

241-273

1/28/2009

1 of 9



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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

JAN 28 2009

Dr. Jeffrey H. Birk
Regulatory Manager
BASF
26 Davis Drive
Research Triangle Park, NC 27709-3528

Subject: Label Notification for Pesticide Registration Notice 2007-4

Dear Dr. Birk,

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 2007-4 dated August 18, 2008 for the product Arsenal[®] Railroad herbicide (EPA Registration Number 241-273). The Registration Division (RD) has conducted its review of this request for its applicability under PRN 2007-4 and finds that the label changes requested fall within the scope of PRN 2007-4. The label submitted with the application has been stamped "Notification" and will be placed in our records.

Please be reminded that 40 CFR Part 156.140(a)(4) requires that a batch code, lot number, or other code identifying the batch of the pesticide distributed and sold be placed on nonrefillable containers. The code may appear either on the label (and can be added by non-notification/PR Notice 98-10) or durably marked on the container itself.

If you have any questions, please call me directly at 703-305-6249 or Steve Schaible of my staff at 703-308-9362.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Arrington".

Linda Arrington
Notifications & Minor Formulations Team Leader
Registration Division (7505P)
Office of Pesticide Programs

2049



The Chemical Company

August 18, 2008

U.S. Environmental Protection Agency
Office of Pesticide Programs (7505P)
Document Processing Desk 7504P (NOTIF)
Room S-4900
One Potomac Yard
2777 S. Crystal Drive
Arlington, VA 22202
Attention: Mr. James Tompkins, (PM 25)

**RE: Notification complying with PRN 2007-4:
Revised Arsenal Railroad herbicide container disposal language
EPA Reg. No. 241-273**

Dear Mr. Tompkins:

BASF is hereby submitting revised labeling for Arsenal Railroad herbicide (EPA Reg. No. 241-273) to comply with the container disposal changes required by PRN 2007-4. No other substantive changes have been made to the labeling.

Enclosed please find:

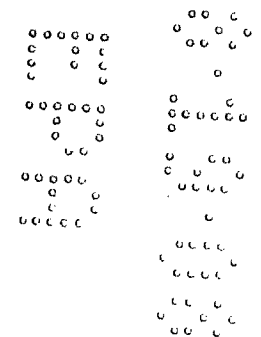
- Application form 8570-1
- CD containing electronic copy of the label
- Certification with Respect to Label Integrity
- Arsenal Railroad herbicide label
- Approved Arsenal Railroad herbicide label

No PRIA fee is required for this notification.

Thank you for your assistance with this matter. If you should have any questions, please feel free to call me at (919) 547-2622.

Regards,

Jeffrey H. Birk, Ph.D.
Regulatory Manager
Phone 919-547-2622
Mobile : 919-225-9220
Fax: 919-547-2850
Email: jeffrey.birk@basf.com



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3099



ACTIVE INGREDIENT: Isopropylamine salt of Imazapyr
 (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)*

27.6%

INERT INGREDIENTS

72.4%

TOTAL

100.0%

*Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.

EPA Reg. No. 241-273

EPA Est. No.

NOTIFICATION

JAN 28 2009

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 additional **First Aid, Precautionary Statements, Directions for Use**
 and **Conditions of Sale and Warranty.**

BASF Corporation
 Agricultural Products
 26 Davis Drive
 Research Triangle Park, NC 27709



The Chemical Company

FIRST AID	
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after first 5 minutes, then continue rinsing. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).	

PRECAUTIONARY STATEMENTS

**HAZARDS TO HUMANS
CAUTION!**

Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- Long-sleeve shirt and long pants
- Chemical-resistant gloves made of waterproof material
- Shoes plus socks

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

USER SAFETY RECOMMENDATIONS

Users should:

1. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of **ARSENAL® Railroad herbicide** should be mixed, stored and applied only in stainless steel, fiber-glass, plastic and plastic-lined steel containers.

DO NOT mix, store or apply **ARSENAL** or spray solutions of **ARSENAL** in unlined steel (except stainless steel) containers or spray tanks.

ENVIRONMENTAL HAZARDS

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

IMPORTANT

DO NOT use on food or feed crops. **DO NOT** treat irrigation ditches, or water used for crop irrigation or for domestic purposes. Keep from contact with fertilizers, insecticides, fungicides and seeds. **DO NOT** apply or drain or flush equipment on or near desirable trees or

other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. **DO NOT** use on lawns, walks, driveways or tennis courts. **DO NOT** side-trim desirable vegetation with this product. Prevent drift of spray to desirable plants. **DO NOT USE** in California. Clean application equipment after using this product by thoroughly flushing with water.

