turf grasses are tolerant to Spartan Herbicide at the listed use rates.

Grass Type	Maximum Use Rate For Single Application	
	Dry Ounces Spartan Herbicide Per Acre	Pound Active Ingredient Per Acre
<b>Cool Season Grasses</b>		
Bentgrass creeping	2.7	0.125
Fescue fine (Festuca rubra)	2.7-5.3	0.125-0.25
Fescue tall (Festuca arundinacea)		
Ryegrass perennial (Lolium perenne)		
Bluegrass Kentucky (Poa pratensis)		
Bluegrass Rough (Poa trivialis)		
<b>Warm Season Grasses</b>		
Bahiagrass (Paspalum notatum)	5.3-7.9	0.25-0.375
Buffalograss (Buchloe dactyloides)		
Carpetgrass (Axonopus affinis)		
Centipedegrass (Eremochloa ophiuoides)		
Kikuyugrass (Pennisetum clandestinum)		
Seashore Paspalum (Paspalum aginatum)		
Zoysiagrass (Zoysia japonica)		
Bermudagrass (Cynodon dactylon)		
Bermudagrass Hybrids (Cynodon)		
St. Augustinegrass (Stenotaphrum secundatum)		

Applications of Spartan Herbicide to certain varieties of Chewings Fine Fescue or Tall Fescue may result in undesirable plant response.

It is important to note that not all varieties or cultivars have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Applications to Reseeded, Overseeded or Sprigged Areas**

Reseeding, overseeding or sprigging may be done following Spartan Herbicide applications to turfgrasses. If reseeding, overseeding or sprigging is done within 1 month following a Spartan Herbicide treatment, the establishment of desirable grasses may be inhibited. Overseeding of bermudagrass with perennial ryegrass may be done two (2) to four (4) weeks following a Spartan Herbicide application provided slight grass plant response can be tolerated.

Optimum reseeding and overseeding results may be obtained with the use of mechanical or power seeding equipment and where proper soil cultivation, irrigation and fertilization practices are followed.

**Adjuvant Use**

Good spray coverage is required for optimum control of weeds. Temporary discoloration of some sod species may result from use of surfactants. Use of surfactants is not recommended.

**Postemergence Control of Sedges**

Spartan Herbicide may be applied at the rate of 2.7 to 8.0 dry ounces per acre to established turf grasses for the control or suppression of sedges. Select the correct Spartan Herbicide use rate from table above.

**When applied as directed Spartan Herbicide will provide control or suppression of the following sedges**

Common Name	Scientific Name
Kyllinga green	<i>Kyllinga brevifolia</i>
Kyllinga false green	<i>Kyllinga gracillima</i>
Nutsedge purple	<i>Cyperus rotundus</i>
Nutsedge yellow	<i>Cyperus esculentus</i>
Sedge cylindrical	<i>Cyperus retrorsus</i>
Sedge globe	<i>Cyperus globulosus</i>
Sedge Surinam	<i>Cyperus surinamensis</i>
Sedge Texas	<i>Cyperus polystachyos</i>

Purple nutsedge: For optimum control of purple nutsedge, split applications are recommended below. Apply 4.8 ounces per acre as an initial application followed by a second application when evidence of actively growing purple nutsedge is visible. Do not exceed the maximum rate per acre based on the turf variety as listed in Tolerant Grasses table.

**Split Application Rates for Optimum Purple Nutsedge Control**

Grass Type	First Application (dry ozs per acre)	Second Application (dry ozs per acre)
Cool Season Grasses	1.4 - 2.7 dry ounces	1.4 - 4 dry ounces
Warm Season Grasses	2.7 - 4 dry ounces	2.7 - 4 dry ounces

Allow 35 days after first application for second application.

**Postemergence Control of Grassy Weeds**

Spartan Herbicide will control or suppress specific annual grasses table when applied at a rate of 4 to 12 fl oz/acre. Apply the highest rate consistent with the rate needed for turfgrass tolerance in Turfgrass Tolerance Table above. Rates lower than 12 fl oz/acre will generally control grasses for at least 60 days. Spartan Herbicide works best if applied when the annual grasses are small (pre tiller stage) and actively growing.

