

Date Out: EFB: JUN 18 1981

To: Product Manager Mountfort (23)
TS-767

From: Dr. Willa Garner III
Chief, Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 100-597

Chemical: Metolachlor

Type Product: Herbicide

Product Name: Dual

Company Name: Ciba-Geigy

Submission Purpose: Amended registration for use on seed & pod
vegetables

ZBB Code: 3(c)(7)

ACTION CODE: 335

Date in: 4/14/81

EFB # 814

Date Completed: JUN 18 1981

TAIS (level II)

Days

Deferrals To:

63

2

Ecological Effects Branch

Residue Chemistry Branch

Toxicology Branch

1. INTRODUCTION

1.1 This is a request for a new use of metolachlor on seed and pod vegetables (Dual 8E Herbicide, reg. no. 100-597).

1.2 Structure and chemical name

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

2. DIRECTIONS FOR USE

The following crops are covered by this request: pod crops including garbanzo, great northern beans, guar, kidney beans, lima beans, mung beans, navy beans, okra, peas (English, southern peas, such as blackeye, pinkeye, crowder, etc.), pinto beans, and snap beans (green, wax, string).

Pod crops

Apply Dual 8E either preplant incorporated or preemergence using the appropriate rate specified in Table 1. Preplant Incorporated: Apply Dual 8E to the soil and incorporate (shallow; not more than 2 inches) within 14 days before planting. Use a finishing disk, harrow, rolling cultivator, or similar implement capable of uniform incorporation. Use an incorporated application if furrow irrigation is used or when a period of dry weather is expected. If these crops are planted on beds, apply and incorporate Dual 8E after bed formation. Preemergence: Apply Dual 8E during planting (behind the planter) or after planting, but before weeds or crop emerge.

Table 1: Dual 8E Alone - Pod Crops*

Soil texture	Broadcast rate per acre	
	Less than 3% organic matter	3% organic matter or greater
COARSE: Sand, loamy sand, sandy loam	1 1/2-2 pts.	2 pts.
MEDIUM: Loam, silt loam, silt	2-2 1/2 pts.	2-2 1/2 pts.
FINE: Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay	2-2 1/2 pts.	2 1/2-3 pts.
muck or peat soils	DO NOT USE	

*On English peas, use only preemergence application.

Within the rate range, use the lower rate on soil relatively coarse-textured or low in organic matter; use the higher rate on soil relatively fine-textured or high in organic matter.

Dry weather following preemergence application of Dual 8E may reduce effectiveness. Cultivate if weeds develop.

Rotational Crops: 1) If treated crop is lost, corn, soybeans, peanuts, Concep treated grain sorghum, or the listed pod crops may be planted immediately. Do not make a second broadcast application of Dual 8E. If the original application was banded and the second crop is planted in the untreated row middles, a second banded treatment may be applied. 2) Small grains may be planted 4 1/2 months following treatment. Field corn, cotton, soybeans, sorghum, peanuts, pod crops, root crops, and small grains may be planted the spring following treatment. Do not graze or feed forage or fodder from cotton or small grains to livestock. All other rotational crops may be planted 18 months after application.

Dual 8E + Eptam® Combination Tank Mix and Sequential Application - Beans (Green or Dry)

This mixture controls all weeds controlled by Dual 8E alone and by Eptam alone. Refer to the Dual 8E alone section of this label for weeds controlled by Dual 8E alone and to the Eptam label for weeds controlled by Eptam.

Apply Dual 8E and Eptam preplant incorporated or sequentially using the appropriate rates from Table 2. Preplant Incorporated: Apply the tank mixture to the soil and immediately incorporate into the top 2 inches of soil within 14 days before planting using a finishing disk, harrow, rolling cultivator, or similar implement capable of providing uniform 2 inch incorporation. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. If these pod crops are planted on beds, apply and incorporate the tank mixture after bed formation. Sequential: Apply Eptam alone Preplant Incorporated, as specified on that label. Follow with a preemergence application of Dual during planting (behind the planter) or after planting before the weeds or crop emerge.

Refer to the Dual 8E and Eptam labels for weather, cultural practices, and all other precautions and limitations that affect performance of these products.

Table 2: Dual 8E + Eptam - Beans (Green or Dry)

Soil texture	Broadcast rates per acre			
	Less than 3% organic matter		3% organic matter or greater	
	Dual 8E	Eptam 7-E*	Dual 8E	Eptam 7-E*
COARSE: Sand, loamy sand, sandy loam	1 1/4 pts.	3 1/2-4 1/2 pts.	1 1/2 pts.	3 1/2-4 1/2 pts.
MEDIUM: Loam, silt loam, silt	1 1/2 pts.	3 1/2-4 1/2 pts.	2 pts.	3 1/2-4 1/2 pts.
FINE: Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay	2 pts.	3 1/2-4 1/2 pts.	2-2 1/2 pts.	3 1/2-4 1/2 pts.
muck or peat soils	DO NOT USE			

*Refer to the Eptam label for rate limits depending on geographic area.