GENERAL INFORMATION

ARSENAL is an aqueous solution containing surfactant to be mixed in water and applied as a spray for control of most annual and perennial grasses and broadleaf weeds on noncropland areas.

ARSENAL may be applied either pre-emergence or postemergence to the weeds; however, postemergence application is the method of choice in most situations, particularly for control of perennials. For maximum activity, weeds should be growing vigorously at the time of post-emergence application. The pre-emergence activity of **ARSENAL** will provide residual control of new germination of most weed species following a postemergence application.

ARSENAL is readily absorbed through leaves, stems, and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground storage organs, thus preventing regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two weeks after application. Complete kill of plants may not occur for several weeks.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

ARSENAL should be used only in accordance with recommendations on the leaflet label attached to the container. Keep containers closed to avoid spills and contamination.

ARSENAL may be used postemergence for control of most annual and perennial grasses and broadleaf weeds on noncropland areas such as railroad, utility, pipeline and

highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas and non-irrigation ditchbanks. **ARSENAL** is recommended for the establishment and maintenance of wildlife openings. **ARSENAL** may also be used for the release of unimproved bermudagrass (see specific directions).

STORAGE AND DISPOSAL

PESTICIDE STORAGE: DO NOT store below 10° F. **DO NOT** contaminate water, food or feed by storage or disposal.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Return empty container for reuse.

30 Gallon: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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

APPLICATION EQUIPMENT AND TECHNIQUES

ARSENAL® Railroad herbicide may be applied with the following applications equipment:

Aerial: fixed wing and helicopter.

Boom: conventional boom mounted, manifold mounted, and off-center nozzles.

Low-volume hand-held spray equipment: backpack, knapsack and other pump-up type pressure sprayers and backpack mist blowers used to direct application to weed foliage.

High-volume spray equipment: high pressure handguns and vehicle mounted high-volume directed spray equipment.

AERIAL EQUIPMENT

Uniformly apply the recommended amount of **ARSENAL** with properly calibrated aerial equipment in 5 to 30 gallons of water per acre. All precautions should be taken to minimize or eliminate spray drift. Aerial equipment designed to minimize spray drift, such as a helicopter equipped with a MICROFOIL boom, THRU-VALVE boom or raindrop nozzles, must be used. Applications should not be made under gusty conditions or when wind velocity exceeds 5 mph. Except when applying with a MICROFOIL boom, a drift control agent may be added at the recommended label rate. A foam reducing agent may be added at the recommended label rate, if needed.

IMPORTANT: DO NOT make applications by fixed wing aircraft unless appropriate buffer zones can be maintained to insure that drift does not occur off the target area. Thoroughly clean application equipment, including landing gear, immediately after use. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part.

BOOM EQUIPMENT

Mix the recommended amount of **ARSENAL** in 10 to 60 gallons of water per acre in the spray tank with the agitator running. A foam reducing agent may be added at the recommended label rate, if needed. If desired, a spray pattern indicator may be added at the recommended label rate. Check for even distribution in spray pattern.

IMPORTANT: To minimize drift, select proper nozzles; to avoid spraying a fine mist, **DO NOT** exceed spray pressures of 50 psi, and **DO NOT** spray under gusty or windy conditions.

Clean application equipment after using this product by thoroughly flushing with water.

SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the entity authorizing spraying are responsible for considering all these factors when making decisions.

Spray drift from applying this product may result in damage to sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to these and other adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or non-target crops) is minimal. Do not apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

To minimize spray drift, the applicator should be familiar with and take into account the following drift reduction advisory information. Additional information may be available from state enforcement agencies or the Cooperative Extension on the application of this product.

The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see **WIND, TEMPERATURE AND HUMIDITY**, and **TEMPERATURE INVERSIONS**).

CONTROLLING DROPLET SIZE

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

the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. Do not use nozzles producing a mist droplet spray.

APPLICATION HEIGHT

Making applications at the lowest possible height (helicopter, ground driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind.

SWATH ADJUSTMENT

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the treatment area, 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 3-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, which can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

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.

SENSITIVE AREAS

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

LOW-VOLUME HAND-HELD SPRAY EQUIPMENT

Thoroughly mix a 1/2 to 1 percent solution of **ARSENAL** in water. To determine the proper percent solution of **ARSENAL** to use, see the **WEEDS CONTROLLED** section of this label and the **PERCENT SOLUTION RATE GUIDE** below. The table calculations below are based on an approximate delivery volume of 50 to 75 gallons per acre.