Common Name	Scientific Name
Goosegrass	<i>Eleusine indica</i>

**Postemergence Control of Broadleaf Weeds**

Spartan Herbicide will control or suppress the weeds listed in the broadleaf chart below when applied alone shortly after weeds have emerged. Spartan Herbicide may be applied at the rate of 2.67 to 8 dry ounces per acre to established turf grasses for the control or suppression of broadleaf weeds. Select the correct Spartan Herbicide use rate from Turfgrass Tolerance table. For optimum results, Spartan applications should be made shortly after weeds have emerged.

Spartan Herbicide may be tank mixed with other herbicides, insecticides and fungicides registered for use on turfgrasses. Read and follow the label directions of the tank mix partner to determine turfgrass species tolerance, use rates and application requirements. Follow all label restrictions, use directions and precautionary statements before use.

**When applied as directed Spartan Herbicide will provide control or suppression of the following broadleaf weeds**

Common Name	Scientific Name
Bittercress	<i>Cardamine spp</i>
Black Medic	<i>Medicago lupulina</i>
Buttercup	<i>Ranunculus spp</i>
Carolina geranium	<i>Geranium carolinianum</i>
Carpetweed	<i>Mollugo verticillata</i>
Chickweed common	<i>Stellaria media</i>
Chickweed mouseear	<i>Cerastium vulgatum</i>
Cinquefoil	<i>Potentilla spp</i>
Clover	<i>Trifolium spp</i>
Cudweed	<i>Gnaphalium spp</i>
Dandelion	<i>Taraxacum officinale</i>
Dock curly	<i>Rumex crispus</i>
Evening primrose	<i>Oenothera biennis</i>
Fiddleneck	<i>Amsinckia spp</i>
Filaree	<i>Erodium spp</i>
Garlic wild	<i>Allium vineale</i>
Goldenrod	<i>Solidago spp</i>
Ground ivy	<i>Glechoma hederacea</i>
Henbit	<i>Lamium amplexicaule</i>
Knotweed prostrate	<i>Polygonum aviculare</i>
Kochia	<i>Kochia scoparia</i>
Lambsquarters common	<i>Chenopodium album</i>

Lawn burweed	<i>Soliva pterosperma</i>
Lespedeza common	<i>Lespedeza striata</i>
Mallow common	<i>Malva neglecta</i>
Onion wild	<i>Allium canadense</i>
Parsley pier	<i>Alchemilla arvensis</i>
Pigweed redroot	<i>Amaranthus retroflexus</i>
Pigweed tumble	<i>Amaranthus albus</i>
Pineapple weed	<i>Matricaria matricanodes</i>
Plantain buckhorn	<i>Plantago lanceolata</i>
Puncture weed	<i>Tribulus terrestris</i>
Purslane common	<i>Portulaca oleracea</i>
Pusley Florida	<i>Richardia scabra</i>
Redweed	<i>Melochia corchorifolia</i>
Rocket London	<i>Sisymbrium ino</i>
Smartweed PA	<i>Polygonum pennsylvanicum</i>
Sorrel red	<i>Rumex acetosella</i>
Speedwell	<i>Veronica spp</i>
Spurge annual	<i>Euphorbia spp</i>
Spurge prostrate	<i>Euphorbia humistrata</i>
Spurge spotted	<i>Euphorbia maculata</i>
Star of Bethlehem	<i>Omithogalum umbellatum</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Violet wild	<i>Viola pratincola</i>
Woodsorrel creeping	<i>Oxalis corniculata</i>
Woodsorrel yellow	<i>Oxalis stricta</i>

**Precautions**

The use of additional surfactants may cause temporary undesirable effects to turfgrasses

**Restrictions**

Sod production areas must be established three (3) months prior to the initial treatment of Spartan Herbicide

Not for use on commercial or residential turf other than that grown for Sod

Do apply Spartan Herbicide to turf grasses not listed on this label

Do not apply with surfactants without on site evaluations for spray mixture compatibility and physical effects to turf grasses

