



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

April 7, 2017

Dr. Craig D. Kleppe
BASF Corporation
26 Davis Drive, PO box 13528
Research Triangle Park, NC 27709

Subject: Label Amendment – Add a new sub-section to describe understory application in “Conifer and Hardwood Plantations”; re-name table headers, off-label leafy spurge control in California, and make other minor label changes
Product Name: HEAT Powered by KIXOR Herbicide
EPA Registration Number: 7969-297
Application Date: 10/25/2016
Decision Number: 523318

Dear Dr. Kleppe:

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, is acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. “To distribute or sell” is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

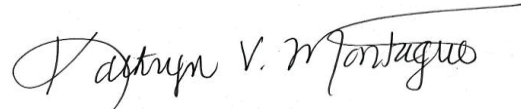
Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance

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with FIFRA section 6. If you have any questions, please contact Karen Samek by phone at (703) 347-8825, or via email at samek.karen@epa.gov.

Sincerely,

A handwritten signature in black ink that reads "Kathryn V. Montague". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Kathryn Montague, Product Manager 23
Herbicide Branch
Registration Division (7505P)
Office of Pesticide Programs

Enclosure

Group **14** Herbicide

Heat™

ACCEPTED

04/07/2017

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 7969-297

Powered by Kixor® Herbicide

[Alternate Trade Name] **Detail® Powered by Kixor® Herbicide**

For wildling pine control, vegetation control and management in noncropland areas, and postemergence and residual weed control in pasture and rangeland

Active Ingredient*:

saflufenacil: N'-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3,6-dihydro-1(2H)-pyrimidinyl)benzoyl]-N-isopropyl-N-methylsulfamide 29.74%

Other Ingredients: 70.26%

Total: 100.00%

* Contains 2.85 pounds active ingredient saflufenacil per gallon formulated as a water-based suspension concentrate

EPA Reg. No. 7969-297

EPA Est. No.

KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCION

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 inside for complete **Precautionary Statements, Directions For Use, Conditions of Sale and Warranty**, and state-specific use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

Net Contents:

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709



We create chemistry

FIRST AID

If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • DO NOT induce vomiting unless told to do so by a poison control center or doctor. • Have person sip a glass of water if able to swallow. • DO NOT give anything to an unconscious person.
If in eyes	<ul style="list-style-type: none"> • Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eyes. • Call a poison control center for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • 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.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves
- Protective eyewear such as face shield, goggles, or safety glasses

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

Engineering Controls

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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for **applicators and other handlers** and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

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

For terrestrial uses, **DO NOT** apply directly to water, areas where surface water is present, or intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater or rinsate.

Groundwater Advisory. This product has properties and characteristics associated with chemicals detected in groundwater. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

Surface Water Advisory. This product may impact surface water due to runoff of rainwater. This is especially true for poorly draining soils and soils with shallow groundwater. This product is classified as having high potential for reaching surface water via runoff for several weeks after application. A level, well-maintained buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of this chemical from runoff water and sediment. Runoff of this product will be reduced by avoiding application when rainfall is forecast to occur within 48 hours.

Endangered Species Protection Requirements

This product may have effects on federally listed threatened or endangered plant species or their critical habitat. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the county or parish in which you are applying the pesticide. To determine whether your county or parish has a Bulletin, and to obtain that Bulletin, consult <http://www.epa.gov/espp/>, or call 1-800-447-3813 no more than 6 months before using this product. Applicators must use Bulletins that are in effect in the month in which the pesticide will be applied. New Bulletins will generally be available from the above sources 6 months prior to their effective dates.

Directions For Use

It is a violation of federal law to use this product in a manner inconsistent with its labeling. This label must be in the possession of the user at time of herbicide application.

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.

Observe all precautions and limitations in this label and the labels of products used in combination with

Heat™ Powered by Kixor® herbicide. The use of this product not consistent with this label can result in injury to crops, animals, or persons. Keep containers closed to avoid spills and contamination.

Unless otherwise directed in supplemental labeling, all applicable directions, restrictions, precautions, and **Conditions of Sale and Warranty** are to be followed.

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 **12 hours**.

EXCEPTION: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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 any waterproof material
- Shoes plus socks
- Protective eyewear

NONAGRICULTURAL 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 treated areas without protective clothing until sprays have dried.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage

DO NOT use or store near heat or open flame. Store in original container in a well-ventilated area separately from fertilizer, feed, or foodstuffs. Avoid cross-contamination with other pesticides.

Pesticide Disposal

Wastes resulting from this product must be disposed of on-site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) 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.

Triple rinse containers too large to shake (capacity > 5 gallons) as follows: 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. 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.

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

(continued)

STORAGE AND DISPOSAL (continued)

Container Handling (continued)

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container 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.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Emergency

In case of large-scale spill of this product, call:

- CHEMTREC 1-800-424-9300
- BASF Corporation 1-800-832-HELP (4357)

In case of medical emergency regarding this product, call:

- Your local doctor for immediate treatment
- Your local poison control center (hospital)
- BASF Corporation 1-800-832-HELP (4357)

Steps to take if material is released or spilled:

- Dike and contain the spill with inert material (sand, earth, etc.) and transfer liquid and solid diking material to separate containers for disposal.
- Remove contaminated clothing, and wash affected skin areas with soap and water.
- Wash clothing before reuse.
- Keep the spill out of all sewers and open bodies of water.

Product Information

Heat™ Powered by Kixor® herbicide (henceforth in this label referred to as **Heat herbicide**) provides both contact burndown (postemergence) and rate-dependent residual preemergence weed control (refer to **Table 1** and **Table 2** for list of weeds controlled). **Heat herbicide** does not control grass weeds and must be tank mixed with a grass herbicide for a complete weed control program.

Thorough coverage of weed foliage is critical for optimum postemergence control.

