

# SPIRUS™

Contains S-metolachlor, the active ingredient used in Pennant Magnum®.



**Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited. For weed control in nurseries, turf, and landscape plantings. Not for Homeowner Use**

ACTIVE INGREDIENT:	(% by weight)
S-metolachlor (CAS No. 87392-12-9).....	83.7%
OTHER INGREDIENTS:.....	16.3%
TOTAL:.....	100.0%

Spirus contains 7.62 lbs active ingredient per gallon.  
Spirus is formulated as an emulsifiable concentrate (EC).  
EPA Reg. No.: 91234-188

SPECIMEN

## KEEP OUT OF REACH OF CHILDREN CAUTION

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

See below for additional Precautionary Statements.

**FIRST AID - 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 on skin or clothing:** ▪ Take off contaminated clothing. ▪ Rinse skin immediately with plenty of water for 15 - 20 minutes. ▪ Call a poison control center or doctor for treatment advice. **If swallowed:** ▪ Call a poison control center or doctor immediately for treatment advice. ▪ Have the 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. **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. **HOT LINE NUMBER** - Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact SafetyCall at 1-844-685-9173 for emergency medical treatment information.

For Chemical Emergency: Spill, Leak, Fire, Exposure, or Accident,  
Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 or +1 703-527-3887 (collect calls accepted)

Spirus™ is not manufactured, or distributed by Syngenta Crop Protection, LLC, seller of Pennant Magnum®.



Manufactured for:  
**Atticus, LLC**  
940 NW Cary Parkway, Suite 200  
Cary, NC 27513

# PRECAUTIONARY STATEMENTS

## Hazards to Humans and Domestic Animals

### CAUTION

Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing. This product may cause skin sensitization reactions in some people.

### Personal Protective Equipment (PPE)

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves made of barrier laminate or Viton® ≥ 14 mils
- Shoes plus socks
- Protective eyewear

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

### Engineering Control Statements

Mixers and loaders supporting aerial applications are required to use closed systems. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)]. When using the closed system, the mixers' and loaders' PPE requirements may be reduced or modified as specified in the WPS.

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

### User Safety Recommendations

**Users should:**

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

### Environmental Hazards

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

### Groundwater Advisory

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

### Surface Water Advisory

*S*-metolachlor can contaminate surface water through ground spray drift. Under some conditions, *S*-metolachlor may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying 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 overlaying tile drainage systems that drain to surface water.

### Mixing/Loading Instructions

Care must be taken when using this product to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check-valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

This product may not be mixed or loaded within 50 ft of perennial or intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be mixed/loaded or used within 50 ft of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft 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 wash water, and rain water 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-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading sites.

### DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

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

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

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

- Coveralls
- Chemical-resistant gloves made of barrier laminate or Viton ≥ 14 mils
- Shoes plus socks
- Protective eyewear

## NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

**Do not enter or allow others to enter the treated area until sprays have dried.**

## FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, AND/OR ILLEGAL RESIDUES.

**Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.**

## PRODUCT INFORMATION

**SpiruS** controls many annual grasses, certain annual broadleaf weeds, and yellow nutsedge.

**SpiruS** may be used on commercial and residential warm-season turfgrasses and other noncrop land, including, airports, roadsides, golf courses, sports fields, public recreational areas, ornamental gardens, cemeteries, and other landscaped areas. **SpiruS** may also be used in and around container and field-grown ornamentals, nonbearing nursery stock, and on sod farms.

**DO NOT USE IN GREENHOUSES OR OTHER ENCLOSED STRUCTURES.**

Do not apply under conditions which favor runoff or wind erosion of soil containing this product to nontarget areas.

To prevent off-site movement due to runoff or wind erosion:

1. Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
2. Do not apply to impervious substrates such as paved or highly compacted surfaces.
3. Do not use tailwater from the first flood or furrow irrigation of treated fields to treat nontarget crops unless at least 1/2 inch of rainfall has occurred between application and the first irrigation.

