

FILE

081901

Date Out EFB: 26 APR 1984

TO: Stubbs/Welsh
Product Manager
Registration Division
TS-767

FROM: Samuel Creeger, Chief *SK*
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 84-OR-12

Chemical: Chlorothalonil

Type Product: Fungicide

Product Name: Bravo 500

Company Name: Oregon State Department of Agriculture

Submission Purpose: Emergency exemption for use on cranberry
bogs.

ZBB Code: 3(c)(5)

ACTION CODE: 510

Date in: 4/19/84

EFB No. 4306

Date Completed: 4/24/84

TAIS (level II) Days

51

0.5

Deferrals To:

Ecological Effects Branch

Residue Chemistry Branch

Toxicology Branch.

1.0 INTRODUCTION

The Oregon State Department of Agriculture requested an Emergency Exemption (Section 18) for the use of Bravo 500 Fungicide (Chlorothalonil as a. i.). The request is to treat an estimated 1,200 acres of cranberries for control of Lophodermium twig blight. The complete request is appended to this review.

1.1 Chemical

Common name: Chlorothalonil

Chemical name: Tetrachloroisophthalonitrile

Current uses: Chlorothalonil (Bravo 500) is currently registered for use on numerous field and orchard crops and on turf.

2.0 DIRECTIONS FOR USE

The directions call for 6-10 pints of Bravo 500 per acre (3.12-5.2 lbs. a. i./acre). Applications will be made at late bloom and will be repeated at 10-14 day intervals. Under severe disease conditions, the higher rate will be used on a 10 day schedule. Bravo 500 will not be applied more than three times per season, nor within 50 days of harvest. Bogs will not be flooded until cranberries are to be harvested. Bravo 500 may be applied through solid set sprinkler irrigation systems.

With three applications and treating an estimated 1,200 acres of cranberries, 4,500 gallons of Bravo 500 will be required.

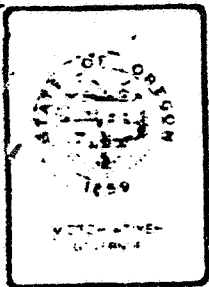
3.0 RECOMMENDATIONS

As yet, adequate data are not available to support the emergency use of chlorothalonil (Bravo 500) on cranberries in Oregon. There are questions still unanswered concerning the leaching of chlorothalonil (if, in fact, it does occur) and anaerobic soil metabolism.

Currently, data in-house awaiting review include a resubmitted aquatic field dissipation study and leaching data.



Clinton Fletcher
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division



Oregon Department of Agriculture

635 CAPITOL STREET NE. SALEM OREGON 97310-0110

March 27, 1984

Mr. Donald R. Stubbs, Section Head
Emergency Response Group (TS-767C)
Environmental Protection Agency
1921 Jefferson Davis Highway
ARLINGTON VA 22202

RECEIVED
4-13-84

Dear Mr. Stubbs:

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 Bravo 500 fungicide for control of *Lophodermium* twig blight on cranberries.

1. *Lophodermium* twig blight, *Lophodermium oxycocci*, is a fungus which kills the fruit bearing stem of cranberry. Infection levels in western Oregon cranberry bogs have reached 80-90% in several instances. Without adequate protection, crop reduction can be extreme.
2. The pest to be controlled is *Lophodermium oxycocci*, commonly called *Lophodermium* twig blight.
3. Twig blight has become a chronic problem since the adoption of sprinkler irrigation. Wetting of the foliage causes the fruiting structures on the underside of leaves to release spores which infect the plant.

The *Lophodermium* twig blight infection period varies with each season's weather, but it usually occurs from late June through September with the peak danger period occurring during July and August. To control the pest, protection must be in place before the infection period occurs, and protection must be maintained throughout the infection period.

4. According to the Pacific Northwest Plant Disease Control Handbook, Extension Services of Oregon State University, Washington State University, and the University of Idaho, March 1983, and the "1982-83 Cranberry Insect and Disease Control Program," EB 9845, Cooperative Extension, Washington State University, October 1983, the following materials are listed for control of *Lophodermium* twig blight: Captan, Difolatan, Ferban, Mancozeb, Maneb, Pholtan and Zineb.

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Based on several years of research in Oregon and Washington under the direction of Washington State University Plant Pathologist Dr. Peter Bristow, Mancozeb as Rohm and Haas Company's Dithane M-45 has been the most effective of these materials. However, Dr. Allan Stretch, Plant Pathologist, U.S. Department of Agriculture - Rutgers University, Blueberry-Cranberry Research Station, Chatsworth, New Jersey, has observed that Maneb fungicides like Mancozeb may retard red color development in cranberry, an important quality characteristic.

In 1978, Oregon State University plant pathologists, under the direction of Bernard Moore, Plant Clinic Pathologist and Dr. Peter Bristow, conducted tests in a Southwest Oregon cranberry bog to evaluate the efficacy of Captan, Difolatan, Ferbam, Maneb, and Zineb to control Lophodermium twig blight. No statistically significant differences were found with these materials.

Dr. Bristow's research has determined that Bravo 500 is superior to Mancozeb and Difolatan for control of Lophodermium twig blight. Fungicide trials at Long Beach, Washington, indicated that twig blight infestations when unsprayed (check) were 47.2% infection, late treatments with Difolatan had 30.7% infection, late treatments with Dithane M-45 had 27.1% infection, and early treatments with Bravo 500 had 14.8% infection. Storage rot was considerably less than with the other fungicides and Bravo 500 was also very effective in controlling Guignardia blight on cranberry.