Make postemergence applications of **Heat herbicide** in tank mixture with glyphosate-based products when weeds are small (less than 6 inches) and actively growing. An adjuvant is required with **Heat herbicide** for optimum burndown activity (refer to **Additives** section for specifics). Burndown activity may be slowed or reduced under cloudy and/or foggy or cooler weather conditions, or when weeds are growing under drought or other stress conditions. When targeting dense weed populations and/or larger weeds, use higher spray volumes and/or a higher application rate within an application rate range.

Length of weed control from residual preemergence applications will be affected by use rate, soil characteristics (texture, organic matter, cation exchange capacity), as well as the amount of rainfall after application.

Heat herbicide is rainfast 1 hour after application. Burndown activity may be reduced if rain occurs within 1 hour of application.

Table 1. Weeds Controlled with a Postemergence Application of Heat™ herbicide¹

Common Name	Scientific Name
Amaranth, Palmer	<i>Amaranthus palmeri</i>
Bedstraw, catchweed	<i>Galium aparine</i>
Beggarticks, hairy	<i>Bidens pilosa</i>
Beggarweed, Florida	<i>Desmodium tortuosum</i>
Bindweed, field ³	<i>Convolvulus arvensis</i>
Buckwheat, wild	<i>Polygonum convolvulus</i>
Carpetweed	<i>Mollugo verticillata</i>
Chickweed, common ²	<i>Stellaria media</i>
Cocklebur, common	<i>Xanthium strumarium</i>
Cowcockle	<i>Vaccaria pyramidata</i>
Dandelion ³	<i>Taraxacum officinale</i>
Eveningprimrose, cutleaf	<i>Oenothera laciniata</i>
Falseflax, smallseed	<i>Camelina microcarpa</i>
Filaree, redstem ²	<i>Erodium cicutarium</i>
Fleabane, hairy	<i>Conyza bonariensis</i>
Flixweed	<i>Descurainia sophia</i>
Groundcherry, cutleaf	<i>Physalis angulata</i>
Groundsel, common	<i>Senecio vulgaris</i>
Hawksbeard, narrowleaf ⁷	<i>Crepis tectorum</i>
Hemlock, poison ⁷	<i>Conium maculatum</i>
Henbit ²	<i>Lamium amplexicaule</i>
Horseweed (Marestail)	<i>Conyza canadensis</i>

(continued)

Table 1. Weeds Controlled with a Postemergence Application of Heat™ herbicide¹ (continued)

Common Name	Scientific Name
Knotweed, prostrate	<i>Polygonum aviculare</i>
Kochia	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters, common	<i>Chenopodium album</i>
Lambsquarters, narrowleaf	<i>Chenopodium pratericola</i>
Lettuce, prickly	<i>Lactuca serriola</i>
Mallow, common	<i>Malva neglecta</i>
Mallow, little (Cheeseweed)	<i>Malva parviflora</i>
Mallow, Venice	<i>Hibiscus trionum</i>
Marestail (Horseweed)	<i>Conyza canadensis</i>
Morningglory, entireleaf	<i>Ipomoea hederacea</i> var. <i>integriuscula</i>
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>
Morningglory, palmleaf	<i>Ipomoea wrightii</i>
Morningglory, pitted	<i>Ipomoea lacunosa</i>
Morningglory, tall	<i>Ipomoea purpurea</i>
Mustard, black	<i>Brassica nigra</i>
Mustard, tumble	<i>Sisymbrium altissimum</i>
Mustard, wild	<i>Sinapis arvensis</i>
Needles, Spanish ⁷	<i>Bidens pilosa</i>
Nettle, burning	<i>Urtica urens</i>
Nightshade, black	<i>Solanum nigrum</i>
Nightshade, cutleaf	<i>Solanum triflorum</i>
Nightshade, Eastern black	<i>Solanum ptycanthum</i>
Nightshade, hairy	<i>Solanum saccharoides</i>
Parthenium	<i>Parthenium hysterophorus</i>
Pennycress, field	<i>Thlaspi arvense</i>
Pigweed, prostrate	<i>Amaranthus blitoides</i>
Pigweed, redroot	<i>Amaranthus retroflexus</i>
Pigweed, smooth	<i>Amaranthus hybridus</i>
Pine ⁴	<i>Pinus</i> spp.
Puncturevine	<i>Tribulus terrestris</i>
Purslane, common	<i>Portulaca oleracea</i>
Pusley, Florida ²	<i>Richardia scabra</i>
Ragweed, common ⁵	<i>Ambrosia artemisiifolia</i>
Ragweed, giant ⁵	<i>Ambrosia trifida</i>
Rapeseed (Canola), volunteer	<i>Brassica</i> spp.
Rocket, London ⁷	<i>Sisymbrium irio</i>
Sesbania, hemp	<i>Sesbania exaltata</i>
Shepherd's-purse	<i>Capsella bursa-pastoris</i>
Sida, prickly	<i>Sida spinosa</i>
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>
Sowthistle, annual	<i>Sonchus oleraceus</i>
Sowthistle, spiny	<i>Sonchus asper</i>
Spurge, leafy ^{6,7}	<i>Euphorbia esula</i>
Sunflower, common	<i>Helianthus annuus</i>
Tansymustard, pinnate	<i>Descurainia pinnata</i>
Texasweed	<i>Caperonia palustris</i>
Thistle, Canada ³	<i>Cirsium arvense</i>

(continued)

Table 1. Weeds Controlled with a Postemergence Application of Heat™ herbicide¹ (continued)

Common Name	Scientific Name
Thistle, Russian	<i>Salsola kali</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Waterhemp ⁵	<i>Amaranthus tuberculatus</i>
Willowweed	<i>Epilobium adenocaulon</i>

¹ For best control, target application when weeds are less than 6 inches. Larger weeds or heavy infestations require higher use rates (see **Table 3**) or tank mixes.