**NOTICE TO USER:** Plant tolerances to **SpiruS** have been found to be acceptable in the specific genera and species listed on this label. Because of the large number of species and varieties of plants, it is impossible to test each for tolerance to **SpiruS**. Neither the manufacturer nor the seller has determined whether or not **SpiruS** can be used safely on plants not specified on this label. Therefore, the professional user should determine if **SpiruS** can be used safely by testing the labeled rates on a particular group of similar unlabeled ornamental plants in a small area before widespread use or by checking with the local weed specialist for guidance. Likewise, if the professional user plans to apply **SpiruS** for control of weed species not listed on this label, **SpiruS** should be tested on a small-scale basis before widespread use or the local weed specialist contacted for guidance.

## WEED RESISTANCE MANAGEMENT

For resistance management, **SpiruS** is a Group 15 herbicide. Any weed population may contain or develop plants naturally resistant to **SpiruS** and other Group 15 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Appropriate resistance management strategies should be followed.

To delay herbicide resistance, take one or more of the following steps:

- Rotate the use of **SpiruS** or other Group 15 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g., higher crop seeding rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.
- Scout after herbicide application to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- If a weed pest population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicides with a different mode of action, if available.
- Contact your local extension specialist or certified crop advisors for additional pesticide resistance-management and/or integrated weed management recommendations for specific crops and weed biotypes.

Report any incidence of non-performance of this product against a particular weed species to your Atticus, LLC retailer or representative. If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemicals means to remove escapes, as practical, with the goal of preventing further seed production.

## APPLICATION PROCEDURES

**Ground Application:** Apply **SpiruS** alone or in tank mixtures by ground equipment in a minimum of 10 gal of spray mixture per acre, unless otherwise specified.

Use sprayers that provide accurate and uniform application. For **SpiruS** tank mixtures with wettable powder or dry flowable formulations, screens and strainers should be no finer than 50-mesh. Rinse sprayer thoroughly with clean water immediately after use. Calculate the amount of herbicide needed for band treatment by the following formula:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \frac{\text{broadcast rate}}{\text{per acre}} = \text{amount needed per acre of field}$$

**Aerial Application (Sod Farms Only):** Apply **SpiruS** in water alone or in tank mixtures with atrazine, simazine, or other herbicides registered for use on sod farms in a minimum total volume of 2 gal/A by aircraft. See **Turfgrass** section for listing of applicable warm-season grasses. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft, using low-drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed

does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply **SpiruS** or **SpiruS** mixtures at a minimum upwind distance of 400 ft from sensitive plants.

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

## SPRAY EQUIPMENT

### Aerial Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. 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 drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

1. The distance of the 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 downward more than 45 degrees.

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

The applicator should be familiar with and take into account the information covered in the **Aerial Drift Reduction Advisory Information** section below.

### Aerial Drift Reduction Advisory Information Information on Droplet Size

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

### Controlling Droplet Size

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

### Boom Length

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

### Application Height

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

### Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

### Wind

Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 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 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 light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

### Sensitive Areas

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

**Overhead or Microjet Irrigation Application: SpiruS** alone or in tank mixture with other herbicides which are registered for overhead or microjet application may be applied in irrigation water at rates listed on this label. Apply this product only through an overhead or microjet irrigation system. Do not apply this product through any other type of irrigation system. Crop injury or lack of effectiveness can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension specialists, equipment manufacturers, or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.



## Operation Instructions

1. 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.
2. The pesticide injection pipeline must contain a functional, automatic, quickclosing check-valve to prevent the flow of fluid back toward the injection pump.
3. 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.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. 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.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.
8. Prepare a mixture with a minimum of 1 part water to 1 part herbicide(s) and inject this mixture into the overhead or microjet system. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide in suspension.
9. Meter into irrigation water during entire period of water application.
10. Apply in 1/2 - 1 inch of water. Use the lower water volume (1/2 inch) on coarse textured soils and the higher volume (1 inch) on fine-textured soils. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

*Precaution for Overhead or Microjet Applications: Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, injury to desirable plants may result.*

## Dry Bulk Granular Fertilizers

Many dry bulk granular fertilizers may be impregnated or coated with **SpiruS** alone or with selected **SpiruS** tank mixtures which are registered and not prohibited from use on dry bulk granular fertilizers.

When applying **SpiruS** or **SpiruS** mixtures with dry bulk granular fertilizers, follow all directions for use and precautions on the respective product labels regarding target crops, rates per acre, soil texture, application methods (including timing of application), and rotational crops.

All individual state regulations relating to dry bulk granular fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling the herbicide/fertilizer mixture.

