

PM 23 352-581 12/120

Mr. Richard M. Vaught
E.I. DuPont de Nemours & Co
P.O Box 80038
Wilmington, DE 19880-0038

JAN 24 1997

Dear Mr. Vaught

Subject: Velpar® DF Herbicide
EPA Registration No. 352-581
Applications Dated December 4, 1996 and January
15, 1997, Request To Amend Labeling of Velpar
Herbicide To Revise Sugarcane Rotation
Restrictions, To Correct Error on Printed Label
(Dosage for Spot Applications To Sugarcane in Hawaii),
To Add Root Crop Rotation To the Alfalfa Use-Pattern
and To Clarify Restrictions on Use in Culture of
Alfalfa for Seed

The proposed subject labeling amendments have been reviewed
and found to be acceptable for registration under the Federal
Insecticide, Fungicide and Rodenticide Act (FIFRA) as amended,
provided that you:

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

If this condition is not complied with, the registration
will be subject to cancellation in accordance with FIFRA,
Section 6(e). Your release for shipment of the product under
the subject labeling constitutes acceptance of this condition.

A stamped copy of the label is enclosed for your records.

Sincerely yours,

BEST AVAILABLE COPY

Joanne I. Miller
Product Manager (23)
Fungicide-Herbicide Branch
Registration Division (7505C)

Enclosures

E. Wilson Diskette ABC32: 01-24-97

CONCURRENCES

SYMBOL							
SURNAME							
DATE							



Velpar® DF

herbicide

Dispersible Granules

Active Ingredient	By Weight
Hexazinone [3-cyclohexyl-6-(dimethylamino) -1-methyl-1,3,5-triazine-2,4(1H,3H)-dione]	75%
Inert Ingredients	25%
TOTAL	100%

EPA Reg. No. 352-581

KEEP OUT OF REACH OF CHILDREN DANGER PELIGRO

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

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Hold eyelids open and flush with steady, gentle stream of water for 15 minutes. Get medical attention.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

IF SWALLOWED: Call a physician or poison control center. Drink 1 or 2 glasses of water and induce vomiting by touching the back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

For medical emergencies involving this product, call toll free 1-800-441-3637.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER! CAUSES EYE DAMAGE.

Corrosive, causes irreversible eye damage. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Wash thoroughly with soap and water after handling.

PRECAUTIONARY STATEMENTS

(continued in next column)

PRECAUTIONARY STATEMENTS(continued)

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

Long-sleeved shirt and long pants.

Shoes plus socks.

Protective eyewear.

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

USER SAFETY RECOMMENDATIONS

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL HAZARDS

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.

The active ingredient, hexazinone, in this product is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.

GENERAL INFORMATION

DuPont VELPAR® DF Herbicide is a water-dispersible granule that is mixed in water and applied as a spray for weed control in certain crops, Christmas trees, forestry site preparation and release areas, and industrial areas. It may also be applied as a basal soil treatment for brush control in reforestation areas, rangeland, pastures and noncrop areas.

VELPAR DF is an effective general herbicide providing both contact and residual control of many annual and biennial weeds and woody plants. It is also effective for control of most perennial weeds.

VELPAR DF is noncorrosive to equipment.

ACCEPTED
with COMMENTS
In EPA Letter Dated

JAN 24 1997

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

352-581

3/20

ENVIRONMENTAL CONDITIONS AND BIOLOGICAL ACTIVITY

VELPAR DF is absorbed through the roots and foliage. Moisture is required to activate VELPAR DF in the soil. Best results are obtained when the soil is moist at the time of application and 1/4-1/2" of rainfall occurs within 2 weeks after application.

Apply VELPAR DF preemergence or postemergence when weeds are less than 2" in height or diameter. Herbicidal activity is most effective under conditions of high temperature (above 80 °F), high humidity, and good soil moisture. Herbicidal activity may be reduced when vegetation is dormant, semi-dormant, or under stress (e.g. temperature or moisture).

Herbicidal activity will usually appear within 2 weeks after application to susceptible plants under warm, humid conditions; while 4-6 weeks may be required when weather is cool or dry, or when susceptible plants are under stress. If rainfall after application is inadequate to activate VELPAR DF in the soil, plants may recover from contact effects and continue to grow.

On woody plants, symptoms usually appear within 3-6 weeks after sufficient rainfall has carried the herbicide into the root zone during periods of active growth. Defoliation and subsequent refoiliation may occur, but susceptible plants are killed.

The degree and duration of control will depend on the following:

- Use rate
- Weed spectrum and size at time of application
- Environmental conditions at and following treatment

Where a rate range is shown, use the higher levels of the dosage range on hard-to-control species, fine-textured soils, or soils containing greater than 5% organic matter or carbon. Use the lower levels of the dosage range on coarse-textured soils and/or on soils low in organic matter. Refer to specific uses for rate ranges.

WEED RESISTANCE MANAGEMENT

When herbicides with the same mode of action are used repeatedly over several years to control the same weed species in the same field, naturally occurring resistant weed biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. These resistant weed biotypes may not be adequately controlled. Cultural practices such as tillage, preventing weed escapes from going to seed, and using herbicides with different modes of action within and between crop seasons can aid in delaying the proliferation and possible dominance of herbicide resistant weed biotypes.

APPLICATION INFORMATION

VELPAR DF may be applied by ground equipment and, where permitted, aerial equipment. Use rates, minimum spray gallonage, and other application information are described for various uses.

Dispose of the equipment washwater by applying it to a use-site listed on this label or in accordance with directions given in the "Storage and Disposal" section of this label.

MIXING

Before spraying, calibrate equipment to determine the quantity of water necessary to uniformly and thoroughly cover the vegetation and soil in a measured area to be treated. Make sure the volume of water is sufficient to completely suspend the VELPAR DF.

DIRECTIONS FOR USE

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

VELPAR DF should be used only in accordance with recommendations on this label, or in supplemental DuPont labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

The correct use rates by crop and geographical area, specified on the label, and proper mixing/loading site considerations and application procedures must be followed to minimize potential for hexazinone movement into ground water. Users are encouraged to consult with their state Department of Agriculture, Extension Service, or other pesticide lead agency for information regarding soil permeability, aquifer vulnerability, and best management practices for their area.

AGRICULTURAL USES

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 apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

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

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

- Coveralls
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

4/20

ALFALFA

VELPAR DF is recommended for control of certain weeds in established alfalfa grown for hay, except in the states of North Dakota and South Dakota. Do not use on alfalfa grown for seed in any state except California.

APPLICATION TIMING

NONDORMANT AND SEMI-DORMANT VARIETIES

In the following states, make a single application during winter months when alfalfa plants are in the least active stage of growth:

Arizona	Kansas	New Mexico	Utah
California	Montana	Oklahoma	Washington
Colorado	Nebraska	Oregon	Wyoming
Idaho	Nevada	Texas	

In the following states, make a single application in the spring before new growth exceeds 2" in height or to stubble after cutting following hay removal and before regrowth exceeds 2" in height:

Connecticut	Maine	New Hampshire	Vermont
Delaware	Maryland	New Jersey	Virginia
Illinois	Massachusetts	New York	West Virginia
Indiana	Michigan	Ohio	Wisconsin
Iowa	Minnesota	Pennsylvania	
Kentucky	Missouri	Rhode Island	

Severe alfalfa injury may result following application after cutting if either the regrowth is more than 2" high, significant stubble is left after alfalfa cutting, or the air temperature is above 90 °F.

DORMANT VARIETIES

Make a single application after alfalfa becomes dormant and before new growth begins in the spring. Where weeds have emerged, use a surfactant.

USE RATES

Use higher rates on hard-to-control species, fine textured soils, soils containing greater than 5% organic matter, or under adverse environmental conditions such as temperature extremes or when weeds are stressed due to low rainfall.

Select the appropriate dose for soil texture and organic matter content as follows:

Soils	VELPAR DF (Lb/Acre)*		
	Percent Organic Matter in Soil		
	<1%	1-5%	>5%
Coarse Texture			
Loamy sand, sandy loam	2/3 - 1	2/3 - 1	1 1/3 - 2
Medium Texture			
Loam, silt loam, silt, clay loam, sandy clay loam	2/3 - 1	1 - 2	1 1/3 - 2
Fine Texture			
Silty clay loam, sandy clay, silty clay, clay	1 - 2	1 - 2	1 1/3 - 2

* Do not exceed 1 lb per acre on alfalfa less than one year old.