Do not graze or feed forage harvested from Spartan Herbicide treated areas

Do not apply to landscape ornamental plants or ornamental beds

Do not harvest sod within three (3) months of Spartan Herbicide application

**PERMANENT CROPS**

**CITRUS FRUIT, TREE NUTS, GRAPES and BERRIES**

**Citrus Fruits (Crop Group 10)** Australian desert lime Australian finger lime Australian round lime Brown River finger lime calamondin citron citrus hybrids grapefruit Japanese summer grapefruit kumquat lemon lime Mediterranean mandarin mount white lime New Guinea wild lime orange sour orange sweet pummelo Russell River lime satsuma mandarin sweet lime tachibana orange Tahiti lime tangelo tangerine (mandarin) tangor trifoliate orange uniq fruit cultivars varieties and/or hybrids of these

Preharvest Interval 3 days

**Grapes** Wine Raisin Table and Juice Amur river grape

Preharvest Interval 3 days

**Berries (Crop Group 13 07)** aronia berry bayberry bearberry bilberry blackberry (including Andean blackberry arctic blackberry bingleberry black satin berry boysenberry brombeere California blackberry Chesterberry Cherokee blackberry Cheyenne blackberry common blackberry coryberry darrowberry dewberry Dirksen thornless berry evergreen blackberry Himalayaberry hullberry lavacaberry loganberry lowberry Lucretiaberry mammoth blackberry manonberry mora mures deronce nectarberry Northern dewberry olallieberry Orgeon evergreen berry phenomenalberry rangeberry ravenberry rossberry Shawnee blackberry Southern dewberry tayberry youngberry zarzamora and cultivars varieties and/or hybrids of these) blueberry highbush blueberry lowbush buffalo currant buffaloberry che Chilean guava chokecherry cloudberry cranberry cranberry highbush currant black currant red elderberry European barberry gooseberry honeysuckle edible huckleberry jostaberry Juneberry (Saskatoon berry) kiwifruit fuzzy kiwifruit hardy lingonberry maypop mountain pepper berries mulberry muntries native currant partridgeberry phalsa pincherry raspberry black and red riberry salal schisandra berry sea buckthorn serviceberry wild raspberry cultivars varieties and/or hybrids of these

Preharvest interval 3 days

**Tree Nuts (Crop Group 14)** Almond Beech Nut Brazil Nut Butternut Cashew Chestnut Chinquapin Filbert (Hazelnut) Hickory Nut Macadamia Nut (Bush Nut) Pecan Pistachio and Walnut (Black and English)

Preharvest Interval 3 days

**APPLICATION INFORMATION**

Spartan Herbicide should be applied as a uniform broadcast soil application to orchard and vineyard floors and to berry beds and furrows or as a uniform band application directed to the base of the trunk in trees and vines and to the base of the berry and beds in berries to provide preemergence control of weeds in Table 24

For best control Spartan Herbicide should be applied when there are no weeds present or a postemergence herbicide is tank mixed to eliminate emerged weeds

For broadcast applications a single application of Spartan Herbicide should be made at 2.7 to 8 dry ounces of product per acre (0.125 to 0.375 lb ai/A) Do not apply more than 8 dry ounces of product (0.375 lb ai) per acre per twelve month period The twelve month period is considered to begin when the initial application of Spartan is applied

For improved weed management Spartan Herbicide can be applied in a tank mixture with other preemergence and postemergence burndown herbicides Refer to the tank mix partner's labels for additional restrictions including minimum spray volumes and crops in which they are labeled Burndown herbicides may include but are not limited to Aim Shark Rage D Tech glyphosate paraquat Rely and 2,4-D Do not tank mix with Chateau® herbicides (flumioxazin) or with other products containing sulfentrazone

When applied as a banded treatment (50% band or less) Spartan Herbicide may be applied twice per year Do not apply more than 0.5 lb product per acre on a broadcast application basis per year Allow a minimum of 60 days between applications unless otherwise specified on the label or separate published FMC recommendations

