Quantitative Usage Analysis for Diazinon

Case Number: 0238 PC Code: 57801
Date: 1-29-99 Analyst: Alan Halvorson

Based on available pesticide usage information mainly for 1987 through 1996, but also taking into account 1997 data, total annual domestic usage of diazinon is approximately 6 million pounds active ingredient (a.i.). In terms of pounds a.i., total diazinon usage is allocated mainly to outdoor by consumers (39%), lawn care operators (19%) and pest control operators (11%). Sites with a high percentage of total U.S. acreage treated include Brussels sprouts (90%), hops (63%), nectarines (54%), apricots (52%), cranberries (48%), Romaine lettuce (45%), plums (39%), prunes (36%) and beets(35%). For agriculture, rates per application and rates per year are generally less than 3 and 4 pounds a.i. per acre, respectively, while for non-agriculture, corresponding rates apparently are generally less than 4 and 8 pounds a.i. per acre, respectively. States with significant usage include California, Florida and Texas.

Diazinon | Case #: 0238 | AI #: 57801 | EPA QUANTITATIVE USAGE ANALYSIS | Analyst: Alan Halvorson | 1-29-99

Site	Acres (000) Grown	Acres Treated (000)		% Crop Treated		Lbs AI Applied (000)		Average Application Rates			States of Most Usage (% of total lb ai used by these states)
		Wtd Ave	Est Max	Wtd Ave	Est Max	Wtd Ave	Est Max	lb ai/ A/yr	# appl/ year	lb ai/ A/appl	
Alfalfa	23,949	58	129	0%	1%	39	92	0.7	1.5	0.4	CA AZ MO NM CO PA 81%
Almonds	429	85	130	20%	30%	170	329	2.0	1.2	1.7	CA 100%
Apples	572	20	33	4%	6%	37	62	1.8	1.5	1.2	CA WA MO ID MT OR 74%
Barley	7,505	1	2	0%	0%	2	3	1.5	1.0	1.5	ID 100%
Beans, Snap, Fresh	75	1	2	1%	3%	1	5	2.0	1.2	1.7	CA FL 100%
Beans, Snap, Proc.	186	8	15	4%	8%	5	9	0.6	1.1	0.5	OR 100%
Beets	12	4	6	35%	53%	4	6	1.0	-	-	NY 88%
Berries	161	25	43	16%	27%	57	103	2.2	1.6	1.4	MA CA NJ 91%
- Blackberries	5	1	1	18%	23%	1	2	1.2	1.0	1.2	OR 84%
- Blueberries	59	3	6	6%	11%	3	5	0.8	1.0	0.8	NJ OR 82%
- Boysenberries	-	-	-	-	-	0	0	-	-	-	-
- Cranberries	29	14	21	48%	73%	35	53	2.5	-	-	MA WI 89%
- Raspberries	11	3	5	25%	45%	4	8	1.5	1.1	1.4	WA OR MI 97%
- Strawberries	50	4	8	9%	16%	8	16	1.7	2.5	0.7	CA FL WI 80%
Bulb Vegetables	198	17	22	8%	11%	33	82	2.0	2.2	0.9	TX CA NY WI 88%
- Onions, Dry	144	16	24	11%	16%	25	38	1.6	1.8	0.9	CA TX GA NY 89%
- Onions, Green	14	1	3	8%	23%	1	2	0.8	-	-	CA 100%
Cabbage, Chinese	9	-	-	-	-	2	4	-	-	-	-
Cantaloupes	113	14	20	12%	18%	7	11	0.5	-	-	CA TX 91%
Carrots	108	11	21	10%	20%	18	36	1.7	1.5	1.1	FL MI CA WA TX 85%
Celery	35	4	5	10%	15%	4	8	1.1	1.8	0.6	CA TX 86%
Cherries, Sweet	47	8	14	17%	29%	18	26	2.2	1.4	1.6	CA WA 83%
Cherries, Tart	49	1	3	2%	6%	1	4	1.5	1.4	1.1	OR 82%
Citrus, Other	51	0	0	0%	1%	0	0	1.2	1.2	1.0	FL 100%
Cole Crops	313	26	64	8%	20%	26	61	1.0	1.4	0.7	CA AZ TX MI NM FL 74%
- Broccoli	111	12	23	11%	21%	12	25	1.1	1.2	0.9	CA AZ TX 82%
- Brussels Sprouts	3	3	3	90%	100%	2	2	0.6	-	-	-
- Cabbage, Fresh	74	8	12	11%	17%	13	19	1.6	1.5	1.1	TX CA FL 95%
- Cabbage, Proc.	6	1	2	13%	31%	1	2	1.1	1.0	1.1	WI 86%
- Cauliflower	58	9	18	16%	31%	5	11	0.6	1.0	0.6	CA AZ FL 87%
- Collards	11	2	3	19%	28%	2	3	0.9	-	-	FL CA SC 95%
- Greens	2	0	1	20%	39%	0	0	0.5	1.0	0.5	MI 100%
Corn	71,264	38	99	0%	0%	26	72	0.7	1.0	0.7	CA NE KS WA MO OH 71%
Cotton	12,429	15	26	0%	0%	14	29	1.0	1.0	0.9	TN AR LA MO CA 82%
Cucumbers, Fresh	52	2	3	4%	7%	2	3	0.8	1.5	0.5	CA TX FL 88%
Cucumbers, Proc.	97	5	11	5%	12%	5	12	1.1	1.2	0.9	TX FL 100%
Eggplant	4	0	1	6%	18%	0	1	1.2	1.5	0.8	FL 100%
Endive	-	-	-	-	-	1	2	-	-	-	-
Figs	14	2	4	17%	26%	5	8	2.1	-	-	-
Flax	188	0	0	0%	0%	-	-	-	-	-	-
Grapefruit	194	4	9	2%	4%	5	11	1.3	1.5	0.9	FL CA 97%
Grapes	825	22	58	3%	7%	21	45	1.0	1.2	0.9	CA AZ WA TX 83%
Hay, Other	33,427	7	23	0%	0%	8	25	1.0	1.4	0.8	AZ CA TX NC 81%
Honeydew	27	1	3	5%	10%	1	2	0.9	1.1	0.8	TX CA 100%
Hops	40	25	33	63%	84%	41	54	1.6	-	-	-
Idle Cropland (*)	7,461	17	166	0%	2%	20	197	1.2	1.0	1.2	CO 92%