WEEDS CONTROLLED

VELPAR DF, when applied preemergence or early postemergence at the following rates is recommended for the control or suppression of the following species:

1/3 - 2/3 Lb/Acre

Tansy-mustard

2/3 - 1 1/3 Lb/Acre

Annual bluegrass	Jim Hill mustard
Blue mustard	London rocket
Cheatgrass (downy brome)	Miners lettuce
Common chickweed	Salsify
Common groundsel	Seedling orchardgrass
Dogfennel (mayweed)	Shepherdspurse
English catchfly	Spurry
Fiddleneck (tarweed)	Tansy-mustard
Field pennycress	Wild radish
Filaree	Yellow rocket
Flixweed	

1 1/3 - 2 Lb/Acre

Common dandelion* (i.e. Canada bluegrass)	Perennial bluegrass* (spring only)
False dandelion	Prickly lettuce*
Foxtail (Setaria spp)*	Ryegrass, annual
Mexican tea*	Quackgrass*
White cockle*	Seedling alfalfa*

* Partial control

VELPAR DF, when applied in late spring or after cutting at the following rates, will control these species:

2/3 - 2 Lb/Acre

Common lambsquarters	Foxtail (<i>Setaria</i> spp.)
Crabgrass	Jimsonweed
Fleabane	Redroot pigweed

SPRAY EQUIPMENT

Apply VELPAR DF using a fixed boom power sprayer or aerial equipment.

MIXING INSTRUCTIONS

Add VELPAR DF to a water-filled tank and mix it thoroughly. Apply it in at least 20 gal of water per acre by ground or 5 to 10 gal of water per acre by air.

REPLANTING (FOLLOWING ALFALFA)

- Do not replant treated areas to any crop except corn, root crops or sugarcane within two years after treatment, as crop injury may result.
- Corn may be planted 12 months after the last treatment, provided the use rate did not exceed 1 lb per acre, except in areas of low rainfall (20" or less).
- Root crops such as potatoes, sugarbeets, radish and carrots may be planted 12 months after last treatment.
- Sugarcane may be planted any time following treatment.
- In California, do not replant seed alfalfa areas to any crop within two years after treatment, as crop injury may result.

USE PRECAUTIONS - ALFALFA ONLY

Best results are obtained when 1/2-1" of rainfall or sprinkler irrigation occurs within two weeks after application, when soil is moist at time of application, and when weeds have not germinated or are less than 2" in height or diameter. Heavy rainfall or excessive irrigation after application may result in crop injury or poor performance of the herbicide.

- Do not apply to snow-covered or frozen ground.
- Since the effect of VELPAR DF on alfalfa varies with soil conditions, uniformity of application, and environmental conditions, growers should limit their first use to small areas.
- If abnormally dry conditions exist following application, restrict the first irrigation to no more than 1/2 acre inch of water.
- Temporary yellowing of alfalfa may occur following VELPAR DF applications.
- Treat only stands of alfalfa established for one year or for one growing season, provided the following conditions are met:
 - The alfalfa root system must be well established.
 - The crop must be healthy, vigorous and not under stress from adverse weather conditions, insect or disease damage.
 - The alfalfa crop must be free of excessive winter injury from freezing and thawing.

- 5/20
- Do not use VELPAR DF on seedling alfalfa, alfalfa-grass mixtures, or other mixed stands as injury may result to the seedling alfalfa or companion crop.
 - At elevations above 4,000 ft, do not use VELPAR DF on alfalfa that has been established with a cover or nurse crop until the alfalfa has gone through two summer growing seasons.
 - Do not use VELPAR DF in low desert valleys in California or Arizona.
 - Do not add a surfactant to VELPAR DF when treating nondormant alfalfa.
 - Do not use VELPAR DF on gravelly or rocky soils, exposed subsoils, hardpan, sand, poorly drained soil, or alkali soils.
 - Crop injury, including mortality, may result in fields with restricted root growth due to nonuniform soil profiles such as gravel bases and clay lenses.
 - Do not graze or feed forage or hay to livestock within 30 days following application.

SEED ALFALFA

- ADDITIONAL USE PRECAUTIONS

- Do not use VELPAR DF on fields with sandy loam or loamy sand soils having less than 1% organic matter.
- Do not exceed 2/3 lb per acre on fields with sandy loam or loamy sand soils having 1-2% organic matter.
- Do not exceed 2/3 lb per acre on seed alfalfa that has been established for only one growing season.

ALFALFA - IMPREGNATION ON DRY BULK FERTILIZER (EXCEPT CALIFORNIA AND ARIZONA)

Dry bulk fertilizer may be impregnated or coated with VELPAR DF for application to established alfalfa. All recommendations, cautions and special precautions on this label must be followed along with state regulations relating to dry bulk fertilizer blending, impregnating and labeling.

If fertilizer materials are excessively dusty, use a suitable additive to reduce dust prior to impregnation, as dusty fertilizer will result in poor distribution during application. The dry fertilizer must be properly impregnated and uniformly applied to the alfalfa to avoid crop injury and/or poor weed control.

To impregnate the fertilizer, use a system consisting of a conveyor or closed drum used to blend dry bulk fertilizer. Any commonly used fertilizer can be impregnated with VELPAR DF, except potassium nitrate or sodium nitrate. Do not use VELPAR DF on limestone.

Use a minimum of 250 lb dry bulk fertilizer per acre and up to a maximum of 450 lb per acre. To impregnate or coat the dry bulk fertilizer with VELPAR DF, mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Direct the nozzles to deliver a fine spray of this suspension toward the fertilizer for thorough coverage while avoiding spray contact with mixing

6/20

equipment. Uniform impregnation of VELPAR DF to dry bulk fertilizer will vary, and if the absorptivity is not adequate, the use of an absorptive powder may be required to produce a dry, free-flowing mixture. Microcel E (Johns Manville Product Corporation) is the recommended absorbent powder. When another herbicide is used with VELPAR DF, mix and impregnate the fertilizer immediately.

Apply impregnated fertilizer as soon as possible after impregnation for optimum performance.

Select the rate of VELPAR DF to apply per acre from the appropriate section of this label. Then refer to the rate chart below to determine the amount of VELPAR DF that should be impregnated on a ton of dry bulk fertilizer, based on the amount of fertilizer to be distributed in one acre.

Rate Chart for Impregnating Fertilizer with VELPAR DF

Fertilizer Rate/Acre	VELPAR DF Rate Per Acre			
	2/3 Lbs	1 Lbs	1 1/3 Lbs	2 Lbs
250 lbs	5.3 lbs/ton	8.0 lbs/ton	10.6 lbs/ton	16.0 lbs/ton
300 lbs	4.4 lbs/ton	6.6 lbs/ton	8.8 lbs/ton	13.3 lbs/ton
350 lbs	3.7 lbs/ton	5.7 lbs/ton	7.5 lbs/ton	11.4 lbs/ton
400 lbs	3.3 lbs/ton	5.0 lbs/ton	6.7 lbs/ton	10.0 lbs/ton
450 lbs	2.9 lbs/ton	4.4 lbs/ton	5.9 lbs/ton	8.9 lbs/ton

For rates other than those listed, use the following formula to calculate the amounts of VELPAR DF to be impregnated per ton of dry fertilizer.

$$\frac{\text{Lbs VELPAR DF Per acre} \times 2000}{\text{Lbs Fertilizer Per Acre}} = \frac{\text{Lbs VELPAR DF Per Ton of Fertilizer}}{1}$$

APPLICATION

Uniform application of VELPAR DF-impregnated dry fertilizer is essential for satisfactory weed control. Accurate calibration of the application equipment is essential for uniform distribution to the surface. The recommended method of application is to apply 1/2 the recommended rate and overlap 50%. This results in the best distribution pattern.