Refer to the Eptam label for species and varietal restrictions.

Precaution: Do not exceed 3 1/2 pts. Eptam 7-E per acre on small white beans or green beans grown on coarse-textured soils.

Rotational Crops: Refer to the crop rotation instructions for Dual 8E alone on this label.

Dual 8E + Premerge® Combination and Sequential Application - Beans (Field, Lima and Snap)

This mixture controls all weeds controlled by Dual 8E alone and by Premerge alone. Refer to the Dual 8E alone section of this label for weeds controlled by Dual 8E alone, and to the Premerge label for weeds controlled by Premerge.

Apply Dual and Premerge using the appropriate rates from Table 3. Preemergence: Apply the tank mixture during planting (behind the planter) or after planting, but before weeds or crop emerge; or application may be delayed until just before or during early emergence when beans are in, but not beyond the "crook" stage. Sequential: Using the rates in Table 3, apply Dual 8E preplant incorporated as specified in the Dual alone section. Follow with a preemergence or at emergence application of Premerge; or Dual may be applied preemergence as specified alone followed by an at emergence application of Premerge.

Refer to the Dual 8E and Premerge labels for weather, cultural practices, and all other precautions and limitations that affect performance of these products.

Table 3: Dual 8E + Premerge - Beans (Field, Lima and Snap)

Soil texture	Broadcast rate per acre			
	Less than 3% organic matter		3% organic matter or greater	
	Dual 8E	Premerge*	Dual 8E	Premerge*
COARSE: Sand, loamy sand, sandy loam	1 1/4 pts.	1-1 1/2 gals.	1 1/2 pts.	1-1 1/2 gals.
MEDIUM: Loam, silt loam, silt	1 1/2 pts.	1-1 1/2 gals.	2 pts.	1-1 1/2 gals.
FINE: Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay	2 pts.	1-1 1/2 gals.	2-2 1/2 pts.	1-1 1/2 gals.
muck or peat soils	DO NOT USE			

*In the Premerge rate range, use the high rate for preemergence application and the low rate for the at emergence application.

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Precaution: Do not use on light sandy soils having little or no organic matter.

Rotational Crops: Refer to the crop rotation instructions for Dual 8E alone on this label.

Note: Do not graze or feed forage or fodder from pod crops treated with Dual, Dual + Eptam, or Dual + Premerge to livestock.

Dual® trademark of CIBA-GEIGY for metolachlor
U.S. Patent No. 3,937,730

Eptam® trademark of Stauffer Chemical Company for EPTC

Premerge® trademark of the Dow Chemical Company for dinoseb

Agricultural Division
CIBA-GEIGY Corporation
Greensboro, North Carolina 27409

March 2, 1981

3. DISCUSSION OF DATA

3.1 Gas Chromatographic Residue Determination of CGA-24705 in Soil, AG-303, acc. no. 099991

This is a modification of the procedure "CGA - 24705 Gas Chromatographic Residue Determination in Plant Material, Grains and Soil" (Provisional) (REM 12/73).

CGA - 24705 residues are extracted from soil with 10% water in methanol. The methanol extract is diluted with water and partitioned with hexane. The hexane is cleaned on a column and analyzed for CGA - 24705 on a GC with a Dohrman microcoulometric detector in the chloride specific mode.

Samples fortified at 0.05 to 1.0 ppm showed an average 92% recovery. The limit of detection is 0.05 ppm.

3.2 Dual Plus Premerge Tank Mix Soil Dissipation Studies, Report No. AGA-5112 I-V, acc. no. 099991, ref. 3

Procedure

A sandy loam soil was treated with Dual 8E at 2.5 lb ai/A and a different plot with the mixture of Dual 8E at 2.5 lb ai/A plus Premerge 3E at 4.5 lb ai/A. The test plot was in CA and was a sandy loam (63.2% sand, 28.2% silt, 8% clay, 0.7% OM, pH = 7.0 and CEC = 3.7).

Results

Metolachlor residues found (ppm) at interval (days)

<u>Treatment</u>	<u>0</u>	<u>30</u>	<u>53</u>	<u>123</u>	<u>190</u>	<u>246</u>	<u>368</u>
Dual 8E 2.5 lb ai/A	0.56	0.41	0.12	<0.05	<0.05	<0.05	<0.05
{ Dual 8E 2.5 lb ai/A	0.48	0.46	0.11	<0.05	<0.05	<0.05	<0.05
plus							
{ Premerge 3E 4.5 lb							
ai/A							

Conclusions

Increased persistence of metolochlor did not occur when used with Premerge on the test soil.

