1-4-84

Shaughnessy No.: _____

Date out: 04 JAN 1984

To: Dick Mountfort
Product Manager
Registration Division TS-767

From: Samuel M. Creeger, Chief SMC
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division TS-769c

COPY

Attached, please find the EAB review of:

Reg./File No.: 8340-EUP-T

Chemical: HOE 33171 [ethyl 2-(4-((6-chloro-2-benzoxazolyl)oxy)phenoxy) propanoate

Type Product: Herbicide

Product Name: WHIP 1 EC Herbicide

Company Name: American Hoechst Corp.

Submission Purpose: review rotational crop to support EUP on soybeans

ZBB Code: other

Action Code: 711

Date In: 12/9/83

EAB No.: 4099

Date Completed: 04 JAN 1984

TAIS (Level II)	Days
52	1.5

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

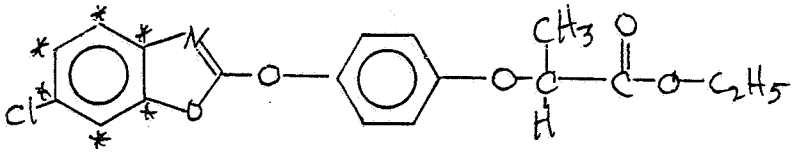
_____ Toxicology Branch

1.0 INTRODUCTION

Chemical Name and type of pesticide: fenoxaprop-ethyl (proposed common name), ethyl 2-[4-[(6-chloro-2-benzoaxozolyl)oxy]phenoxy]propanoate, 12.5% ai, herbicide.

Trade Name: Whip 1 EC Herbicide
HOE-33171

Chemical Structure:



* denotes radiolabel

American Hoechst is submitting a rotational crop study for review to support an EUP on soybeans.

2.0 DIRECTIONS FOR USE

See previous review (3 Nov 1983).

3.0 DISCUSSION OF DATA

3.1 ROTATIONAL CROP STUDY

3.1.1 ^{14}C-Hoe-33171 Rotational Crop Study; Borriston Labs; Temple Hills, MD; Project #1901; 20 Dec. 1982, tab D-33, Acc #071799.

Experimental Procedure

The methods and experimental set-up used are as follows:

"Each 1m x 2m sandy loam test plot (characterization shown in Table 1) was separated by a 1m aisle and a 6' fence was constructed of fine mesh poultry wire to contain the entire plot area (Figure 1). The plot was further covered with bird netting to eliminate intrusion of wildlife. A 10cm border was maintained around each plot to avoid walking in areas where lateral ^{14}C-drift might occur (Figure 1).

Rotation crops were planted at 120 days after the first application of ^{14}C-HOE-33171 (wheat, lettuce, carrots, and radishes) and each plot had a 3' high greenhouse built around it. The greenhouse box was not heated until January, 1982. The purpose of the greenhouse boxes was to allow the seedlings to survive the winter and grow to maturity during the spring; therefore, longer growing times than normal prevailed to provide a worst case for uptake.

The 1-year rotation crops were planted at 364 days after the first application of ^{14}C-HOE-33171 (wheat, lettuce, carrots, radishes, soybeans, and corn) and allowed to grow to maturity during the summer. The plots were open without the greenhouse boxes used over the previous winter.

^{14}C-HOE-33171 and nonlabeled HOE-33171 were supplied by Hoechst AG. ^{14}C-HOE-33171 (2 mCi) was supplied at a specific activity of 26.4 uCi/mg. Nonlabeled HOE-33171 (1g) was supplied at a purity of 95.8% (Code No. HOE-33171 OH at 302). Two 10 ml aliquots of formulation ingredients suitable to produce an emulsifiable concentrate were also supplied by Hoechst AG (Code No. HOE-33171 OH EC 03).

Three dose solutions were made from the stock solution of ^{14}C-HOE-33171 (in acetone) each containing 49 mg of active ingredient. Two dose solutions were used on day zero to treat plots two and three. The third dose solution was stored frozen (-20°C) until study day 40. The third dose solution was used to treat plot three for a second time on study day 40.

Each dose solution (49 mg ai) was added to 343 mg of emulsifiable concentrate formulation and distilled water was added to a final volume of 70 ml (ratio - 25 mg ai/175 mg formulation, 0.22 lbs/A).

