

**ATTACHMENT A**

**EPA MEMORANDUM: NATIONAL AND STATE SUMMARY USE AND USAGE MATRIX**

1. Bromoxynil (PC Codes: 035302 & 128920) August 5, 2019 Update
2. Prometryn (PC Code: 080805) August 14, 2019



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

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

**MEMORANDUM**

**SUBJECT:** Bromoxynil (PC Codes: 035302 & 128920) National and State Use and Usage Summary

**FROM:** Cynthia Doucoure, Environmental Protection Specialist *Cynthia Doucoure*  
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**THRU:** Mark Suarez, Acting Chief *Mark S*  
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**TO:** Cathy Tortorici, Chief  
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Office of Protected Resources  
NOAA's National Marine Fisheries Service

## **Bromoxynil: National and State Use and Usage Summary**

**(August 5, 2019 Update)**

### **Introduction**

This document contains national and state-level use and usage data on bromoxynil, an herbicide registered for control of annual grasses and broadleaf weeds in food and feed crops. National-level agricultural data are presented in Figure 1 and Table 1; state-level agricultural data are presented in Table 2; and national-level non-agricultural usage data are presented in Table 3.

The Environmental Protection Agency (EPA) has been working with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to develop a method for assessing the risks of pesticides to endangered and threatened species. Given that many listed species range over large areas, it is necessary to consider use of pesticides on a landscape scale, rather than simply a field or a small watershed. One consideration involves the percent of the crop in a given area (relevant to a listed species' range) that is treated with a pesticide. There are uncertainties in extrapolating from national level usage data to regional and state level ranges of protected species. In particular, national level data do not distinguish if there are areas of a species' range where usage is greater or less than the average national usage. To address these concerns, this document provides all available estimates of pesticide usage data for bromoxynil, nationally and by state. All registered use sites as of May 2019 are listed; although, usage data are not available for every site.

The intended use of the data presented here is to inform assessment of bromoxynil use in the United States, and the extent, variability, and rate of that usage at the state-level. Pesticide usage data are not reported below the state-level because the usage estimates below the state level may not be statistically valid. Extent and variability of usage at the state-level are presented using minimum, maximum, and average percent crop treated (PCT) over the five-year observation period. PCT is calculated as the percent of the acres grown for a crop that are treated with bromoxynil. Additionally, the data may inform assumptions about crops and states where bromoxynil is likely not being used or usage is low, by identifying crops that are surveyed for but where usage is not observed during the observation period.

The pesticide usage data summarized herein were obtained from both public and private (proprietary) sources. As presented, the data are not proprietary, business confidential, or a trade secret. The most recent five years of available data were used, 2013-2017, to characterize current usage. Additionally, Figure 1 presents the bromoxynil usage trend for the 1998-2017 reporting period.

### **Data Sources**

- **Agricultural Market Research Data (AMRD)** – proprietary pesticide usage data from 1998 to 2017 for historical use trend and 2013 to 2017 for current usage estimates. These data are

collected and sold by a private market research firm. The data are collected by annual surveys of agricultural users in the continental United States and provides pesticide usage data for about 60 crops, including both specialty and row crops. The survey design targets at least 80 percent of US acreage/production of the surveyed commodities. The survey methodology provides statistically valid estimates of usage at the national and state levels, but typically not below the state-level.

- **United States Department of Agriculture’s National Agricultural Statistics Service (NASS)** – publicly available pesticide usage data from 2013 to 2017. NASS data are based on surveys that focus on the top-producing states that together account for the majority of U.S. acres or production of the surveyed commodity. NASS survey design targets a minimum of 80 percent of the acreage/production for every fruit, vegetable, and field crop surveyed. Operation level data are combined during summary and, pending compliance with disclosure rules, published at the state and national levels. NASS does not collect data annually for each crop, but surveys for various commodities on a rotating schedule.
- **California Department of Pesticide Regulation (CADPR) Pesticide Use Reporting (PUR)** – publicly available pesticide usage data for 2012 to 2016. The PUR database contains detailed records and summaries of agricultural applications of pesticides on crops based on application permits. All agricultural growers must submit their production agricultural pesticide use reports monthly and pest control businesses must submit pesticide use reports within 7 days after application. As such, CADPR data is a census of all usage rather than a survey. The Pesticide Use Summary reports are published annually.
- **Non-Agricultural Market Research Data (NMRD)** - Proprietary data source that provides market data for agrochemicals/specialty pesticides for various market sectors, including professional turf and ornamental plants, professional pest control, consumer pesticides, and vegetation management. Market reports reflect usage by class/market segment and chemical and are based on sales information (manufacturer and retail) and end-user surveys. Study dates vary by market sector.

The presented usage data are averaged over the number of years of available survey data based on sampling frequency (five years for AMRD and CADPR, and 1-2 years for NASS and NMRD), regardless of whether usage is observed in each surveyed year. The presented data may thus underestimate the maximum yearly usage. In certain cases, data are unavailable or withheld. These cases are indicated in the tables:

- Some data sources do not provide all data elements. When a data element is not available, this is indicated with a "--" notation in the relevant column.
- In some cases, not enough samples are available to establish a robust average. This is indicated with the notation "Insufficient number of reports to establish an estimate" or "(S)". Generally, this indicates that the chemical is only periodically used by a small number of users.
- If a registered use site is surveyed by one of our data sources but no usage is observed, this is indicated with the notation "Surveyed but no usage reported" across the data columns. Lack of reported usage data for the pesticide on a surveyed crop indicates that there is a very low likelihood that the given pesticide is used on that crop.