Prepare the granular herbicide/fertilizer mixtures by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray **SpiruS** or **SpiruS** tank mixtures onto the fertilizer must be placed to provide uniform spray coverage.

If the herbicide/fertilizer mixture is too wet, use a highly absorptive material, such as Agsorb® granules, Microcel E (Johns-Manville Products Corporation), diatomaceous earth, or finely powdered clay, to obtain a dry free-flowing mixture. Add the absorptive material separately and uniformly to the herbicide/fertilizer mixture and blend to form a suitable free-flowing mixture. Generally, less than 2% by weight of absorptive material will be needed.

Calculate amounts of **SpiruS** and other herbicides needed by the following formula:

$$\frac{2,000}{\text{lbs. of fertilizer per acre}} \times \frac{\text{pt/A of liquid or flowable product}}{\text{flowable product}} = \frac{\text{pt of liquid or flowable product per ton of fertilizer}}{\text{flowable product}}$$
$$\frac{2,000}{\text{lbs. of fertilizer per acre}} \times \frac{\text{pt/A of dry product}}{\text{product}} = \frac{\text{lb of dry product per ton of fertilizer}}{\text{product}}$$

*Precautions: To avoid potential for explosion, (1) Do not impregnate **SpiruS** or **SpiruS** mixtures on ammonium nitrate, potassium nitrate, or sodium nitrate, either alone or in blends with other fertilizers. (2) Do not combine mixtures of **SpiruS** plus any other herbicide with single superphosphate (0-20-0) or triple superphosphate (0-46-0). (3) Do not use **SpiruS** or **SpiruS** mixtures on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.*

## Application

Apply 100 - 800 lb of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Uniform application of the herbicide/fertilizer mixture is essential to prevent possible crop injury. Nonuniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil may improve weed control. On fine- or medium-textured soils in areas where soil incorporation is not planned, i.e., reduced tillage situations or in some conventional tillage situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse textured soils, make applications approximately 14 days prior to planting.

*Precaution: To avoid potential injury of ornamental plants, do not use the herbicide/fertilizer mixture on container-grown plants and where planting beds are being formed.*

## MIXING PROCEDURES

**SpiruS Alone:** Mix **SpiruS** with water or fluid fertilizer and apply as a spray. Fill the spray tank 1/2 - 3/4 full with water or fluid fertilizer, start agitation, add the proper amount of **SpiruS**, then add the rest of the water or fluid fertilizer. Agitate continuously during mixing and application to maintain a uniform spray mixture.

**Tank Mixtures:** When using **SpiruS** in a tank mixture, it is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture. Fill the spray tank 1/4 full with water or fluid fertilizer and start agitation. (1) Add all products packaged in water-soluble bags first and at the same time. These products **must be mixed in clean water only** (preslurry in water when fertilizer is the main carrier). (2) Continue agitation. Then add water-dispersible granules (WG formulations). Allow the granules to disperse. (3) Add any wettable powder (WP) formulations to the tank as agitation continues. (4) Add spray adjuvants and spray markers, if needed. Use additives approved for application to turf and ornamentals. Check additive label before use. (5) Add flowable liquids (L) or suspension concentrates (SC). (6) Add **SpiruS** to the spray tank last. Continue to fill the sprayer with the rest of the water or fluid fertilizer. Maintain agitation in the spray tank until all of the solution has been applied.

When tank mixing **SpiruS** solutions, allow each product to fully disperse before adding other products. Check compatibility of the mixture using the test described below before mixing in the spray tank.

**Restrictions:** Before using **SpiruS** in a tank mix with fluid fertilizer or other registered pesticides, determine the tolerance of the plant species by applying the combination to a limited area during a period of active growth. **Do not use fluid fertilizers as a carrier for applications to container-grown ornamentals.**

**Compatibility Test: Check compatibility with herbicide(s) each time before use.** Be especially careful when using complete suspension or fluid fertilizers, as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gal/A. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure.