The final dose solution (70 ml) was sprayed on the test plot using a Gilson TLC spray unit. It took approximately eight minutes to spray the 70 ml of solution. A minimum of five overflapping passes in each direction followed by a 90° turn and five overlapping passes were performed on each plot to assure a uniform distribution of the solution. Periodic watering was performed during dry periods.

The sampling intervals are shown in Table 2 for plant and soil samples. All samples of soil and plants were taken in duplicate. Soil samples were taken at depths of 0"-2", 2"-4", 4"-6", and 6"-12", using a coring device. All samples were individually packaged, labeled and stored frozen for further analysis. Plant samples were divided into various plant parts.

All soil and plant samples were homogenized with dry ice using a Waring, Polytron or a Virtis blender. Soil samples were analyzed for moisture content and combusted in duplicate using a Harvey BMO. Plant samples were combusted in duplicate and reported on a wet weight basis. Soil analysis results are reported on a dry weight basis. All samples were quantitated for radiocarbon content using a Packard TriCarb® Liquid Scintillation Sprectrometer, Oxiflour CO_2 LS fluid (Packard), and automatic quench control to correct for sample quenching.

Results

Tables 2 and 3 show the radiocarbon levels in rotation crops at the end of 120 and 364 days, respectively. The uptake of activity was not considered significant and the parts of the plants that had measurable levels are not used for human or animal consumption.

Conclusion

Samples of representative rotation crops did not show significant uptake of radiolabeled HOE-33171 after 120 and 364 days.

Tables 4 and 5 show the radiocarbon levels in soil samples during the 120-day and 313/480-day aging period, respectively. Measurable activity was present in the soil (0-2" segment) 480 days (16 months) after treatment.

4.0 RECOMMENDATION

4.1 EAB finds the submitted rotational crop study satisfactory in meeting this data requirement for an EUP on soybeans, and will support a 120-day or one-year rotated crop interval.

Herbert L. Manning, Ph.D.
Review Section #1
EAB/HED

TABLE 1. Sandy Loam Soil Characterization - Project 1901

Organic	2.4%
Cation Exchange Capacity	9.6 meq/100g
pH	6.4
Mechanical Separation	
Sand	30.0%
Silt	41.0%
Clay	29.0%
Bulk Density	1.45 g/cc