- If a registered use site is not surveyed nationally by any of our data sources, this is indicated with the notation “Not Surveyed at National Level” across the data columns.

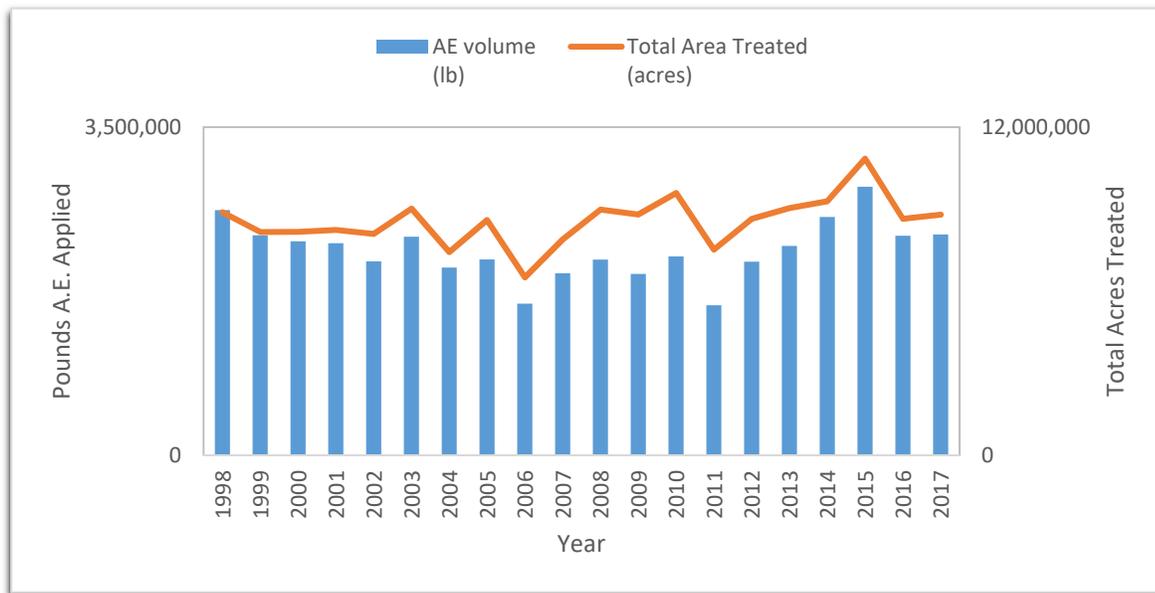
## Summary

Nationally, agricultural bromoxynil usage shows no consistent trend of increasing or decreasing pounds of acid equivalent (AE) applied from 1998 to 2017 (Figure 1). Over the same period, the trend in total acres treated with bromoxynil indicates a slight increase over time. During the most recent five years of available survey data (2013 - 2017), an annual average of approximately 2.5 million pounds of bromoxynil were applied to approximately 9.3 million acres of agricultural crops (Table 1). Approximately 95% of pounds of bromoxynil applied and total acres treated agriculturally are to three crops: wheat, sorghum, and barley. The remaining 5% of bromoxynil applications are spread over five other crops. Further information on national usage of bromoxynil by crop is available in Table 1.

While the majority of bromoxynil is only applied to a handful of surveyed crops, the percentage of some crops that are treated with bromoxynil within individual states suggests that it is an important pest control tool and may be important for additional, unsurveyed crops in certain states. Further information on percent of crops treated with bromoxynil by state is available in Table 2.

National non-agricultural usage data are more limited than agricultural data. There are no reported uses of bromoxynil nationally on surveyed uses including non-crop areas, turf (nonresidential), and sod farms. However, CADPR reports an average usage of 615 pounds of bromoxynil on sod farms over the 2012-2016 period. (Table 3).

## Agricultural Usage



**Figure 1: Bromoxynil Total Acres Treated and Total Pounds A.E. Applied (1998-2017).**

Source: Agricultural Market Research Data (AMRD). 1998-2017.

**Table 1. National Bromoxynil Agricultural Usage by Crop**

Crop	Data Source	States with Reported Usage	Avg. Annual Pounds AE Applied <sup>a</sup>	Avg. Annual Total Acres Treated <sup>b</sup>	% Applied by Air	Avg. Single AE Rate	Max Single Labeled Rate lb ae/a <sup>c</sup>
<b>Cereal Grains</b>	<b>See individual crops below</b>						<b>Full Group Not Registered</b>
Barley	AMRD (2013-2017)	CA, CO, ID, MN, MT, ND, OR, SD, UT, WA, WY	190,000	800,600	3%	0.239	0.5
Corn, Field	AMRD (2013-2017)	IL, IN, IA, KS, MI, MN, NE, ND, OH, SD, WA, WI	40,000	135,500	2%	0.293	0.5
Corn, Pop	Not Surveyed at National Level						0.5
Oats	NASS (2015)	MI, MN, NE NY, ND, SD, WI	40,000	215,000	--	0.167	0.5
Rye	Not Surveyed at National Level						0.5
Sorghum	AMRD (2013-2017)	AR, CO, IL, KS, MO, NE, NM, OK, SD, TX	220,700	932,500	1%	0.237	0.5
Triticale	Not Surveyed at National Level						0.5
Wheat	AMRD (2013-2017)	CA, CO, ID, IL, IN, KS, MI, MO, MN, MT, NE, ND, OH, OR, SD, VA, WA, WI	1,960,900	7,226,000	3%	0.2650	0.5
Spring Wheat	AMRD (2013-2017)	CA, ID, MN, MT, ND, OR, SD, WA	1,480,000	5,315,000	2.3%	0.279	0.5
Winter Wheat	AMRD (2013-2017)	CA, CO, ID, IL, IN, KS, MI, MO, MT, NE, ND, OH, OR, SD, VA, WA, WI	480,000	1,900,000	6.5%	0.250	0.5
<b>Grass Forage, Fodder, and Hay</b>	<b>See individual crops below</b>						<b>Full Group Not Registered</b>
Alfalfa	AMRD (2013-2017)	CA, CO, ID, IL, MN, MT, NV, NY, ND, OK, OR, PA, WA, WI, WY	15,000	46,700	5.5%	0.319	0.5
Barley Legume Mixture	Not Surveyed at National Level						0.375
Oats-Legume Mixture	Not Surveyed at National Level						0.375
Rye-Legume Mixture	Not Surveyed at National Level						0.375
Triticale-Legume Mixture	Not Surveyed at National Level						0.375
Wheat-Legume Mixture	Not Surveyed at National Level						0.375