² Suppression only

³ Control of seedling stage and suppression of perennial growth stage

⁴ See **Right of Way, Conifer and Hardwood Plantations**, and **Vegetation Control and Management in Noncropland Areas** specific use pattern directions for additional information. Tank mix partners, such as glyphosate, are required.

⁵ Populations of noted weeds exist that are known to be resistant to burn-down applications of **Group 14/Group E** herbicides and will not be controlled by herbicides like **Heat herbicide**. See the **Resistance Management** section for practices to manage and minimize the impact of resistant weeds (e.g. tank mixes or alternation with other herbicide modes of action and mechanical control).

⁶ Control of leafy spurge requires a tank mix with **Plateau® herbicide**. Refer to **Leafy Spurge Control** in **Specific Use Information** section.

⁷ Not controlled in California

Table 2. Weeds Controlled with a Residual Preemergence Application of Heat™ herbicide¹

Common Name	Scientific Name
Amaranth, Palmer	<i>Amaranthus palmeri</i>
Amaranth, Powell	<i>Amaranthus powellii</i>
Beggarweed, Florida	<i>Desmodium tortuosum</i>
Buckwheat, wild	<i>Polygonum convolvulus</i>
Burcucumber ²	<i>Sicyos angulatos</i>
Canola, volunteer (Rapeseed), all types ³	<i>Brassica</i> spp.
Carpetweed	<i>Mullugo verticillata</i>
Chickweed, common	<i>Stellaria media</i>
Cocklebur, common	<i>Xanthium strumarium</i>
Copperleaf, Virginia	<i>Acalypha virginica</i>
Galinsoga, smallflower	<i>Galinsoga parviflora</i>
Groundcherry, cutleaf	<i>Physalis angulata</i>
Horseweed (Marestail)	<i>Conyza canadensis</i>
Jimsonweed	<i>Datura stramonium</i>
Kochia	<i>Kochia scoparia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters, common	<i>Chenopodium album</i>
Mallow, Venice	<i>Hibiscus trionum</i>
Marestail (Horseweed)	<i>Conyza canadensis</i>
Morningglory, entireleaf	<i>Ipomoea hederacea</i> var. <i>integruscula</i>
Morningglory, ivyleaf	<i>Ipomoea hederacea</i>
Morningglory, pitted	<i>Ipomoea lacunosa</i>
Morningglory, tall	<i>Ipomoea purpurea</i>
Mustard, wild	<i>Sinapis arvensis</i>
Nightshade, black	<i>Solanum nigrum</i>
Pennycress, field	<i>Thlaspi arvense</i>

(continued)

Table 2. Weeds Controlled with a Residual Preemergence Application of Heat™ herbicide¹ (continued)

Common Name	Scientific Name
Pigweed, prostrate	<i>Amaranthus blitoides</i>
Pigweed, redroot	<i>Amaranthus retroflexus</i>
Pigweed, smooth	<i>Amaranthus hybridus</i>
Pigweed, tumble	<i>Amaranthus albus</i>
Puncturevine ²	<i>Tribulus terrestris</i>
Purslane, common	<i>Portulaca oleracea</i>
Pusley, Florida ²	<i>Richardia scabra</i>
Ragweed, common	<i>Ambrosia artemisiifolia</i>
Ragweed, giant	<i>Ambrosia trifida</i>
Sida, prickly	<i>Sida spinosa</i>
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>
Starbur, bristly	<i>Acanthospermum hispidum</i>
Sunflower, common	<i>Helianthus annuus</i>
Texasweed	<i>Caperonia palustris</i>
Thistle, Russian	<i>Salsola kali</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Waterhemp	<i>Amaranthus tuberculatus</i>

¹ For effective **residual** preemergence weed control from postemergence applications, **Heat herbicide** must be used at the maximum use rate of 6 fl ozs/A (see **Table 3**) and be activated by a minimum of 1/2 inch of rainfall before weed seedling emergence. When **Heat herbicide** is not activated, a labeled postemergence herbicide may be required to improve weed control.

² Suppression only

³ Not controlled in California

Mode of Action

Heat herbicide is a potent inhibitor of protoporphyrinogen-oxidase belonging to herbicide mode-of-action **Group 14 (WSSA)/Group E (HRAC)**. **Heat herbicide** is rapidly absorbed by roots and foliage. Following inhibition of protoporphyrinogen-oxidase, plant death is the result of membrane damage. Under active growing conditions, susceptible emerged weeds usually develop chlorotic and necrotic injury symptoms within hours and die within a few days. Susceptible emerging weed seedlings usually die as they reach the soil surface or shortly after emergence.

Resistance Management

While weed resistance to protoporphyrinogen-oxidase-inhibiting herbicides is relatively infrequent, populations of resistant biotypes are known to exist. Herbicide resistance management practices should be considered and include:

1. Following labeled application rate and weed growth stages
2. Avoiding repeated applications of herbicides with the same mode of action
3. Using tank mixes and sequential applications with other effective herbicides possessing different modes of action

Application Instructions

Heat™ herbicide may be applied in a single application or sequentially with an interval of 14 days or more.

Application Rate

Application rates for **Heat herbicide** when applied alone, in tank mix, or sequentially are given in **Table 3**. **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Heat herbicide** per year.

In California, **DO NOT** apply more than 2 fl ozs/A of **Heat herbicide** in a single application.

Table 3. Heat herbicide Application Rates

Application	Application Target	Application Rate (fl ozs/A)
Postemergence	Weed size < 6 inches	2 to 4
	Weed size ≥ 6 inches and/or heavier weed infestations	4 to 6 ^a
Postemergence + Residual	Burndown + Residual preemergence weed control	6 ^b
Tank Mixes with Glyphosate		
Accelerated Burndown	Accelerated burndown of weeds and/or control of glyphosate-tolerant species [such as horseweed (marestail)]	1 to 5
Accelerated Burndown + Residual	Accelerated burndown of weeds plus control of glyphosate-tolerant species with residual preemergence weed control	6 ^b

^a Partial control or suppression may result with application to weeds greater than 6 inches.

