

257258
Record No.

Review No.
111601
Shaughnessey No.

EEB REVIEW

DATE: IN 1/8/90 OUT 1/24/90

FILE OR REG. NO. 90-OR-03
PETITION OR EXP. NO. _____
DATE OF SUBMISSION 12/26/89
DATE RECEIVED BY EFED 1/8/90
RD REQUESTED COMPLETION DATA 1/20/90
EEB ESTIMATED COMPLETION DATE 1/20/90
RD ACTION CODE/TYPE OF REVIEW 510
TYPE PRODUCTS(S): I, D, H, F, N, R, S Herbicide
MRID NO(S). _____
PRODUCT MANAGER NO. D. Stubbs (41)
PRODUCT NAME(S) Goal 1.6 E
COMPANY NAME Oregon Dept. of Agriculture
SUBMISSION PURPOSE Proposed Section 18 for use on raspberry

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	% A.I.
<u>111601</u>	<u>Oxyfluorfen</u>	<u>19.4</u>
_____	_____	_____
_____	_____	_____

①

ECOLOGICAL EFFECTS BRANCH REVIEW
SECTION 18

OXYFLUORFEN (GOAL)

100 Section 18 Application

100.1 Nature and Scope of Emergency

The Oregon Department of Agriculture requests an approval of a Section 18 specific exemption for the use of Goal 1.6E Herbicide for chemical pruning (cane suppression) of primocanes in raspberries grown in Oregon.

100.2 Formulation Information

ACTIVE INGREDIENT

Oxyfluorfen.....19.4%

100.3 Target Organism

None

100.4 Date, Duration

The use period will be from March 1 to May 15, 1990.

100.5 Application Methods, Directions, Rates

Use rate would be a one time application at 1 to 2 pints/A or a maximum rate of 0.4lbs/A. Goal 1.6E should be applied in a minimum of 30 gallons of water/A in a 3-foot band over the row to primocanes which have emerged 4 - 6 inches. Mounted nozzles should be used to deliver the spray solution.

100.6 Treatment Area

The total of approximately 4,000 acres in western Oregon (Willamette Valley) are used for red raspberry production. Nine counties involved in raspberry production are Washington, Multnomah, Clackamas, Linn, Benton, Polk, Lane, Marion and Douglas.

100.7 Precautionary Labelling

The following statement will occur on the label:

"Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes."

"This product is toxic to aquatic invertebrates, aquatic plants, wildlife and fish. Use with care when applying in areas frequented by wildlife of adjacent to any body of water or wetlands area. Do not apply when weather conditions favor drift or erosion from target areas."

101 Hazard Assessment

101.1 Discussion

The state of Oregon requests an emergency exemption for the use of oxyfluorfen for control of primocanes of red raspberries. Total area for treatment is approximately 4,000 acres at a one time application with a maximum rate of 0.4lbs/A a.i.

101 Likelihood of adverse effects on nontarget organisms

Terrestrial Exposure

The following theoretical values were calculated based on historical measured residue data used to generate a nomograph presented in Hoerger and Kenaga (1972). If Goal is applied at 0.4 lb/A, the following residues (ppm) occur on terrestrial food items immediately after treatment:

<u>Application*</u>	<u>Short Grass</u>	<u>Long Grass</u>	<u>Leafy Crops</u>	<u>Insect Forage</u>	<u>Seeds Pods</u>	<u>Fruit</u>
1.33 lb/A	275	117	129	67	14	8.0

Birds

The above residue do not exceed the lowest avian dietary LC₅₀ value of 390 ppm. The avian reproductive NOEL is at 100 ppm. Adverse effects to avian reproduction are not expected at the rate of application requested by this Section 18 because most avian organisms likely to be found in raspberries will be feeding on seeds, pods, and and insects.

Mammals

The estimated residues on terrestrial food items are below the lowest mammalian dietary LC₅₀ value nor the reproductive NOEL value. Therefore, no acute or chronic hazard to mammals is expected.