For band treatments apply the broadcast equivalent rate and volume per acre To determine these

Band Width Feet	X	Broadcast Rate Per Acre	=	Band Rate
Row Width Feet				
Band Width Feet	X	Broadcast Volume Per Acre	=	Band Volume
Row Width Feet				

A minimum of 10 gallons of spray solution per acre should be used to ensure uniform spray coverage Nozzle selection should meet manufacturer's spray volume and pressure recommendations for Preemergence and postemergence herbicide applications The spray solution should have a pH between 5.0 and 9.0

Spartan Herbicide should only be applied to crops that have been established for one full growing season and are in good health and vigor Avoid contact of the spray solution on the green bark of trunks of young vines and trees by wrapping the trunk with a nonporous wrap grow tubes or wax containers which will keep the spray solution from coming in direct contact with the green tissue Avoid direct or indirect spray contact with crop foliage and fruit

Use ground equipment only do not apply using an airblast sprayer or by air

Best results are obtained when the soil is moist at the time of application and the application will be followed by at least 1/4 inch of rainfall or sprinkler irrigation within two weeks after application Applications should be timed to take advantage of normal rainfall patterns and cool temperatures especially where drip or micro sprinkler irrigation is used which may not uniformly incorporate the herbicide

**WEED CONTROL INFORMATION**

Spartan Herbicide is a selective soil applied herbicide for the control of susceptible broadleaf grass and sedge weeds found in Tables 24 and 25 Adequate moisture of at least 1/4 inch is required within 14 days after application for optimal control If adequate rainfall is not received in a timely fashion irrigate with a minimum of 1/4 inch of water When activating moisture is delayed a reduced level of weed control may occur These escaped weeds can be removed using a burndown herbicide

Tank mix Spartan Herbicide with a burndown herbicide and use an appropriate adjuvant when weeds are present at the time of application Refer to the tank mix partner's product label for the proper use rates by weed sizes Use the most restrictive label limitations and precautions of the tank mix product(s)

Residual weed control may be reduced when Spartan Herbicide is applied where heavy crop trash such as leaves and branches and/or weed residues exists It is best to rake or blow off the leaves and trash when they fall and prior to the Spartan Herbicide application

Do not apply after petal fall unless using a hooded or shielded sprayer to ensure that the spray solution will not come in contact with the crop or foliage

