7969-297 07/19/2011 1/14

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

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

Craig D. Kleppe
BASF Corporation
26 Davis Drive, PO Box 13528
Research Triangle Park, NC 27709-3528

JUL 19 2011

Subject: Label Amendment
HEAT Powered by KIXOR Herbicide
EPA reg. # 7969-297
Application dated: April 19, 2011

Dear Mr. Kleppe:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable.

Amended labeling will supercede all previously accepted ones. A stamped copy of labeling is enclosed for your records.

Submit one (1) copy of final printed labeling before you release the product for shipment.

Sincerely,

Kathryn V. Montague

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

2/14

Group 14 Herbicide

HEAT™

POWERED BY KIXOR® HERBICIDE

For postemergence and residual broadleaf weed control in noncropland areas

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 **First Aid**, **Precautionary Statements**, **Directions For Use**, **Conditions of Sale and Warranty**, and state-specific crop and/or 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:

ACCEPTED

JUL 19 2011

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

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

BASF
The Chemical Company

8/14

FIRST AID	
If swallowed	• 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. • **DO NOT** give any liquid to the person. • **DO NOT** give anything by mouth to an unconscious person.
If in eyes	• 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	• 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	• 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)

Some materials that are chemically resistant to this product are listed below. For more options, refer to **Category A** on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves (such as natural rubber, selection **Category A**)
- 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 Statement

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 washwaters or rinsate.

Groundwater Advisory. Saflufenacil 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. Saflufenacil 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™ herbicide**. The use of **Heat** 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, such as natural rubber ≥ 14 mils
- 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 may 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. 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 spillage regarding 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 be taken in case 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™ herbicide provides both contact burndown (postemergence) and rate-dependent residual preemergence broadleaf weed control (refer to **Table 1** and **Table 2** for list of weeds controlled). **Heat** does not control grass weeds and must be tank mixed with a grass herbicide for a complete weed control program.

Good coverage of weed foliage is critical for optimum postemergence control. Higher spray volumes should be used when targeting larger weeds or higher weed densities.

Postemergence applications of **Heat** should be made when broadleaf weeds are small (less than 6 inches) and actively growing. An adjuvant is required with **Heat** for optimum burndown activity (refer to **Additives** section for details). 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 broadleaf weeds, use higher spray volumes and/or a higher application rate within an application rate range. Angling nozzles forward (to 45 degrees) may improve penetration of denser weed canopies.

Length of broadleaf 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.

Table 1. Broadleaf Weeds Controlled with a Postemergence Application of Heat[1]

Common Name	Scientific Name
Amaranth, Palmer	*Amaranthus palmeri*
Bedstraw, catchweed	*Galium aparine*
Beggarticks, hairy	*Bidens pilosa*
Beggarweed, Florida	*Desmodium tortuosum*
Bindweed, field[3]	*Convolvulus arvensis*
Buckwheat, wild	*Polygonum convolvulus*
Carpetweed	*Mollugo verticillata*
Chickweed, common	*Stellaria media*
Cocklebur, common	*Xanthium strumarium*
Cowcockle	*Vaccaria pyramidata*
Dandelion[3]	*Taraxacum officinale*
Eveningprimrose, cutleaf	*Oenothera laciniata*
Falseflax, smallseed	*Camelina microcarpa*
Filaree, redstem	*Erodium cicutarium*
Fleabane, hairy	*Conyza bonariensis*
Flixweed	*Descurainia sophia*
Groundcherry, cutleaf	*Physalis angulata*
Groundsel, common	*Senecio vulgaris*
Henbit[2]	*Lamium amplexicaule*
Horseweed (marestail)	*Conyza canadensis*
Knotweed, prostrate	*Polygonum aviculare*
Kochia	*Kochia scoparia*
Ladysthumb	*Polygonum persicaria*
Lambsquarters, common	*Chenopodium album*
Lambsquarters, narrowleaf	*Chenopodium pratericola*

Table 1. Broadleaf Weeds Controlled with a Postemergence Application of Heat[1] *(continued)*