CHRISTMAS TREES

VELPAR DF is recommended for control of certain weeds where the following species are grown:

- | | |
|-------------------|----------------|
| Austrian pine | Noble fir |
| Douglas fir | Ponderosa pine |
| (western US only) | Scotch pine |
| Grand fir | Sitka spruce |
| Loblolly pine | |

Do not use VELPAR DF on Christmas trees in the following states:

- | | | | |
|-------------|---------------|----------------|---------------|
| Alabama | Louisiana | New Jersey | Texas |
| Arkansas | Maine | New York | Vermont |
| Connecticut | Maryland | North Carolina | Virginia |
| Delaware | Massachusetts | Pennsylvania | West Virginia |
| Georgia | Mississippi | Rhode Island | |
| Florida | New Hampshire | South Carolina | |

APPLICATION TIMING

EASTERN US

Apply VELPAR DF as a broadcast spray in the spring prior to bud break. If application is made after bud break, use directional spray equipment to prevent contact with foliage.

WESTERN US

Areas of greater than 20" annual rainfall - Apply VELPAR DF as a broadcast spray in the spring prior to bud break. If application is made after bud break, use directional spray equipment to prevent contact with foliage.

Areas of less than 20" annual rainfall - Apply VELPAR DF in the fall before the soil freezes or in the spring after snow cover melts, but before bud break occurs.

USE RATES

The rates listed below are for broadcast application. For band application, use proportionately less; for example, use 1/2 of the broadcast rates when treating a 3-ft band where row spacing is 6 ft.

Do not use more than one application of VELPAR DF per year.

VELPAR DF (Lb/Acre)

Soils	First Year Plantings	Established Trees
Coarse Texture		
Loamy sand, sandy loam (50-85% sand)	1 1/3	1 1/3 - 1 2/3
Medium Texture		
Loam, silt loam, silt, clay loam, sandy clay loam	1 1/3 - 1 2/3	1 2/3 - 2 1/3
Fine Texture		
Silty clay loam, clay loam, sandy clay, silty clay, clay	1 2/3 - 2	2 1/3 - 2 2/3

7/20

First year plantings - Transplant stock that is 2 years old or more (1 year old for loblolly pine). Apply VELPAR DF only if rainfall has settled the soil around the base and root systems of the transplants.

Established trees - Trees that have been planted in the plantation for 1 year or more.

WEEDS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

- | | |
|----------------------------|------------------------|
| Annual bluegrass | Fleabane |
| Barnyardgrass | Foxtail |
| Bentgrass | Goldenrod* |
| Bromegrass | Heath aster* |
| Catsear* (false dandelion) | Horseweed* |
| Common groundsel | Orchardgrass* |
| Common ragweed | Oxeye daisy |
| Crabgrass* | Pennsylvania smartweed |
| Curly dock* | Ryegrass* |
| Dandelion* | Velvetgrass |
| Fescue* | Wild carrot* |
| Fireweed (willowweed)* | |

* Partial control

SPRAY EQUIPMENT

VELPAR DF may be applied by ground equipment or by air (helicopter only).

MIXING INSTRUCTIONS

Select a spray volume that will ensure a thorough and uniform application.

USE PRECAUTIONS

- CHRISTMAS TREES

- Do not use VELPAR DF in nurseries, seed beds, or ornamental plantings.
- Do not add a surfactant in applications over the top of conifers.
- Weed control results from spring applications depend on sufficient moisture to activate VELPAR DF.
- Do not cut treated vegetation for forage or hay nor graze domestic animals on treated areas for 60 days following application.
- Poor weed and brush control may result from the following:
 - Heavy duff or slash present at the time of application.
 - Use on poorly drained sites.
 - Applications made when soil is saturated with water and rain is imminent within 24 hours.
 - Applications to soils high in organic matter (greater than 5%).
- Injury may occur when VELPAR DF is used on the following:

- Trees that show poor vigor, insect damage, disease, winter injury, or other stress conditions.
- Any soil containing less than 1% organic matter.
- Loamy sand or sandy loam with less than 2% organic matter (except Jeffrey Pine and Ponderosa Pine).
- Foliage after bud break.
- Gravelly or rocky soils, exposed subsoils, clay knobs, sand, or sandy soil with 85% or more sand.

PINEAPPLE

VELPAR DF is recommended for control of certain weeds in pineapple.

APPLICATION TIMING

- USE RATES - MIXING INSTRUCTIONS

Use a sprayer properly calibrated to a constant speed and rate of delivery.

Mix the proper amount of VELPAR DF in water. Add a surfactant at 0.25% by volume of water.

- Intercrop period - Apply VELPAR DF as a broadcast spray in 100-400 gal of water per acre at the rate of 1/3 - 2 1/3 lb per acre. For aerial application, use at least 10 gal water per acre.
- Post mulch, preplant - Apply VELPAR DF as a broadcast spray in 100-400 gal of water per acre at the rate of 1/3 - 2 1/3 lb per acre.
- Post plant, before planted cuttings start active growth - Apply VELPAR DF as a broadcast spray in 100-400 gal of water per acre at the rate of 1/3 - 2 1/3 lb per acre. A post-plant application should be made after planted cuttings start to grow only when weed growth has escaped control by other herbicide applications.
- Prior to forcing first ratoon - Apply VELPAR DF as a broadcast spray in 100-400 gal of water per acre at the rate of 1/3 - 2 1/3 lb per acre.
- Directed postemergence (pineapple and weeds) inter-space application - Apply VELPAR DF as a directed spray 3-10 months after planting in 50-200 gal of water per acre (broadcast basis) at the rate of 1/3 - 2 1/3 lb per acre (broadcast basis) using a stroller boom or knapsack.
- Directed spot treatments for perennial grasses before floral induction - Spray perennial grasses postemergence to wet (50-200 gals per acre depending on size) with 1 1/3 - 2 1/3 lb per 100 gal of water as a spot treatment.
- Treatments to field edges and roadsides - Apply VELPAR DF at 2 1/3 - 4 8/10 lb per acre in 100-400 gal of water.

WEEDS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

Ageratum	Kao haole*
Balsam apple	Mauna loa*
Castor bean	Morningglory
Crabgrass	Oxalis
Crotalaria	Popolo
Dallisgrass	Richardsonium
Guinea grass	Vaseygrass
Jungle rice	

* Suppression

USE PRECAUTIONS - PINEAPPLE

- Use the lower rates on coarse-textured soils or in areas where rainfall exceeds 65" per year.
- Use the higher rates on fine-textured soils or in areas where rainfall is less than 65" per year.
- Do not exceed 4.8 lb VELPAR DF per acre per crop.
- Do not apply VELPAR DF within 181 days of harvest.

SUGARCANE

VELPAR DF is recommended for selective weed control in sugarcane except in the State of Florida.

APPLICATION TIMING

- USE RATES - MIXING INSTRUCTIONS

Apply a single treatment of VELPAR DF per year using a fixed-boom sprayer and a minimum of 25 gal per acre unless otherwise directed.

HAWAII

Apply VELPAR DF pre- or postemergence at the following rates for the indicated soil texture:

Soils	VELPAR DF (Lb/Acre) (Plus surfactant 0.25% by volume)
Coarse Texture	
Sand, loamy sand, sandy loam	2/3 - 1 2/10
Medium Texture	
Loam, silt loam, silty clay loam	2/3 - 2 1/3
Fine Texture	
Clay, gray hydromorphic clay	2 1/3 - 4 8/10

Use the higher levels of the recommended dosage ranges on soils high in organic matter. Do not apply more than twice the highest recommended rate for the indicated soil texture per crop (18-24 months).

A surfactant is recommended for all uses.

For preemergence use only, VELPAR DF may be applied with aerial equipment using at least 10 gal of spray per acre.

For spot treatments of emerged weeds, VELPAR DF may be applied with a knapsack sprayer in concentrations of 0.6 - 4.8 lb per 100 gal of water. Apply a sufficient volume to

thoroughly wet weed foliage, but do not exceed 40 gal of spray per treated acre. Use the lower concentrations on coarse-textured soils that are low in organic matter, and use the higher concentrations on fine-textured soils that are high in organic matter.

