279-3189

1/30/2009

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

30 JAN 2009

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Callista O. Chukwunenye
FMC Corporation
1735 Market Street
Philadelphia, PA 19103

Dear Dr. Chukwunenye:

SUBJECT: Label Amendment
Spartan Herbicide
EPA Registration No. 279-3189
Your Application Dated September 26, 2008

The label amendment referred to above, submitted in accordance with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable. A stamped copy is enclosed for your records. Please submit one (1) copy of your final printed labeling before you release the product for shipment. This amended labeling supersedes all previously accepted ones.

Sincerely yours,

Joanne I. Miller

Joanne I. Miller
Product Manager (23)
Herbicide Branch
Registration Division (7505P)

Enclosure

SPARTAN® HERBICIDE

Group | 14 | Herbicide

ACCEPTED
30 JAN 2009
Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No.
279-3189
FROM FMC

For Use Only by Individuals/Firms Certified And/or Licensed as Pesticide Applicators

EPA Reg. No. 279-3189	**EPA Est. 279-**
Active Ingredient: (1.0)	**By Wt.**
Sulfentrazone	75.0%
Inert Ingredients:	25.0%
	100.0%

Contains 0.75 pounds of active ingredient per pound formulated.
U.S. Patent No. 4,818,275

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID (2.0)

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 (3.0)

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.

Note to Physician: Sulfentrazone is expected to have low oral and dermal toxicity, and moderate inhalation toxicity. It is expected to be slightly irritating to the skin and minimally irritating to the eyes. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

See other sections for precautionary information.

ACTIVE INGREDIENT MADE IN CHINA AND FORMULATED AND PACKAGED IN USA.

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.

TABLE OF CONTENTS

PRECAUTIONARY STATEMENTS (4.0)

Hazards to Humans and Domestic Animals (4.1)

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) (4.2)

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, 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 (4.3)

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 (4.4)

Do not use or store near heat or open flame.

DIRECTIONS FOR USE (5.0)

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 (5.1)

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 (5.2)

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 FMC: (800) 331-3148.

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

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 50 pounds)** 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 50 pounds or less)** Empty the remaining contents into application equipment or a mix tank. 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 (6.0)

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 or 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 (7.0)

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 recommended rates and in accordance with the use directions. Do not use less than recommended 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.

GENERAL INFORMATION (8.0)

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.

GENERAL APPLICATION INSTRUCTION (9.0)

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 lay-by, 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 tilth. 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 (10.0)

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 (10.1)

Sulfentrazone, the active ingredient in Spartan Herbicide, is a potent inhibitor of the enzyme Protoporpyrinogen 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 (10.2)

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 1.

SOIL CLASSIFICATION CHART

Table 1

COARSE	MEDIUM	FINE
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 recommendations 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 recommendations.

APPLICATION INFORMATION (11.0)

Ground Application (11.1)

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 (11.2)

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 (11.3)

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 (11.4)

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 (11.41)

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 recommended 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:

2000 / Pounds dry fertilizer per acre	X	Spartan use rate in dry ounces per acre	=	dry ounces of Spartan to be applied per ton of fertilizer

RATE CHART FOR IMPREGNATION OF DRY BULK FERTILIZERS WITH SPARTAN HERBICIDE

Table 2

	Dry Ounces Spartan Herbicide per ton of fertilizer		
	Spartan Herbicide Use Rate Per Acre		
Dry Fertilizer Rate (lb/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 (11.42)

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 condcted 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 (11.43)

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 (12.0)

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 (12.1)

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 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.
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 (12.2)

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 (12.3)

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 3/4 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 * (13.0)

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
Row Crops		
Corn	8.0	0.375
Fallow	5.3	0.25
Peanuts	6.3	0.30
Potatoes	5.3	0.25
Soybeans	12.0	0.375
Sugarcane	12.0	0.375
Sunflowers	8.0	0.25
Tobacco	8.0	0.375
Vegetable Crops		
Asparagus	8.0	0.375
Cabbage	8.0	0.375
Dry Beans & Peas	5.3	0.25
Horseradish	5.3	0.25
Lima Beans (Succulent)	4.0	0.1875
Oil Crops		
Mint	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 (14.0)

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
Barley	4
Cabbage	Anytime
Canola	24
Cereal Grains (Buckwheat, Oats, Pearl Millet, Proso Millet, Teosinte, Wild Rice)	12
Corn, Field	10
Corn, Pop	18
Corn, Sweet	18
Cotton	18
Dry Shell Peas and Beans	Anytime
Horseradish	Anytime
Limas	Anytime
Mint	Anytime
Peanuts	Anytime
Potatoes	Anytime
Rice	10
Rye	4
Sorghum	10 *
Soybeans	Anytime
Sugar Beets	36
Sugarcane	Anytime
Sunflowers	Anytime
Sweet Potatoes	12
Triticale	4
Tobacco	Anytime
Turf	Anytime
Wheat	4