PERCENT SOLUTION RATE GUIDE

ARSENAL RATE PER ACRE	TO MIX
2-3 pints	1/2%
3-4 pints	3/4%
4-6 pints	1%

For best results, uniformly cover the foliage of the vegetation to be controlled with the spray solution.

DO NOT over apply and cause runoff from the treated foliage.

To mix the spray solution, add the volume of **ARSENAL** indicated in the table below to the desired amount of water.

SPRAY SOLUTION MIXING GUIDE

SOLUTION VOLUME	AMOUNT OF ARSENAL TO USE (fluid volume)		
	1/2%	3/4%	1%
1 gallon	2/3 oz	1 oz	1-1/3 oz
5 gallons	3-1/3 oz	5 oz	6-1/2 oz
10 gallons	6-2/3 oz	10 oz	13 oz
25 gallons	1 pint	1-1/2 pints	2 pints

2 tablespoons = 1 fluid ounce

IMPORTANT: DO NOT exceed recommended dosage rate per acre. **DO NOT** side-trim desirable vegetation with this product. Clean application equipment after using this product by thoroughly flushing with water.

HIGH-VOLUME SPRAY EQUIPMENT

ARSENAL may be applied using high-volume spray equipment. For best results, apply **ARSENAL** using the least amount of water practical to obtain uniform coverage of the vegetation foliage. Using excessive spray volumes which cause runoff from the plant foliage may result in reduced performance. When using spray volumes greater than 60 gallons per acre, additional nonionic surfactant such as Ortho* X-77 must then be added at the rate of 1 quart per 100 gallons of spray solution to provide optimum wetting and/or contact activity. A foam reducing agent may be added at the recommended label rate, if needed. If desired, a spray pattern indicator may be added at the recommended label rate.

To mix the spray solution, determine the proper **ARSENAL** pints per acre rate from the **WEEDS CONTROLLED** section of this label and mix according to the table below.

SPRAY SOLUTION MIXING GUIDE

PINTS ARSENAL TO MIX

PER 100 GALLONS WATER

SPRAY VOLUME (GAL/ACRE)	3 PTS/ACRE	4 PTS/ACRE	5 PTS/ACRE	6 PTS/ACRE
50	6	8	10	12
100	3	4	5	6
150	2	2-3/4	3-1/4	4

IMPORTANT: DO NOT exceed recommended dosage rate per acre. **DO NOT** side-trim desirable vegetation with this product. Clean application equipment after using this product by thoroughly flushing with water.

FOR CONTROL OF UNDESIRABLE WEEDS IN UNIMPROVED BERMUDAGRASS AND BAHIAGRASS

For use on unimproved bermudagrass and bahiagrass turf such as roadsides, utility rights-of-way and other noncrop-land industrial sites. The application of **ARSENAL**[®]

Railroad herbicide on established common and coastal bermudagrass and bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the bermudagrass and bahiagrass. Treatment of bermudagrass with **ARSENAL** results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre with a spray pressure 20 to 50 psi.

DOSAGE RATES AND TIMING

EARLY SPRING - DORMANT: Apply **ARSENAL** at 6 to 12 oz per acre for bermudagrass, and 4 to 8 fluid oz per acre for bahiagrass when the grass is still dormant and has not initiated new growth.

SPRING - UP TO 25% GREEN-UP: Apply **ARSENAL** at 6 to 8 oz per acre for bermudagrass and 4 to 8 fluid oz per acre for bahiagrass after the grass has initiated green-up but has not exceeded 25% green-up.

WEEDS CONTROLLED

Bedstraw (<i>Galium</i> spp.)	Little barley (<i>Hordeum pusillum</i>)
Bishopweed (<i>Ptilimnium capillaceum</i>)	Seedling Johnsongrass (<i>Sorghum halepense</i>)
Buttercup (<i>Fanunculus parviflorus</i>)	Wild carrot (<i>Daucus carota</i>)
Carolina geranium (<i>Geranium carolinianum</i>)	White clover (<i>Trifolium repens</i>)
Fescue (<i>Festuca</i> spp.)	Yellow woodsorrel (<i>Oxalis stricta</i>)
Foxtail (<i>Setaria</i> spp.)	

¹**DO NOT APPLY** to grass during its first growing season.