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Crop	Data Source	States with Reported Usage	Avg. Annual Pounds AE Applied <sup>a</sup>	Avg. Annual Total Acres Treated <sup>b</sup>	% Applied by Air	Avg. Single AE Rate	Max Single Labeled Rate lb ae/a <sup>c</sup>
Grass Forage/Fodder/Hay	Not surveyed at National Level						0.205
Sudangrass	Not Surveyed at National Level						0.5
<b>Oilseed Crops</b>	<b>See individual crops below</b>						<b>Full Group Not Registered</b>
Flax	Not Surveyed at National Level						0.25
<b>Bulb Vegetable</b>	<b>See individual crops below</b>						<b>Full Group Not Registered</b>
Garlic	AMRD (2013-2017)	CA	4,600	10,000	10%	0.453	0.5
Onion	AMRD (2013-2017)	CA, CO, ID, NY, OR, TX, WA	25,000	110,000	0.2%	0.220	0.5
<b>Misc. Crops</b>	<b>See individual crops below</b>						<b>Full Group Not Registered</b>
Mint (Peppermint/Spearmint)	Not Surveyed at National Level						0.5
Grass Grown for Seed	Not Surveyed at National Level						0.5
Fallow	AMRD (2013-2017)	KS, MT, OR, WA, WY	9,600	55,000	0%	0.175	1.0

Notes	
AMRD (YEAR-YEAR)	Agricultural usage surveyed by market research firm(s)
NASS (YEAR)	Surveyed by United States Department of Agriculture National Agricultural Statistics Service
CDPR (YEAR)	Surveyed by the California Department of Pesticide Regulation. Over than 80% of crop grown in California
a	The pounds AE displayed in this document may differ from those displayed in the SLUA and other BEAD documents, because different calculation methods were used.
b	Total Acres Treated accounts for multiple applications to a single area. This may overestimate the number of acres treated as some acres are treated more than once.
d	Max labeled rate from 2019 Bromoxynil Pesticide Label Use Summary (PLUS) Report
--	Estimate not available.

**Table 2. Bromoxynil Agricultural Usage by Crop and State (Data Averaged Over Reported Years).**

Crop	Data Source	State	Avg. Annual Crop Acres Grown †	Avg. Annual Total Lbs. AE Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
<b>Cereal Grains</b>	<b>See individual crops below</b>						
Barley	AMRD (2013-2017)	California	80,000	300	0.0	6.0	1.4
		Colorado	64,000	8,300	29	55	38.7
		Idaho	582,000	43,600	14.2	35.6	26.8
		Minnesota	94,000	8,200	10.2	72.3	40.4
		Montana	924,000	61,400	20.7	36.3	28.6
		North Dakota	700,000	40,200	24	32.8	27.4
		Oregon	49,000	1,000	1.2	19.6	9.1
		South Dakota	34,000	400	0.0	9.2	1.8
		Utah	32,000	60	0.0	4.4	1.0
		Washington	126,000	20,800	43.6	73.2	60.1
		Wyoming	53,600	7,100	5	49.3	28.7
	<i>PA, VA</i>	111,600	Surveyed but no usage reported				
Corn, Field	CDPR-CASR (2012-2016)	California (0.2%) <sup>+</sup>	495,000	185	^	^	^
	AMRD (2013-2017)	Illinois	11,760,000	3,000	0.0	<1	<1
		Indiana	5,820,000	1,200	0.0	<1	<1
		Iowa	13,800,000	6,700	0.0	<1	<1
		Kansas	4,550,000	200	0.0	<1	<1
		Michigan	2,600,000	500	0.0	<1	<1
		Minnesota	8,400,000	3,100	0.0	<1	<1
		Nebraska	9,700,000	11,600	0.0	1.3	<1
		North Dakota	3,400,000	2,600	0.0	1.2	<1
		Ohio	3,640,000	4,800	0.0	1.1	<1
		South Dakota	5,600,000	4,400	0.0	1.0	<1
		Washington	190,000	1,500	0.0	4.3	1.7
		Wisconsin	4,200,000	300	0.0	<1	<1
			<i>AL, AR, CO, DE, GA, ID, KY, LA, MD, MO, MS, NC, NM, NY, OK, PA, SC, TN, TX, VA, WY</i>	17,926,000	Surveyed but no usage reported		
<i>Continued on next page</i>							