Figure 1. Test Plot Design - Project 1901

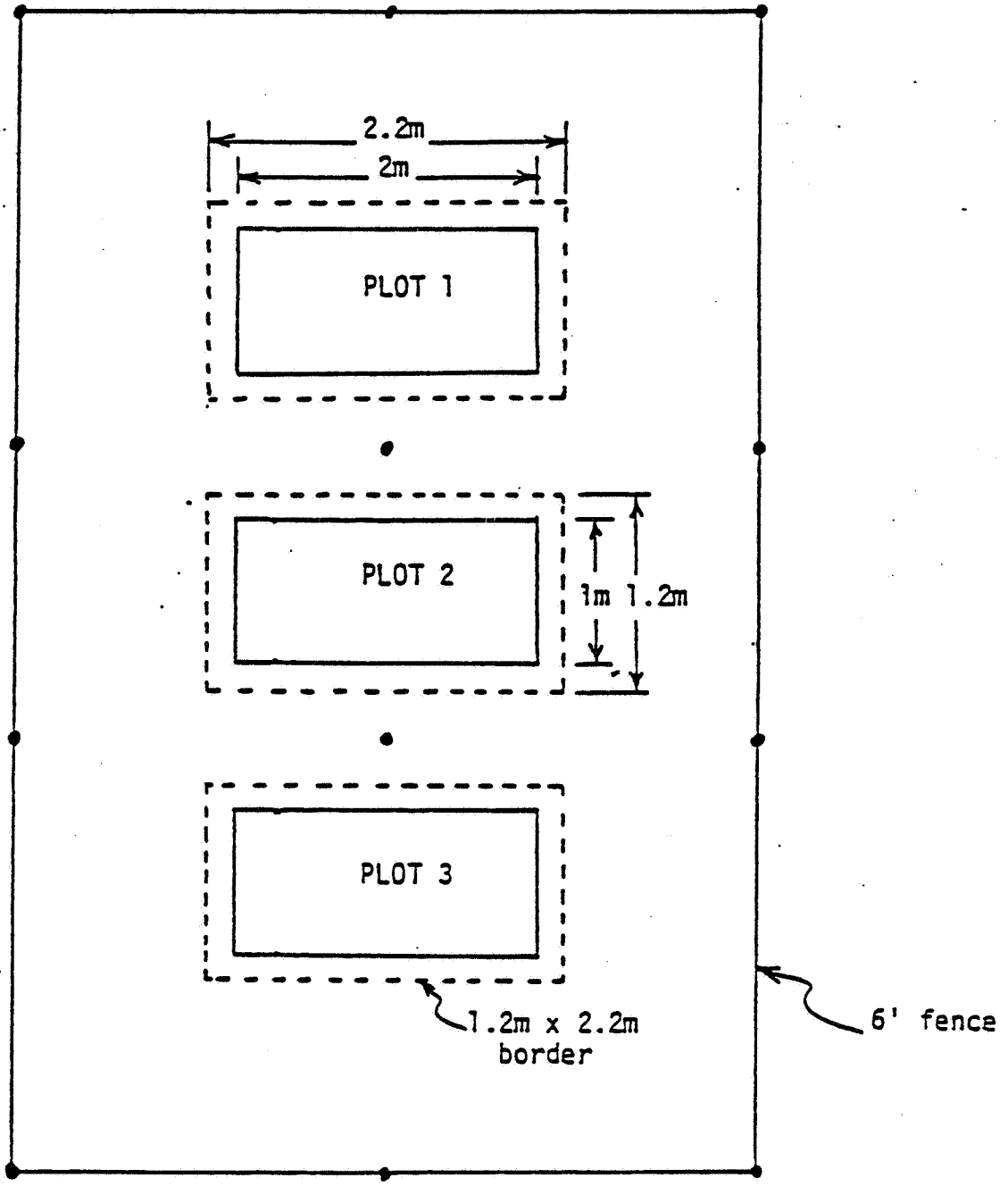


TABLE 2. Radiocarbon Levels in Rotation Crops Planted 120 Days After Field Treatment With ^{14}C-HOE-33171[a] - Project 1901

CROP[b]		PLOT 2 - 1 TREATMENT (ppm)	PLOT 3 - 2 TREATMENT (ppm)
Wheat Head	rep 1	<0.006	<0.006
	rep 2	<0.006	0.006
Wheat Stem	rep 1	<0.006	0.009
	rep 2	<0.006	0.009
Wheat Root	rep 1	0.012	0.019
	rep 2	0.011	0.014
Carrot Leaf	rep 1	<0.006	<0.006
	rep 2	<0.006	<0.006
Carrot Root	rep 1	<0.006	<0.006
	rep 2	<0.006	<0.006
Lettuce Leaf	rep 1	<0.006	<0.006
	rep 2	<0.006	<0.006
Lettuce Root	rep 1	<0.006	0.010
	rep 2	<0.006	0.010
Radish Leaf	rep 1	<0.006	<0.006
	rep 2	<0.006	<0.006
Radish Root	rep 1	<0.006	<0.006
	rep 2	<0.006	<0.006

[a]All control samples were <0.006 ppm (quantitation limit of radiocarbon).
[b]Harvested at 313 days.

TABLE 3. Radiocarbon Levels in Rotation Crops Planted 364 Days After Field Treatment With ^{14}C-HOE-33171[a] - Project 1901