²**DO NOT APPLY** to grass that is under stress from drought, disease insects, or other causes.

³Temporary yellowing of grass may occur when treatment is made after growth commences.

⁴**DO NOT** add a surfactant.

FOR CONTROL OF UNDESIRABLE WEEDS UNDER PAVED SURFACES

ARSENAL can be used under asphalt, pond liners and other paved areas, **ONLY** in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

ARSENAL should be used only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, they should be removed by scalping with a grader blade to a depth sufficient to insure their complete removal.

APPLICATION DIRECTIONS

Applications should be made to the soil surface only when final grade is established. Do not move soil following **ARSENAL** application.

Uniformly apply **ARSENAL** to the area to be surfaced, including the shoulder areas at a rate of 6 pints per acre. Apply **ARSENAL** in sufficient water (at least 100 gal. per acre) to ensure thorough and uniform wetting of the soil surface. Add the recommended amount of **ARSENAL** to clean water in the spray tank during the filling operation. Agitate before spraying.

For Herbicide Activation:

On Moist Subsoil: Apply **ARSENAL** after final grading and immediately before laying asphalt or liner surface. Apply uniformly, using a at least 100 gallons of water per acre.

If Moisture Is Not Present: Incorporation of **ARSENAL** is needed for herbicide activation. **ARSENAL** can be incorporated into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. Do not allow treated soil to wash or move into untreated areas.

IMPORTANT

Paving should follow **ARSENAL** applications as soon as possible. **DO NOT** apply where the chemical may contact the roots of desirable trees or other plants.

The product is not recommended for use under pavement on residential properties such as driveways or parking lots, nor is it recommended for use in recreational areas such as under bike or jogging paths, golf cart paths, or tennis courts, or where landscape plantings could be anticipated. Injury or death of desirable plants may result if this product is applied where roots are present or where they may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities or drip line.

WEEDS CONTROLLED

ARSENAL will provide postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by pre-emergence or postemergence applications of **ARSENAL**; whereas, for established biennials and perennials postemergence applications of **ARSENAL** are recommended. **ARSENAL** should be used only in accordance with the recommendations on this label and the leaflet label.

809

GRASSES

COMMON NAME	SPECIES	GROWTH HABIT ²
Apply 2-3 pints per acre¹		
Annual bluegrass	<i>(Poa annua)</i>	A
Broadleaf signalgrass	<i>(Brachiaria platyphylla)</i>	A
Canada bluegrass	<i>(Poa compressa)</i>	P
Downy brome	<i>(Bromus tectorum)</i>	A
Fescue	<i>(Festuca spp.)</i>	A/P
Foxtail	<i>(Setaria spp.)</i>	A
Italian ryegrass	<i>(Lolium multiflorum)</i>	A
Johnsongrass	<i>(Sorghum halepense)</i>	P
Kentucky bluegrass	<i>(Poa pratensis)</i>	P
Lovegrass	<i>(Eragrostis spp.)</i>	A/P
Orchardgrass	<i>(Dactylis glomerata)</i>	P
Paragrass	<i>(Brachiaria mutica)</i>	P
Quackgrass	<i>(Agropyron repens)</i>	P
Sandbur	<i>(Cenchrus spp.)</i>	A
Sand dropseed	<i>(Sporobolus cryptandrus)</i>	P
Smooth brome	<i>(Bromus inermis)</i>	P
Vaseygrass	<i>(Paspalum urvillei)</i>	P
Wild oats	<i>(Avena fatua)</i>	A
Witchgrass	<i>(Panicum capillare)</i>	A
Apply 3-4 pints per acre¹		
Beardgrass	<i>(Andropogon spp.)</i>	P
Cheat	<i>(Bromus secalinus)</i>	A
Crabgrass	<i>(Digitaria spp.)</i>	A
Fall panicum	<i>(Panicum dichotomiflorum)</i>	A
Goosegrass	<i>(Eleusine indica)</i>	A
Prairie threeawn	<i>(Aristida oligantha)</i>	P
Reed canarygrass	<i>(Phalaris arundinacea)</i>	P
Torpedograss	<i>(Panicum repens)</i>	P
Wild barley	<i>(Hordeum spp.)</i>	A
Apply 4-6 pints per acre¹		
Bahiagrass	<i>(Paspalum notatum)</i>	P
Bermudagrass	<i>(Cynodon dactylon)</i>	P
Big bluestem	<i>(Andropogon gerardii)</i>	P
Cattail	<i>(Typha spp.)</i>	P
Cogongrass	<i>(Imperata cylindrica)</i>	P
Dallisgrass	<i>(Paspalum dilatatum)</i>	P
Feathertop	<i>(Pennisetum villosum)</i>	P
Guineagrass	<i>(Panicum maximum)</i>	P
Phragmites	<i>(Phragmites australis)</i>	P
Prairie cordgrass	<i>(Spartina pectinata)</i>	P
Saltgrass	<i>(Distichlis stricta)</i>	P
Timothy	<i>(Phleum pratense)</i>	P
Wirestem muhly	<i>(Muhlenbergia frondosa)</i>	P

