DATE: 10/13/78

To: Product Manager 24 (Jacoby)
TS-767

Through: Dr. Gunter Zweig, Chief
Environmental Fate Branch
CV Collie 10/12/78
for G. Zweig

Through: Mr. James Conlon, Acting Director
Hazard Evaluation Division, TS-769

From: Review Section No. 2
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 100-LOT and 100-590

Chemical: Dual (Metolachlor) and ~~X~~ Bicep

Type Product: I, D, H, F, N, R, S, Herbicide

Product Name: Dual and Bicep

Company Name: Ciba-Geigy

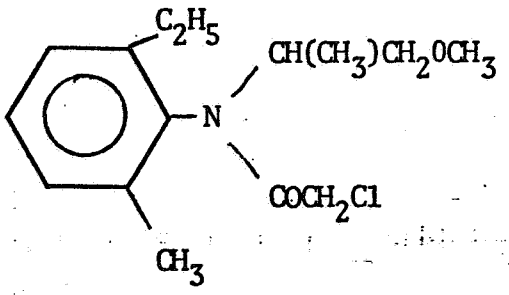
Submission Purpose: New use on grain sorghum + tank mix with terbutryn

Date in: 8-2-78

Date out: 10/13/78

I. Introduction

This is a request to add use on sorghum to the Bicep 4.5 label and also the proposed label for Dual 8E. The Dual 8E label includes uses of metolachlor in tank mixtures with atrazine and terbutryn. Bicep is a combination product containing both atrazine and metolachlor and is registered for use on corn grown for grain, excluding popcorn.



Metolachlor — 2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide

II. Directions for Use

Dual 8E Herbicide - Precaution: Do not use Dual 8E alone in tank mixtures if sorghum seed has not been properly pretreated with CGA-43089 because severe crop injury will occur.

Dual 8E alone - Sorghum apply either preplant incorporated or pre-emergence to the soil surface at 1.5 to 2.5 pts/acre depending on soil type. (1.5 to 2.5 lbs ai/acre)

Rotational Crop: 1) If treated sorghum crop is lost, corn or soybeans may be replanted immediately or sorghum may be replanted immediately provided the seed has been properly pretreated with CGA-43089. Do not make a second broadcast application of Dual 8E. If the original application was middles, a second band treatment of Dual 8E may be applied. 2) Plant only corn, sorghum, or soybeans within 18 months after application.

Dual 8E plus Aatrex Tank Mixtures: Apply preplant incorporated or preemergence to the soil surface at rates given below:

Broadcast rate per acre

Soil textrure	Less than 1.5% organic matter		1.5% organic matter or greater	
	Dual 8E	AAtrex 80W	Dual 8E	AAtrex 80W
COARSE Sand, loamy sand, sandy loam	DO NOT USE		DO NOT USE	
MEDIUM loam, silt, silt loam	DO NOT USE		1.5 pts.	1.5 lbs.
FINE Silty clay loam, sandy clay loam, clay loam, sandy clay, silty clay, clay	1.5 pts.	1.5 lbs.	1.75-2 pts.	1.75-2 lbs.

*When using AAtrex Nine-0, AAtrex 4L, or AAtrex 4LC, use equivalent rates. One lb. of AAtrex 80W equals 0.9 lb. of AAtrex Nine-0 or 1.6 pts. of AAtrex 4L (4LC).

Precaution: Applications of Dual 8E + AAtrex on highly alkaline soils or on eroded areas where calcareous subsoils are exposed may cause sorghum injury.

Rotational Crops: 1) If treated sorghum is lost, corn may be replanted immediately or sorghum may be replanted immediately provided the seed has been properly pretreated with CGA-43089. Do not make a second broadcast application of Dual 8E + AAtrex. If the original application was banded and the second crop is replanted in the untreated row middles, a second band treatment of the combination may be applied. 2). Corn, sorghum, or other crops may be planted 18 months after application. 3) Injury may occur to soybeans planted in north-central and northeast IA, south-central and southwest MN, Northeast NE, southeast, SD, and other areas the year following application on soils having a calcareous surface layer.