* This application rate considers a 10 foot row spacing and 3 foot wide bands, based on 0.4lb/A.

Aquatic Exposure

Goal is expected to absorb strongly to soils and likely to reach high concentrations in water. Goal is expected to be in runoff when soil erosion takes place. In aquatic habitats it is expected to concentrate in the hydrosol. The estimated environmental concentration (EEC) is 2.4 ppb. This residue level is a real possibility because of a high rate of erosion, predominance of hydrosols type C and D (soils with moderately high to high potential for runoff) and high amount of rainfall in Willamette Valley.

The proposed rate of use of Goal is not expected to be a hazard for aquatic invertebrates and vertebrates.

Endangered Species Considerations

Endangered fauna are not expected to be at risk from, Goal at the application rate 0.4 lb/A.

One endangered plant (Bradshaw's lomatium) occurs in Willamette Valley. The Bradshaw's lomatium is endemic only to lowland prairie communities in the Willamette Valley (Benton, Lane, Linn, Marion, and Polk counties). Bradshaw's lomatium is afforded protection by Endangered Species Act section 4 (b) (3) (ii). A one hundred yard buffer strip should be maintained bordering

- all patches of lowland prairie communities
- all wetlands
- all other aquatic habitats including drainage courses, and all other water ways

in Benton, Lane, Linn, Marion, and Polk counties. Exposure to Goal is critical in this case because Bradshaw's lomatium is a perennial and the application of Goal as requested by this Section 18 is during the Spring (March 1 to May 15), when there is regrowth of Bradshaw's lomatium after the previous year's die back in the fall.

101.4 Adequacy of toxicity data

The existing database is adequate to assess hazards to nontarget wildlife under this section 18. EEB recommends that before any registrations of Goal, phytotoxicity tests be submitted. § 123-2 in Subdivision J (Growth and reproduction of aquatic plants- tier 2 using Selenastrum capricornutum) should be submitted.

101.5 Adequacy of Labeling

The labeling statement is adequate.

102 Conclusions

EEB has reviewed the Section 18 emergency exemption requested by Oregon for the use of Goal 1.6 E herbicide on raspberries. Based on the above assessment, Goal will not have acute or

reproductive effects to birds. The endangered plant species (Bradshaw's lomatium), which is protected by Endangered Species Act section 4 (b) (3) (ii) and is found in lowland prairie habitats, around drainage and other water ways, and other wetlands in the Willamette Valley, is of concern if exposed to Goal. Exposure to Goal is critical in this case because Bradshaw's lomatium is a perennial and the application of Goal as requested by this Section 18 is during the Spring (March 1 to May 15), when there is regrowth of Bradshaw's lomatium after the previous year's die back in the Fall.

The Bradshaw's lomatium may be exposed via runoff because runoff of Goal is a real possibility in the Willamette Valley where there is considerable erosion, high amount of precipitation and predominance of hydrosols which facilitate for moderately high to high amounts of runoff.

To protect Bradshaw's lomatium, it is strongly advised to maintain 100 yard buffer strips bordering

- all lowland prairie communities,
- all wetlands
- all other aquatic habitats including drainage courses and other water ways

in Benton, Lane, Linn, Marion, and Polk counties. A buffer strip will not be an option for Section 3 requests.

Goal has been shown to bind to soil, however, Goal will occur in runoff when soil erosion takes place. There is considerable amount of erosion in the Willamette Valley and therefore EEB recommends that before any Section 3 registrations of Goal, phytotoxicity tests be submitted. § 123-2 in Subdivision J (Growth and reproduction of aquatic plants- tier 2 using Selenastrum capricornutum) should be submitted.

Telephone Conversations

Diana Hwang, Biologist, USFWS, Portland Field Station, Oregon, FTS 429-6179. She shared EEB's concern regarding the hazardous exposure of Bradshaw's lomatium to Goal and strongly suggested on the buffer zone adjacent to all aquatic habitats listed in this Section 18 review.