Common Name	Scientific Name
Lettuce, prickly	*Lactuca serriola*
Mallow, common	*Malva neglecta*
Mallow, little (cheeseweed)	*Malva parviflora*
Mallow, Venice	*Hibiscus trionum*
Marestail (horseweed)	*Conyza canadensis*
Morningglory, entireleaf	*Ipomoea hederacea* var. *integriuscula*
Morningglory, ivyleaf	*Ipomoea hederacea*
Morningglory, palmleaf	*Ipomoea wrightii*
Morningglory, pitted	*Ipomoea lacunosa*
Morningglory, tall	*Ipomoea purpurea*
Mustard, black	*Brassica nigra*
Mustard, tumble	*Sisymbrium altissimum*
Mustard, wild	*Sinapis arvensis*
Nettle, burning	*Urtica urens*
Nightshade, black	*Solanum nigrum*
Nightshade, cutleaf	*Solanum triflorum*
Nightshade, Eastern black	*Solanum ptycanthum*
Nightshade, hairy	*Solanum saccharoides*
Pennycress, field	*Thlaspi arvense*
Pigweed, prostrate	*Amaranthus blitoides*
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, smooth	*Amaranthus hybridus*
Pine[4]	*Pinus* spp.
Puncturevine	*Tribulus terrestris*
Purslane, common	*Portulaca oleracea*
Pusley, Florida[2]	*Richardia scabra*
Ragweed, common[5]	*Ambrosia artemisiifolia*
Ragweed, giant[5]	*Ambrosia trifida*
Rapeseed (canola), volunteer	*Brassica* spp.
Sesbania, hemp	*Sesbania exaltata*
Shepherd's-purse	*Capsella bursa-pastoris*
Sida, prickly	*Sida spinosa*
Smartweed, Pennsylvania	*Polygonum pensylvanicum*
Sowthistle, annual	*Sonchus oleraceus*
Sowthistle, spiny	*Sonchus asper*
Spurge, leafy[6]	*Euphorbia esula*
Sunflower, common	*Helianthus annuus*
Tansymustard, pinnate	*Descurainia pinnata*
Thistle, Canada[3]	*Cirsium arvense*
Thistle, Russian	*Salsola kali*
Velvetleaf	*Abutilon theophrasti*
Waterhemp[5]	*Amaranthus tuberculatus*
Willowweed	*Epilobium adenocaulon*

[1] For best control, target applications when weeds are less than 6 inches. Larger weeds or heavy infestations will 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** 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 burndown applications of **Group 14/Group E** herbicides and will not be controlled by herbicides like **Heat**. 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 tank mix with **Plateau® herbicide**.

Table 2. Preemergence Weed Control with Heat™ herbicide[1]

Common Name	Scientific Name
Amaranth, Palmer	*Amaranthus palmeri*
Amaranth, Powell	*Amaranthus powellii*
Beggarweed, Florida	*Desmodium tortuosum*
Buckwheat, wild	*Polygonum convolvulus*
Burcucumber[2]	*Sicyos angulatos*
Chickweed, common	*Stellaria media*
Cocklebur, common	*Xanthium strumarium*
Copperleaf, Virginia	*Acalypha virginica*
Galinsoga, smallflower	*Galinsoga parviflora*
Groundcherry, cutleaf	*Physalis angulata*
Horseweed (marestail)	*Conyza canadensis*
Jimsonweed	*Datura stramonium*
Kochia	*Kochia scoparia*
Ladysthumb	*Polygonum persicaria*
Lambsquarters, common	*Chenopodium album*
Mallow, Venice	*Hibiscus trionum*
Morningglory, entireleaf	*Ipomoea hederacea* var. *integriuscula*
Morningglory, ivyleaf	*Ipomoea hederacea*
Morningglory, pitted	*Ipomoea lacunosa*
Morningglory, tall	*Ipomoea purpurea*
Mustard, wild	*Sinapis arvensis*
Nightshade, black	*Solanum nigrum*
Pennycress, field	*Thlaspi arvense*
Pigweed, prostrate	*Amaranthus blitoides*
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, smooth	*Amaranthus hybridus*
Pigweed, tumble	*Amaranthus albus*
Puncturevine[2]	*Tribulus terrestris*
Purslane, common	*Portulaca oleracea*
Pusley, Florida	*Richardia scabra*
Ragweed, common	*Ambrosia artemisiifolia*
Ragweed, giant	*Ambrosia trifida*
Sida, prickly	*Sida spinosa*
Smartweed, Pennsylvania	*Polygonum pensylvanicum*
Starbur, bristly	*Acanthospermum hispidum*
Sunflower, common	*Helianthus annuus*
Thistle, Russian	*Salsola kali*
Velvetleaf	*Abutilon theophrasti*
Waterhemp	*Amaranthus tuberculatus*