LOUISIANA

Apply 2/3 - 1 2/10 lb of VELPAR DF per acre broadcast in the fall before sugarcane emerges or in the spring before active cane tillering begins. Fall treatments of 2/3 - 1 2/10 lb per acre may be followed by a spring treatment of 2/3 - 1 2/10 lb per acre. Do not apply more than 2 lb per year. Use the higher levels of the recommended dosage range on fine-textured soils.

PUERTO RICO

For preemergence treatments, apply 1/3 - 2/3 lb of VELPAR DF per acre.

For postemergence treatments, apply 1/3 - 2/3 lb of VELPAR DF per acre to weeds after they have emerged. Use the lower rates on coarse-textured soils and the higher rates on fine-textured soils (high in clay or organic matter). Each ratoon may receive up to 2/3 lb of VELPAR DF per acre.

For spot treatment of emerged weeds, VELPAR DF may be applied with a knapsack sprayer in concentrations of 1/3 - 2/3 lb per 100 gal of water. Apply a sufficient volume to wet the weed foliage. Do not exceed 100 gal of spray per treated acre. Use the lower concentration on coarse-textured soils and the higher concentration on fine-textured soils.

Note: Since it is difficult to calibrate "spot" knapsack applications, extra care must be taken not to exceed the rate equivalent of the maximum of 2/3 lb VELPAR DF per acre.

Do not apply more than 1 1/3 lb of VELPAR DF per acre per crop season.

TEXAS

Apply 2/3 - 2 1/3 lb of VELPAR DF per acre. On plant cane, apply the herbicide before the cane emerges or as a directed layby treatment. On stubble cane, apply VELPAR DF preemergence (up to the 3-leaf stage) or as a directed layby treatment. A pre- or early postemergence treatment may be followed by a layby treatment, provided at least 60 days have elapsed and 3" of rainfall or sprinkler irrigation have occurred since the first treatment.

Do not apply more than 2 1/3 lb of VELPAR DF per acre per season.

Use the following rates according to the different soil textures:

Soils	VELPAR DF (Lb/Acre)	
	Preemergence	+ Layby
Coarse Texture*		
Sandy loam	1/3	1/3
Medium Texture		
Loam, silt loam	9/10	9/10
Fine Texture		
Clay loam	1 1/3	1 1/3

* With at least 2% organic matter

On dormant cane, a surfactant may be added to the spray mixture to increase control of emerged weeds.

9/20

WEEDS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

Ageratum*	Johnsongrass (from seed)
Alexandergrass	Jungle rice
Amaranth (slender, smooth)	Lambsquarter
American burnweed (fireweed)	Morningglory (hairy, three-lobed)
Balsam apple	Mustard (wild)
Barnyardgrass	Oxalis
Bermudagrass*	Panicum (brownleaf, browntop, Texas millet)
Carolina geranium	Paspalum (ricegrass, sour)
Chickweed	Pigweed (common, smooth)
Crabgrass (hairy, large, smooth)	Popolo
Crotalaria (fuzzy, showy)	Purslane
Cuphea (tarweed)	Sandbur
Dallisgrass	Sensitive plant (hila hila)
Fingergrass (radiate, swollen)	Signalgrass (broadleaf)
Flora's paintbrush	Sowthistle
Foxtail (bristly, yellow)	Spanish needle
Goosegrass	Sprangletop
Guineagrass	Spurge (prostrate, graceful)
Henbit	Sunflower
Itchgrass*	Vaseygrass
Jobs tears	Waltheria (hialoa)

* Partial control

USE PRECAUTIONS - SUGARCANE

Do not plant any crop other than sugarcane following an application of VELPAR DF.

Do not feed sugarcane forage to livestock.

Do not apply VELPAR DF:

- Within 180 days of harvest in Hawaii.
- Within 234 days of harvest in Louisiana.
- Within 288 days of harvest in Puerto Rico.
- Within 234 days of harvest in Texas.

To avoid injury to sugarcane, observe the following precautions:

- Do not use VELPAR DF on cane that shows poor vigor because of insect damage, disease, or winter injury, or shows symptoms of other stress conditions such as drought stress.
- Do not add a surfactant in applications unless otherwise specified.
- Do not use VELPAR DF on gravelly or rocky soils, thinly covered subsoils, or coarse-textured soils (sands to sandy loams) with less than 1% organic matter.
- Temporary chlorosis of the crop may result from application over emerged cane. Applications during active

cane growth should be directed to cover the weeds and soil while minimizing crop contact.

- Do not use VELPAR DF on varieties known to be susceptible to weed killers.

Extremely heavy rainfall after application may result in poor weed control and/or crop injury, especially if the application is made to dry soil.

FORESTRY

SITE PREPARATION

VELPAR DF is recommended for weed and brush control in areas where the following species are grown:

EASTERN US AND LAKE STATES

Austrian pine	Red spruce
Balsam fir	Scotch pine
Black spruce	Shortleaf pine
Loblolly pine	Slash pine
Longleaf pine	Spruce
Ponderosa pine	Virginia pine
Red pine	White spruce

WESTERN US

Blue spruce	Lodgepole pine
Douglas fir	Noble fir
Engelman spruce	Ponderosa pine
Grand fir	Sitka spruce
Jeffrey pine	White fir

APPLICATION TIMING

EASTERN US

Apply VELPAR DF from early spring to early summer after hardwoods have broken bud and before the foliage has hardened off.

WESTERN US

Rainbelt (areas of high spring rainfall): For best results, apply in late winter or spring when weeds and brush are actively growing.

Snowbelt (areas of low spring rainfall): For best results, apply in the fall before soil freezes, or in the spring after snow cover melts in anticipation of rainfall. Weed and brush control results from spring applications will be dependent on sufficient rainfall following application to activate VELPAR DF.

USE RATES

Use the lower rates on coarse-textured soils and soils low in organic matter; use the higher rates on fine-textured soils and on soils high in organic matter. Use the higher rates where hard-to-kill species predominate.

The rates listed below are for broadcast application.

Soils	VELPAR DF (Lb/Acre)	
	Eastern US	Western US
Coarse Texture		
Sand, loamy sand, sandy loam	2 2/3 - 4	1 1/3 - 1 1/2
Medium Texture		
Loam, silt loam, sandy clay loam	4 - 5 1/3	1 1/2 - 2 2/3
Fine Texture		
Silty clay loam, clay loam, sandy clay, silt, silty clay, clay	5 1/3 - 6 2/3	2 2/3 - 4

PLANTS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

Herbaceous Plants

Annual bluegrass	Fleabane
Asters	Foxtail
Barnyardgrass	Goldenrod*
Bentgrass	Heath aster*
Bromegrass	Horseweed*
Canada thistle*	Orchardgrass*
Catsear (false dandelion)*	Oxeye daisy
Common groundsel	Pennsylvania smartweed*
Common ragweed	Pinegrass
Crabgrass*	Quackgrass*
Curly dock*	Ryegrass*
Dandelion*	Squawcarpet
Elksedge	Velvetgrass
Fescue*	Wild carrot
Fireweed (willowweed)*	

*Partial control; use higher rates for soil textures indicated above.

Woody Plants

Ash	Hickory
Aspen (big tooth, trembling)	Honeysuckle*
Balsam poplar	Oaks
Birch	Red maple*
Blackgum	Snowbush ceanothus (varnishleaf ceanothus)
Deerbrush ceanothus	Sourwood*
Elm	Sweetgum
Flowering dogwood*	Whitehorn
Greenleaf manzanita	Wild cherry
Hawthorne	Willows
Hazel	

*Partial control; use the higher rates for the soil textures indicated above.

Within several weeks after VELPAR DF activation by rainfall, affected vegetation may be burned, if desired. This burn may further enhance control of vegetation. Burn the vegetation only after any residual stand is completely defoliated, at least twice, allowing for sufficient root uptake of VELPAR DF. In the West, results may take one to two years in areas of low rainfall.

SPRAY EQUIPMENT

VELPAR DF may be applied by ground equipment or by air (helicopter only).

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage, usually a minimum of 25 gal per acre. For aerial applications, use at least 5 gal of water per acre.

