108801
+
110101

(4)

EEE BRANCH REVIEW

DATE: IN 4/1 OUT 4/28/76 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. _____

PETITION OR EXP. PERMIT NO. 100-EUP-44

DATE DIV. RECEIVED _____

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): I, D,(H) F, N, R, S Herbicide

PRODUCT MGR. NO. Libby Zink

PRODUCT NAME(S) CA-2-686 15G DUAL/CYCLE

COMPANY NAME Ciba-Geigy

SUBMISSION PURPOSE Experimental Use Permit

CHEMICAL & FORMULATION

108801 - DUAL 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide

110101 - CYCLE 2-[(4-chloro-6-(cyclopropylamino)-1,3,5-Triazin-2yl)amino]-2-methylpropanenitrile

100.0 PESTICIDAL USE

Weed control in field corn, sweet corn and popcorn. GA-2-686 15G is a preemergence herbicide for control of annual grasses and broadleaf weeds.

100.1,.2 Application Methods/Directions

(a) Directions for Use

Use only in Midwest and Northeast states.

Apply GA-2-686 15G at planting behind the press wheel or immediately after planting before emergence of either crop or weeds. Apply at the appropriate rate in the following table. In the rate ranges given, use the lower rate on soils relatively low in organic matter, and use the higher rate on soils relatively high in organic matter.

	Broadcast* rate per acre	
Soil texture**	1-3% organic matter	Over 3% organic matter
COARSE:		
Loamy sand, sandy loam	16 2/3-20 lbs. 2.5-3.0 lbs. a.i.	20-26 2/3 lbs. 3.0-4.0 lbs. a.i.
MEDIUM:		
Loam, silt loam, silt	20-26 2/3 lbs. 3.0-4.0 lbs. a.i.	20-26 2/3 lbs. 3.0-4.0 lbs. a.i.
FINE:		
Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay	26 2/3-33 1/3 lbs. 4.0-5.0 lbs. a.i.	26 2/3-33 1/3 lbs. 4.0-5.0 lbs. a.i.

*The amount of GA-2-686 15G needed for band treatment may be calculated by the formula:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{amount needed per acre}$$

**Do not apply to sand, peat, muck, or high organic clay.

Precautions: 1) Apply only once per growing season. 2) Do not apply to soil with less than 1% organic matter. 3) Do not use under sprinkler irrigation. 4) Do not use on soil recently cut and leveled for irrigation. 5) Do not use on inbred corn lines grown for hybrid seed production. 6) Under high moisture conditions on the coarser textured soils, while corn is germinating and becoming established, some temporary injury or stunting may occur at the higher recommended rates. The crop will normally outgrow this effect.

Note: Do not graze or feed treated sweet corn forage. Do not graze or feed treated field corn or popcorn forage for 60 days after application.

(b) Rates and Areas of Use

States Involved, Amount of GA-2-686 15G to be Used and Acreage to be Treated

State	Acres Treated[1)]	Pounds of GA-2-686 15G
Colorado	5	50
Connecticut	2	20
Delaware	2	20
Illinois	91	910
Indiana	50	500
Iowa	97	970
Kansas	25	250
Kentucky	11	110
Maine	2	20
Maryland	8	80
Massachusetts	2	20
Michigan	20	200
Minnesota	56	560
Missouri	25	250
Montana	2	20
Nebraska	42	420
New Hampshire	2	20
New Jersey	4	40
New York	6	60
North Dakota	8	80
Ohio	32	320
Pennsylvania	12	120
Rhode Island	2	20
South Dakota	30	300
Vermont	4	40
Virginia	4	40
West Virginia	8	80
Wisconsin	25	250
Total	577	5,770 lbs.[2)]

1) The approximate number of acres to be treated is based on an average treatment rate of 26 2/3 lbs. of GA-2-686 15G per acre on a broadcast basis. Since granular herbicides are commonly applied on a band, this rate would be converted to 10 lbs./A calculated on the basis of a 14 inch-wide band with rows 38 inches apart (common band width and row spacing).

2) Contains 433 lbs. CGA-24705 and 433 lbs. of procyazine.

(c) Purpose of Program

The objectives of the proposed testing program are to compare the efficacy and crop safety of GA-2-686 15G to standards applied with commercial application equipment and untreated controls under as many environmental conditions as possible in order to develop data to support a permanent registration on corn.