^b For effective residual control of labeled weed species, **Heat herbicide** must be used at the maximum use rate of 6 fl ozs/A.

Application Methods and Equipment

Heat herbicide may be applied by air or ground. Thorough spray coverage is important for optimum weed control and can be improved with proper adjuvant, nozzle, and spray volume selection.

Use and configure application equipment for adequate spray volume, accurate and uniform distribution of spray droplets over the treated area, and to avoid spray drift to nontarget areas. Adjust equipment to maintain continuous agitation during spraying with good mechanical or bypass agitation. Avoid overlaps that will increase rates above use rates specified in this label.

Aerial Application Requirements - Helicopter Water Volume.

Use 15 or more gallons of water per acre.

DO NOT apply aerially in California.

Applicators must follow these requirements to reduce the potential of spray drift to nontarget areas from aerial application with helicopter:

1. The distance of the outermost nozzles on the boom must not exceed 75 to 80% of rotor blade diameter.
2. Use Accu-Flo™ .028 nozzles or larger. **DO NOT** use nozzles producing a smaller droplet size than Accu-Flo .028.
3. Orient nozzles so spray is released parallel to the airstream.
4. Without compromising aircraft safety, applications should be made at a height of 10 feet or less above the target vegetative canopy.
5. **DO NOT** apply when wind speed is greater than 10 miles per hour, during periods of temperature inversions or stable atmospheric conditions.
6. Avoid potential adverse effects to nontarget areas by maintaining a (XX, see **Table 4**)^a foot buffer between the point of direct application and the **closest downwind edge** of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, and shrub lands).

^a Buffer zone size is determined by use rate. Refer to **Table 4** below for minimum buffer zone distance required for the intended use rate. Use the appropriate buffer zone distance from the table below in the buffer zone statement above.

NOTE: This footnote and table will only appear on master label and will be removed from the final print container label after the appropriate buffer zone distance is selected.

Table 4. Wind-directional Buffer Zone Distances for Helicopter Applications when Adjacent to Sensitive Terrestrial Habitats

Heat Use Rate (fl ozs/A)	Saflufenacil Use Rate (lb ai/A)	Saflufenacil Use Rate (g ai/ha)	Buffer Zone Distance (feet)
1	0.022	25	5
2	0.045	50	5
4	0.089	100	15
6	0.134	150	30

Aerial Application Requirements - Fixed-wing Aircraft

Water Volume. Use 15 or more gallons of water per acre.

DO NOT apply aurally in California.

Applicators must follow these requirements to reduce the potential of spray drift to nontarget areas from aerial application:

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan.
2. Use low-drift nozzles such as straight-stream nozzles (D-8 or larger). **DO NOT** use nozzles producing a mist droplet spray.
3. Nozzles must always point backward parallel with the airstream and never point downward more than 45 degrees.
4. Without compromising aircraft safety, application should be made at a height of 10 feet or less above the plant canopy or tallest plants.
5. **DO NOT** apply when wind speed is greater than 10 miles per hour, during periods of temperature inversions or stable atmospheric conditions.
6. Avoid potential adverse effects to nontarget areas by maintaining a (XX, see **Table 5**)^a foot buffer between the point of direct application and the **closest downwind edge** of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, and shrub lands).

^aBuffer zone size is determined by use rate. Refer to **Table 5** below for minimum buffer zone distance required for the intended use rate. Use the appropriate buffer zone distance from the table below in the buffer zone statement above.

NOTE: This footnote and table will only appear on master label and will be removed from the final print container label after the appropriate buffer zone distance is selected.

Table 5. Wind-directional Buffer Zone Distances for Fixed-wing Aircraft Applications when Adjacent to Sensitive Terrestrial Habitats

Heat™ herbicide Use Rate (fl ozs/A)	Saflufenacil Use Rate (lb ai/A)	Saflufenacil Use Rate (g ai/ha)	Buffer Zone Distance (feet)
1	0.022	25	26
2	0.045	50	66
4	0.089	100	100
6	0.134	150	150

Ground Application Requirements - Broadcast

Water Volume. Use 20 or more gallons of water per acre.

Applicators must follow these requirements to reduce the potential of spray drift to nontarget areas from ground application:

1. Apply this product using nozzles which deliver **medium-to-coarse spray droplets** as defined by

ASAE standard S-572 and as shown in nozzle manufacturer's catalogs. Flat-fan nozzles are recommended for burndown application while flood-jet type nozzles are recommended for residual soil surface application. Nozzles that deliver coarse spray droplets may be used to reduce spray drift if spray volume per acre (GPA) is increased to maintain coverage of target (i.e. weeds or soil surface). **DO NOT** use nozzles that produce fine (e.g. cone) spray droplets. In California, nozzles must be affixed to spray no higher than 20 inches above the spray target (e.g. top of weed foliage).

2. Apply this product only when the potential for drift to adjacent nontarget areas is minimal (e.g. when wind is **10 MPH or less and is blowing away** from sensitive areas). **DO NOT** apply during periods of temperature inversions or stable atmospheric conditions.
3. Avoid potential adverse effects to nontarget areas by maintaining a (XX, see **Table 6**)^a foot buffer (120-feet in California) between the application area and the **closest downwind edge** of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas, and shrub lands).

^aBuffer zone size is determined by use rate. Refer to **Table 6** below for minimum buffer zone distance required for the intended use rate. Use the appropriate buffer zone distance from the table below in the buffer zone statement above.

NOTE: This footnote and table will only appear on master label and will be removed from the final print container label after the appropriate buffer zone distance is selected.