1. Add 1 pt of water or fertilizer to each of 2 one-qt jars with tight lids.
2. To **one** of the jars, add 1/4 tsp or 1.1 milliliters of a compatibility agent approved for this use, such as Compex® or Unite® (1/4 tsp is equivalent to 2 pt/100 gal spray). Shake or stir gently to mix.
3. To **both** jars, add the appropriate amount of herbicide(s). If more than one herbicide is used, add them separately with dry herbicides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of herbicides for this test follows:

**Dry herbicides:** For each pound to be applied per acre, add 1.5 level teaspoons to each jar.

**Liquid herbicides:** For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.

After adding all ingredients, put lids on and tighten, and invert each jar 10 times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the 2 jars. If either mixture separates, but can be readily remixed, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (a) slurry the dry herbicide(s) in water before addition, or (b) add 1/2 of the compatibility agent to the water or fertilizer and the other 1/2 to the emulsifiable concentrate or flowable herbicide before the addition to the mixture. If incompatibility is still observed, do not use the mixture.

4. After conducting the compatibility test, any pesticide wastes should be disposed of according to the instructions given in the **STORAGE AND DISPOSAL** section of this label.

## CROP USE DIRECTIONS

### Nurseries and Landscape Plantings

Apply **SpiruS** at rates indicated below to control many annual grasses, certain broadleaf weeds, and yellow nutsedge (see following list). Calibrate applicator equipment before use according to the manufacturer's directions.

Weeds Controlled	
annual bluegrass	giant foxtail
barnyardgrass (watergrass)	goosegrass
black nightshade	green foxtail
carpetweed	pigweed
crabgrass	prairie cupgrass
crowfootgrass	red rice
doveweed	signalgrass (Brachiaria)
fall panicum	southwestern cupgrass
Florida pusley	witchgrass
foxtail millet	yellow foxtail
galinsoga	yellow nutsedge
Weeds Partially Controlled*	
common purslane	seedling johnsongrass
groundsel	shattercane
hairy nightshade	volunteer sorghum
sandbur	

\* Control of these weeds can be erratic due partially to variable weather conditions.

## Application

Apply **SpiruS** in sufficient carrier to obtain thorough coverage. For liquid carriers, use a minimum of 10 gal/A. Apply before grass, broadleaf weeds, or yellow nutsedge emerge, or after existing weeds or nutsedge plants have been removed. A second application may be needed to provide longer weed control not to exceed a total of 4.2 pt/A (1.5 fl oz/1,000 sq ft) (4.0 lb ai/A) per year or crop cycle, whichever is less.

## Application Rates of SpiruS

Soil Texture	pt/A*	fl oz/1,000 sq ft
COARSE	1.3 - 2.0	0.4 - 0.7
MEDIUM	1.3 - 2.0	0.4 - 0.7
FINE	2.0 - 2.6	0.7 - 0.9

\* Use higher rates for a given soil texture on high organic matter soils and where yellow nutsedge and/or a heavy infestation of weeds is expected. Use the lower rates on soils with low organic matter content and where light infestations of weeds are expected. In peat and muck soils and soils highly enriched with organic matter (i.e., sawdust) and/or synthetic mixes, the activity of **SpiruS** may be reduced.

If banded applications are used, refer to the **PRODUCT INFORMATION** section of this label to calculate the amount of **SpiruS** needed.

*Precautions: (1) To avoid plant injury, do not apply **SpiruS** to seedbeds, cutting beds, or unrooted cuttings before transplanting or to plants until the soil has firmly settled around roots. (2) When **SpiruS** is applied broadcast over-the-top of plant foliage, follow with sufficient overhead irrigation to wash **SpiruS** from the foliage to reduce the chance of injury.*

**SpiruS** has been found to be safe on the following plants:

## Container-Grown Plants

Scientific Name	Common Name/Variety
<i>Abelia grandiflora</i>	Glossy Abelia
<i>Acer rubrum</i>	Red Maple
<i>Ajuga reptans</i>	Ajuga
<i>Aucuba japonica variegata</i>	Variiegated Aucuba
<i>Betula nigra</i>	River Birch
<i>Buxus</i> spp.	Boxwood
<i>Carex</i> spp.	Carex
<i>Cornus</i> spp.	Dogwood
<i>Cotoneaster</i> spp.	Cotoneaster
<i>Euonymus fortunei</i>	Euonymus
<i>Euonymus kiautschovicus</i>	Manhattan Euonymus
<i>Forsythia</i> spp.	Forsythia
<i>Gardenia jasminoides</i>	Gardenia
<i>Hedera helix</i>	English Ivy
<i>Hosta lancifolia</i>	Variiegated Hosta
<i>Iberis sempervirens</i>	Candytuft