Crop	Data Source	State	Avg. Annual Crop Acres Grown <sup>†</sup>	Avg. Annual Total Lbs. AE Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT	
Corn, Pop	Not Surveyed at National Level							
Oats	CDPR-CASR (2012-2016)	California (2.3%) <sup>+</sup>	125,000	2,944	^	^	^	
	NASS (2015)	Michigan	75,000	1,000	3.0	3.0	3.0	
		Minnesota	280,000	8,000	9.0	9.0	9.0	
		North Dakota	275,000	6,000	11.0	11.0	11.0	
		South Dakota	325,000	23,000	21.0	21.0	21.0	
		NE, NY, WI	485,000	Surveyed but no usage reported				
Rye	Not Surveyed at National Level							
Sorghum	CDPR-CCACR (2012-2016)	California (0.7%) <sup>+</sup>	6,030	<100	^	^	^	
	AMRD (2013-2017)	CDPR (2012-2016)	California (0.3%) <sup>+</sup>	29,215	900	^	^	^
		Arkansas	174,400	4,900	1.4	21.4	9.1	
		Colorado	402,000	2,600	<1	4.3	2.0	
		Illinois	28,000	550	0.0	70.0	14.3	
		Kansas	3,000,000	110,600	11.2	16.2	14.3	
		Missouri	88,000	500	0.0	3.6	1.5	
		Nebraska	214,000	440	<1	1.7	1	
		New Mexico	120,000	320	0.0	6.4	1.5	
		Oklahoma	382,000	12,000	1.8	16	10.2	
		South Dakota	270,000	12,200	0.0	44.1	19.3	
		Texas	903,000	76,800	10.0	18.5	14.0	
		GA, LA	108,400	Surveyed but no usage reported				
Triticale	Not Surveyed at National Level							
Wheat, Spring	CDPR-CCACR (2012-2016)	California (23.9%) <sup>+</sup>	9,849	413	^	^	^	
	AMRD (2013-2017)	California	62,800	2,450	0	56	15	
		Idaho	496,800	50,300	18.5	51.7	33.0	
		Minnesota	1,338,000	195,300	43.6	57.6	52.4	
		Montana	3,207,000	258,500	22.3	35.6	30.0	
		North Dakota	6,974,000	875,200	38.1	47.7	41.4	

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Crop	Data Source	State	Avg. Annual Crop Acres Grown †	Avg. Annual Total Lbs. AE Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
		Oregon	91,000	4,300	7.0	35.5	23.0
		South Dakota	1,265,800	34,500	6.8	16.3	11.2
		Washington	548,000	61,600	23.0	76.0	45.0
		AZ	93,000	Surveyed but no usage reported			
Wheat, Winter	AMRD (2013-2017)	California	472,000	9,800	<1	11.6	4.0
		Colorado	2,440,000	900	0.0	1.0	<1
		Idaho	756,000	55,000	18.0	40.0	27.0
		Illinois	642,000	400	0.0	1.0	<1
		Indiana	368,000	1,400	0.0	3.1	1.4
		Kansas	8,800,000	800	0.0	<1	<1
		Michigan	558,000	29,400	18.1	35.2	26.5
		Missouri	812,000	700	0.0	1.5	<1
		Montana	2,219,998	90,400	10.0	22.2	15.8
		Nebraska	1,391,998	100	0.0	<1	<1
		North Dakota	395,000	36,300	0.0	53.1	34.0
		Ohio	566,000	2,200	0.0	3.1	1.2
		Oregon	741,999	28,500	11.5	22.3	16.2
		South Dakota	1,210,000	40,000	6.7	19.9	13.1
		Virginia	248,000	300	0.0	3.8	1.0
		Washington	1,691,997	175,800	36.0	44.4	40.0
		Wisconsin	274,000	8,100	4.3	24.0	14.0
				AR, GA, KY, NC, NM, OK, TN, TX	13,462,500	Surveyed but no usage reported	
<b>Grass Forage, Fodder, and Hay</b>	<b>See individual crops below</b>						
Alfalfa	AMRD (2013-2017)	California	854,000	9,300	0.0	12.8	3.3
		Colorado	710,000	1,150	0.0	2.0	<1
		Idaho	1,070,000	300	0.0	<1	<1
		Illinois	290,000	40	0.0	<1	<1
		Minnesota	996,000	450	0.0	1.0	<1
		Nevada	240,000	700	0.0	3.5	1.2
		New York	352,000	1,350	0.0	3.0	1.0
<i>Continued on next page</i>							