CROP[b]		PLOT 2 - 1 TREATMENT	PLOT 3 - 2 TREATMENT
Soybeans	rep 1	<0.006	<0.006
	rep 2	"	"
Soybean pods	rep 1	<0.006	<0.006
	rep 2	"	"
Soybean stalk	rep 1	<0.006	0.006
	rep 2	"	0.006
Soybean root	rep 1	<0.006	<0.006
	rep 2	"	0.006
Carrot leaf	rep 1	<0.006	<0.006
	rep 2	"	"
Carrot root	rep 1	<0.006	<0.006
	rep 2	"	"
Corn	rep 1	<0.006	<0.006
	rep 2	"	"
Corn cob	rep 1	<0.006	<0.006
	rep 2	"	"
Corn stalk	rep 1	<0.006	<0.006
	rep 2	"	"
Corn root	rep 1	0.016	0.008
	rep 2	0.011	0.007
Wheat leaf	rep 1	<0.006	<0.006
	rep 2	"	"
Wheat root	rep 1	0.006	0.013
	rep 2	0.009	0.024
Lettuce leaf	rep 1	<0.006	<0.006
	rep 2	"	"
Lettuce root	rep 1	<0.006	<0.006
	rep 2	"	"
Radish leaf[c]	rep 1	<0.006	<0.006
	rep 2	"	"
Radish root[c]	rep 1	<0.006	<0.006
	rep 2	"	"

[a] All control samples were <0.006.
[b] Harvested at 480 days.
[c] Harvested at maturity (391 days).

TABLE 4. Radiocarbon Levels in Soil Samples Taken in the First 120 Day Period of the Field Treatment with ^{14}C-HOE-33171[a] - Project 1901

SAMPLING DAY AND REP. NUMBER		PLOT 2 - 1 TREATMENT (ppm)			PLOT 3 - 2 TREATMENTS (ppm)		
		0"-2"	2"-4"	4"-6"	0"-2"	2"-4"	4"-6"
0	rep 1	0.539	0.185	0.058	0.393	0.069	0.037
	rep 2	0.323	0.123	0.030	0.389	0.163	0.014
7	rep 1	0.125	0.010	0.006	0.141	0.034	<0.006
	rep 2	0.077	0.022	<0.006	0.081	0.010	<0.006
14	rep 1	0.073	0.021	<0.006	0.024	0.018	<0.006
	rep 2	0.341	0.041	0.093	0.086	0.016	0.058
28	rep 1	0.048	0.023	0.010	0.052	<0.006	<0.006
	rep 2	0.115	0.046	0.010	0.013	<0.006	<0.006
39	rep 1	0.424	0.007	<0.006	0.562	0.090	0.033
	rep 2	0.071	0.036	<0.006	0.441	0.098	0.083
40[b]	rep 1	0.142	0.047	0.024	0.300	0.021	0.006
	rep 2	0.037	0.014	<0.006	0.280	0.018	<0.006
47	rep 1	0.064	0.007	<0.006	0.178	0.098	0.014
	rep 2	0.045	<0.006	0.008	0.101	0.025	0.047
60	rep 1	0.373	0.023	0.085	0.117	0.053	<0.006
	rep 2	0.326	0.061	0.015	0.490	0.049	<0.006
90	rep 1	0.030	<0.006	<0.006	0.126	0.019	0.008
	rep 2	0.047	<0.006	<0.006	0.101	0.023	<0.006
120	rep 1	0.023	<0.006	<0.006	0.245	0.143	0.012
	rep 2	0.024	<0.006	<0.006	0.323	0.033	<0.006

All control samples were <0.006 ppm.
Samples on day 40 taken immediately after second application of HOE-33171 to Plot 3.

TABLE 5. Radiocarbon Levels in Soil Samples Taken at 313 and 480 Days after Field Treatment with ^{14}C-HOE-33171[a] - Project 1901

313 Days Sampling

SOIL DEPTH		PLOT 2 - 1 TREATMENT (ppm)	PLOT 3 - 2 TREATMENT (ppm)
0-2"	rep 1	0.067	0.139
	rep 2	0.048	0.104
2-4"	rep 1	0.014	0.019
	rep 2	0.028	0.013
4-6"	rep 1	0.011	0.011
	rep 2	0.013	0.010
6-12"	rep 1	<0.006	0.011
	rep 1	0.007	0.006

480 Days Sampling

SOIL DEPTH		PLOT 2 - 1 TREATMENT (ppm)	PLOT 3 - 2 TREATMENT (ppm)
0-2"	rep 1	0.048	0.148
	rep 2	0.018	0.083
2-4"	rep 1	0.017	0.057
	rep 2	<0.006	0.053
4-6"	rep 1	0.007	0.014
	rep 2	<0.006	0.018
6-12"	rep 1	<0.006	0.007
	rep 2	<0.006	0.014

[a]All control samples were <0.006 ppm.

10