Table 6. Wind-directional Buffer Zone Distances for Ground Applications when Adjacent to Sensitive Terrestrial Habitats

Heat herbicide Use Rate (fl ozs/A)	Saflufenacil Use Rate (lb ai/A)	Saflufenacil Use Rate (g ai/ha)	Buffer Zone Distance (feet)
1	0.022	25	13
2	0.045	50	33
4	0.089	100	50
6	0.134	150	75

Ground Application - Spot

Postemergence spot application may be made with **Heat herbicide**. Spray volumes should be sufficient to thoroughly wet target foliage but not to the point of runoff, i.e. a spray-to-wet basis. Use 0.25% to 0.50% volume/volume (v/v) spray solution for control of weeds less than 6 inches. For larger weeds or under heavy weed infestations, increase spray solution to 0.50% to 1.00% v/v. Spot application also requires the use of an adjuvant; add methylated seed oil (MSO) at the rate of 1.0% v/v. See **Table 7** for amount(s) of **Heat herbicide** to prepare spray solutions for spot application.

Table 7. Amount of Heat™ herbicide for Spot Application

Heat herbicide Required (fl ozs) for Spot Application				
Spray Solution to Prepare (gals)	Desired Concentration (v/v)			
	0.25%	0.50%	0.75%	1.00%
1	0.3	0.6	1.0	1.3
3	1.0	1.9	2.9	3.8
4	1.3	2.6	3.8	5.1
5	1.6	3.2	4.8	6.4
50	16.0	32.0	48.0	64.0
100	32.0	64.0	96.0	128.0

2 tablespoons = 1 fluid ounce, 1 pint = 16 fluid ounces,
1 quart = 32 fluid ounces, 1 gallon = 128 fluid ounces

Cleaning Spray Equipment

Clean application equipment thoroughly by using a strong detergent or commercial sprayer cleaner according to the manufacturer's directions, followed by triple rinsing the equipment before and after applying this product.

Spray Drift Management

It is the responsibility of the applicator to avoid spray drift at the application site, especially onto nontarget areas. The interaction of many equipment-related and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The applicator should be familiar with and take into account the information covered in the following spray drift reduction advisory information.

Controlling Droplet Size. The most effective way to reduce drift potential is to apply the largest droplets that provide sufficient coverage and control.

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 Type. Use a nozzle type designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets.

Swath Adjustment. When 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 adjusting the path of the application equipment

(e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

Wind. Drift potential is lowest between wind speeds of 3 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. If applying at wind speeds less than 3 mph, the applicator must determine if:

1. Conditions of temperature inversion exist, or
2. Stable atmospheric conditions exist at or below nozzle height.

DO NOT make applications into areas of temperature inversions or stable atmospheric conditions.

NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Wind Erosion. Avoid treating powdery, dry, or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

Additives

For optimum burndown activity with **Heat herbicide** and to achieve consistent weed control in postemergence use patterns, an adjuvant system must be used that includes the following:

Adjuvant ¹	Rate
Methylated seed oil (MSO) ²	1 gal/100 gals (1% v/v) ³

¹ Use of ammonium sulfate (AMS) fertilizer at 8.5 to 17 lbs/100 gallons (1% to 2% weight/volume) or urea ammonium nitrate (UAN) at 1.25 to 2.5 gals/100 gals (1.25% to 2.5% v/v) is highly recommended when mixing **Heat herbicide** with glyphosate-based herbicides.

² MSO-based adjuvant **MUST** contain at least 60% methylated seed oil. Poor performance may occur with adjuvants containing less than 60% methylated seed oil.

³ **DO NOT** use less than 1 pint/A of MSO with low-volume (less than 12.5 gallons per acre) aerial or ground application.

DO NOT use nonionic surfactant (NIS) or crop oil concentrate (COC) as a substitute for MSO or poor performance on weeds will occur.

DO NOT add acidifying agents to the spray tank when applying **Heat herbicide**.

Tank Mixing Information

Heat herbicide may be tank mixed with one or more registered herbicide products according to the specific tank mixing instructions in this label and respective product labels. It is the pesticide user's responsibility to ensure that all products in the listed mixtures 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.

Tank mixes with contact herbicides (e.g. carfentrazone, paraquat) may reduce the burndown activity of **Heat™ herbicide**.

Compatibility Test for Mix Components

Before mixing components, always perform a compatibility jar test.

1. For 20 gallons per acre spray volume, use 3.3 cups (800 mL) of water. For other spray volumes, adjust rates accordingly. Only use water from the intended source at the source temperature.
2. Add components as indicated in the **Mixing Order** section using 2 teaspoons for each pound or 1 teaspoon for each pint of label use rate per acre.
3. Always cap the jar and invert 10 cycles between component additions.
4. When components have all been added to the jar, let the solution stand for 15 minutes.
5. Evaluate the solution for uniformity and stability. The spray solution should not have free oil on the surface, fine particles that precipitate to the bottom, or thick (clabbered) texture. If the spray solution is not compatible, repeat the compatibility test with the addition of a suitable compatibility agent. If the solution is then compatible, use the compatibility agent as directed on its label. If the solution is still incompatible, **DO NOT** mix the ingredients in the same tank.

Mixing Order

Maintain continuous and constant agitation throughout mixing and application until spraying is completed. If the spray mixture is allowed to settle for any period of time, thorough agitation is essential to resuspend the mixture before spraying is resumed.

1. **Water** - Fill tank 1/2 to 3/4 full with clean water and start agitation.
2. **Inductor** - If an inductor is used, rinse it thoroughly after each component has been added.
3. **Products in PVA bags** - Place any product contained in water-soluble PVA bags into the mixing tank. Wait until all water-soluble PVA bags have fully dissolved and the product is evenly mixed in the spray tank before continuing.
4. **Water-soluble additives** (including dry and liquid fertilizers such as AMS or UAN)
5. **Water-dispersible products** (such as dry flowables, wettable powders, suspension concentrates, or suspo-emulsions)
6. **Water-soluble products**
7. **Emulsifiable concentrates** (including MSO adjuvants)
8. **Remaining quantity of water**

Use Restrictions

- **Maximum annual use rate** - **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Heat herbicide** (0.134 pound active ingredient saflufenacil per acre) per year from broadcast or banded applications.