SITE PREPARATION - TANK MIXTURES

VELPAR DF PLUS "TORDON 101 MIXTURE"

For improved, broad-spectrum brush control, tank mix VELPAR DF with TORDON 101 MIXTURE. Only the following trees may be planted on sites with this combination:

Austrian pine	Scotch pine
Loblolly pine	Shortleaf pine
Longleaf pine	Slash pine
Ponderosa pine	Virginia pine
Red pine	

APPLICATION TIMING

Apply VELPAR DF plus TORDON 101 MIXTURE from late spring to early summer after the trees have reached full leaf, but before leaf tissue hardens. In the states of Maine, Michigan, Minnesota, New Hampshire, New York, Vermont, and Wisconsin, apply this tank mixture after bud break.

WOODY PLANTS CONTROLLED - USE RATES

Predominant Species	VELPAR DF (Lb/Acre)	Tordon 101 M (Qt/Acre)
Blackberry, Elm, Oak (Prunus spp.), Sweetgum	4 - 6 2/3	4
Blackgum, Dogwood, Pine, Red maple, Sassafras, Sourwood	2 2/3 - 6 2/3	6-8

Refer to the USE RATES table in the FORESTRY SITE PREPARATION section of this label for recommended rates based on soils.

SPRAY EQUIPMENT

VELPAR DF plus TORDON 101 MIXTURE may be applied by ground equipment or by air (helicopter only).

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage, usually a minimum of 25 gal per acre. For aerial applications, use at least 5 gal of water per acre. For best results, full foliar coverage is required.

USE PRECAUTIONS

- VELPAR DF + TORDON 101 MIXTURE

- To avoid injury, do not plant pine before the following intervals following application with Tordon 101 Mixture:
 - Southern states - 6 months
 - Lake states - 9 months
 - Northeastern states - 9 months
- Burning treated sites after initial contact (browning) effect on foliage may result in poor control. Burn the vegetation only after brush has completely defoliated at least once, allowing sufficient root uptake of VELPAR DF (usually 60-90 days after adequate rainfall).
- Before using Tordon 101 Mixture, read and carefully observe the cautionary statements and all other information appearing on the product label. Tordon 101 Mixture is a restricted use pesticide, for retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by certified applicator's certification.

VELPAR DF PLUS "GARLON 4"

For improved, broad-spectrum brush control, tank mix VELPAR DF with GARLON 4. This tank mix may be used in the following states:

Alabama	Maryland	South Carolina
Arkansas	Michigan	Tennessee
Delaware	Minnesota	Texas
Florida	Mississippi	Virginia
Georgia	North Carolina	Wisconsin
Louisiana	Oklahoma	

APPLICATION TIMING

Apply VELPAR DF plus GARLON 4 from late spring to early summer after the trees have reached full leaf, but before leaf tissue hardens.

USE RATES

Refer to the USE RATES table in the FORESTRY SITE PREPARATION section of this label for recommended rates of VELPAR DF based on soil texture. Mix the recommended rate of VELPAR DF with 4-8 qt of GARLON 4 per acre.

SPRAY EQUIPMENT

Apply VELPAR DF plus GARLON 4 by ground equipment or by air (helicopter only).

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage, usually a minimum of 25 gal per acre. For aerial applications, use at least 12 gal of water per acre.

For best results, full foliar coverage is required.

USE PRECAUTIONS

- VELPAR DF + GARLON 4

- Conifers planted sooner than two months after treatment with GARLON 4 at 1-2 gal per acre may be injured.
- Burning treated sites after initial contact (browning) effect on foliage may result in poor control. Burn the vegetation only after brush has completely defoliated at least once, allowing sufficient root uptake of VELPAR DF (usually 60-90 days after adequate rainfall).
- Before using GARLON 4, read and carefully observe the cautionary statements and all other information appearing on the product label.

SITE PREPARATION

- GRID & SINGLE STEM APPLICATIONS

VELPAR DF is recommended for control of brush in site preparation.

GRID APPLICATION

Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Intermittent agitation may be required to maintain the VELPAR DF in suspension.

Apply the VELPAR DF suspension directly to the soil surface in a grid pattern using an exact delivery handgun applicator. This equipment delivers a thin stream of predetermined volume. VELPAR DF should be applied during the period from hardwood bud break to early summer.

Application rate and grid pattern will depend on soil texture and woody plant composition. Use the lower rates on coarse textured soils and when the major component of the hardwoods are susceptible species. Use the high rates on fine-textured soils and hard-to-control species.

Application Patterns and Rates For VELPAR DF

	ML/Spot	Grid (Ft)	Qt/Acre
Coarse	0.6	3 X 3	2.0
	2.0	4 X 4	3.8
	3.1	4 X 6	4.0
Medium/Fine	1.6	3 X 3	5.5
	2.8	4 X 4	5.4
	3.5	4 X 4	6.7
	5.2	4 X 6	6.6

SINGLE STEM (BASAL SOIL)

Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Apply the VELPAR DF suspension with an exact-delivery handgun applicator. This equipment delivers a thin stream of predetermined volume when triggered. Apply the VELPAR DF suspension at the rate of 2 to 4 ml for each inch of stem diameter at breast height. Direct the treatment to the soil within 3 ft of the root collar of woody plants to be controlled.

For multi-stemmed and low-growing brush that have stem diameters that are difficult to determine, apply the VELPAR DF suspension at the rate of 2 to 4 ml per 3 ft of canopy width. For tall, slender (columnar) brush types, apply 4 to 8 ml per 3 ft of height. Base the rate on whichever canopy dimension is greater (width or height).

When treating brush that requires more than a single delivery of the VELPAR DF suspension, apply subsequent deliveries equally spaced around the target plant. If treating brush on sloping sites, apply most of the suspension on the uphill side of the stem. If treating resprouts from brush disturbed by cutting or other mechanical methods, the rate of application should be proportional to the original tree size, not just the size of sprout regrowth.

USE PRECAUTIONS

- SITE PREPARATION

Where burning is desired, burn the vegetation only after any residual brush has completely defoliated, at least twice, allowing for sufficient root uptake of VELPAR DF.

Following harvest, allow sufficient time for stumps and injured trees to adequately resprout before applying VELPAR DF.

RELEASE

- HARDWOOD SUPPRESSION

VELPAR DF is recommended for conifer release where the following species are grown:

EASTERN US

- | | |
|---------------|----------------|
| Balsam fir | Red spruce |
| Black spruce | Shortleaf pine |
| Loblolly pine | Slash pine |
| Longleaf pine | Virginia pine |
| Norway spruce | White spruce |
| Red pine | |

WESTERN US

- | | |
|-----------------|----------------|
| Blue spruce | Lodgepole pine |
| Douglas fir | Noble fir |
| Engleman spruce | Ponderosa pine |
| Grand fir | Sitka spruce |
| Jeffrey pine | White fir |

APPLICATION TIMING

EASTERN US

Apply VELPAR DF from early spring to early summer after hardwoods have broken bud and before full leaf expansion.

Applications made over the top of pines may result in excessive pine injury under conditions of high humidity and temperature (80 degrees F).

WESTERN US

Rainbelt (areas of high spring rainfall): For best results, apply in late winter or spring when brush is actively growing, but prior to conifer budbreak. If application is

made after bud break, use directional spray equipment to prevent contact with conifer foliage, as injury may result.

Snowbelt (areas of low spring rainfall): For best results, apply in the fall before soil freezes and after the final resting bud has hardened on the conifers. Or, spring applications may be made after snow cover melts in anticipation of rainfall prior to conifer budbreak. Brush control results from spring treatments will be dependent on sufficient rainfall following application to activate VELPAR.

USE RATES

The rates listed below are for broadcast application. Do not use more than one application of VELPAR DF per year.

