

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 WASHINGTON D.C., 20460

OCT 11 2005

OFFICE OF  
 PREVENTION, PESTICIDES AND TOXIC  
 SUBSTANCES

**MEMORANDUM**

**SUBJECT:** Atrazine and Propazine Use Rates in Sorghum for Potential Co-occurrence  
 (DP 308550)

**FROM:** William Phillips, II, Agronomist  
 Nicole Zinn, Biologist  
 Biological Analysis Branch

*[Handwritten signature]*  
*Nicole Zinn*

Timothy Kiely, Economist  
 Economic Analysis Branch  
 Biological and Economic Analysis Division (7503C)

*[Handwritten signature]*

**THRU:** Arnet Jones, Chief  
 Biological Analysis Branch

*[Handwritten signature]* 10/05/2005

David Widawsky, Chief  
 Economic Analysis Branch  
 Biological and Economic Analysis Division (7503C)

*[Handwritten signature]* 10/05/2005

**TO:** Diane Sherman  
 Chemical Review Manager  
 Special Review and Reregistration Division (7508C)

**PRODUCT REVIEW PANEL:** October 5, 2005

**SUMMARY**

As a component of the triazine cumulative drinking water assessment, BEAD was asked in 2004 by SRRD to determine whether it is likely for both atrazine and propazine to be used on the same sorghum field in a single growing season. In a memorandum dated August 18, 2004 (DP# 305266), BEAD stated that *"It is the conclusion of BEAD that in the narrow scope of preemergence control of broadleaf weed species in sorghum crop production, propazine is an agronomic replacement for atrazine; however, this does not preclude the possible use of atrazine as a postemergence applied herbicide in fields where an application of propazine was made."* The above statement remains the position of the division as there has been no new evidence to change this characterization. Recently BEAD offered to refine its assessment by trying to determine a rate structure for this use scenario.

*10/20/05*

BEAD conducted further analysis to refine this statement by evaluating historical information on the rates of each herbicide in situations where atrazine and propazine use occurred together (co-occurrence). The analysis focused on the states where propazine is proposed to be used on sorghum: Kansas, Texas, Oklahoma, Colorado, and New Mexico. In BEAD's review of available historic recommendations and efficacy trials from the time period during which propazine was available, no evidence was found indicating that propazine was recommended, evaluated, or used in combination, or in sequence, with atrazine. Following an evaluation of this limited historic use and usage data, BEAD has determined that if a postemergence application of atrazine were used, applicators would most likely not apply the full labeled rate. However, due to data gaps that exist in the historical research, BEAD is unable to determine a plausible use rate for a situation where co-occurrence may exist. With this stated, it must be reinforced that historical data from efficacy trials also indicated that at rates between 2.0 and 3.0 lb ai acre<sup>-1</sup>, there was little to no crop injury compared to the hand-weeded or cultivated control plots.

## **INTRODUCTION**

In 2004 SRRD asked BEAD to determine whether it is likely for both atrazine and propazine to be used on the same sorghum field in a single growing season. The purpose of the request was to better understand the use of atrazine and propazine on sorghum for the drinking water component of the triazine cumulative risk assessment. Recently BEAD offered to refine its assessment by trying to determine a rate structure for this use scenario.

Propazine was registered through the 1980's then voluntarily canceled by the registrant. Currently there is renewed interest by industry, growers, and grower groups in registering propazine for use on sorghum. In the south central portion of the country where sorghum is followed by cotton, atrazine carry over poses a potential threat to cotton crops. The use of propazine is expected to alleviate this problem. Currently, there is no label restriction planned that would prohibit the use of atrazine and propazine on the same field during the same growing season.

## **USAGE ANALYSIS**

The states with proposed use of propazine on sorghum are Kansas, Texas, Oklahoma, Colorado, and New Mexico. This analysis focuses only on these five states. The proposed maximum label rate (MLR) for propazine applied either preemergence or preplant incorporated for sorghum is 1.2 lb ai acre<sup>-1</sup> (Propazine ® 4L), and the current MLR for atrazine applied for postemergence weed control in sorghum in the affected states is 1.2 lb ai acre<sup>-1</sup> (Aatrex® 4L).

A survey of EPA proprietary data for the time period between 1998 and 2004 revealed that on average a single atrazine application was made to a given sorghum crop at a rate of 1.0 lb ai acre<sup>-1</sup>. However, the 2003 atrazine rates in the aforementioned states ranged from 0.30 lb ai acre<sup>-1</sup> in Colorado to 1.11 lb ai/acre in Kansas, with a national average rate range of

1.04 lb ai acre<sup>-1</sup> (Table 1). Currently, there is no perceived reason that these rates for atrazine will increase if propazine is added to the market.

Table 1. Atrazine Usage in Sorghum in Certain States, 2003

State	Crop Treated (%)	Average Number of Applications	Rate (lb ai/acre/application)	Acres Grown
Colorado	30	1.0	0.30	270,000
Kansas	79	1.1	1.11	3,550,000
Oklahoma	52	1.1	0.88	300,000
Texas	59	1.1	0.87	3,200,000
National*	70	1.1	1.04	8,500,000

USDA/NASS 2004

\*For all states surveyed

In BEAD's review of historic recommendations and efficacy trials during the time period when propazine was available, there was no evidence found that propazine was recommended, evaluated, or used in combination, or in sequence, with atrazine (Schroeder and Christensen, 1993; Russ, 1978; Phillips and Ross, 1965). Rates of these herbicides used in the efficacy trials ranged from 2.0 to 3.0 lb ai/acre (Russ, 1978; Schroeder and Christensen, 1993; Phillips and Ross, 1965). In 1992, after the cancellation of propazine, but with existing stocks available, Colorado estimated that propazine was used on less than 1 percent of the acreage at a rate of 1.8 lb ai acre<sup>-1</sup> (Bohmont 1993). These rates are higher than the current maximum application rate for atrazine and the proposed maximum application rate for propazine. Overall, historical data gathered within some of the field trials indicated that at higher rates there was little to no crop injury compared to the hand-weeded or cultivated control plots (Russ, 1978; Schroeder and Christensen, 1993; Phillips and Ross, 1965).