Monte Graham, Soils Technician, Soil Conservation Service, Oregon, 503-399-5746. He provided the information mentioned in this review regarding erosion and hydrological soil types in the Willamette Valley.

Bernadene Strik, Crop Specialist for Grape and Berry section, Oregon State University Horticulture Extension Service, 503-737-3464. She provided information mentioned in this review regarding precipitation and raspberry growing practices in the Willamette Valley.

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References

Hoerger, F.C. and Kenaga, E.E. 1972. Pesticide residue on plants. Correlation of representative data as a basis for estimation of their magnitude in the environment. Environmental Quality. Academic Press, New York, 1:9-28.

Nimish Vyas

Nimish Vyas, Biologist
Ecological Effects Branch
EFED

*WPCW for
1-25-90*

Norman J. Cook 1-25-90

Norman J. Cook, Head Section 2
Ecological Effects Branch
EFED

James W. Ackerman 1/25/90

James W. Ackerman, Branch Chief
Ecological Effects Branch
EFED



United States Environmental Protection Agency
Office of Pesticide Programs
Washington, DC 20460

Data Review Record

Confidential Business Information - Does not contain
National Security Information (E.O. 12065)

Pack Number

Date Received

49986

EFED

1-8-90

1. Product Name

GOAL

Chemical Name

Oxyfluorfen

2. Identifying Number	3. Record Number	4. Action Code	5. MRID/ Accession Number	6. Study Guideline or Narrative
90-OR-03	257258	510		

7. Reference No.

8. Date Rec'd (EPA)

9. Prod/Review Mgr/DCI

10. PM/RM Team No.

11. Date to HED/
EFED/RD/BEAD

12. Proj Return Date

13. Date Returned
to RD/SRRD

12/24/89

Pimbrinton/600

41

1/5/90

1/20/90

Instructions

Please comment on any endangered species concerns.

This Section Applies to Review of Studies Only

14. Check Applicable Box

☐ Adverse 6(a)(2) Data (405)
☐ Special Review Data (870)

☐ Generic Data (Reregistration) (660)
☐ Product Specific Data (Reregistration) (655)
15. No. of Individual Studies
Submitted

16. Have any of the above studies (in whole or in part) been previously submitted for review?

☐ Yes (Please identify the study(ies))

☐ No

17. Related Actions

18.	To	Type of Review	19. Reviews Also Sent to	20. Data Review Criteria
HED		Science Analysis & Coordination	☐ SAC ☐ PC	A. Policy Note No. 31 ☐ 1 = data which meet 6(a)(2) or meet 3(c)(2)(B) flagging criteria ☐ 2 = data of particular concern from registration standard ☐ 3 = data necessary to determine tiered testing requirements B. Section 18 ☐ 1 = data in support of section 3 in lieu of section 18 C. Inert Ingredients ☐ 1 = data in support of continued use of List 1 inert
		Toxicology/HFA	☒ TOX/HFA ☐ PL	
		Toxicology/IR	☐ TOX/IR ☐ EA	
		Dietary Exposure	☒ DEB ☐ AC	
		Nondietary Exposure	☐ NDE ☒ BA	
EFED	☒	Ecological Effects	☐ EEB	
		Environmental Fate & Groundwater	☐ EFGWB	
SRRD		Special Review	☐ SR	
		Reregistration	☐ RER	
		Generic Chemical Support	☐ GSC	
RD		Insecticide-Rodenticide	☐ IR	
		Fungicide-Herbicide	☐ FH	
		Antimicrobial	☐ AM	
		Product Chemistry		
		Precautionary Labeling		
BEAD		Economic Analysis		
		Analytical Chemistry		
		Biological Analysis		

☐ Confidential Statement of Formula
(EPA Form 8570-4) Attached (Trade Secrets)

☐ Label Attached



Oregon Department of Agriculture

635 CAPITOL STREET NE, SALEM, OREGON 97310-0110

December 22, 1989

Ms. Rebecca Cool, Section Head
Emergency Response Group (H7505C)
Environmental Protection Agency
401 M Street N.W.
WASHINGTON DC 20460

2513

SPECIFIC EXEMPTION FOR USE OF OXYFLUORFEN (GOAL) HERBICIDE FOR CHEMICAL PRUNING OF PRIMOCANES IN RASPBERRIES IN OREGON

The Oregon Department of Agriculture requests approval of this application for a specific exemption under Section 18, FIFRA, as amended in Part 166, Title 40, CFR 166.3, to use Goal 1.6E Herbicide for chemical pruning (cane suppression) of primocanes in raspberries grown in Oregon.