EASTERN US

Crop Species	Soil Description	VELPAR DF (Lb/Acre)	Established Trees
Loblolly pine	Loamy sand,		
Longleaf pine	sandy loam		1 1/3 - 2
Shortleaf pine	Loam, silt loam,		
Virginia pine	silt, sandy clay loam		1 1/3 - 2 2/3
Slash pine	Silty clay loam, clay loam, sandy clay, silty clay, clay		3 - 4
Red pine	Loamy sand, sandy loam		1 1/3 - 2 2/3
	Loam, silt loam, silt, sandy clay loam		2 2/3 - 4
	Silty clay loam, clay loam, sandy clay, silty clay, clay		4 - 5 1/3

Established Trees - 4 years of age from transplanting on coarse-textured soils
 - 3 years of age from transplanting on medium-textured soils
 - 2 years of age from transplanting for Red Pine

WESTERN US

Crop Species	Soil Description	VELPAR DF (Lb/Acre)
Blue spruce	Loamy sand,	
Douglas fir	sandy loam	1 1/3 - 3
Englemen spruce	Loam,	
Grand fir	silt loam,	
Jeffrey pine	sandy clay loam	2 2/3 - 4
Lodgepole pine	Silt, silty clay loam,	
Noble fir	clay loam,	
Ponderosa pine	sandy clay, silty clay,	
Sitka spruce	clay	3 - 4
White fir		

For first year plantings treat only transplant stock that is 2 years old (2-0, 1-1) or more, except (1-0) for Ponderosa and Jeffrey pines. Apply VELPAR DF only if rainfall has settled the soil around the base and root systems of the transplants.

BRUSH SUPPRESSION

VELPAR DF is recommended for the control or suppression of the following species:

Ash	Hawthorne
Aspen	Hazel
Balsam poplar	Honeysuckle
Birch	Oaks
Box elder	Red maple*
Brambles	Snowbush ceanothus
Cherry (black, pin)	Sumac*
Deerbrush ceanothus	Sweetgum*
Dogwood*	Whitehorn
Elm	Willow
Greenleaf manzanita	

* Partial control

In addition to brush controlled, herbaceous species listed in Weeds Controlled section of Release-Herbaceous Weed Control may be controlled with these applications.

SPRAY EQUIPMENT

Apply VELPAR DF by ground equipment or by air (helicopter only).

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage, usually a minimum of 25 gal per acre. For aerial applications, use at least 5 gal of water per acre.

RELEASE

- GRID & SINGLE STEM APPLICATIONS

VELPAR DF is recommended for hardwood suppression in conifer release sites.

GRID APPLICATION

Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Intermittent agitation may be required to maintain the VELPAR DF in suspension.

Apply the VELPAR DF suspension directly to the soil surface in a grid pattern using an exact delivery handgun applicator. This equipment delivers a thin stream of predetermined volume. VELPAR DF should be applied during the period from hardwood bud break to early summer.

Application rate and grid pattern will depend on soil texture and woody plant composition. Use the lower rates on coarse textured soils and when the major component of the hardwoods are susceptible species. Use the high rates on fine-textured soils and hard-to-control species.

Application Patterns and Rates For VELPAR DF Solution

	ML/Spot	Grid (Ft)	Qt/Acre
Coarse	0.5	3 X 4	2*
	1.2	3 X 6	3
	2.1	4 X 6	4
Medium/Fine	1.2	3 X 3	6
	2.3	3 X 6	6
	1.6	3 X 3	8
	3.1	3 X 6	8

* Use on deep sands with pines four years or more of age.

SINGLE STEM (BASAL SOIL)

Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Apply the VELPAR DF suspension with an exact-delivery handgun applicator. This equipment delivers a thin stream of predetermined volume when triggered. Apply the VELPAR DF suspension at the rate of 2 to 4 ml for each inch of stem diameter at breast height. Direct the treatment to the soil within 3 ft of the root collar of woody plants to be controlled.

For multi-stemmed and low-growing brush that have stem diameters that are difficult to determine, apply the VELPAR DF suspension at the rate of 2 to 4 ml per 3 ft of canopy width. For tall, slender (columnar) brush types, apply 4 to 8 ml per 3 ft of height. Base the rate on whichever canopy dimension is greater (width or height).

When treating brush that requires more than a single delivery of the VELPAR DF suspension, apply subsequent deliveries equally spaced around the target plant. If treating brush on sloping sites, apply most of the suspension on the uphill side of the stem. If treating resprouts from brush disturbed by cutting or other mechanical methods, the rate of application should be proportional to the original tree size, not just the size of sprout regrowth.

USE PRECAUTIONS

- RELEASE GRID & SINGLE STEM

- Application of VELPAR DF spots closer than 36" to conifer seedlings in their first season or directly up slope from these seedlings may result in injury or mortality.
- Use VELPAR DF on seedlings in their first or fourth year and older. Injury may result from use on two and three year old seedlings where root growth is extensive but hardiness is lacking.

RELEASE

- HERBACEOUS WEED CONTROL

VELPAR DF is recommended for controlling herbaceous weeds where the following species are grown:

EASTERN US

Loblolly pine	Slash pine
Longleaf pine	Red pine

WESTERN US

Blue spruce	Lodgepole pine
Douglas fir	Noble fir
Engleman spruce	Ponderosa pine
Grand fir	Sitka spruce
Jeffrey pine	White fir

APPLICATION TIMING

EASTERN US

Apply VELPAR DF as a broadcast or banded spray in the spring prior to conifer bud break to lessen conifer injury potential.

WESTERN US

Rainbelt (areas of high spring rainfall): For best results, apply as a broadcast or banded spray in the late winter or spring when weeds are actively growing, but prior to conifer budbreak. If application is made after conifer bud break, use directional spray equipment to prevent contact with conifer foliage, as injury may result.

Snowbelt (areas of low spring rainfall): For best results, apply as a broadcast or banded spray in the fall before soil freezes and after the final resting bud has hardened on the conifers. Or, spring applications may be made after snow cover melts in anticipation of rainfall prior to conifer budbreak. Weed control results from spring treatments will be dependent on sufficient rainfall following application to activate VELPAR DF.

USE RATES

The rates listed below are for broadcast application. For band application, use proportionately less. For example, use 1/2 of the broadcast rates when treating a 3-ft band where row spacing is 6 ft.

EASTERN US

Soil Description	VELPAR DF (Lb/Acre)	
	First Year Plantings	Established Trees
Loamy sand, sandy loam(50-85% sand)	1 1/3	1 1/3 - 1 2/3
Loam, silt loam, silt, sandy clay loam	1 1/3 - 1 1/2	1 2/3 - 2 1/3
Silty clay loam, clay loam, sandy clay, silty clay, clay	1 1/2 - 1 8/10	2 1/3 - 2 2/3

Red pine only - Refer to recommended rates in the **HARDWOOD SUPPRESSION - Eastern US** table on page 11.

WESTERN US

Refer to recommended rates in the **HARDWOOD SUPPRESSION-Western US** table on page 11.

WEEDS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

- | | |
|---------------------------|------------------------|
| Annual bluegrass | Fireweed (willowweed)* |
| Aster | Fleabane |
| Barnyardgrass | Foxtail |
| Bentgrass | Goldenrod* |
| Bracken Fern | Heath aster* |
| Bromegrass | Horseweed* |
| Catsear (false dandelion) | Orchardgrass* |
| Common groundsel | Oxeye daisy |
| Common ragweed | Panicums |
| Crabgrass* | Pennsylvania smartweed |
| Curly dock* | Ryegrass* |
| Dandelion* | Squawcarpet |
| Dogfennel | Velvetgrass |
| Fescue* | Wild carrot* |

* Partial control

USE PRECAUTIONS - FORESTRY

- Do not use VELPAR DF in nurseries, seedbeds, or ornamental plantings.
- On tracts of land where various soil types are present and VELPAR DF rate selection is difficult, conifer damage or less-than-expected vegetation suppression may occur due to the different rates required for various soil types.
- Poor weed and brush control may result from the following:
 - Heavy duff or slash present at time of application
 - Use on poorly drained sites
 - Applications made when the soil is saturated with water and rain is imminent within 24 hours.
 - Applications to soils high in organic matter (greater than 5%).
- Following harvest, allow stumps and injured trees sufficient time to adequately resprout before applying VELPAR DF.
- Where burning is desired, burn vegetation only after any brush has completely defoliated, at least twice, allowing for sufficient root uptake of VELPAR DF
- Do not use VELPAR DF on frozen soils; use in spring after snow melt.
- Do not add a surfactant in applications over the top of conifers.
- Weed control results from spring applications depend on sufficient moisture to activate VELPAR DF.
- When applying VELPAR DF after transplanting, wait until rainfall has settled the soil around the base and root systems of the transplants before making the treatment.
- Crop injury may occur when VELPAR DF is used:
 - On trees that show poor vigor, insect damage, disease, winter injury, or other stress conditions
 - On any soil containing less than 1% organic matter
 - On loamy sand or sandy loam with less than 2% organic matter, except Jeffry pine and Ponderosa pine
 - On conifer foliage after conifer bud break.
 - On gravelly or rocky soils, exposed subsoils, clay knobs, sand, or sandy soil with 85% or more sand.
- Do not cut treated vegetation for forage or hay nor graze domestic animals on treated areas for 60 days following application.