- **DO NOT** contaminate irrigation ditches or water used for domestic purposes.
- **DO NOT** apply through any type of irrigation system (e.g. chemigation).
- **Heat herbicide is not for sale, distribution, or use in Nassau and Suffolk counties in New York State.**

Specific Use Information

Heat herbicide may be used for selective or nonselective weed control for labeled uses. This section provides use directions for **Heat herbicide** in various noncrop situations. Read product information, mixing, application, weeds controlled, and adjuvant instructions in preceding sections of the label. Read and follow tank mix product labels for restrictions, precautions, instructions, and rotational crop restrictions.

Christmas Tree Plantations

Application Method, Rate, and Timing

Heat herbicide may be used as a postemergence-directed application in Christmas tree plantations to control weeds. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates. Apply **Heat herbicide** plus the recommended adjuvant (refer to **Additives** section for specifics) as a postemergence-directed spray application, uniform broadcast application, or uniform banded application, or as a spot application directed at the base of trees while targeting emerged weeds. Spray contact of needles or buds directly via improper nozzle orientation or indirectly via physical drift will result in crop injury.

Heat herbicide may be applied in a single application or sequentially. Sequential applications must be separated by at least 14 days.

Christmas trees must be established for at least 9 months before application.

DO NOT make over-the-top application to Christmas trees or severe injury will occur.

Tank Mixes

Broad-spectrum burndown and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. Apply **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (see **Additives** section for specifics). **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Pendulum® AquaCap™ herbicide**
- **Segment® herbicide**
- glyphosate (e.g. **Roundup® herbicide**)

Conifer and Hardwood Plantations

Application Method, Rate, and Timing

Apply **Heat™ herbicide** for the control of wildling pine and other undesirable plants during site preparation operations conducted before planting and establishment of conifer and hardwood plantations, or as an understory application below the tree canopy of establishment conifer and hardwood plantations. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates.

DO NOT apply **Heat herbicide** as an over-the-top spray on desirable conifer or hardwood plantings or severe injury will occur.

DO NOT plant tree seedlings within 2 months after **Heat herbicide** application.

Site Preparation Application

Apply **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (refer to **Additives** section for specifics) as a uniform broadcast application during preplant site preparation for control of wildling pine and other undesirable plants in plantations and for enhanced brownout with other site-preparation tank mixes.

Wildling Pine Control

For best control of wildling pine, apply **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (see **Additives** section for specifics) in addition to other tank mix herbicides. Make foliar applications in the spring, summer, and early fall when wildling pine seedlings are actively growing. Mid-to-late fall applications to wildling pines that are slowing their growth may not provide consistent control.

Thorough spray coverage is essential for control. Use a spray volume of 15 gallons of water per acre or more for aerial application. For ground application, use a spray volume of 25 gallons of water per acre or more for broadcast foliar applications to provide thorough spray coverage.

Understory Application in Established Plantations

Apply **Heat herbicide** with a labeled rate of a glyphosate-based product or other tank mix partner plus the recommended adjuvant (refer to **Additives** section for specifics) as a postemergence-directed, uniform broadcast or uniform banded, or as a spot spray application below the canopy of established conifer or hardwood plantings for control of targeted emerged weeds and/or undesirable brush and other tree species.

Tank Mixes

Broad-spectrum burndown and/or residual control of grass weeds, pine, or additional broadleaf weeds requires a tank mix with another herbicide. **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Arsenal® herbicide Applicators Concentrate**
- **Chopper® Gen2™ herbicide**
- glyphosate (e.g. **Accord® XRT herbicide**)

Field-grown Tree Nurseries

Application Method, Rate, and Timing

Heat herbicide may only be applied to dormant field-grown tree nurseries. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates.

Apply **Heat herbicide** plus the recommended adjuvant (refer to **Additives** section for specifics) as a postemergence-directed spray application, uniform broadcast application, or uniform banded application, or as a spot application directed at the base of trees while targeting emerged weeds. **DO NOT** apply if trees have emerged leaves, emerged green shoots, or emerging buds.

Heat herbicide may be applied in a single application or sequentially. Sequential applications must be separated by at least 14 days.

Tree stock must be established for at least 6 months before application. Apply only to nonbearing tree stock.

DO NOT apply more than 4 fl ozs/A of **Heat herbicide** to tree stock 1-year old or less.

DO NOT make over-the-top application to any desirable plant or tree.

DO NOT apply in vineyard nurseries.

Tank Mixes

Broad-spectrum burndown and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. Apply **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (see **Additives** section for specifics). **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Pendulum® AquaCap™ herbicide**
- **Segment® herbicide**
- **Tower® herbicide**
- glyphosate (e.g. **Roundup® herbicide**)

Industrial Landscaping

Heat herbicide may be used in industrial landscapes and landscaped highway medians, interchanges, embankments, and buffer areas where perennial plants are established.

Application Method, Rate, and Timing

Selective Weeding

Apply **Heat™ herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (refer to **Additives** section for specifics) for selective weed control as a postemergence-directed spray, uniform broadcast application, or as a spot application around established trees and/or woody shrubs while targeting emerged weeds. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates. Spray contact of leaves, stems, green shoots, or buds directly via improper nozzle orientation or indirectly via physical drift will result in plant injury.

Heat herbicide may be applied in a single application or sequentially. Sequential applications must be separated by at least 14 days.

Desirable industrial landscape vegetation must be established for at least 9 months before application. Apply **Heat herbicide** at least one dripline length away from desirable industrial landscape vegetation.

DO NOT make over-the-top application to any desirable industrial landscape vegetation or severe plant injury will occur.