Crop	Data Source	State	Avg. Annual Crop Acres Grown †	Avg. Annual Total Lbs. AE Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
		North Dakota	1,454,000	400	0.0	<1	<1
		Oklahoma	262,000	600	0.0	3.9	1.0
		Oregon	396,000	200	0.0	1.0	<1
		Pennsylvania	376,000	<100	0.0	<1	<1
		Washington	414,000	120	0.0	1.0	<1
		Wisconsin	1,206,000	70	0.0	<1	<1
		Wyoming	518,000	200	0.0	<1	<1
		AZ, IN, LA, KS, KY, MI, MO, NE, NM, MT, OH, PA, SD, TX, UT, VA	8,961,501	Surveyed but no usage reported			
Barley-Legume Mixture	Not Surveyed at National Level						
Oats-Legume Mixture	Not Surveyed at National Level						
Rye-Legume Mixture	Not Surveyed at National Level						
Triticale-Legume Mixture	Not Surveyed at National Level						
Wheat-Legume Mixture	Not Surveyed at National Level						
Grass Forage, Fodder, and Hay	Not Surveyed at National Level						
	CDPR-CASR (2012-2016)	California (--%) <sup>+</sup>	1,528,000	848	^	^	^
Sudangrass (hay)	Not Surveyed at National Level						
	CDPR-CCACR (2012-2016)	California (--%) <sup>+</sup>	93,607	500	^	^	^
<b>Oilseed Crops</b>	<b>See individual crops below</b>						
Flax	Not Surveyed at National Level						
<b>Bulb Vegetable</b>	<b>See individual crops below</b>						
Garlic	AMRD (2013-2017)	California	691,837	4,600	22.5	62.8	35.6
Onion	AMRD (2013-2017)	California	46,240	6,800	26.5	69.4	51.4
		Colorado	4,800	1,000	0.0	100.0	52.7
		Idaho	8,140	3,500	89.5	100.0	94.8
<i>Continued on next page</i>							

Crop	Data Source	State	Avg. Annual Crop Acres Grown †	Avg. Annual Total Lbs. AE Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
		New York	8,200	1,400	8.8	100.0	64.0
		Oregon	19,400	5,350	32.0	99.6	67.1
		Texas	12,500	250	0.0	56.1	11.2
		Washington	23,300	6,000	53.2	94.4	80.3
		<i>GA</i>	12,150	Surveyed but no usage reported			
<b>Misc Crops</b>	<b>See individual crops below</b>						
Mint (Peppermint / Spearmint)	Not Surveyed at National Level						
	CDPR-CASR (2012-2016)	California (3.2%) <sup>+</sup>	1,398	<100	^	^	^
Grasses Grown for Seed ( <i>Bermudagrass</i> + <i>seed grass</i> )	Not Surveyed at National Level						
	CDPR- (2012-2016)	California (--%) <sup>+</sup>	21,290	1,489	^	^	^
Fallow	AMRD (2013-2017)	Kansas	3,200,000	2,040	0.0	2.1	<1
		Montana	3,000,000	1,000	0.0	1.0	<1
		Oregon	571,000	950	0.0	4.6	1.0
		Washington	1,200,000	5,340	0.0	9.5	2.0
		Wyoming	135,000	200	0.0	2.6	<1
		<i>CA, CO, ID, LA, MN, NE, ND, OK, SD, UT, TX</i>	5,783,500	Surveyed but no usage reported			

Notes	
AMRD (2013-2017)	Agricultural usage surveyed by market research firm(s)
NASS (2015)	Surveyed by United States Department of Agriculture National Agricultural Statistics Service
CDPR (2012-2016)	Surveyed by the California Department of Pesticide Regulation. Over than 80% of crop grown in California unless otherwise specified
+	Percent of crop grown in California
†	Crop Acres Grown (CAG) represents the total number of acres that are grown of the crop in each state. It is independent of treatment with any pesticide. CAG values for the data sources come from the following: AMRD comes from AMRD estimate, NASS comes from the 2012 Census of Agriculture, and CDPR estimates come from the 2017-2018 California Agricultural Statistics Review (CASR) or 2012-2016 California County Agricultural Commissioners' Reports (CCACR).
a	The pounds AE displayed in this document may differ from those displayed in the SLUA and other BEAD documents, because different calculation methods were used.
^	Due to the inconsistent reporting of crop acreages between California counties for these crops, CalPUR state-level summary usage statistics (based on acreages) are unreliable.
-	Estimate not available

## Non-Agricultural Usage

**Table 3. National Bromoxynil Non-Agricultural Usage by Site. Data Averaged Over Reported Years.**

Crop	Survey Status	Avg. Annual Pounds AE Applied <sup>a</sup>	Avg. Annual Total Acres Treated <sup>b</sup>	Max Single Labeled Rate <sup>c</sup>
				(lb AE/A)
<b>Grass and Turf</b>	<i>See Sector usage below</i>			
Sod Farms	CDPR (2012-2016)	615	NA	0.5
	NMRD (2013)	North East, North Central, South, and Deep South regions of the US were surveyed, but no usage was reported.		
Turf (nonresidential)	NMRD (2013)	Surveyed but no usage was reported.		0.5
<b>Premises/Areas</b>	<i>See Sector usage below</i>			
Conservation Reserve Program (CRP) Land	Not surveyed at National Level			0.5
Non-crop Areas (rights-of-way, roadsides, industrial sites, fencerows, non-irrigation ditchbanks, etc.)	NMRD (2014)	Surveyed but no usage reported.		0.5

Notes	
NMRD (2013 & 2014)	Nonagricultural usage surveyed by market research firms. West region = AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
CDPR (2012-2016)	Surveyed by the California Department of Pesticide Regulation but is not considered a California Crop (<80% acreage).
a	The pounds AE displayed in this document may differ from those displayed in the SLUA and other BEAD documents, because different calculation methods were used.
b	Total Acres Treated accounts for multiple applications to a single area. This may overestimate the number of acres treated as some acres are treated more than once.
c	Max labeled rate from 2019 Bromoxynil Pesticide Label Use Summary (PLUS) Report.
NA	Data not available



**MEMORANDUM**

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NOAA's National Marine Fisheries Service)

## Prometryn: National and State Use and Usage Summary

(August 14, 2019)

### Introduction

This document contains national and state-level use and usage data on prometryn, an herbicide registered for control of annual grasses and broadleaf weeds in food and feed crops. National-level agricultural data are presented in Figure 1 and Table 1; state-level agricultural data are presented in Table 2. Prometryn is not registered for use on non-agricultural sites.