(continued)

### Container-Grown Plants (continued)

Scientific Name	Common Name/Variety
<i>Ilex attenuata</i>	Savannah Holly
<i>Ilex cornuta</i>	Dwarf Burford Holly
<i>Ilex crenata</i>	Japanese Holly
<i>Juniperus chinensis</i>	Chinese Juniper
<i>Juniperus horizontalis</i>	Juniper
<i>Juniperus sabina</i>	Hick's Juniper/Foemina
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Kalmia</i> spp.	Mountain Laurel
<i>Kniphofia uvaria</i>	Poker Plant
<i>Lantana</i> spp.	Shrub Verbena
<i>Lavandula angustifolia</i>	English Lavender
<i>Leucothoe fontanesiana</i>	Leucothoe
<i>Ligularia stenocephala</i>	Golden Rockets
<i>Ligustrum japonicum</i>	Ligustrum or Privet
<i>Liriope mascara</i>	Liriope
<i>Liriope spicata</i>	Green Liriope
<i>Myrica cerifera</i>	Wax Myrtle
<i>Ophiopogon japonicus</i>	Mondo Grass
<i>Opuntia humifusa</i>	Prickly Pear Cactus
<i>Pachysandra terminalis</i>	Japanese Pachysandra
<i>Panicum virgatum</i>	Switchgrass
<i>Penstemon x Mexicali</i>	Beard-Tongue
<i>Phormium colensoi</i>	Flax
<i>Pinus strobus</i>	White Pine
<i>Pinus thunbergii</i>	Japanese Black Pine
<i>Pittosporum tobira</i>	Pittosporum
<i>Quercus phellos</i>	Willow Oak
<i>Rhododendron catawbiense</i>	Catawba Azalea
<i>Rhododendron indica</i>	Formosa/Indica Azalea
<i>Rhododendron obtusum</i>	Kurume Azalea
<i>Sempervivum tectorum</i>	Hens and Chicks
<i>Solidago sempervirens</i>	Goldenrod
<i>Taxus cuspidata</i>	Yew

(continued)

### Container-Grown Plants (continued)

Scientific Name	Common Name/Variety
<i>Thuja occidentalis</i>	Globe Arborvitae
<i>Tsuga Canadensis</i>	Hemlock
<i>Vernonia noveboracensis</i>	Ironweed
<i>Viburnum</i> spp.	Viburnum
<i>Yucca</i> spp.	Yucca

### Field- and Liner\*-Grown Plants and Plants in Landscape Plantings

\* Plants transplanted normally in rows in a nursery or similar area for further growth before transplanting to final growing location (place of establishment).

Scientific Name	Common Name/Variety
<i>Abelia</i> spp.	Glossy Abelia
<i>Abies</i> spp.	Fir
<i>Acer</i> spp.	Maple
<i>Achillea</i> spp.	Yarrow
<i>Agapanthus africanus</i>	African Lily
<i>Ageratum</i> spp.	Blue Ageratum
<i>Ajuga reptans</i>	Ajuga
<i>Allium</i> spp.	Allium
<i>Alyssum</i> spp.	Alyssum
<i>Antirrhinum majus</i>	Snapdragon
<i>Aquilegia</i> spp.	Columbine
<i>Artemisia stelleriana</i>	Dusty Miller
<i>Asclepias</i> spp.	Milkweed
<i>Aster</i> spp.	Aster
<i>Aucuba</i> spp.	Aucuba
<i>Berberis</i> spp.	Barberry
<i>Betula</i> spp.	Birch
<i>Bougainvillea</i> spp.	Bougainvillea
<i>Buxus</i> spp.	Boxwood
<i>Camellia</i> spp.	Camellia
<i>Campanula carpatica</i>	Bellflower
<i>Canna indica</i>	Canna Lily
<i>Carex</i> spp.	Carex
<i>Chrysanthemum</i> spp.	Chrysanthemum, Daisy
<i>Citrus</i> spp.**	Citrus**

(continued)