BROADLEAF WEEDS

COMMON NAME	SPECIES	GROWTH HABIT ²
Apply 2-3 pints per acre¹		
Burdock	<i>(Arctium spp.)</i>	B
Camphorweed	<i>(Heterotheca subaxillaris)</i>	P
Carpetweed	<i>(Mollugo verticillata)</i>	A
Carolina geranium	<i>(Geranium carolinianum)</i>	A
Clover	<i>(Trifolium spp.)</i>	A/P
Common chickweed	<i>(Stellaria media)</i>	A
Common ragweed	<i>(Ambrosia artemisiifolia)</i>	A
Dandelion	<i>(Taraxacum officinale)</i>	P
Dogfennel	<i>(Eupatorium capillifolium)</i>	A
Filaree	<i>(Erodium spp.)</i>	A
Fleabane	<i>(Erigeron spp.)</i>	A
Hoary vervain	<i>(Verbena stricta)</i>	P
Horseweed	<i>(Conyza canadensis)</i>	A
Indian mustard	<i>(Brassica juncea)</i>	A
Lambsquarters	<i>(Chenopodium album)</i>	A
Lespedeza	<i>(Lespedeza spp.)</i>	P

Miners lettuce	<i>(Montia perfoliata)</i>	A
Mullein ¹	<i>(Verbascum spp.)</i>	B
Nettleleaf goosefoot	<i>(Chenopodium murale)</i>	A
Oxeye daisy	<i>(Chrysanthemum leucanthemum)</i>	P
Pepperweed	<i>(Lepidium spp.)</i>	A
Pigweed	<i>(Amaranthus spp.)</i>	A
Plantain	<i>(Plantago spp.)</i>	P
Puncturevine	<i>(Tribulus terrestris)</i>	A
Russian thistle	<i>(Salsola kali)</i>	A
Smartweed	<i>(Polygonum spp.)</i>	A/P
Sorrell	<i>(Rumex spp.)</i>	P
Sunflower	<i>(Helianthus spp.)</i>	A
Sweet clover	<i>(Melilotus spp.)</i>	A/B
Tansymustard	<i>(Descurainia pinnata)</i>	A
Western ragweed	<i>(Ambrosia psilostachya)</i>	P
Wild carrot	<i>(Daucus carota)</i>	B
Wild lettuce	<i>(Lactuca spp.)</i>	A/B
Wild parsnip	<i>(Pastinaca sativa)</i>	B
Wild turnip	<i>(Brassica campestris)</i>	B
Woollyleaf bursage	<i>(Franseria tomentosa)</i>	P
Yellow woodsorrel	<i>(Oxalis stricta)</i>	P

Apply 3-4 pints per acre¹

Broom snakeweed ³	<i>(Gutierrezia sarothrae)</i>	P
Bull thistle	<i>(Cirsium vulgare)</i>	B
Cocklebur	<i>(Xanthium strumarium)</i>	A
Desert Camelthorn	<i>(Alhagi pseudalhagi)</i>	P
Diffuse knapweed	<i>(Centaurea diffusa)</i>	A
Dock	<i>(Rumex spp.)</i>	P
Goldenrod	<i>(Solidago spp.)</i>	P
Pokeweed	<i>(Phytolacca americana)</i>	A
Purple loosestrife ³	<i>(Lythrum salicaria)</i>	P
Purslane	<i>(Portulaca spp.)</i>	A
Rush skeletonweed ³	<i>(Chondrilla juncea)</i>	B
Saltbush	<i>(Atriplex spp.)</i>	A
Stinging nettle ³	<i>(Urtica dioica)</i>	P
Yellow starthistle	<i>(Centaurea solstitialis)</i>	A