The Environmental Protection Agency (EPA) has been working with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to develop a method for assessing the risks of pesticides to endangered and threatened species. Given that many listed species range over large areas, it is necessary to consider use of pesticides on a landscape scale, rather than simply a field or a small watershed. One consideration involves the percent of the crop in a given area (relevant to a listed species' range) that is treated with a pesticide. There are uncertainties in extrapolating from national level usage data to regional and state level ranges of protected species. In particular, national level data does not distinguish if there are areas of a species' range where usage is greater or less than the average national usage. In order to address these concerns, this document provides all available estimates of pesticide usage data for prometryn at both national and state levels. All registered use sites as of November 2018 are listed; although, usage data are not available for every site.

The intended use of the data presented here is to inform assumptions about how prometryn is used in the United States and the extent, variability, and rate of that usage at the state-level. Pesticide usage data are not reported below the state-level; usage data at smaller levels may not be statistically valid due to reduced sample size. Extent and variability of usage at the state level are presented using minimum, maximum, and average percent crop treated (PCT) over the five-year observation period (Table 2). PCT is calculated as the percent of the acres grown for a crop (CAG) that are treated with prometryn. Additionally, the data may inform assumptions about crops and states where prometryn is likely not being used, by identifying crops that are surveyed but where usage is not observed during the observation period. The state-level estimates of pesticide usage presented here (especially PCT) can be used to inform estimates of the proportion of a species range that may be exposed to prometryn. Please note that for some crops the California percent crop treated (PCT) estimates in Table 2 have been calculated using the PUR estimate for base acres treated (BAT) divided by the crop acres grown (CAG) estimate from the California Agricultural Statistics Review (CASR), California County Agricultural Commissioner' Reports (CCACR), or USDA Census of Agriculture. CASR provides the primary estimate of CAG where available. In instances where a CASR does not provide a CAG estimate, CCACR is used as the secondary source of CAG in determining PCT for prometryn usage. For dill, neither of the aforementioned

sources provided CAG estimates. So, the USDA Census of Agriculture (2012) reported acres harvested of dill grown for oil was used instead.

The pesticide usage data summarized herein were obtained from both public and private (proprietary) sources. As presented, the data are not proprietary, business confidential, or a trade secret. The most recent five years of available data were used, 2012-2016, in order to more accurately current usage. Additionally, Figure 1 presents the prometryn usage trend for the 1998-2016 reporting period.

### **Data Sources**

- **Agricultural Market Research Data (AMRD)** – proprietary pesticide usage data from 1998 to 2017 for historical use trend and 2013 to 2017 for current usage estimates. These data are collected and sold by a private market research firm. The data are collected by annual surveys of agricultural users in the continental United States and provides pesticide usage data for about 60 crops, including both specialty and row crops. The survey design targets at least 80 percent of US acreage/production of the surveyed commodities. Survey methodology provides statistically valid results, typically at the state-level.
- **United States Department of Agriculture’s National Agricultural Statistics Service (NASS)** – publicly available pesticide usage data from 2013 to 2017. NASS data are based on surveys that focus on the top-producing states that together account for the majority of U.S. acres or production of the surveyed commodity. NASS survey design targets a minimum of 80 percent of the acreage/production for every fruit, vegetable, and field crop surveyed. Operation level data are combined during summary and, pending compliance with disclosure rules, published at the state and national levels. NASS does not collect data annually for each crop, but surveys for various commodities on a rotating schedule.
- **California Department of Pesticide Regulation (CADPR) Pesticide Use Reporting (PUR)** – publicly available pesticide usage data for 2012 to 2016. The PUR database contains detailed records and summaries of agricultural applications of pesticides on crops based on application permits. All agricultural growers must submit their production agricultural pesticide use reports monthly and pest control businesses must submit pesticide use reports within 7 days after application. As such, CADPR data is a census of all usage rather than a survey. The Pesticide Use Summary reports are published annually.
- **California Agricultural Statistics Review (CASR)** – publicly available California crop production data for 2012-2016. CASR data are used as the primary source for CAG data when calculating PCT estimates for California crops and based on acres planted.
- **California County Agricultural Commissioners’ Report (CCACR)** – publicly available California crop production data for 2012-2016. CCACR data are used as a secondary source to calculate California crop PCT estimates in instances where

CASR data are not available. PCT estimates using CCACR data are based on acres harvested.

- **Non-Agricultural Market Research Data (NMRD)** - Proprietary data source that provides market research data for agrochemicals/specialty pesticides for various market sectors, including professional turf and ornamental plants, professional pest control, consumer pesticides, and vegetation management. Market reports reflect usage by class/market segment and chemical and are based on sales information (manufacturer and retail) and end-user surveys. Study dates vary by market sector.