(d) Weeds Controlled

Grasses:

barnyardgrass	foxtail, green	johnsongrass (seedling)
brown-top millet	foxtail, robust purple	panicum, fall
crabgrass	foxtail, yellow	witchgrass
foxtail, giant	goosegrass	

Broadleaves:

buckwheat, wild	jimsonweed	ragweed, common
buffalobur	kochia	shepherdspurse
carpetweed	lambsquarters	sida, prickly
chickweed, common	mallow, Venice	smartweed, Pennsylvania
cocklebur	morningglory, tall	sunflower
coffeeweed	mustard, wild	velvetleaf
henbit	pigweed	yellow rocket
	purslane, common	

101.0 CHEMICAL & PHYSICAL PROPERTIES

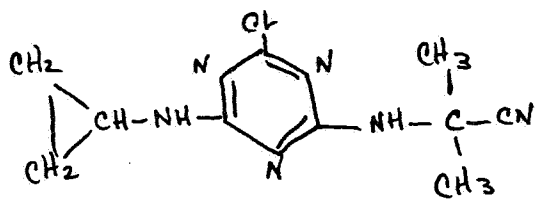
101.1 Chemical Name

Procyzzine

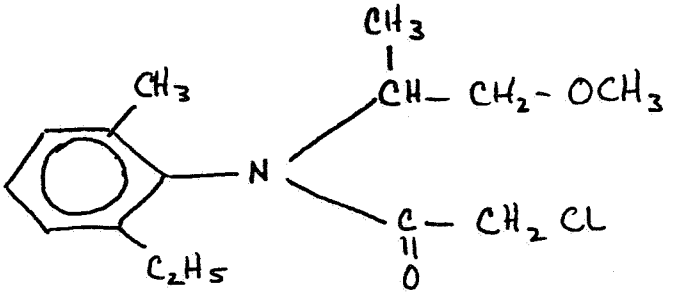
101.2 Product Name

GA-2-686 15G

101.3 Structure



Procyzzine



CGA-24705

102.0 BEHAVIOR IN THE ENVIRONMENT

Refer to reviews by N. Cook on CYCLE (Procyazine) and DUAL (CGA-24705).

103.0 TOXICOLOGICAL PROPERTIES

103.1 Acute toxicity

Toxicology data for GA-2-686 15G is presented below. For additional toxicology data on CYCLE and DUAL refer to reviews by N. Cook and S. Fredericks.

103.1.1 Mammals

Organism	Test	Result
Albino Rat	Acute Oral LD_{50}	3,000 mg/kg
"	Acute Inhalation LC_{50}	>6,650 mg/m^3
Albino Rabbits	Acute Dermal LD_{50}	>2,000 mg/kg
"	Eye Irritation	Category II
"	Skin Irritation	Non-Irritating

103.2 Subacute toxicity

Refer to reviews by S. Fredericks.

Summary of toxicity data:

Chemical	8-day dietary LC mallard	Bobwhite	Pheasant	96-hr LC_{50} Rainbow	Bluegill
Procyazine	>5000 ppm	1300 ppm		4.25 ppm	13.5 ppm
Dual	>10,000 ppm		>10,000 ppm	2.0 ppm	15.0 ppm

104.0 HAZARD ASSESSMENT

104.1 Discussion

104.1.1 Adequacy of Data

The toxicity data submitted is acceptable.

104.1.2 Additional Data Required

Prior to consideration for full registration, an acute oral LD_{50} for either mallard duck or bobwhite quail and an acute 48-hr LC_{50} for an aquatic invertebrate are required under Sec. 3 Regulations and the proposed Guidelines.

104.1.3 Likelihood of Exposure to Non-Target Organisms

As mentioned in N. Cook's review on DUAL, residue accumulation in non-edible fish tissue presents a potential hazard to non-target aquatic organisms. DUAL will constitute approximatly 7.5% of the active ingredient in GA-2-686 15 formulation (CYCLE will constitute approximately 7.5%) or approximately .5% of a.i. (1.0-2.5 lbs.). This rate is similar to rates for DUAL alone. Therefore, in accordance with Cook's remarks, it is felt that CA-2-686 156 is also a candidate for a fish reproduction study and a "secondary poisoning" study using prey-eating birds and/or mammals and/or fish.

105.0 CONCLUSIONS

The Environmental Safety Staff finds no objection to the proposed experimental permit program. The "Environmental Hazards" paragraph should be modified to read as follows:

"Keep out of lakes, streams and ponds. Do not apply when weather conditions favor run-off or drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes."

Prior to consideration for full registration, the following data, as required by the new Sec. 3 Regulations and proposed Guidelines, must be submitted: an acute oral LD_{50} using either mallard duck or bobwhite quail and an acute 48-hr LC_{50} on an aquatic invertebrate.

In accordance with N. Cook's letter of August 12, 1975 (see review comments on DUAL) a chronic fish study will also be required for this product. Prior to initiation of this study, however, the Environmental Safety Section should be informed.

R. W. Felthousen
Efficacy and Ecological Effects Branch
April 28, 1976