15/20

NON-AGRICULTURAL USES

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

Industrial and Pasture/Rangeland weed and brush control applications as described on this label for DuPont VELPAR DF are not within the scope of the Worker Protection Standard.

The area being treated must be vacated by unprotected persons.

Do not enter or allow entry into treated areas until sprays have dried to perform hand tasks.

APPLICATION INFORMATION

VELPAR DF is recommended for general weed and brush control in noncrop sites such as railroads, highways, utility and pipeline rights-of-way, petroleum tank farms, storage areas, industrial plant sites, and other similar areas.

NONCROP INDUSTRIAL SITES

VELPAR DF is recommended for control of many annual, biennial, and perennial weeds in noncrop, industrial sites.

APPLICATION TIMING

Apply VELPAR DF as a preemergence or postemergence spray when weeds are actively germinating or growing.

WEEDS CONTROLLED - USE RATE

VELPAR DF effectively controls the following weeds when applied at the use rates shown. When applied at lower rates, VELPAR DF provides short-term control of the weeds listed; when applied at higher rates, weed control is increased and extended.

Use lower rate on coarse-textured soils (sand to sandy loam). Use the higher rate on fine-textured soils (clay loam to clay) and on soils high in organic matter.

2 2/3 - 6 2/3 Lb/Acre

- | | |
|-----------------|------------------|
| Barnyardgrass | Lespedeza |
| Bindweed* | Milkweed* |
| Bouncingbet* | Mustard |
| Bromegrass | Nutsedge* |
| Buffalograss* | Orchardgrass* |
| Burdock | Oxalis |
| Cocklebur | Paragrass |
| Crabgrass | Pigweed |
| Crown vetch | Purselane |
| Curly dock* | Quackgrass |
| Dandelion* | Ryegrass, annual |
| Dogbane* | Smartweed |
| Fiddleneck | Spurge |
| Filaree | Star thistle |
| Fleabane | Trumpet creeper* |
| Goatsbeard vine | Wild oats* |
| Goldenrod | Wild parsnip |

8 - 10 2/3 Lb/Acre

- | | |
|-----------------|-----------------|
| Bahiagrass* | Guineagrass |
| Bermudagrass* | Heath aster |
| Blackberry | Honeysuckle |
| Bluegrass | Lantana |
| Broomsedge | Marestail |
| Camphorweed | Natalgrass |
| Canada thistle* | Plantain |
| Chickweed | Prickly lettuce |
| Clovers | Ragweed |
| Dewberry | Smutgrass† |
| Dogfennel* | Spanish nettle |
| Fescue* | Vaseygrass |
| Fingergrass | Wild carrot |
| Foxtail | |

* Partial control

† Partial control may result with some of the giant (larger) smutgrass species.

SPECIFIC WEED PROBLEMS

Control of Canada Thistle in Crown Vetch - VELPAR DF is recommended for control of Canada thistle in established stands of crown vetch on noncrop sites. Make a single application of 1 - 1 2/3 lb of VELPAR DF from late spring through mid-summer, when thistle is actively growing prior to flowering. Do not use a surfactant. Some discoloration of the crown vetch foliage may occur after application.

SPRAY EQUIPMENT

Apply VELPAR DF uniformly over the desired area using ground equipment only.

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage, usually a minimum of 25 gal per acre. Higher application volumes may be needed to obtain uniform application with handgun equipment.

16/20

INDUSTRIAL TURF (UNIMPROVED ONLY)

VELPAR DF is recommended for selective weed control in established stands of bermudagrass and/or bahiagrass in noncrop areas.

APPLICATION TIMING

Make a single application of VELPAR DF per year when weeds are actively growing.

WEEDS CONTROLLED - USE RATE

VELPAR DF effectively controls the following weeds at the rates shown. Use a lower rate on coarse-textured soils (sand to sandy loam). Use the higher rate on fine-textured soils (clay loam to clay) and on soils high in organic matter.

9/10 - 1 1/2 Lb/Acre

Barnyardgrass	Maypop (passion flower)
Dogfennel	Oxalis
Fescue	Pepperweed
Lespedeza	Pigweed
Little barley	Smutgrass†

† Partial control may result with some of the giant (larger) smutgrass species.

SPRAY EQUIPMENT

Apply VELPAR DF uniformly over the desired area using ground equipment only.

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage usually a minimum of 25 gal per acre. The use of a surfactant is not recommended.

USE PRECAUTIONS

- INDUSTRIAL UNIMPROVED TURF

- Use VELPAR DF only in stands of bermudagrass and bahiagrass established for at least one year. Do not treat newly sprigged or sodded areas.
- Some discoloration of the bermudagrass or bahiagrass may occur after application.
- Injury may result when desirable grasses are under stress from drought, insects, disease, cold temperature, or poor fertility.
- Severe turf injury may occur if applications are made on gravelly or rocky soils, thinly covered subsoils, or soils with less than 1% organic matter.

BRUSH CONTROL

VELPAR DF is recommended for the control of undesirable woody plants in noncrop sites.

APPLICATION TIMING

Apply VELPAR DF from late winter through summer, prebud break until new growth hardens off.

In areas where the soil remains frozen during the winter and spring rains are usually inadequate for soil activation, a fall or winter treatment may be applied before the soil freezes.

WOODY PLANTS CONTROLLED - USE RATE

VELPAR DF is recommended for the control or suppression of the following species. Use lower rate on coarse-textured soils (sand to sandy loam). Use the higher rate on fine-textured soils (clay loam to clay) and on soils high in organic matter.

5 1/3 - 10 2/3 Lb/Acre

Alder	Manzanita
American elm	Mesquite
Ash	Mulberry
Aspen	Multiflora rose
Balsam poplar	Myrtle
Birch	Oaks
Black cherry	Osage orange
Blackgum	Persimmon
Catclaw acacia	Privet
Chinaberry*	Red maple
Chinese elm	Sassafras*
Chinese tallow	Small soapweed
Deerbrush	Snowbrush
Dogwood	Sourwood
Eastern red cedar*	Sumac
Hackberry	Sweet bay
Hawthorne	Sweet gum
Hazel	Whitebrush
Hickory	Whitehorn
Huisache	Wild plum
Juniper	Willow
Locust	Yellow Poplar
Lotebush	

*Partial control

SPRAY EQUIPMENT

AND APPLICATION TECHNIQUES

BROADCAST

Apply 5 1/3 - 10 2/3 lb of VELPAR DF per acre as a coarse spray using ground equipment only. Use enough water for thorough coverage, usually a minimum of 25 gal per acre.

BASAL (SOIL)

SINGLE STEM - Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Apply the VELPAR DF suspension with an exact-delivery handgun applicator. This equipment delivers a thin stream of predetermined volume when triggered. Apply the VELPAR DF suspension at the rate of 2 to 4 ml for each inch of stem diameter at breast height. Direct the treatment to the soil within 3 ft of the root collar of woody plants to be controlled.

For multi-stemmed and low-growing brush that have stem diameters that are difficult to determine, apply the VELPAR DF suspension at the rate of 2 to 4 ml per 3 ft of canopy width. For tall, slender (columnar) brush types, apply 4 to 8 ml per 3 ft of height. Base the rate on whichever canopy dimension is greater (width or height).