The presented usage data are averaged over the number of years of available survey data based on sampling frequency (five years for AMRD and CADPR, and 1-2 years for NASS and NMRD), regardless of whether usage is observed in each surveyed year. The presented data may thus underestimate the maximum yearly usage. In certain cases, data are unavailable or withheld. Such instances include the following:

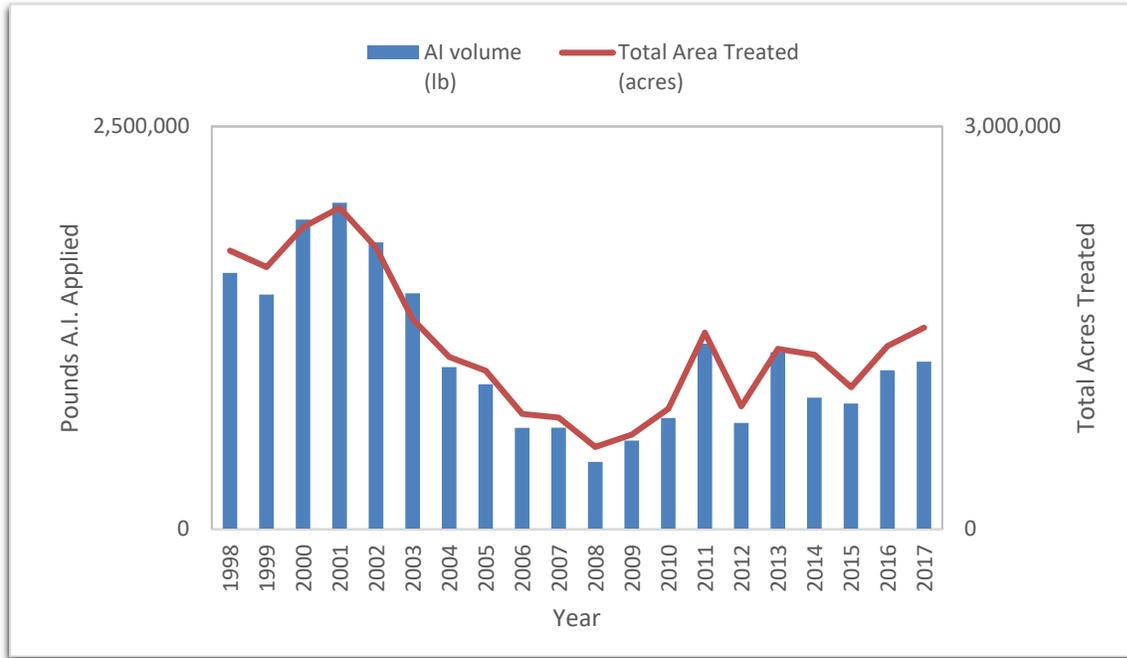
- Some data sources do not provide all data elements. When a data element is not available, this is indicated with a "--" notation in the relevant column.
- In some cases, not enough samples are available to establish a robust average. This is indicated with the notation "Insufficient number of reports to establish an estimate". Generally, this indicates that the chemical is only periodically used by a small number of users.
- If a registered use site is surveyed by one of our data sources but no usage is observed, this is indicated with the notation "Surveyed but no usage reported" across the data columns. Generally, the lack of reported usage data for the pesticide on a surveyed crop indicates that there is a very low likelihood that the given pesticide is used on that crop.
- If a registered use site is not surveyed nationally by any of our data sources, this is indicated with the notation "Not Surveyed at National Level" across the data columns.

### **Summary**

Nationally, agricultural prometryn usage has decreased in terms of both pounds applied and total acres treated since 1998. Total agricultural acres treated with prometryn has decreased by 37%, and annual pounds applied agriculturally has decreased 49% since its peak in 2001 (Figure 1). During the most recent five years of available survey data (2013 - 2017), an annual average of approximately 944,000 pounds of prometryn were applied to an approximate average of 1,300,000 acres of agricultural crops, (Table 1), in 17 states (Table 2). Approximately 94% of the pounds of prometryn applied agriculturally are to one crop: cotton. In terms of total acres treated, approximately 97% of the acres treated with prometryn are for one crop, cotton. The remaining 3% of prometryn usage is spread over the remaining crops. Further information on national usage of prometryn by crop is available in Table 1. While the majority of prometryn is only applied to cotton, examination of the percent of individual crops grown by state that are treated with prometryn indicates that it is an important pest control tool for certain crops in certain states. Further information on percent of crops treated with prometryn by state is

available in Table 2.

**Agricultural Usage**



**Figure 1: Prometryn Total Acres Treated and Total Pounds A.I. Applied (1998-2017).**

Source: Agricultural Market Research Data (AMRD). 2012-2017.

**Table 1. National Prometryn Agricultural Usage by Crop.**

Crop	Data Source	States with Reported Usage	Avg. Annual Pounds AI Applied <sup>a</sup>	Avg. Annual Total Acres Treated <sup>b</sup>	% Applied by Air	Avg. Single AI Rate	Max Single Labeled Rate (lb ai/a) <sup>c</sup>
Carrot	AMRD (2013-2017)	CA, MI, WA, WI	4,000	3,400	0	1.22	2.00
Celeriac	Not Surveyed at National Level						2.00
Celery	AMRD (2013-2017)	CA, MI	42,900	28,600	5	1.50	<ul style="list-style-type: none"> <li>• 3.20 (HI)</li> <li>• 2.0 (AZ, CA, MI,</li> </ul>