* 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 (15.0)

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

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

MIXING AND LOADING INSTRUCTIONS (16.0)

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 (17.0)

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 (18.0)

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	*Amaranthus lividus*
Amaranth, Palmer	*Amaranthus palmeri*
Amaranth, Powell	*Amaranthus Powell II*
Amaranth, spiny	*Amaranthus spinosus*
Amaranth, spleen	*Amaranthus dubius*
Anoda, spurred	*Anoda cristata*
Bedstraw, catchweed	*Galium aparine*
Carpetweed	*Mollugo verticillata*
Chickweed, common	*Stellaria media*
Copperleaf, hophornbeam	*Acalypha ostryeafolia*
Copperleaf, Virginia	*Acalypha virginica*
Crabgrass, large	*Digitaria sanguinalis*
Crabgrass, smooth	*Digitaria ischaemum*
Crabgrass, Southern	*Digitaria ciliaris*
Croton, tropic	*Croton glandulosus*
Crownbeard, golden	*Verbesina encelioides*
Cupgrass, wooly	*Erichloa villosa*
Cyperus, hedgehog	*Cyperus compressus*
Daisy, American	*Eclipta alba*
Devilsclaw	*Proboscidea louisiana*
Dock, curly	*Rumex crispus*
Eclipta	*Eclipta prostrata*
Filaree, redstem	*Erodium cicutarium*
Flixweed	*Descurainia sophia*
Galinsoga, hairy	*Galinsoga ciliata*
Goosegrass	*Eleusine indica*
Groundcherry, clammy (seedling)	*Physalis heterophylla*
Groundcherry, cutleaf	*Physalis angulata*
Jimsonweed	*Datura stramonium*
Kochia (ALS and Triazine Resistant)	*Kochia scoparia*
Ladysthumb	*Polygonum persicaria*
Lambsquarters, common	*Chenopodium album*
Lettuce, miners	*Montia perfoliata*
Mallow, common	*Malva neglecta wall r.*
Mayweed, Chamomile	*Anthemis cotula l.*
Milkweed, honeyvine	*Ampelamus albidus*
Morningglory, entireleaf	*Ipomoea hederacea integriuscula*
Morningglory, ivyleaf	*Ipomoea hederacea hederacea*
Morningglory, palmleaf	*Ipomoea wrightii*
Morningglory, purple	*Ipomoea turbinata*
Morningglory, red	*Ipomoea, coccinea L.*
Morningglory, scarlet	*Ipomoea coccinea*
Morningglory, smallflower	*Jacquemontia tamnifolia*
Morningglory, tall	*Ipomoea, purpurea*
Mustard, tumble	*Sisybrium altissimum*
Nightshade, black	*Solanum nigrum*
Nightshade, Eastern black	*Solanum ptycanthum*
Nutsedge, purple	*Cyperus rotundus*
Nutsedge, yellow	*Cyperus esculentus*
Orchardgrass	*Dactylis glomerata*
Panicum, fall	*Panicum dichotomiflorum*
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, smooth	*Amaranthus hybridus*
Plantain, blackseed	*Plantago rugelii decne*
Plantain, narrow-leaved	*Plantago lanceolata*
Poorjoe	*Diodia teres*
Porophyllum	*Porophyllum rederale*
Poinsettia, wild	*Euphorbia heterophylla*
Purslane, common	*Portulaca oleracea*
Redmaids	*Calandrinia ciliata*
Redweed	*Melochia corchorifolia*
Sedge, annual	*Carex spp.*
Senna, coffee	*Cassia occidentalis*
Sheperdspurse	*Capsella bursa-pastoris*
Sida, prickly	*Sida spinosa*
Sida, Southern	*Sida acuta*
Signalgrass, broadleaf	*Brachiaria platyphylla*
Smartweed, PA (seedling)	*Polygonum pensylvanicum*
Smellmellon	*Cucumis melo*
Starbur, bristly	*Acanthospermum hispidum*
Stinkgrass	*Eragrostis cilianensis*
Toadflax, yellow	*Linaria vulgaris*
Tassleflower, red	*Emilio sonchifolia*
Thistle, Russian	*Salsola kali*
Waterhemp, common	*Amaranthus rudis*
Waterhemp, tall	*Amaranthus tuberculatos*
Waterprimrose, winged	*Ludwigia decurrens*
Witchgrass	*Panicum capillare*

REPLANTING INSTRUCTIONS (19.0)

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) (20.0)

Table 6

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) (20.1)
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 recommended in the Table 6. 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 6 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) (20.2)
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 6. 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 (20.3)
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 6 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 General Application Instructions, General 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 (21.0)

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.