5. Bravo 500 fungicide, common name Chlorothalonil (EPA Reg. No. 50534-8), active ingredient: tetrachloroisophthalonitrile, manufactured by SDS Btotech Corporation, is the pesticide intended to be used.
6. (a) Recommended application directions for Bravo 500: For cranberry Lophodermium leaf/twig blight, 6-10 pints of Bravo 500 will be applied per acre. Applications will be made at late bloom and repeated at 10-14 day intervals. Under severe disease conditions, the higher rate will be used on a 10 day schedule. Bravo 500 will not be applied more than three times per season, nor within 50 days before harvest. Bogs will not be flooded until cranberries are to be harvested. Bravo 500 may be applied through solid set sprinkler irrigation systems.

No spreader-stickers or spray adjuvant will be added to the spray solution.

(b) Bravo 500 is formulated as a flowable product containing 4.17 pounds active ingredient per gallon. 6 pts/acre = 3.11 lbs. ai/A; 10 pts/acre = 5.2 lbs. ai/A.

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A rate of 6-10 pints of formulated product is recommended per acre per application. Three applications are recommended; therefore, 18-30 pts/acre (2.25-3.75 gals/acre) will be needed. To treat an estimated 1,200 acres of cranberries, 4,500 gallons of Bravo 500 will be required.

(c) The period of application will be from June 1, 1984 to August 15, 1984.

(d) Applications will be made by certified commercial applicators or by growers using their own equipment.

(e) Bravo 500 is requested for the Oregon cranberry growing areas of Clatsop, Coos and Curry counties. Approximately 1,200 acres of cranberries are in production in this area. Over 900 acres were harvested in 1983; the remaining acreage is also susceptible to disease and total loss, even though the bogs are not yet into full production.

7. (a) Economic information concerning cranberries in Oregon: Approximately 90% of cranberry acreage in Oregon has some level of twig blight infection (up to 90% infection in some bogs). It was estimated in 1983 that even with use of registered fungicides, 10% of the crop was lost to twig blight. Surveys of bogs conducted in February, 1984, by the Coos County Extension Specialist revealed that Lophodermium infection appears to exceed the level of a year ago. One bog with an estimated 10% infection level in 1983 now has an estimated 30% disease level.

(b) Economic benefits/losses expected: The 1983 Oregon cranberry crop was about 75,000 barrels. Assuming 80-90% control of Lophodermium with Bravo 500, an average 8% yield improvement would be expected, amounting to 6,000 barrels based on the 1983 crop. At an anticipated \$49 per barrel, an economic benefit of \$294,000 to the Oregon cranberry industry would be realized. This is an average benefit. Many farmers would realize much more than an 8% yield improvement. Losses on some bogs have reached 90%. Continued losses could force cranberry growers to take affected areas out of production. Since it takes five years for cranberries to reach peak yields, long-term economic effects could be expected.

(c) Crop yields over the past four years:
(one barrel = 100 pounds)

1980	104 barrels/acre
1981	119 barrels/acre
1982	80 barrels/acre
1983	82 barrels/acre

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(d) Crop production costs per acre for the past four years:

1980	\$2,190
1981	2,460
1982	2,705
1983	2,902
1984 (est.)	3,095

(e) Price received for crop for past four years (\$/barrel)

1980	\$33
1981	41
1982	47
1983	49

(f) Economic value of cranberry crop to Oregon for the past four years:

1980	\$2,700,000
1981	3,900,000
1982	2,900,000
1983	3,700,000

8. Estimation of percent control of the pest during 1984 with

(a) Registered pesticides:	40-60%
(b) Proposed pesticide:	80-90%

9. Bravo 500 is registered and used on tree and orchard crops as well as for control of Lophodermium needlecast on conifers in Oregon. No adverse effects to man or the environment have been found. Manufacturers data indicate that the chemical is relatively immobile in soils, that it should not contaminate waterways (no residues were detected in 20 groundwater or streamwater samples), and that it does not bioaccumulate in a model ecosystem.

It is our understanding that EPA is now reviewing an application for registration of Bravo 500 for use on cranberries (1R-4 Project No. PR1758).

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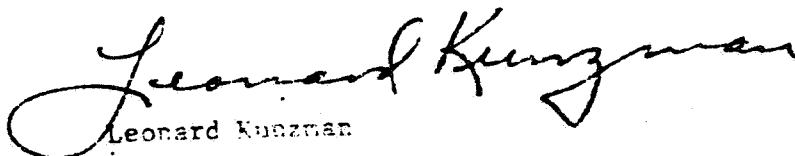
10. Names and addresses of knowledgeable experts:

Mr. Arthur Poole
Oregon State University
Extension/Horticulture
Coos County Extension Office
290 N. Central
Coquille, OR 97423
(503) 398-3121, Ext. 240

Ms. Gwen Windom
Western Washington Research
& Extension Center
Puyallup, WA 98371
(206) 593-8529

Your prompt consideration for this request will be appreciated.

Sincerely,


Leonard Kunzman
Director
(503) 378-4152

PL150-154

cc: Arthur Poole
Gwen Windom
Charles Osgood
Roger Sebek
Lyn Frandsen
Bill Kosesan