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							OH, TX, WI; • 1.6 (FL)
Cilantro	Not Surveyed at National Level						1.60
Coriander	Not Surveyed at National Level						1.60
Cotton	AMRD (2013-2016)	AL, AZ, AR, CA, GA, KS, LA, MS, MO, NC, SC, TN, TX	892,000	1,280,000	<1	0.70	2.80
Dill	Not Surveyed at National Level						1.60
Florence Fennel	Not Surveyed at National Level						• 2.00 (AZ, CA, MI, OH, TX WI) • 1.6 (FL)
Okra	Not Surveyed at National Level						1.50
Parsley	Not Surveyed at National Level						2.00 (CA)
Peas, Pigeon	Not Surveyed at National Level						3.00 (PR only)
Rhubarb	Not Surveyed at National Level						2.00
Sesame	Not Surveyed at National Level						1.00

Notes	
AMRD (2012-2016)	Agricultural market research data surveyed by market research firm(s)
a	The pounds AI displayed in this document may differ from those displayed in the SLUA and other BEAD documents, because different calculation methods were used.
b	Total Acres Treated accounts for multiple applications to a single area. This may overestimate the number of acres treated as some acres are treated more than once.
c	Max labeled rate from the 2018 Prometryn Pesticide Label Use Summary (PLUS) Maximum Use Scenario Report.

**Table 2. Prometryn Agricultural Usage by Crop and State (Data Averaged Over Reported Years).**

Crop	Data Source	State	Avg. Annual Crop Acres Grown <sup>†</sup>	Avg. Annual Lbs. AI Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
Carrots	AMRD (2013-2017)	California	66,759	2,600	1.0	6.8	2.9
	AMRD (2013-2017)	Michigan	3,455	145	0.0	23.6	4.7
	AMRD (2013-2017)	Washington	6,713	220	0.0	3.5	4.6
	AMRD (2013-2017)	Wisconsin	4,220	1,180	0.0	73.1	21.7
Celeriac	Not Surveyed at State Level						
Celery	AMRD (2013-2017)	California	27,040	40,400	85.3	93.4	91.1
	AMRD (2013-2017)	Michigan	1,120	2,500	0.0	100	60
Cilantro	CDPR-CCACR (2012-2016)	California (NA)	6,029	7,882	^	^	^
Coriander	Not Surveyed at State Level						
Cotton	AMRD (2013-2017)	Alabama	360,999	11,190	2.5	7.4	5.0
	AMRD (2013-2017)	Arizona	145,600	15,300	4.7	17.6	10.9
	AMRD (2013-2017)	Arkansas	330,998	3,400	0.0	3.3	1.4
	AMRD (2013-2017)	California	232,999	2,300	0.0	2.4	1.0
	AMRD (2013-2017)	Georgia	1,303,999	84,000	4.9	13.6	8.7
	AMRD (2013-2017)	Kansas	20,400	300	0.0	5.7	1.9
	AMRD (2013-2017)	Louisiana	154,001	5,000	0.0	9.8	4.3
	AMRD (2013-2017)	Mississippi	409,000	3,100	0.0	3.6	1.5
	AMRD (2013-2017)	Missouri	257,000	9,200	0.0	9.8	4.4
	AMRD (2013-2017)	North Carolina	392,998	21,800	0.0	17.4	6.6
	AMRD (2013-2017)	South Carolina	238,000	2,000	0.0	7.0	1.4
	AMRD (2013-2017)	Tennessee	248,000	99,700	35.3	53.9	48.5
	AMRD (2013-2017)	Texas	5,786,414	634,400	9.5	19.2	15.1

Crop	Data Source	State	Avg. Annual Crop Acres Grown <sup>†</sup>	Avg. Annual Lbs. AI Applied <sup>a</sup>	Min. Annual PCT	Max. Annual PCT	Avg. Annual PCT
Dill	CDPR (2012-2016)- Census of Ag (2012)	California (1%)	24 <i>(acres harvested)</i>	399	^	^	^
Fennel	CDPR-CCACR (2012-2016)	California (NA)	900	834	^	^	^
Okra	CDPR-CCACR (2012-2016)	California (17%)	800	6	^	^	^
Parsley	CDPR-CCACR (2012-2016)	California (48%)	3,600	3,723	^	^	^
Peas, Pigeon	Not Surveyed at State Level						
Rhubarb	Not Surveyed at State Level						
Sesame	Not Surveyed at State Level						

Notes	
AMRD (2012-2016)	Agricultural usage surveyed by market research firm(s)
AMRD (2012-2016)*	Due to reporting inconsistencies between California counties for this crop, state-level summary usage statistics from the CalPUR data are unreliable. Therefore, state-level usage estimates from a national pesticide usage survey are the best available data for these crops during the reported period and were used to calculate the usage statistics presented here.
CDPR – CASR (2012-2016)	Surveyed by the California Department of Pesticide Regulation and California Agricultural Statistics Service.
CDPR – CCACR (2012-2016)	Surveyed by the California Department of Pesticide Regulation and California County Agricultural Commissioner’ Report
CDPR (2012- 2016) Census of Ag (2012)	Surveyed by the U.S. Census of Agriculture and the California Department of Pesticide Regulation
†	Crop Acres Grown (CAG) represents the total number of acres that are grown of the crop in each state. It is independent of treatment with any pesticide. CAG values for the data sources come from the following: AMRD comes from AMRD estimate, NASS comes from the 2012 Census of Agriculture, and CADPR estimates come from 2012-2016 California County Agricultural Commissioners’ Reports.
a	The pounds AI displayed in this document may differ from those displayed in the SLUA and other BEAD documents, because different calculation methods were used.
**	Due to reporting inconsistencies between California counties for these crops, state-level summary usage statistics from the CalPUR data are unreliable.