Table 7

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

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) (21.1)
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 full, recommended 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 Preemerge Application (21.2)
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 recommendations and application guidelines listed under the Fall Application section above.

Weeds Controlled (21.3)
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 General Application Instructions, General 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 (22.0)

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 8 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[1]

Table 8

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, spleen	Jimsonweed
Copperleaf, hophornbeam	Lambsquarters, common
Croton, tropic	Morningglory, entireleaf
Crownbeard, golden	Morningglory, red
Devilsclaw	

When applied, as directed, at 4.24 dry ounces (.2 pound active ingredient) per acre, Spartan Herbicide will provide: Control of the listed weeds.

All the weeds controlled at 3.2 dry ounces plus:	
Amaranthus, Palmer	Morningglory, smallflower
Crabgrass, large	Poinsettia, wild [2]
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.

All the weeds controlled at 4.24 dry ounces plus:	
Anoda, spurred	Purslane, common
Cocklebur, common	Sida, prickly
Nutsedge, yellow	Starbur, prickly
Nutsedge, purple [3]	

[1]Use rates are Spartan Herbicide fluid 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 8 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.

[2] Controls initial and several continuing flushes (germinations) of wild poinsettia.

[3] 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 General Application Instructions, General 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 (23.0)

Table 9

Spartan Herbicide Use Rate Table (Potatoes) Preemergence Application			
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 (23.1)

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 9 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 (23.2)

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 General Application Instructions, General 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 (24.0)

Table 10

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 (24.1)
Apply Spartan Herbicide in conventional tillage, conservation tillage, reduced tillage or no-tillage cropping systems using rates recommended in the Spartan Herbicide Use Rate Table 10. 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 (24.3)
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 General Application Instructions, General 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 (24.0)

Table 11

Spartan Herbicide Use Rate Table (Sugarcane)
Planting Time and Lay-by 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.			

Apply Spartan Herbicide as a broadcast or banded preemerge 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 11for specific use information.

Planting Time Applications (24.1)
Apply Spartan Herbicide preemerge 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 (24.2)
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 (24.3)
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 General Application Instructions, General 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 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 lb 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.

SUNFLOWERS (25.0)

Table 12

Spartan Herbicide Use Rate Table (Sunflowers)
Fall, Early Spring 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 – 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) (25.1)
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. 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 12 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) (25.2)
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 preemerge soil application if seedlings have not broken the soil surface and if the seed furrow is completely closed. For preemerge 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). Spartan Herbicide can be tank mixed with other preemerge herbicides labeled for sunflower use. If dry conditions persist following preemerge 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) (25.3)
Spartan Herbicide may be applied as a Preplant Incorporated treatment in the spring prior to planting in reduced and conventional tillage sunflowers. 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 13 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.

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
Morninglory, ivyleaf	Waterhemp, common
Morningglory, tall	Waterhemp, tall
Nightshade, Eastern black	

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 gravelly 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 General Application Instructions, General 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) (26.0)

Table 13

Spartan Herbicide Use Rate Table (Tobacco)
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.

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 13 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) (26.1)
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) (26.2)
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 effect 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 General Application Instructions, General 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.

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.

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 (27.0)

Table 14

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 fluid 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 General Application Instructions, General 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 fluid 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.

CABBAGE (Transplanted Only) (28.0)

Table 15

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
<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 (Fall Application or Spring Application) (28.1)
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 full, recommended 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) (28.1)
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 full, recommended 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 (28.2)
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 General Application Instructions, General 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.

DRY SHELLED BEANS AND PEAS (29.0)

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; lab lab bean; pea (*Pisum*) (includes field pea) and pigeon pea.

Table 16

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) (29.1)
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 16 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) (29.2)
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 preemerge soil application if seedlings have not broken the soil surface and if the seed furrow is completely closed. For preemerge 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 Table17. Spartan Herbicide can be tank mixed with other preemerge herbicides labeled for dry bean and dry peas use. If dry conditions persist following preemerge 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) (29.3)
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 full, recommended 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:

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
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 General Application Instructions, General 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.