Dual 8E plus Igran 80W Tank Mixture: Apply preplant incorporated or preemergence to soil surface at the rates given below:

	Broadcast rate per acre	
Soil texture	Dual 8E	Igran 80W
COARSE Sand, loamy sand	1.25 pts.	1.5 lbs
sandy loam	1.25-1.5 pts.	1.5-2 lbs.
MEDIUM Loam, silt, silt loam	1.5-1.75 pts.	2-2.2 lbs.
FINE Silty clay loam, sandy clay loam, clay loam, sandy clay, silty clay, clay	1.75-2 pts.	2.2-2.5 lbs

Rotational Crops 1) If treated sorghum is lost, sorghum may be replanted immediately provided the seed has been properly pretreated with CGA-43089. Do not make a second broadcast application. If the original application was banded and the second crop is replanted in the untreated row middles, a second band treatment of the combination may be applied. 2) Corn, sorghum, or soybeans may be planted the year following application. All other crops may be planted 18 months after application.

Bicep 4.5 - Active ingredients metolachlor and atrazine (2.5 + 2 lbs ai/gal). Apply eitner preplant incorporated or preemergence to the soil surface at rates given below:

	Broadcast rate per acre	
Soil texture	Less than 1.5% organic matter	1.5% organic matter or greater
COARSE Sand, loamy sand, sandy loam	DO NOT USE	DO NOT USE
MEDIUM Loam, silt, silt loam	DO NOT USE	2.4 qts.
FINE Silty clay loam, sandy clay loam, clay loam, sandy clay, silty clay, clay	2.4 qts.	2.8-3.2 qts.

Precaution: Application of Bicep on highly alkaline soils or on eroded areas where calcareous subsoils are exposed may result in sorghum injury.

Rotational Crops: 1) If treated sorghum crop is lost, corn may be replanted immediately or sorghum may be replanted immediately provided the seed has been properly pretreated with CGA-43-089. Do not make a second broadcast application of Bicep. If the original application was banded and sorghum is replanted in the untreated row middles, a second band treatment may be applied. 2) Corn, sorghum, or soybeans may be planted the year following application. All other crops may be planted 18 months after application. 3) Injury may occur to soybeans planted in north-central and northeast IA, south-central and southwest MN, northeast NE, southeast SD, and other areas the year following application on soils having a calcareous surface layer.

III. Discussion of Data:

The following document was submitted for review: "Environmental Chemistry Data Showing Soil Dissipation of Metolachlor and Terbutryn applied in Tank Mixtures?: Accession No. 234418.

1. Study AG-303:

An analytical method for the extraction, cleanup and final determination of intact CGA-24705 residues in soil is described. Recoveries from several soil types spiked at the 0.05-1.0 ppm level ranged from 70 to 128% with an average of 92%. The method appears to be adequate for the purpose intended.

2. Study GAAC-69014:

Quantitative determination of triazine herbicides in soils by chemical analysis. A detailed method of analysis is described. A limit of detection of 0.05 ppm using gas chromatography is claimed.

3. Study AG-A 4713:

A Texas silt clay loam soil was treated with Metolachlor and Terbutryn alone and in tank mixture at 2.0 lb ai/A of each pesticide. Soil samples were taken to 245 days. No significant differences in the dissipation rates of the chemicals were noted when applied alone or in tank mixtures.

4. Study AG-A 4878:

A sandy loam soil in Autauga Alabama was treated with metolachlor and terbutryn alone and in tank mixture at 2.0 lbs ai/A of each pesticide. Soil samples were taken to 255 days. No significant difference in the dissipation rates of the chemicals were noted when applied alone or as tank mixtures.

IV. Conclusions:

Bicep 4.5 : Use of this product is already registered for corn at similar application rates. Our review of 7/6/78 indicates that residues may occur in forage and fodder or parts fed to livestock of rotational crops. This opinion was re-confirmed in our memo from Collier to Jacoby, dated June 28, 1978. (See Attachment #1)

Dual 8E: Use on a similar product, Dual 6E is already registered for corn at similar application rates.

Immediate replanting to soybeans for use of 8E alone should not be permitted. See our review of 7/7/78 concerning residues in forage, fodder or parts fed to livestock.

Tank Mixes:

Soil residue decline data support the proposed tank mixture with terbutryn.

It is understood by the reviewer that the material CGA-43089 used to pre-treat sorghum seed is not a pesticide. This was learned from a telephone communication with PM team member G. La Rocca.

V. Recommendations:

1. Delete any reference to soybeans as a replant crop after crop failure. Rotations with soybeans should be made no earlier than the spring following treatment.
2. Our postion on label restrictions related to forage and fodder has not changed since our review of 7/7/78 (R. Ney) and memo from Collier to Jacoby 6/28/78, attached.