1. Since the suspension order for dinoseb in October 1986, Oregon State University Extension (OSU) personnel, processor and grower organizations, and private agricultural entities have been searching for alternatives which may be economical and efficacious. OSU and industry personnel have reached the conclusion that oxyfluorfen is an acceptable alternative to dinoseb.

The recent loss of dinoseb is a serious concern for the Oregon raspberry industry. Dinoseb played several important and unique roles in the production of raspberries:

- (A) Mechanical harvest, which now accounts for approximately 90% of the harvested fruit, requires the removal of growth at the plant base (caneburning) for proper operation of harvester catch plates which "catch" the falling fruit. Dinoseb was used routinely for cleaning plant bases before harvest. (Exhibits 1,2)
- (B) Red raspberry yields had been increased through the use of dinoseb to retard early season vegetative growth by diverting nutrition to fruit buds. Studies indicated yield increases of 1.2 tons per acre and 1.9 tons per acre with one and two dinitro cane burnings, respectively. The inability to basal burn canes can reduce economic returns by as much as \$1,900 per acre.
- (C) In past years, virtually all red raspberries in Oregon were chemically pruned at least once a year with dinoseb. The loss of dinoseb will result in a loss of over \$4.8 million for Oregon raspberry growers (estimated on 4,000 acres at an average price of 50 cents per pound reduced by 1.2 tons per acre).

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- (D) Hand pruning is not a realistic alternative. Pruning crews are not generally available in April and May. Removal of new vegetative canes one time per season would cost approximately \$180 per acre. The further costs of removing shoots up to 1.5 feet long at the bases of fruiting canes (custom pruning) cannot be accurately estimated.
- (E) The trellis system required for supporting raspberries makes mechanical weed control difficult. If field conditions (e.g., fall rains) prevent growers from applying fall herbicides, major in-row weed problems result by spring. Knock-down with a contact herbicide such as dinoseb was an additional tool to control winter weeds unaffected by spring-applied pre-emergence materials.

Research data shows that oxyfluorfen provides the same benefits aforementioned for dinoseb. Supporting data for efficacy of oxyfluorfen in raspberries is enclosed.

- 2. The primary use of oxyfluorfen in raspberries will be for primocane growth control/suppression. There are no pesticides federally registered for cane control. The State of Washington has a Section 24c (SLN) label for monocarbamide dihydrogen sulfate (Enquik) but this chemical is not registered in Oregon because local tests/trials indicated efficacy was not sufficient on a commercial basis. (Exhibits 3,4,5)

Hand pruning of primocanes is costly and impractical as stated above.

- 3. GOAL herbicide a.i. (active ingredient): oxyfluorfen [2-chloro-1-(3 ethoxy-4nitrophenoxy)-4-(trifluoromethyl) benzene], manufactured by Rohm and Haas as Goal 1.6E HERBICIDE, EPA No. 707-174 is the pesticide intended to be used. Rohm and Haas has been informed of this Section 18 request.

4. Application Information

- (A) One application of Goal at 1 to 2 pints/A will provide sufficient temporary suppression of early-season red raspberry primocane growth. Addition of a nonionic surfactant at 0.25% may be used. Goal should be applied in a minimum of 30 gallons water/A in a 3-foot band over the row to primocanes which have emerged 4 to 6 inches. Mounted nozzles should be used to deliver the spray solution. The lower rate should be used if plantings appear weak or slightly stressed. Care should be taken to avoid application to excessively weak or stressed plantings or primocane growth may be insufficient for the following year's crop.