Tank Mixes

Broad-spectrum burndown and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Frequency® herbicide**
- **Pendulum® AquaCap™ herbicide**
- **Plateau® herbicide**
- **Segment® herbicide**
- **Tower® herbicide**
- glyphosate (e.g. **Roundup® herbicide**)

Leafy Spurge Control

Use not permitted in California.

Apply **Heat herbicide** in tank mixture with **Plateau herbicide** to control leafy spurge in the late spring/early summer in pasture and rangeland and other areas described in this label. This tank mixture will also control additional weeds listed on the respective **Heat herbicide** and **Plateau herbicide** labels. **Heat herbicide** plus **Plateau herbicide** tank mix may be applied by air or ground.

Apply **Heat herbicide** at 1 to 2 fl ozs/A plus **Plateau herbicide** at 4 to 6 fl ozs/A to leafy spurge when it reaches the yellow bract (pre-bloom) stage in late spring/early summer. **DO NOT** apply this tank mix as a fall application because control may not be satisfactory.

Spray Additives. **Heat herbicide** plus **Plateau herbicide** tank mix requires the use of an effective adjuvant system. For best results, use nonionic surfactant at 0.25% v/v plus ammonium sulfate at 8.5 to

17.0 lbs/100 gals [1% to 2% weight/volume (w/v)]. Crop oil concentrate or methylated seed oil may also be used with this tank mixture when injury (stunting, necrosis) to grasses is acceptable.

Water Volume. Use 5 or more and 10 or more gallons of water per acre for aerial and ground application, respectively. Thorough coverage of weeds is essential and higher spray volumes may be necessary for performance on a heavy population of leafy spurge.

Native Grass Areas

Use not permitted in California.

Heat herbicide may be used for establishment and maintenance of native grass and natural areas (such as wildlife management areas, wildlife openings, wildlife food plots, and wildlife habitats).

Application Method, Rate, and Timing

Apply **Heat herbicide** as a postemergence spray plus the recommended adjuvant (refer to **Additives** section for specifics) as a uniform broadcast application for selective broadleaf weed control in native grass areas and unimproved turf. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates. Transitory injury may be observed on certain grass species such as Bermudagrass and Bahiagrass at higher use rates.

Grasses treated with **Heat herbicide** may be grazed with no pre-grazing interval.

Pasture and Rangeland

Use not permitted in California on pasture and rangeland unless otherwise directed by supplemental labeling.

Heat herbicide may be applied for broadleaf weed control (refer to **Table 1** and **Table 2** for list of weeds controlled) in perennial cool-season and warm-season forage grasses grown in pastures or rangeland or Federal Conservation Reserve Program (CRP) land for livestock grazing.

Before applying **Heat herbicide** to forage grasses, verify the selectivity of **Heat herbicide** on your variety with your local seed company (supplier) to help avoid potential injury to sensitive varieties.

Application Method, Rate, and Timing

Apply **Heat herbicide** only to established (defined as planted in fall or spring which has gone through a first cutting/mowing) stands of perennial cool-season and warm-season forage grasses.

Heat herbicide may cause transitory injury to forage grasses (leaf necrosis) under certain conditions, but new growth is normal and vigor is not reduced.

Disease, extremely cold weather, drought, extensive frost heaving, low or high pH, salinity, and other environmental pressures may weaken grass stands and make the crop more susceptible to herbicide injury.

Dormant-season Application for Burndown and Residual Weed Control in Warm-season and Cool-season Grasses

Apply **Heat™ herbicide** at 1 to 2 fl ozs/A as a broadcast burndown spray to emerged broadleaf weeds in the dormant season [i.e. when grasses are not actively growing in the fall (postharvest), during winter dormancy period, or in early spring before greenup]. An adjuvant system is required for optimum broadleaf burndown activity.

For additional residual broadleaf weed control, **Heat herbicide** can be applied anytime in the dormant season (as previously described) at rates of 3 to 4 fl ozs/A.

Sequential applications of **Heat herbicide** may be made within the dormant season if the maximum cumulative amount does not exceed 4 fl ozs/A of **Heat herbicide**. Apply dormant-season burndown applications sequentially where the first burndown application is made fall (postharvest) or during winter dormancy period, and the second application is made in early spring before greenup. Separate sequential dormant-season burndown applications by at least 14 days.

Specific Adjuvant Requirements for Dormant-season Application in Warm-season and Cool-season Grasses. For optimum postemergence control of emerged broadleaf weeds, use the following adjuvants with **Heat herbicide**:

- Methylated seed oil (MSO) at 1% volume/volume (v/v) plus ammonium sulfate (AMS) at 8.5 to 17.0 lbs/100 gallons

In-season Postemergence Application for Weed Control in Cool-season Grasses

Apply **Heat herbicide** at 1 to 2 fl ozs/A as a broadcast postemergence spray to control emerged broadleaf weeds in season (i.e. actively growing cool-season forage grasses). Make in-season application before weeds reach the maximum size listed in **Table 3**. Postemergence application requires the addition of an adjuvant system.

Specific Adjuvant Requirements for In-season Postemergence Application in Cool-season Grasses. For optimum postemergence control of emerged broadleaf weeds, use the following adjuvant with **Heat herbicide**:

- MSO at 1% v/v
- Some cool-season grass species, such as Timothy, may exhibit crop response such as leaf burn and leaf trapping when adding a nitrogen-containing fertilizer with post-emergence application of **Heat herbicide**.

In-season Postemergence Application for Weed Control in Warm-season Grasses

Apply **Heat herbicide** at 1 to 2 fl ozs/A as a broadcast postemergence spray to control emerged broadleaf weeds in season (i.e. actively growing warm-season forage grasses). In-season postemergence application can be made in the spring after greenup. Make in-season application before weeds reach the maximum size listed in **Table 3**.

Postemergence application requires the addition of an adjuvant system.

DO NOT apply **Heat herbicide** in-season postemergence on Bahiagrass, buffalograss, and switchgrass.