**Field- and Liner\*-Grown Plants and Plants in Landscape Plantings  
(continued)**

Scientific Name	Common Name/Variety
<i>Coreopsis</i> spp.	Coreopsis
<i>Cornus</i> spp.	Dogwood
<i>Cortaderia selloana</i>	Pampas Grass
<i>Cotoneaster</i> spp.	Cotoneaster
<i>Crocus</i> spp.	Crocus
<i>Cryophytum crystallium</i>	Ice Plant
<i>Cytisus racemosus</i>	Sweet Broom
<i>Daucus carota</i>	Queen Anne's Lace
<i>Delphinium</i> spp.	Delphinium
<i>Dianthus barbatus</i>	Sweet William
<i>Elaeagnus</i> spp.	Elaeagnus
<i>Endymion</i> spp.	Endymion
<i>Escallonia fradesii</i>	Escallonia
<i>Euonymus</i> spp.	Euonymus
<i>Ficus</i> spp.	Fig
<i>Forsythia</i> spp.	Forsythia
<i>Fraxinus</i> spp.	Ash
<i>Gaillardia</i> spp.	Gaillardia
<i>Gardenia jasminoides</i>	Gardenia
<i>Gazania splendens</i>	Gazania Gold Rush
<i>Gelsemium sempervirens</i>	Carolina Jessamine
<i>Geranium</i> spp.	Geranium
<i>Geum</i> spp.	Geum
<i>Ginkgo biloba</i>	Ginkgo
<i>Gladiolus x hortulanus</i>	Gladiolus
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Hedera</i> spp.	English Ivy
<i>Hemerocallis</i> spp.	Daylily
<i>Hibiscus</i> spp.	Hibiscus
<i>Hosta lancifolia</i>	Hosta
<i>Hyacinthus</i> spp.	Hyacinth
<i>Hydrangea</i> spp.	Hydrangea

(continued)

**Field- and Liner\*-Grown Plants and Plants in Landscape Plantings  
(continued)**

Scientific Name	Common Name/Variety
<i>Hypericum</i> spp.	St. John's Wort
<i>Iberis sempervirens</i>	Candytuft
<i>Ilex</i> spp.	Holly
<i>Illicium</i> spp.	Spicebush
<i>Impatiens</i> spp.	Impatiens
<i>Iris</i> spp.	Iris
<i>Jasmine</i> spp.	Jasmine
<i>Juniperus</i> spp.	Juniper
<i>Kalmia</i> spp.	Kalmia
<i>Kniphofia uvaria</i>	Poker Plant
<i>Lagerstroemia</i> spp.	Crepe Myrtle
<i>Lantana</i> spp.	Shrub Verbena
<i>Lavandula angustifolia</i>	English Lavender
<i>Leucothoe</i> spp.	Leucothoe
<i>Ligularia stenocephala</i>	Golden Rockets
<i>Ligustrum</i> spp.	Privet
<i>Lilium</i> spp.	Lily
<i>Liquidambar</i> spp.	Sweetgum
<i>Liriodendron tulipifera</i>	Tulip Tree
<i>Liriope</i> spp.	Liriope
<i>Lonicera</i> spp.	Honeysuckle
<i>Lupinus</i> spp.	Lupines
<i>Lythrum</i> spp.	Loosestrife
<i>Magnolia</i> spp.	Magnolia
<i>Malus</i> spp.**	Crabapple, Apple**
<i>Mesembryanthemum crystallinum</i>	Ice Plant
<i>Morea</i> spp.	Fortnight Lily
<i>Muscari armeniacum</i>	Muscari
<i>Myrica</i> spp.	Wax Myrtle
<i>Nandina domestica</i>	Bamboo
<i>Narcissus</i> spp.	Narcissus
<i>Nerium oleander</i>	Oleander

(continued)