[1] For effective **residual** preemergence weed control from postemergence applications, **Heat** 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 prior to weed seedling emergence. When **Heat** is not activated, a labeled postemergence herbicide may be required to improve weed control.

[2] Suppression only

Mode of Action

Heat is a potent inhibitor of protoporphyrinogen-oxidase belonging to herbicide mode of action **Group 14** (WSSA)/ **Group E** (HRAC). **Heat** 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 will 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. Resistance management practices include:

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

Application Instructions

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

Application Rates

Application rates for **Heat** 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** per year.

Table 3. Application Rates for Heat

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 broadleaf weeds and/or control of glyphosate-tolerant species [such as horseweed (marestail)]	1 to 2
Accelerated Burndown + Residual	Accelerated burndown of broadleaf 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] To provide effective residual control of labeled weed species, **Heat** must be used at the maximum use rate of 6 fl ozs/A.

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Application Methods and Equipment

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

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

Aerial Application Requirements

Water Volume. Use 10 or more gallons of water per acre.

The following measures must be followed to reduce the potential of spray drift to nontarget areas from aerial applications:

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the fixed wingspan or 90% of rotor blade diameter.
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 be pointed downward more than 45 degrees.
4. Without compromising aircraft safety, applications should be made at a height of 10 feet or less above the crop canopy or tallest plants.
5. **DO NOT** apply during periods of temperature inversions or stable atmospheric conditions.
6. Avoid potential adverse effects to nontarget areas by maintaining a (150)[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] The buffer zone size is determined by use rate. Refer to the table below for the minimum buffer zone distance required for the intended use rate. Utilize 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. It will be removed from the final print container label after the appropriate buffer zone distance is selected.

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	26
2	0.045	50	66
4	0.089	100	100
6	0.134	150	150

Ground Application (broadcast) Requirements

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

The following measures must be followed to reduce the potential of spray drift to nontarget areas from ground applications:

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 applications while flood-jet type nozzles are recommended for residual soil surface applications. Nozzles that deliver coarse spray droplets may be used to reduce spray drift provided 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.
2. Apply this product only when the potential for drift to adjacent nontarget areas is minimal (e.g. when the 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 (75)[a] foot buffer 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).

[a] The buffer zone size is determined by use rate. Refer to the table below for the minimum buffer zone distance required for the intended use rate. Utilize 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. It will be removed from the final print container label after the appropriate buffer zone distance is selected.

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	13
2	0.045	50	33
4	0.089	100	50
6	0.134	150	75

Ground Application (spot)

Postemergence spot applications may be made with **Heat**. Spray volumes should be sufficient to thoroughly wet targeted foliage but not to the point of runoff, i.e. a spray-to-wet basis. Use a 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 the spray solution to 0.50% to 1.00% v/v. Spot applications will also require the use of an adjuvant; add methylated seed oil (MSO) or crop oil concentrate (COC) at the rate of 1% v/v. The following chart

provides the amount(s) of **Heat™ herbicide** to use to prepare spray solutions for spot applications.

Heat Required (fl ozs) for Spot Application Treatments				
Spray Solution to Prepare (gals)	**Desired Concentration (v/v)**			
	0.25%	**0.50%**	**0.75%**	**1.0%**
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 that is 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** and to achieve consistent broadleaf 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] The 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** 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 (< 12.5 gallons per acre) aerial or ground applications.