DO NOT exceed 1 fl oz/A of **Heat herbicide** in forage Bermudagrass applied in-season postemergence (i.e. after greenup) because higher rates may cause unacceptable grass injury.

Specific Adjuvant Requirements for Postemergence Application in Warm-season Grasses. For optimum postemergence control of emerged broadleaf weeds, use the following adjuvant with **Heat herbicide**:

- MSO at 1% v/v
- **DO NOT** add nitrogen-containing fertilizers when applying **Heat herbicide** to warm-season grasses.

Sequential Applications in Warm-season and Cool-season Grasses

Heat herbicide may be applied as a sequential or split program where application(s) is made in the dormant season and subsequent application(s) is made postemergence in season after greenup. **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Heat herbicide** per season.

In-season postemergence application of **Heat herbicide** may also be applied sequentially; separate sequential applications by at least 14 days. The maximum cumulative amount for in-season postemergence applications must not exceed 2 fl ozs/A of **Heat herbicide**.

Tank Mixes

Broad-spectrum control of grass weeds and/or additional broadleaf weeds requires a tank mix with another herbicide. Read and follow the applicable restrictions and limitations and directions for use on the other product label. The most restrictive labeling applies to tank mixes. **Heat herbicide** may be tank mixed or applied sequentially with other herbicide products.

Use-specific Restrictions

- **DO NOT** apply more than a maximum cumulative amount of 6 fl ozs/A of **Heat herbicide** per season.
- For a mixed stand of cool-season and warm-season grasses, follow use directions for warm-season grasses when applying **Heat herbicide** in-season postemergence.
- **DO NOT** apply **Heat herbicide** to mixed stands of grass and forage legumes or to grass stands containing other desirable broadleaf species. **Heat herbicide** application will kill or cause severe injury to alfalfa, clover, other legumes, and most broadleaf species.
- There is no preharvest or pre-grazing interval for **Heat herbicide**-treated grass forage, hay, pasture, or rangeland.

- **DO NOT** apply **Heat™ herbicide** to stands of annual forage (e.g. forage sorghum, Sudangrass).

Vegetation Control and Management in Noncropland Areas

Heat herbicide may be applied for vegetation control and management in and/or around the following nonagricultural areas: airports, barns, fence rows, manufacturing plants, nonirrigation ditchbanks, parking lots, petroleum tank farms, pumping installations, railroads, rights-of-way (highway, pipeline, utility), roadsides, sheds, storage areas, utility buildings, utility plant sites, and other similar use sites.

Application Method, Rate, and Timing

Selective Weeding

Apply as a postemergence spray of **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (refer to **Additives** section for specifics) as a uniform broadcast application for selective weed control (e.g., broadleaves and wildling pine). Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates.

Tank Mixes. Broad-spectrum postemergence and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Overdrive® herbicide**
- **Plateau® herbicide**
- glyphosate

Bareground

Heat herbicide provides contact burndown of emerged weeds plus rate-dependent residual preemergence control of annual weeds. Apply **Heat herbicide** with a labeled rate of a glyphosate-based product plus the recommended adjuvant (refer to **Additives** section for specifics) as a uniform broadcast application. For effective residual broadleaf weed control, **Heat herbicide** must be applied at the maximum use rate of 6 fl ozs/A. The actual length of residual control depends on factors such as application rate, soil type, organic matter, weed pressure, and rainfall amounts after application. Adequate precipitation is necessary to activate **Heat herbicide**. Dry weather following application may reduce effectiveness. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates.

Tank Mixes. Broad-spectrum postemergence and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Arsenal® herbicide**
- **Arsenal® PowerLine™ herbicide**
- **Frequency® herbicide**
- **Pendulum® AquaCap™ herbicide**
- **Plateau herbicide**
- diuron
- glyphosate

Right of Way

Broadcast Application. Apply **Heat herbicide** for rapid brownout of wilding (volunteer) pine, including loblolly pine (*Pinus taeda*) and Virginia pine (*P. virginiana*). For best control, apply **Heat herbicide** at 2 to 6 fl ozs/A with a labeled rate of a glyphosate-based product plus the recommended adjuvant (refer to **Additives** section for specifics) as a uniform broadcast application. Make foliar applications in the spring to summer when volunteer pine are actively growing. Fall application may not provide consistent control. Use a spray volume of 20 gallons water per acre or more for broadcast foliar applications for thorough spray coverage.

Tank Mixes. Broad-spectrum postemergence and/or residual control of grass weeds or additional broadleaf weeds requires a tank mix with another herbicide. **Heat herbicide** may also be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

- **Arsenal herbicide**
- **Arsenal PowerLine herbicide**
- **Milestone® herbicide**
- glyphosate

Selective Stem Application

Apply **Heat herbicide** in a tank mix with glyphosate and/or other tank mix herbicides, plus the recommended adjuvant (refer to **Additives** section for specifics), for rapid brownout of woody species using a directed-foliar individual plant treatment. For enhanced brownout of pine species (including loblolly pine [*Pinus taeda*] and Virginia pine [*P. virginiana*]), tank mix with glyphosate or other pine control herbicides. Make selective stem applications of **Heat herbicide** using backpack or hydraulic handgun equipment. For best results, apply **Heat herbicide** at a rate range of 0.125% to 1.0% v/v with a tank mix partner (refer to tank mix partner label for the use rate). The proper spray pattern for selective stem applications is to uniformly wet all foliage on the target plant, but **DO NOT** drench target vegetation causing spray solution to run off. Excessive wetting of foliage to runoff is not recommended. For best results, make selective stem applications with methylated seed oil at 1% v/v as the adjuvant. Apply **Heat herbicide** up to but **DO NOT** exceed 16 fl ozs/A (0.356 pound active ingredient saflufenacil per acre) with selective stem applications.

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The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Plant injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or use of the product in a manner inconsistent with its labeling, all of which are beyond the control of BASF CORPORATION ("BASF") or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

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