HORSERADISH (30.0)

Table 17

Spartan Herbicide Use Rate Table (Horseradish)
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 – 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 preemerge 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) (30.1)
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 full, recommended 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) (30.2)
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 full, recommended 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.

Pre-Emergence (PRE) (30.3)
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 General Application Instructions, General 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) (31.0)

Table 18

Spartan Herbicide Use Rate Table (Succulent Lima Beans)
Spring 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.

Spartan Herbicide may be applied to limas 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 General Application Instructions, General 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.

OIL CROPS

MINT (32.0)

Table 19

Spartan Herbicide Use Rate Table (Mint) 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 (32.1)
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 (32.2)
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 recommended for established plantings for particular soil characteristics. Refer to Spartan Use Rate Table (Table 19) 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	Sheperdspurse
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.

Applications are recommended only 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 General Application Instructions, General 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 (33.0)

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 recommended use rates.
Table 21

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

* 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 surfactant. 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 21.

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

Table 22A

Common Name	Scientific Name
Kyllinga, green	*Kyllinga brevifolia*
Kullinga, false green	*Kyllinga gracillima*
Nutsedge, purple	*Cyperus rotundus*
Nutsedge, yellow	*Cyperus esculentus*
Sedge, cylindrical	*Cyperus retrorsus*
Sedge, globe	*Cyperus globulosus*
Sedge, Surinam	*Cyperus surinamensis*
Sedge, Texas	*Cyperus polystachyos*

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 Table 21; tolerant grasses.

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 will control or suppress specific annual grasses (Table 22 B) 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 Table 21. Rates lower than 12 fl oz/acre will generally control grasses for at least 60 days. Spartan FL 4F works best if applied when the annual grasses are small (pre tiller stage) and actively growing.

Table 22B

Common Name	Scientific Name
Goosegrass	*Eleusine indica*

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 Table 21. For optimum results, Spartan applications should be made shortly after weeds have emerged.

Spartan Herbicide may be tankmixed with other herbicides, insecticides and fungicides registered for use on turfgrasses. Read and follow the label recommendations of the tank mix partner to determine turfgrass specie 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.

Broadleaves	*Scientific Names*
Bittercress	*Cardamine spp.*
Black Medic	*Medicago lupulina*
Buttercup	*Ranunculus spp.*
Carolina geranium	*Geranium carolinianum*
Carpetweed	*Mollugo verticillata*
Chickweed, common	*Stellaria media*
Chickweed, mousear	*Cerastium vulgatum*
Cinquefoil	*Potentilla spp.*
Clover	*Trifolium spp.*
Cudweed	*Gnaphalium spp.*
Dandelion	*Taraxacum officinale*
Dock, curly	*Rumex crispus*
Evening primrose	*Oenothera biennis*
Fiddleneck	*Amsinckia spp.*
Filaree	*Erodium spp.*
Garlic, wild	*Allium vineale*
Goldenrod	*Solidago spp.*
Ground ivy	*Glechema hederasea*
Henbit	*Lamium amplexicaule*
Knotweed, prostrate	*Polygonum aviculare*
Kochia	*Kochia scoparia*
Lambsquarters, common	*Chenopodium album*
Lawn burweed	*Soliva pterosperma*
Lespedeza, common	*Lespedeza striata*
Mallow, common	*Malva neglecta*
Onion, wild	*Allium canadense*
Parsley piert	*Alchemilla arvensis*
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, tumble	*Amaranthus albus*
Pineapple weed	*Matricaria matricariodes*
Plantain, buckhorn	*Plantago lanceolata*
Puncture weed	*Tribulus terrestris*
Purslane, common	*Portulaca oleracea*
Pusley, Florida	*Richardia scabra*
Redweed	*Melochia corchorifolia*
Rocket, London	*Sisymbrium irio*
Smartweed, PA	*Polygonum pensylvanicum*
Sorrel, red	*Rumex acetosella*
Speedwell	*Veronica spp.*
Spurge, annual	*Euphorbia spp.*
Spurge, prostrate	*Euphorbia humistrata*
Spurge, spotted	*Euphorbia maculata*
Star of Bethlehem	*Omithogalum umbellatum*
Velvetleaf	*Abutilon theophrasti*
Violet, wild	*Viola pratincola*
Woodsorrel, creeping	*Oxalis corniculata*
Woodsorrel, yellow	*Oxalis stricta*

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.
Do not apply Spartan Herbicide to golf course greens or tees.
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.

LABEL TRACKING INFORMATION (34.0)

Label Code: Spartan 09-22-08

Replaces Label Code: Spartan_3_07-20-07

EPA Approval Date: xx-xx-xxxx

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