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

Tank Mixing Information

Heat 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. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Always follow the most restrictive label use directions. Refer to **Specific Use Information** section for details.

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

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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 in the sequence 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 the 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, or 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

1. **Water** - Fill tank 1/2 to 3/4 full with clean water and start agitation.
2. **Agitation** - Maintain continuous and constant agitation throughout mixing.
3. **Inductor** - If an inductor is used, rinse it thoroughly after each component has been added.
4. **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.
5. **Water-soluble additives** (including dry and liquid fertilizers such as ammonium sulfate or urea ammonium nitrate)
6. **Water-dispersible products** (such as dry flowables, wettable powders, suspension concentrates, or suspo-emulsions)
7. **Water-soluble products**
8. **Emulsifiable concentrates** (including methylated seed oil adjuvants)
9. **Remaining quantity of water**

Maintain agitation throughout 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. Continue agitation while spraying.

Use Precautions

- **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.
- **Rainfastness** - **Heat** is rainfast 1 hour after application. Burndown activity may be reduced if rain occurs within 1 hour of application.
- **DO NOT** contaminate irrigation ditches or water used for domestic purposes.
- **DO NOT** apply through any type of irrigation system (e.g. chemigation).
- **Heat is not for sale, distribution, or use in Nassau and Suffolk counties in New York State.**

Specific Use Information

Heat may be used for selective or nonselective broadleaf weed control in Christmas tree plantations, conifer and hardwood plantations and various noncropland areas. This section provides use directions for **Heat** in various noncrop situations. Be sure to 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 may be used as a postemergence-directed application in Christmas tree plantations to control broadleaf weeds. Refer to **Table 1**, **Table 2**, and **Table 3** for lists of weeds controlled and application rates. Apply **Heat** plus the recommended adjuvant (refer to **Additives** section for details) as a postemergence-directed spray application either as a uniform broadcast application or as a uniform banded or as a spot application directed at the base of trees while targeting emerged weeds. Spray contact of needles or buds either directly via improper nozzle orientation or indirectly via physical drift will result in crop injury.

Heat may be applied either 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 prior to application.

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

Tank Mixtures

Broad-spectrum burndown and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat** may 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 undesirable plants during site preparation operations conducted prior to the planting and establishment of 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** 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** application.

Site Preparation Application

Apply **Heat** plus the recommended adjuvant (refer to **Additives** section for details) as a uniform broadcast application during preplant site preparation for the control of undesirable herbaceous broadleaf weed species in plantations and for enhanced brownout with other site preparation tank mixes.

Wildling Pine Control

For best control of wildling pine, tank mix **Heat** with glyphosate (refer to specific glyphosate label for appropriate use rates) and make foliar applications in the spring to summer when wildling pine seedlings are actively growing. Fall applications may not provide consistent control. Proper spray coverage is essential for best control. Use a minimum spray volume of 15 gallons of water per acre for aerial applications. For ground applications, use a minimum spray volume of 30 gallons of water per acre for broadcast foliar applications to provide maximum spray coverage.

Tank Mixtures

Broad-spectrum burndown and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat** may 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 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** plus the recommended adjuvant (refer to **Additives** section for details) as a postemergence-directed spray application either as a uniform broadcast application or as a uniform banded 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 may be applied either 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 prior to application. Apply only to nonbearing tree stock.

DO NOT apply more than 4.0 fl ozs/A of **Heat** to tree stock 1 year old or less.

DO NOT make over-the-top application to any desirable plants or trees.

DO NOT apply in vineyard nurseries.

Tank Mixtures

Broad-spectrum burndown and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat** may 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 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** plus the recommended adjuvant (refer to **Additives** section for details) for selective broadleaf weed control as a postemergence-directed spray either as a uniform broadcast application or as a uniform banded or as a spot application directed at the base of 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, green shoots or buds either directly via improper nozzle orientation or indirectly via physical drift will result in plant injury.

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

Industrial landscape areas must be established for at least 9 months prior to application.

DO NOT make over-the-top applications to any industrial landscape plants or severe plant injury will occur.