**Field- and Liner\*-Grown Plants and Plants in Landscape Plantings  
(continued)**

Scientific Name	Common Name/Variety
<i>Oenothera</i> spp.	Primrose
<i>Ophiopogon japonicus</i>	Mondo Grass
<i>Opuntia humifusa</i>	Prickly Pear Cactus
<i>Ornithogalum umbellatum</i>	Star of Bethlehem
<i>Osmanthus</i> spp.	Osmanthus
<i>Pachysandra</i> spp.	Pachysandra
<i>Panicum virgatum</i>	Switchgrass
<i>Pelargonium x hortorum</i>	Geranium
<i>Penstemon x mexicali</i>	Beard-Tongue
<i>Petunia</i> spp.	Petunia
<i>Phlox</i> spp.	Phlox
<i>Phormium colensoi</i>	Flax
<i>Photinia</i> spp.	Photinia
<i>Physocarpus</i> spp.	Ninebark
<i>Physostegia</i> spp.	Physostegia
<i>Picea</i> spp.	Spruce
<i>Pieris japonica</i>	Japanese Andromeda
<i>Pinus</i> spp.	Pine
<i>Pittosporum</i> spp.	Pittosporum
<i>Podocarpus</i> spp.	Podocarpus
<i>Populus</i> spp.	Poplar
<i>Potentilla</i> spp.	Potentilla (Cinquefoil)
<i>Prunus</i> spp.**	Cherry**
<i>Pseudotsuga menziesii</i>	Douglas Fir
<i>Pyracantha</i> spp.	Firethorn
<i>Pyrus</i> spp.**	Pear**
<i>Quercus</i> spp.	Oak
<i>Raphiolepis</i> spp.	Indian Hawthorne
<i>Rhododendron</i> spp.	Rhododendron/Azalea
<i>Robinia</i> spp.	Locust
<i>Rosa</i> spp.	Rose
<i>Ruellia carolinensis</i>	Mexican petunia
<i>Rumohra adiantiformis</i>	Leatherleaf Fern

(continued)

**Field- and Liner\*-Grown Plants and Plants in Landscape Plantings  
(continued)**

Scientific Name	Common Name/Variety
<i>Salix</i> spp.	Willow
<i>Scilla</i> spp.	Scilla
<i>Sedum</i> spp.	Stone Crop
<i>Sempervivum tectorum</i>	Hens and Chicks
<i>Senecio doronicum</i>	Leopard's-bane
<i>Solidago sempervirens</i>	Goldenrod
<i>Spiraea</i> spp.	Spiraea
<i>Stachys</i> spp.	Stachys
<i>Statice sinuatum</i>	Annual Statice
<i>Symphoricarpos</i> spp.	Snowberry
<i>Syringa</i> spp.	Lilac
<i>Tagetes</i> spp.	Marigold
<i>Taxodium distichum</i>	Bald Cypress
<i>Taxus</i> spp.	Yew
<i>Ternstroemia gymnanthera</i>	Cleyera
<i>Thuja</i> spp.	Arborvitae
<i>Tsuga</i> spp.	Hemlock
<i>Tulipa</i> spp.	Tulip
<i>Vernonia noveboracensis</i>	Ironweed
<i>Veronica</i> spp.	Veronica
<i>Viburnum</i> spp.	Viburnum
<i>Vinca</i> spp.	Periwinkle
<i>Viola x Wittrockiana</i>	Pansy
<i>Washingtonia robusta</i>	Mexican Fan Palm
<i>Weigela</i> spp.	Weigela
<i>Wisteria sinensis</i>	Wisteria
<i>Yucca</i> spp.	Yucca
<i>Zinnia</i> spp.	Zinnia

\*\* Do not apply to trees or plants that will bear harvestable fruit within 12 months, or illegal residues may result.

**SpiruS** may be applied in tank mixtures with proflam, simazine, oxadiazon, glyphosate, or other compatible herbicides registered for use on ornamentals. Refer to the respective product labels for weeds controlled and for plants on which they are registered for use. When applying **SpiruS** in tank mixtures, observe the more restrictive directions for use, precautions, and limitations on this label or the respective tank mix product label.

**Restrictions:**

- Do not apply more than 2.6 pt/A (2.4 lb ai/A) in a single application.
- Do not apply more than 4.2 pt/A (4.0 lb ai/A) in a year.
- Do not make more than 2 applications per year (not to exceed 4.2 pt/A (4.0 lb ai/A) per year).

**Turfgrass****Warm Season Grasses (Bermudagrass, Centipedegrass, St. Augustinegrass, Bahiagrass, and Zoysiagrass) including Commercial St. Augustinegrass Sod Production**

Do not use **SpiruS** on turfgrasses in New York State.

Apply **SpiruS** before weeds emerge. Since soil moisture is necessary to activate **SpiruS**, irrigate with 1/2 inch of water if rainfall does not occur within 7 days after treatment (See following **Precautions**).