**Table 24**

<b>Common Name</b>	<b>Scientific Name</b>
Amaranth livid	<i>Amaranthus lividus</i>
Amaranth Palmer	<i>Amaranthus palmeri</i>
Amaranth Powell	<i>Amaranthus Powell II</i>
Amaranth spiny	<i>Amaranthus spinosus</i>
Amaranth spleen	<i>Amaranthus dubius</i>
Anoda spurred	<i>Anoda cnstata</i>
Barnyardgrass common	<i>Echinochloa crus galli</i>
Bedstraw catchweed	<i>Galium apanne</i>
Bindweed field	<i>Convolvulus arvensis</i>
Bluegrass annual	<i>Poa annua</i>
Bromegrass species	<i>Bromus spp</i>
Burclover California	<i>Medicago polymorpha</i>
Carpetweed	<i>Mollugo verticillata</i>
Cheatgrass	<i>Bromus tectorum</i>
Cheeseweed species	<i>Malva spp</i>
Chickweed common	<i>Stellaria media</i>
Clover species	<i>Trifolium spp</i>
Copperleaf hophornbeam	<i>Acalypha ostryeafolia</i>
Copperleaf Virginia	<i>Acalypha virginica</i>
Crabgrass large	<i>Digitana sanguinalis</i>
Crabgrass smooth	<i>Digitana ischaemum</i>
Crabgrass Southern	<i>Digitana cilians</i>
Croton tropic	<i>Croton glandulosus</i>
Crownbeard golden	<i>Verbesina encelioides</i>
Cupgrass wooly	<i>Erchloa villosa</i>
Cyperus hedgehog	<i>Cyperus compressus</i>
Daisy American	<i>Eclipta alba</i>
Devilsclaw	<i>Proboscidea louisiana</i>
Dock curly	<i>Rumex cnspus</i>
Eclipta	<i>Eclipta prostrata</i>
Eveningprimrose cutleaf	<i>Oenothera laciniata</i>
Fescue Red	<i>Fetuca rubra</i>
Fiddleneck species	<i>Amsinckia spp</i>
Filaree broadleaf	<i>Erodium botrys</i>
Filaree redstem	<i>Erodium cicutarium</i>
Filaree whitestem	<i>Erodium moschatum</i>
Fleabane hairy	<i>Conyza bonanensis</i>
Flixweed	<i>Descurainia sophia</i>
Foxtail bristly	<i>Setan verticillata</i>
Foxtail giant	<i>Setana faben</i>
Foxtail green	<i>Setana vindis</i>
Foxtail yellow	<i>Setana glauca</i>
Galinsoga hairy	<i>Galinsoga ciliata</i>
Goosegrass	<i>Eleusine indica</i>
Goosefoot nettleleaf	<i>Chenopodium murale</i>
Groundcherry clammy (seedling)	<i>Physalis heterophylla</i>
Groundcherry cutleaf	<i>Physalis angulata</i>
Groundsel common	<i>Senecio vulgaris</i>
Henbit	<i>Lamium amplexicaule</i>
Horseweed (Marestail)	<i>Conyza canadensis</i>
Ryegrass Italian	<i>Lolium multiflorum</i>
Jimsonweed	<i>Datura stramonium</i>
Johnsongrass	<i>Sorghum halpense</i>
Junglence	<i>Enchinochloa colona</i>
Knotweed common	<i>Polygonum arenastrum</i>
Kochia (ALS and Triazine Resistant)	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters common	<i>Chenopodium album</i>
Lettuce miners	<i>Montia perfoliata</i>
Lovegrass species	<i>Eragrostis spp</i>
Mallow common	<i>Malva neglecta wall r</i>



Mallow little	<i>Malva parviflora</i>
Mayweed Chamomile	<i>Anthemis cotula l</i>
Milkweed honeyvine	<i>Ampelamus albidus</i>
Morningglory entireleaf	<i>Ipomoea hederacea integruscula</i>
Morningglory ivyleaf	<i>Ipomoea hederacea hederacea</i>
Morningglory palmleaf	<i>Ipomoea wrightii</i>
Morningglory purple	<i>Ipomoea turbinata</i>
Morningglory red	<i>Ipomoea coccinea L.</i>
Morningglory scarlet	<i>Ipomoea coccinea</i>
Morningglory smallflower	<i>Jacquemontia tamnifolia</i>
Morningglory tall	<i>Ipomoea purpurea</i>
Mullein turkey	<i>Eremocarpus setigerus</i>
Mustard Species	<i>Brassica spp</i>
Mustard tumble	<i>Sisymbrium altissimum</i>
Nettle burning	<i>Urtica urens</i>
Nightshade black	<i>Solanum nigrum</i>
Nightshade Eastern black	<i>Solanum ptycanthum</i>
Nutsedge purple	<i>Cyperus rotundus</i>
Nutsedge yellow	<i>Cyperus esculentus</i>
Orchardgrass	<i>Dactylis glomerata</i>
Panicum fall	<i>Panicum dichotomiflorum</i>
Pigweed prostrate	<i>Amaranthus blitoides</i>
Pigweed redroot	<i>Amaranthus retroflexus</i>
Pigweed smooth	<i>Amaranthus hybridus</i>
Pigweed Tumble	<i>Amaranthus albus</i>
Pineapple weed	<i>Chamomilla suaveolens</i>
Plantain blackseed	<i>Plantago rugelii decne</i>
Plantain narrow leaved	<i>Plantago lanceolata</i>
Poorjoe	<i>Diodia teres</i>
Porophyllum	<i>Porophyllum rederale</i>
Poinsettia wild	<i>Euphorbia heterophylla</i>
Puncturevine	<i>Tribulus terrestris</i>
Purslane common	<i>Portulaca oleracea</i>
Redmaids	<i>Calandrinia ciliata</i>
Redweed	<i>Melochia corchorifolia</i>
Radish Wild	<i>Raphanus raphanistrum</i>
Rocket London	<i>Sisymbrium ino</i>
Sandbur	<i>Cenchrus spinifer</i>
Sedge annual	<i>Carex spp</i>
Senna coffee	<i>Cassia occidentalis</i>
Sheperdspurse	<i>Capsella bursa pastoris</i>
Sida prickly	<i>Sida spinosa</i>
Sida Southern	<i>Sida acuta</i>
Signalgrass broadleaf	<i>Brachiana platyphylla</i>
Smartweed PA (seedling)	<i>Polygonum pensylvanicum</i>
Smellmellon	<i>Cucumis melo</i>
Sowthistle species	<i>Sonchus spp</i>
Srangeltop red	<i>Leptochloa filiformis</i>
Spurge spotted	<i>Chamaesyce maculate</i>
Starbur bristly	<i>Acanthospermum hispidum</i>
Stinkgrass	<i>Eragrostis cilianensis</i>
Toadflax yellow	<i>Linaria vulgaris</i>
Tassleflower red	<i>Emilio sonchifolia</i>
Thistle Russian	<i>Salsola kali</i>
Waterhemp common	<i>Amaranthus rudis</i>
Waterhemp tall	<i>Amaranthus tuberculatos</i>
Waterprimrose winged	<i>Ludwigia decurrens</i>
Willowleaf panicle leaf	<i>Epilobium brachycarpum</i>
Witchgrass	<i>Panicum capillare</i>