When treating brush that requires more than a single delivery of the VELPAR DF suspension, apply subsequent deliveries equally spaced around the target plant. If treating brush on sloping sites, apply most of the suspension on the uphill side of the stem. If treating resprouts from brush disturbed by cutting or other mechanical methods, the rate of application should be proportional to the original tree size, not just the size of sprout regrowth.

LACING/STREAKING - Mix VELPAR DF with water to form a concentrated suspension. Apply 5 1/3 to 10 2/3 lbs of VELPAR DF per acre. Adjust the application equipment to deliver a narrow or straight stream spray pattern such that the swath width on the soil surface is 6 to 12 inches wide. Direct the spray at the base of the brush. Swaths or treated bands should be 2 to 4 ft apart.

USE PRECAUTIONS - NONCROP

- Injury to or loss of desirable trees or other plants may result if VELPAR DF is applied or if equipment is drained or flushed on or near desirable trees or other plants, on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.
- Prevent spray from drifting to desirable plants.
- Poor weed and brush control may result from the following:
 - Use on poorly drained sites
 - Applications made when the soil is saturated with water and rain is imminent within 24 hours.
 - Applications to soils high in organic matter (greater than 5%).
- Following mechanical cutting or clearing, allow stumps and injured trees sufficient time to adequately resprout before applying VELPAR DF.
- Do not use VELPAR DF on frozen soils.
- Do not use VELPAR DF on lawns, driveways, tennis courts, or other residential or recreational areas.
- Weed and brush control results from spring applications depend on sufficient moisture to activate VELPAR DF.
- Do not cut treated vegetation for forage or hay nor graze domestic animals on treated areas for 60 days following application. For rates above 8 lb per acre, do not cut treated vegetation for forage or hay nor graze domestic animals for 1 year.

PASTURE

VELPAR DF is recommended for control of brush and weeds in pasture.

BERMUDAGRASS/BAHIAGRASS PASTURES

VELPAR DF is recommended for control of smutgrass and other weeds in established stands of bermudagrass and bahiagrass.

APPLICATION TIMING

Make a single application of VELPAR DF per year when weeds are actively growing.

WEEDS CONTROLLED - USE RATES

VELPAR DF effectively controls the following weeds at the rates shown. Use a lower rate on coarse-textured soils (sand to sandy loam). Use the higher rate on fine-textured soils (clay loam to clay) and on soils high in organic matter.

9/10 - 1 1/2 Lb/Acre

Barnyardgrass	Maypop (passion flower)
Dogfennel	Oxalis
Fescue	Pepperweed
Lespedeza	Pigweed
Little barley	Smutgrass*

* Partial control may result with some of the giant (larger) smutgrass species.

SPRAY EQUIPMENT

Apply VELPAR DF uniformly over the desired area using ground equipment only.

MIXING INSTRUCTIONS

For ground application, use enough water for thorough coverage usually a minimum of 25 gal per acre. The use of a surfactant is not recommended.

USE PRECAUTIONS - PASTURE

- Use VELPAR DF only in stands of bermudagrass and bahiagrass established for at least one year. Do not treat newly sprigged or sodded areas.
- Some temporary discoloration of the bermudagrass or bahiagrass may occur after application.
- Treatment of mixed pastures containing forage species other than bermudagrass or bahiagrass may result in injury or mortality to the other forage species.
- Injury may result when desirable grasses are under stress from drought, insects, disease, cold temperature, or poor fertility.
- Injury to or loss of desirable trees or other plants may result if VELPAR DF is applied or if equipment is drained or flushed on or near desirable trees or other plants, on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.
- Severe crop injury may occur if applications are made on gravelly or rocky soils, thinly covered subsoils, or soils with less than 1% organic matter.
- For broadcast pasture applications of VELPAR DF, do not cut treated vegetation for forage or hay nor graze domestic animals on treated areas for 60 days.

BRUSH CONTROL PASTURE/RANGELAND

VELPAR DF is recommended for the control of undesirable woody plants in pasture or rangeland.

APPLICATION TIMING

Apply VELPAR DF from late winter through summer, pre-budbreak until new growth hardens off.

In areas where the soil remains frozen during the winter and spring rains are usually inadequate for soil activation, a fall or winter treatment may be applied before the soil freezes.

WOODY PLANTS CONTROLLED

VELPAR DF is recommended for the control or suppression of the following species:

Alder	Lotebush
American elm	Manzanita
Ash	Mesquite
Aspen	Mulberry
Balsam poplar	Multiflora rose
Birch	Myrtle Oaks
Black cherry	Osage orange
Blackgum	Persimmon
Catclaw acacia	Privet
Chinaberry*	Red maple
Chinese elm	Sassafras*
Chinese tallow	Small soapweed
Deerbrush	Snowbrush
Dogwood	Sourwood
Eastern red cedar*	Sumac
Hackberry	Sweet bay
Hawthorne	Sweet gum
Hazel	Whitebrush
Hickory	Whitehorn
Huisache	Wild plum
Juniper	Willow
Locust	Yellow poplar

* Partial control.

SPRAY EQUIPMENT AND APPLICATION TECHNIQUES

Basal (Soil)-Mix 2 2/3 pounds of VELPAR DF with sufficient water to make one gallon of suspension and thoroughly agitate. Apply the VELPAR DF suspension with an exact-delivery handgun applicator. This equipment delivers a thin stream of predetermined volume when triggered. Apply the VELPAR DF suspension at the rate of 2 to 4 ml for each inch of stem diameter at breast height. Direct the treatment to soil within 3 ft of the root collar of woody plants to be controlled. When treating large stems and when more than one delivery of the VELPAR DF suspension is needed per stem, make applications on opposite sides of the stem. Do not apply more than 1/3 gallon of the VELPAR DF suspension per acre per year. Intermittent agitation may be required to maintain the VELPAR DF in suspension.

USE PRECAUTIONS - PASTURE/RANGELAND

- Injury to or loss of desirable trees or other plants may result if VELPAR DF is applied or if equipment is drained or flushed on or near desirable trees or other plants, on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.
- Poor weed and brush control may result from the following:
 - Use on poorly drained sites
 - Applications made when the soil is saturated with water and rain is imminent within 24 hours
 - Applications to soils high in organic matter (greater than 5%)
- Following mechanical cutting or clearing, allow stumps and injured trees sufficient time to adequately resprout before applying VELPAR DF.
- Do not use VELPAR DF on frozen soils.
- Weed and brush control results depend on sufficient moisture to activate VELPAR DF.
- When VELPAR DF is applied as a basal soil treatment, there is no restriction on grazing by domestic animals nor on cutting surrounding vegetation for forage or hay.
- For broadcast pasture applications of VELPAR DF, do not cut treated vegetation for forage or hay nor graze domestic animals on treated areas for 60 days.

SPRAY DRIFT MANAGEMENT

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

IMPORTANCE OF DROPLET SIZE

The most effective way to reduce drift potential is to apply large droplets (greater than 150-200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions! See the Wind, Temperature and Humidity, and Temperature Inversions sections below.

CONTROLLING DROPLET SIZE - GENERAL TECHNIQUES

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use a higher-capacity nozzle instead of increasing pressure.
- 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.

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CONTROLLING DROPLET SIZE - AIRCRAFT

- Number of Nozzles - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations.
- Nozzle Type - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.
- Boom Length - The boom length should not exceed 3/4 of the wing or rotor length. Longer booms increase drift potential.
- Application Height - Application more than 10 ft above the canopy increases the potential for spray drift.

BOOM HEIGHT

Setting the boom at the lowest labeled height (if specified) that provides uniform coverage reduces the exposure of droplets to evaporation and wind. For ground equipment, the boom should remain level with the crop, and have minimal bounce.

WIND

Drift potential increases at wind speeds less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given wind speed. Avoid application in gusty and windless conditions.

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 hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversion restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature 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 dissipates rapidly indicates good vertical air mixing.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift, and not interfering with uniform deposition of the product.

SPRAY TANK CLEANOUT

Thoroughly clean all traces of VELPAR DF from application equipment immediately after use. Flush the tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately). Dispose of the equipment wash water by applying it to a use-site listed on this label.

STORAGE AND DISPOSAL

STORAGE: Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage.

PRODUCT DISPOSAL: Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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