**Weeds Controlled**

Scientific Name	Common Name/Variety	Rate of SpiruS*
<i>Cyperus compressus</i>	Annual Sedge	2.6 pt/A (see <b>Restrictions</b> )
<i>Cyperus esculentus</i>	Yellow Nutsedge	
<i>Digitaria ischaemum</i>	Smooth Crabgrass	
<i>Digitaria sanguinalis</i>	Large Crabgrass	
<i>Leptochloa fascicularis</i>	Bearded Sprangletop	1.3 - 2.6 pt/A (see <b>Restrictions</b> )
<i>Leptochloa uninervis</i>	Mexican Sprangletop	
<i>Murdannia nudiflora</i>	Doveweed	
<i>Poa annua</i>	Annual Bluegrass	

- \* 1.0 pt/A = 0.3 fl oz/1,000 sq ft
- 1.3 pt/A = 0.4 fl oz/1,000 sq ft
- 2.6 pt/A = 0.9 fl oz/1,000 sq ft

**Restrictions:**

- Split rate of applications can be made at rates not less than 1 pt/A (0.9 lb ai/A).
- Do not apply more than 2.6 pt/A (2.4 lb ai/A) in a single application.
- Do not apply more than once every 6 weeks.
- For commercial sod production, do not apply more than 4.2 pt/A (4.0 lb ai/A) per year to the same area used for sod production.
- For commercial sod production, do not make more than 4 applications per acre per year (not to exceed 4.2 pt/A (4.0 lb ai/A) per year).
- For other turf uses, do not apply more than 2.6 pt/A (2.4 lb ai/A) per year.
- For other turf uses, do not make more than 2 applications per acre per year (not to exceed 2.6 pt/A (2.4 lb ai/A) per year).
- Do not graze or feed turf clippings to animals.

*Precautions for All Uses on Turf: Delayed spring green-up, temporary slowing of growth and yellowing may occur following application. To avoid turf injury, (1) Application of a nitrogen-containing fertilizer at or soon after applying **SpiruS** will minimize delay in spring green-up and any temporary yellowing; (2) use only on turfgrass not under stress from infestations of insects, nematodes, or diseases; (3) do not use on golf greens, tees, or aprons; (4) do not seed or overseed with desirable turfgrass 4 months before or after treatment, and (5) do not apply this product to newly seeded grasses until they have overwintered and have a well-developed rhizome system. (6) Before using **SpiruS** in the tank mix with fluid fertilizer or other registered pesticides, determine the tolerance of the turf species by applying the combination to a limited area during a period of active growth. (7) In turfgrass areas which have heavy thatch, the weed control of **SpiruS** may be reduced.*

SPECIMEN

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store in a tightly closed container in a cool, dry place. Store in original container and out of reach of children, preferably in a locked storage area.

**PESTICIDE DISPOSAL:** Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### CONTAINER HANDLING:

**For plastic containers ≤ 5 gallons: Nonrefillable Container:** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple Rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or other procedures allowed by state and local authorities.

**For plastic containers > 5 gallons: Nonrefillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple Rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Recap 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. Turn the container over onto its other 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. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or other procedures allowed by state and local authorities.

## LIMITATION OF WARRANTY AND LIABILITY

**IMPORTANT: READ BEFORE USE.** Read the entire Directions for Use, Conditions of Warranties and Limitations of Liability before using this product. If these terms and conditions are not acceptable, return the unopened product container at once. By using this product, user or buyer accepts the following Disclaimer of Warranties and Limitations of Liability. **CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Ineffectiveness, injury, and other unintended consequences may result because of such factors as manner of use or application (including misuse), the presence of other materials, weather conditions, and other unknown factors, all of which are beyond the control of ATTICUS, LLC. All such risks shall be assumed by the user or buyer.

**DISCLAIMER OF WARRANTIES:** To the extent consistent with applicable law, ATTICUS, LLC makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond statements on this label. **LIMITATIONS OF LIABILITY:** To the extent consistent with applicable law, neither ATTICUS, LLC the manufacturer, nor the Seller shall be liable for any indirect, special, incidental or consequential damages resulting from the use, handling, application, storage, or disposal of this product. To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use, handling, application, or storage of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid.

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