3.3 Dual Plus Premerge Tank Mix Soil Dissipation Studies, Report No.
AGA - 5134 - I - VA, acc. no. 099991, ref. 4

Procedure

A sandy clay loam in New York (59% sand, 34.2% silt, 6.8% clay, 2.6% OM, pH = 6.4 and CEC = 8.5) was treated with Dual 8E at 2.5 lb ai/A and a separate plot with the mixture of Dual 8E at 2.5 lb ai/A plus Premerge 3E at 4.5 lb ai/A.

Results

		<u>Metolachlor Residues Found (ppm) at Interval (days)</u>						
<u>Treatment</u>	<u>0</u>	<u>30</u>	<u>59</u>	<u>123</u>	<u>179</u>	<u>290</u>	<u>365</u>	
Dual 8E - 2.5 lb ai/A	1.3	0.50	0.40	0.15	0.09	0.21	0.13	
{ Dual 8E - 2.5 lb ai/A	1.2	0.59	0.47	0.25	0.17	0.14	0.16	
	plus							
{ Premerge 3E - 4.5 lb ai/A								

Conclusions

Increased persistence of metolachlor did not occur when used with Premerge on the test soil.

3.4 Dual Plus Eptam Tank Mix Soil Dissipation Studies, AG-A 5111 I-V,
acc. no. 099990

Procedure

A sandy loam in California (63% sand, 28% silt, 8% clay, 0.7% OM, pH = 7.0, CEC = 3.7) was treated with Dual 8E at 2.5 lb ai./A and a separate plot with the mixture Dual 8E at 2.5 lb ai/A plus Eptam 7E at 4.0 lb ai/A.

Results

		<u>Metolachlor Residues (ppm) Found at Interval (days)</u>						
<u>Treatment</u>		<u>0</u>	<u>30</u>	<u>53</u>	<u>123</u>	<u>189</u>	<u>246</u>	<u>368</u>
Dual 8E - 2.5 lb ai/A		0.41	0.30	0.05	<0.05	<0.05	<0.05	<0.05
{	Dual 8E - 2.5 lb ai/A	0.42	0.49	0.13	<0.05	<0.05	<0.05	<0.05
	plus							
{	Eptam 7E - 4.0 lb ai/A							

Conclusions

Increased persistence of metolachlor did not occur when used with Eptam on the test soil.

3.5 Dual Plus Eptam Tank Mix Soil Dissipation Studies, AG-A, 5133 I-V, acc. no. 099990.

Procedure

A sandy clay loam in New York (59% sand, 34% silt, 7% clay, 2.6% OM, pH = 6.4 and CEC = 8.5) was treated with Dual 8E at 2.5 lb ai/A and a separate plot with the mixture Dual 8E at 2.5 lb ai/A plus Eptam 6E at 4.0 lb ai/A.

Results

<u>Metolachlor Residues (ppm) Found at Interval (days)</u>							
<u>Treatment</u>	<u>0</u>	<u>30</u>	<u>59</u>	<u>123</u>	<u>179</u>	<u>290</u>	<u>365</u>
Dual 8E - 2.5 lb ai/A	0.78	1.2	0.55	0.18	0.21	0.05	0.10
{ Dual 8E - 2.5 lb ai/A	0.89	0.67	0.43	0.26	0.22	0.09	0.09
plus							
{ Eptam 8E - 4.0 lb ai/A							

Conclusions

Increased persistence of metolachlor did not occur when used with Eptam on the test soil.

3.6 Analysis for Eptam from the Tank Mix Study, Stauffer Chemical Co., FSDS No. A-18109, acc. no. 099990.

This study is part of section 3.5, above.

Conclusion

No increased persistence of Eptam occurred when used with Dual on the test soil.

3.7 Analysis for Eptam from the Tank Mix Study, Stauffer Chemical Co., FSDS No. A-18111, acc. no. 099990.

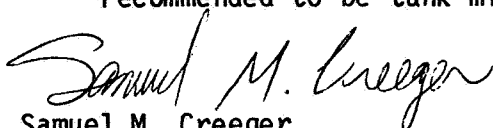
This study is part of section 3.4, above.

Conclusion

No increased persistence of Eptam occurred when used with Dual on the test soil.

4. RECOMMENDATIONS

- 4.1 We concur with the use of metolachlor on the seed and pod vegetables listed on the proposed label.
- 4.2 From this submission, it is not known if the rotational crop restrictions on the proposed label are adequate for Eptam and Premerge (which are recommended to be tank mixed with metolachlor).

 June 18, 1981

Samuel M. Creeger
June 17, 1981
Section #1, EFB
Hazard Evaluation Division