Apply 4-6 pints per acre¹

Arrowwood	<i>(Pluchea sericea)</i>	A
Canada thistle	<i>(Cirsium arvense)</i>	P
Giant ragweed	<i>(Ambrosia trifida)</i>	A
Japanese bamboo	<i>(Polygonum cuspidatum)</i>	P
Little mallow	<i>(Malva parviflora)</i>	B
Milkweed	<i>(Asclepias spp.)</i>	P
Primrose	<i>(Oenothera kunthiana)</i>	P
Russian knapweed	<i>(Centaurea repens)</i>	P
Silverleaf nightshade	<i>(Solanum elaeagnifolium)</i>	P
Sowthistle	<i>(Sonchus spp.)</i>	A
Texas thistle	<i>(Cirsium texanum)</i>	P

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VINES AND BRAMBLES		
COMMON NAME	SPECIES	GROWTH HABIT ²
Apply 1 pint per acre		
Field bindweed	(<i>Convolvulus arvensis</i>)	P
Hedge bindweed	(<i>Calystegia sepium</i>)	A
Apply 2-3 pints per acre¹		
Wild buckwheat	(<i>Polygonum convolvulus</i>)	P
Apply 3-4 pints per acre¹		
Greenbriar	(<i>Smilax</i> spp.)	P
Honeysuckle	(<i>Lonicera</i> spp.)	P
Morningglory	(<i>Ipomoea</i> spp.)	A/P
Poison ivy	(<i>Rhus radicans</i>)	P
Redvine	(<i>Brunnichia cirrhosa</i>)	P
Wild rose	(<i>Rosa</i> spp.)	P
Including:		
Multiflora rose	(<i>Rosa multiflora</i>)	P
Macartney rose	(<i>Rosa bracteata</i>)	P
Apply 4-6 pints per acre¹		
Blackberry ⁴	(<i>Rubus</i> spp.)	P
Dewberry ⁴	(<i>Rubus</i> spp.)	P
Kudzu ⁵	(<i>Pueraria lobata</i>)	P
Trumpet creeper	(<i>Campsis radicans</i>)	P
Virginia creeper	(<i>Parthenocissus quinquefolia</i>)	P
Wild grape	(<i>Vitis</i> spp.)	P
BRUSH SPECIES		
COMMON NAME	SPECIES	GROWTH HABIT ²
Apply 4-6 pints per acre¹		
American beech	(<i>Fagus grandifolia</i>)	P
Ash	(<i>Fraxinus</i> spp.)	P
Bald cypress	(<i>Taxodium distichum</i>)	P
Bigleaf Maple	(<i>Acer macrophyllum</i>)	P
Blackgum	(<i>Nyssa sylvatica</i>)	P
Boxelder	(<i>Acer negundo</i>)	P
Cherry	(<i>Prunus</i> spp.)	P
Chinaberry	(<i>Melia azadarach</i>)	P
Chinese tallow-tree	(<i>Sapium sebiferum</i>)	P
Dogwood	(<i>Cornus</i> spp.)	P
Hawthorn	(<i>Crataegus</i> spp.)	P
Hickory	(<i>Carya</i> spp.)	P
Maple	(<i>Acer</i> spp.)	P
Mulberry	(<i>Morus</i> spp.)	P
Oak	(<i>Quercus</i> spp.)	P
Persimmon	(<i>Diospyros virginiana</i>)	P
Poplar	(<i>Populus</i> spp.)	P
Privet	(<i>Ligustrum vulgare</i>)	P
Russian Olive	(<i>Eleagnus angustifolia</i>)	P
Red Alder	(<i>Alnus rubra</i>)	P
Red Maple	(<i>Acer rubrum</i>)	P
Rubber rabbitbrush	(<i>Chrysothamnus nauseosus</i>)	P
Saltcedar	(<i>Tamarix ramosissima</i>)	P
Sassafras	(<i>Sassafras albidum</i>)	P
Sourwood	(<i>Oxydendrum arboreum</i>)	P
Sumac	(<i>Rhus</i> spp.)	P
Sweetgum	(<i>Liquidambar styraciflua</i>)	P
Willow	(<i>Salix</i> spp.)	P
Yellow poplar	(<i>Liriodendron tulipifera</i>)	P

¹ The higher rates should be used where heavy or well established infestations occur.
² Growth Habit - A = Annual, B = Biennial, P = Perennial
³ For best results early postemergence applications are required.
⁴ The degree of control is species dependent. Some Rubus species may not be completely controlled.
⁵ Use a minimum of 75 GPA - Control of established stands may require repeat applications.

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