#### ANNUAL AND PERENNIALSEDGE CONTROL INCLUDING NUTSEDGE

Spartan Herbicide applied at 8 dry ounces of product per acre (0.375 lb ai/A) may provide control or suppression of sedges whether applied preemergence or postemergence to the sedges. Postemergence applications to sedges allows Spartan to be taken into the sedge through the foliage as well as soil uptake through the roots. Soil uptake is the major means of uptake by sedges. Good spray coverage is required for optimum control of sedges especially when applying postemergence to the sedges. Use a quality nonionic surfactant (NIC) at the rate of 0.25 / v/v when applying postemergence to sedges.

When applied as directed Spartan Herbicide will provide control or suppression of the following sedges

Common Name	Scientific Name
Kyllinga green	<i>Kyllinga brevifolia</i>
Kyllinga false green	<i>Kyllinga gracillima</i>
Nutsedge purple	<i>Cyperus rotundus</i>
Nutsedge yellow	<i>Cyperus esculentus</i>
Sedge cylindrical	<i>Cyperus retrorsus</i>
Sedge globe	<i>Cyperus globulosus</i>
Sedge Surinam	<i>Cyperus surinamensis</i>
Sedge Texas	<i>Cyperus polystachyos</i>

Optimum control of purple nutsedge may be obtained using split applications of Spartan Herbicide. Apply 2.7 to 4.0 dry ounces per acre followed by a second application to actively growing nutsedge. Do not exceed the maximum rate of 8 dry ounces of product per acre (0.375 lb ai/A) per season. Spartan symptoms on nutsedge will be observed as reduced nutsedge stands, necrosis, chlorosis, and/or stunting. Optimum control may not be observed until the second year after the original treatment.

**REPLANTING IN NEW OR ESTABLISHED ORCHARDS AND VINEYARDS**

Delay replanting at least 30 days after Spartan Herbicide applications when replacing trees and vines in newly planted and established orchards and vineyards. Use untreated soil when replanting trees and vines.

**Precautions**

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Product Application Instructions. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions. FMC does not recommend tank mixing this product with other products containing sulfentrazone or other group 14 herbicides as crop injury may occur.