Due to the time frame into which this analysis was conducted, there was limited documentation available from the period when propazine was registered. Although useful to gain historic perspective, BEAD recognizes that these documents may or may not be entirely representative of the general recommendations made for propazine during this time period. In addition, atrazine and proposed propazine rates have decreased since the previous registration of propazine, further limiting the amount of information available to evaluate the atrazine and propazine rates likely to be used based on historical data.

## PROJECTED RATE ANALYSIS

The likely outcome of a failure of BLW control using propazine would be the application of another chemistry of herbicide rather than another triazine. As mentioned in the August 18, 2004 memorandum, there are several other herbicides, including 2, 4-D that could be used for postemergence BLW control.

As for propazine, BEAD assumes that the maximum proposed label rate of 1.2 lb ai acre<sup>-1</sup> would be used for sorghum. In the unlikely event that a postemergence application of

atrazine were made, BEAD believes that a rate lower than the MLR of 1.2 lb ai acre<sup>-1</sup> would be made given the current average use rates.

## CONCLUSION

BEAD reviewed available historic recommendations and efficacy trials from the time period during which propazine was available, and no evidence was found indicating that propazine was recommended, evaluated, or used in combination, or in sequence, with atrazine. Following an evaluation of this limited historic use and usage data, BEAD has determined that if a postemergence application of atrazine were used, applicators would most likely not apply the full labeled rate. However, due to data gaps that exist in the historical research, BEAD is unable to determine a plausible use rate for a situation where co-occurrence may exist. With this stated, it must be reinforced that historical data from efficacy trials also indicated that at triazine rates between 2.0 and 3.0 lb ai acre<sup>-1</sup>, there was little to no crop injury compared to the hand-weeded or cultivated control plots (Russ, 1978; Schroeder and Christensen, 1993; Phillips and Ross, 1965).

## REFERENCES

Bohmont, B., 1993, Colorado Pesticide Use Survey, Estimated Use, 1992, Colorado State University, Available <http://cipm.ncsu.edu/piappud/>

Phillips, W.M. and W.M. Ross., 1965, Effect of Propazine and Atrazine on Ten Hybrid Grain Sorghums, *Sorghum vulgare* Pers. Agron. J. 57:624-625

Russ, O. G., Report of 1978 Herbicide Data, Kansas Experimental Research Station.

Schroeder, J. and N. Christensen, 1993, Weed Management in Conventional Till Grain Sorghum, Technical Report 15, New Mexico State University.

USDA NASS Agricultural Chemicals for Field Crops, 2004

# DATA PACKAGE BEAN SHEET

Date: 17-Oct-2005

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## \*\*\* Registration Information \*\*\*

Registration: REF 0230-19071 - Propazine

Company: -

Risk Manager: RLM - Robert McNally - (703) 368-8085 Room# CM-2 604K

Risk Manager Reviewer: D. Sherman: DSHERM02

Sent Date:

Calculated Due Date:

Edited Due Date:

Type of Registration: Pre-emptive

Action Desc:

Ingredients: 05% Propazine

## \*\*\* Data Package Information \*\*\*

Expedite:  Yes  No

Date Sent: 06-Jun-2005

Due Back:

DP Ingredient: 05% Propazine

DP Title: PESTICIDE USAGE OVERLAP TRIAZINES

CSF Included:  Yes  No

Label Included: Yes  No

Parent DP #:

Assigned To

Date In

Date Out

Organization: BEAD / HED

06-Jun-2005

11-Oct-2005

Last Possible Science Due Date:

Team Name

Science Due Date:

Reviewer Name: Kiely, Tim

06-Jun-2005

11-Oct-2005

Sub Data Package Due Date:

Contractor Name:

## \*\*\* Studies Sent for Review \*\*\*

No Studies

## \* Additional Data Package for this Decision \*\*\*

Printed on Page 2

## \*\*\* Data Package Instructions \*\*\*

ATTN: Tim Kiely and Bill Priddy have provided projections of usage estimates on sorghum for propazine and the potential for overlap or substitution between atrazine and propazine on sorghum. EFED and HED are predicting that an analysis assuming 0% overlap may be too conservative and reflect risk that is unrealistic (especially endangered species risks). Please look into the possibility of the risk assessors using other ways of characterizing the combined use of propazine and atrazine on sorghum (perhaps market share estimates, etc.) and how much propazine would be used on sorghum.

FYI, a label amendment regarding use of one triazine if another is used may not be possible or enforceable because of many reasons, one of which is the extent of production here, so this characterization is important if it is possible. Please provide your professional judgement on what the assessment should use to characterize the usage.

I plan on contacting Tim Priddy to discuss this further - please contact me, Diane Sherman, at 308.0128 or by e-mail if you receive this bean before I speak with Tim or if you have questions. Previous reports BEAD has generated that relate to this topic are:  
\* Jan 11, 2005 memo on the Percent of Crop Treated Estimates for Propazine on Sorghum  
\* August 25, 2004 memo on the Propazine Use on Sorghum



13544



# R136504

**Chemical:** Atrazine  
Propazine

**PC Code:**  
080803  
080808

**HED File Code:** 71000 BEAD Usage Data Report  
**Memo Date:** 10/11/2005  
**File ID:** DPD308550  
**Accession #:** 000-00-0116

**HED Records Reference Center**  
1/8/2007