Occasionally, after the use of Goal herbicide, a 'spotting' or 'flecking' may appear on the lower leaves of the fruiting canes. This will not affect red raspberry plant health, performance, or yield.

- (B) The use period will be from March 1 to May 15, 1990. A preharvest interval of 50 days must be observed.
 - (C) Applications will be made in the following Western Oregon counties: Washington, Multnomah, Clackamas, Linn, Benton, Polk, Lane, Marion and Douglas.
 - (D) All applicable directions on the registered label must be followed.
 - (E) The Oregon Department of Agriculture must be informed of any adverse effects which may result from the use of this pesticide.
5. Oregon is a major red raspberry producing area of North America. The crop is usually grown in light textured, well drained soils in Western Oregon. A total of approximately 4,000 acres are in production. Basal cane growth is a problem on all raspberry acreage. It is estimated that oxyfluorfen will be used on 4,000 acres.

If 4,000 acres of raspberries are treated one time at a maximum rate of 2 pints/acre (0.4 lb. active ingredient) then 1,000 gallons of Goal 1.6E (1,600 lbs. active ingredient) will be needed.

6. Criterion for use of Goal in raspberries: presence of numerous and vigorous primocanes developing at the bases of fruiting canes in early spring.

7. Economic Information

Most red raspberries produced in Oregon are processed. The value of all raspberries grown in 1990 is estimated to be \$12,000,000.

- (A) Projected economic benefits/losses with oxyfluorfen (assuming present market value for red raspberries):

With oxyfluorfen use:	\$12,000,000
Without oxyfluorfen use:	<u>7,200,000</u>

Loss = \$ 4,800,000

- (B) Crop production costs per acre (dollars/acre)

1985	\$3,058
1986	3,174
1987	3,209
1988	3,350
1989	3,497
1990	3,672

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(C) Crop yield per acre (pounds/acre)

1985	5,230
1986	4,050
1987	6,140
1988	5,140
1989	6,000
1990	3,600 (estimate) without Goal
1990	6,000 (estimate)

(D) Economic value to Oregon (in millions of dollars)

1985	7.8
1986	9.6
1987	10.9
1988	10.2
1989	12.5
1990	7.2 (estimate) without Goal
1990	12.0 (estimate)

(E) Price received per pound

1985	\$0.536
1986	0.766
1987	0.507
1988	0.535
1989	0.520
1990	0.500 (estimate)

8. Applications made in accordance with the above provisions are not expected to result in residues of oxyfluorfen and its metabolites in or on raspberries in excess of 0.05 ppm. Raspberries with residues of oxyfluorfen not exceeding this level may enter interstate commerce.

Residue information, "Summary-Goal In Berries" from Oregon State University, Department of Agricultural Chemistry, is enclosed (Exhibit 6).

The 1989 field data and GLP procedures followed have been sent to IR-4 headquarters, referenced under PR No. 3486, Study I.D. No. 89:OR:002, Project title: Oxyfluorfen/Raspberry.

9. In 1989 Oregon growers produced approximately 24 million pounds of raspberries worth about \$12.5 million (farmgate). Oregon supplies about 50% of the nation's raspberries. There are about 675 caneberry growers and 25 packers/processors.

The recent loss of dinoseb for cane suppression (chemical pruning of primo-canes) is a serious concern for the Oregon caneberry industry. Oregon State University and industry personnel have concluded, and research data shows, that oxyfluorfen provides similar benefits as dinoseb and is an acceptable alternative for cane suppression.

//

Ms. Rebecca Cool
Environmental Protection Agency
December 22, 1989
Page 5

10. Knowledgeable experts:

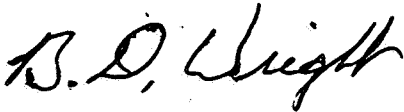
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Very truly yours,



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Enclosures (via mail)

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Jay Holmdal - R&H
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Jon Heller
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Files

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