**Restrictions**

- Do not apply Spartan Herbicide using an airblast sprayer or by air. Use ground equipment only.
- Do not apply more than 8 dry ounces of product per acre (0.375 lb ai/A) per season.
- Apply to crops that have been growing for at least one full year and are in good condition.
- Avoid direct or indirect spray contact to foliage and green bark (wrap trunk with non porous wrap, grow tubes, or wax containers to keep spray solution off of green tissue).
- Do not apply to powdery soils or soils where wind may displace the soil, unless irrigation can be applied immediately after application.
- Follow the most restrictive label of tank mix partners including all references to potential carryover and crop injury warnings and restrictions.
- Pre harvest Interval (PHI) 3 days.
- If two banded treatments are made in a growing season, allow a minimum of 60 days between applications, however, do not exceed the seasonal maximum use rate.

**LABEL TRACKING INFORMATION**

Label Code 072312

**FMC Corporation**

Agricultural Products Group  
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Philadelphia Pennsylvania 19103  
215 299 6000

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# Supplemental Labeling

## SPARTAN Herbicide

EPA Reg No 279 3189  
Expiration Date SEP 28 2012

ACCEPTED  
with COMMENTS  
In EPA Letter Dated  
SEP 28 2012  
Under the Federal Insecticide  
Fungicide and Rodenticide Act  
as amended for the pesticide  
registered under EPA Reg No

279-3189

### DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. ALL APPLICABLE DIRECTIONS, RESTRICTIONS AND PRECAUTIONS ON THE EPA REGISTERED LABEL ARE TO BE FOLLOWED.

This Supplemental labeling must be in the possession of the user at the time of pesticide application. Read the label affixed to the container for F6285 4F CAL Herbicide before applying. Carefully follow all precautionary statements and application use directions.

#### Vegetable Soybean (Edamame)

Spartan Herbicide Use Rate Table (Edamame) Preemergence Applications			
Broadcast Rate	Dry Ounces Spartan Herbicide per acre		
	Soil Texture		
% Organic Matter	Coarse	Medium	Fine
<1.5	1.5 - 2.5	2.0 - 4.0	2.5 - 4.0
1.5 - 3.0	2.0 - 3.0	2.5 - 4.0	3.0 - 4.0
>3.0	2.5 - 4.0	3.0 - 4.0	3.5 - 4.0

Refer to the previous information on soil types under the COARSE, MEDIUM and FINE categories.  
Use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0 within the rate range.

#### Preemergence

Spartan Herbicide may be applied to succulent lima beans as a preemergence treatment at 4.0 dry ounces (0.1875 pounds active) per acre. Applications should be made with ground equipment in a minimum of 10 gallons of finished spray per acre.

#### Precautions

Under extended periods of dry weather, adequate weed control may not be achieved.

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Some adverse crop response may occur on coarse textured soils with low organic matter (less than 1.5%) and pH of 7.8 or higher or on highly eroded soils or in areas of calcareous outcroppings. Spartan Herbicide use rates should be reduced in those areas. If applying Spartan Herbicide to coarse textured soils with less than 1.5% organic matter, wait a minimum of 7 days after application before planting. Inadequate seed furrow closure or shallow planting (less than 1.0 inch) may result in undesirable crop response. As expected, poor growing conditions such as excessive moisture, low temperatures, soil compaction and diseases may also cause undesirable crop response.

These Crop Specific Use directions are based upon the interactive effects of Spartan Herbicide (sulfentrazone) and the primary soil and environmental factors which affect its activity on various weed species and tolerance among crops. The user is required to observe the instructions and guidance previously presented under Application Instructions, Spartan Herbicide Product Use Rates, Rotational Crop Guidelines, Replanting Instructions, Weed Controlled and any other section of this label pertinent to the anticipated crop use. It is important to note that not all varieties or cultivars of a given crop species have been evaluated under treatment with Spartan Herbicide. Consult university or extension weed management specialists for additional information on specific local varieties or cultivars and any other pertinent information on Spartan Herbicide under specific local conditions.

**Restrictions**

Do not apply more than 4.0 dry ounces (0.1875 pound active) per twelve month period. The twelve month period is considered to begin upon the initial Spartan Herbicide application.

Do not apply to coarse soils classified as sand which have less than 1% organic matter.

Do not incorporate.



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