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Tank Mixtures

Broad-spectrum burndown and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat™ herbicide** may 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**)

Noncropland Areas

Heat may be used:

- In noncropland areas including fence rows, nonirrigation ditchbanks, petroleum tank farms, pumping installations, railroad, rights-of-way (utility, pipeline, highway), storage areas, and utility plant sites
- For the establishment and maintenance of natural areas (such as wildlife management areas, wildlife openings, and wildlife habitats)

Application Method, Rate, and Timing

Selective Weeding

Apply **Heat** as a postemergence spray plus the recommended adjuvant (refer to **Additives** section for details) as a uniform broadcast application for selective broadleaf weed control in unimproved turf and native grass areas. 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.

DO NOT feed or allow animals to graze areas of grass treated with **Heat** within 365 days of treatment.

Tank Mixtures. Broad-spectrum postemergence and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat** may 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 will provide contact burndown plus residual preemergence control of annual broadleaf weeds. Apply **Heat** plus the recommended adjuvant (refer to **Additives** section for details) as a uniform broadcast application. To provide effective residual broadleaf weed control, **Heat** must be applied at the maximum use rate of 6 fl ozs/A. The actual length of residual control is dependent on factors such as application rate, soil type, organic matter, weed pressure, and rainfall amounts after application. Adequate precipitation is necessary to activate **Heat**. 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 Mixtures. Broad-spectrum postemergence and/or residual control of grasses or additional broadleaf species will require a tank mix with another herbicide. **Heat** may 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**
- **Plateau**
- **Sahara® herbicide**
- diuron
- glyphosate

Right of Way

Broadcast Application. Apply **Heat** to provide rapid brownout of volunteer pine, including loblolly pine *(Pinus taeda)* and Virginia pine *(P. virginiana)*. For best results, apply **Heat** plus the recommended adjuvant (refer to **Additives** section for details) as a uniform broadcast application at 6 fl ozs/A in a tank mix with glyphosate (refer to glyphosate label for specific use rates). Make foliar applications in the spring to summer when volunteer pine are actively growing. Fall applications may not provide consistent control. Use a minimum spray volume of 50 gallons water per acre for broadcast foliar applications to provide the maximum spray coverage.

Selective Stem Application. Apply **Heat** in a tank mix with glyphosate or other labeled products, plus the recommended adjuvant(s), to provide 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 products. Make selective stem applications of **Heat** using backpack or hydraulic handgun equipment. For best results, apply **Heat** at a rate range of 0.5% to 1.0% v/v with a tank mix partner (refer to tank mix partner label for the recommended use rate). The proper spray pattern for selective stem applications is to uniformly wet all the foliage on the target plant, but **DO NOT** drench the 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 or crop oil concentrate at 1% v/v as the adjuvant. Apply **Heat** up to but **DO NOT** exceed 16 fl ozs/A (0.356 pound active ingredient saflufenacil per acre) with selective stem applications.

Tank Mixtures. Heat may be tank mixed or applied sequentially with one or more of, but not limited to, the following herbicide products:

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

Leafy Spurge Control

Heat™ herbicide applied in tank mixture with **Plateau® herbicide** will control leafy spurge when applied late spring/early summer in noncropland areas as described above. This tank mixture will also control additional weeds listed on the respective **Heat** and **Plateau** labels. **Heat** plus **Plateau** tank mix may be applied by either ground or air.

Apply **Heat** at 1.0 to 2.0 fl ozs/A plus **Plateau** at 4.0 to 6.0 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 resultant control may not be satisfactory.

DO NOT feed or allow animals to graze areas of grass treated with **Heat** within 365 days of treatment.

Spray Additives for Leafy Spurge Control. Heat plus **Plateau** tank mix requires the use of an effective adjuvant system. For best results, use a nonionic surfactant at 0.25% volume/volume (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 for Leafy Spurge Control. For ground applications, use 10 or more gallons of water per acre. Thorough coverage of weeds is essential and higher spray volumes may be necessary for better performance on a heavy population of leafy spurge. For aerial applications, use 5 or more gallons of water per acre.

Conditions of Sale and Warranty

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. Crop 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.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

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TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF. 1108

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