Site	Acres (000) Grown	Acres Treated (000)		% Crop Treated		Lbs AI Applied (000)		Average Application Rates			States of Most Usage (% of total lb ai used by these states)
		Wtd Ave	Est Max	Wtd Ave	Est Max	Wtd Ave	Est Max	lb ai/ A/yr	# appl/ year	lb ai/ A/appl	
Kale	6	-	-	-	-	1	1	-	-	-	-
Lemons	63	0	1	0%	1%	0	0	0.3	1.8	0.2	CA FL 100%
Lettuce, Head	204	57	80	28%	39%	45	63	0.8	1.5	0.5	CA 81%
Lettuce, Other	58	18	30	32%	52%	14	25	0.8	1.5	0.5	CA 90%
- Lettuce, Romaine	2	1	1	45%	68%	1	1	0.9	1.1	0.8	-
Lots/Farmsteads/etc	24,815	14	28	0%	0%	20	48	1.4	2.0	0.7	TX ID VA CA FL KS 58%
Nut Trees, Other	100	2	5	2%	5%	7	14	3.2	1.9	1.7	OR CA 98%
- Filberts	27	2	3	6%	12%	3	6	1.7	-	-	-
Oats/Rye (*)	6,133	1	4	0%	0%	1	4	1.0	1.0	1.0	PA WA 82%
Oranges	867	8	23	1%	3%	21	42	2.7	1.6	1.7	FL 86%
Parsley	2	0	0	4%	8%	0	0	1.5	-	-	-
Pasture (*)	86,960	10	28	0%	0%	9	27	0.9	1.4	0.6	AL MS MO ID 84%
Pasture/Rangeland, Other	-	5	11	-	-	11	21	2.0	2.1	0.9	TX LA 83%
Peaches	212	26	43	12%	20%	61	102	2.4	1.3	1.9	CA 82%
Peanuts	1,610	3	9	0%	1%	4	17	1.2	1.0	1.2	GA NC 85%
Pears	78	8	15	11%	19%	16	29	2.0	1.2	1.6	CA WA OR 92%
Peas/Beans, Dry	2,181	7	18	0%	1%	6	17	0.8	1.3	0.6	CO WA MI 83%
- Peas, Dry	249	5	10	2%	4%	2	3	0.4	-	-	CA 81%
Peas, Green	386	16	32	4%	8%	8	16	0.5	-	-	OR WA FL CA 82%
- Peas, Green, Proc.	277	4	15	1%	5%	5	17	1.1	1.2	1.0	WA OR 100%
Pecans	488	9	27	2%	5%	85	253	9.0	3.2	2.8	AL TX 86%
Peppers, Bell	59	5	11	8%	19%	9	20	1.8	1.7	1.0	FL CA 90%
Peppers, Hot	23	0	0	0%	1%	0	0	1.0	-	-	CA 100%
Plums	64	25	35	39%	54%	64	89	2.6	1.0	2.5	CA 99%
Potatoes	1,421	8	16	1%	1%	13	27	1.7	1.2	1.4	ID WA NY MI ME 83%
Prunes	80	29	51	36%	64%	66	116	2.3	1.1	2.2	-
Pumpkins	36	1	2	1%	5%	0	1	0.5	3.3	0.2	MI 80%
Radishes	37	1	3	4%	7%	2	4	1.3	-	-	OR MI CA 89%
Rice	2,921	1	1	0%	0%	0	1	0.4	1.0	0.4	CA FL 100%
Setaside Acres (*)	21,802	2	439	0%	2%	2	439	1.0	1.5	0.7	CA UT 95%
Sod	152	0	1	0%	0%	0	1	0.8	-	-	OH 100%
Sorghum	11,280	3	8	0%	0%	2	4	0.6	1.0	0.6	MO AR NE LA MS 81%
Soybeans	61,279	8	35	0%	0%	5	9	0.6	1.0	0.6	AL OH IN 81%
Spinach, Fresh	16	4	7	22%	44%	6	11	1.6	1.7	1.0	CA TX 94%
Spinach, Processing	8	2	5	24%	60%	2	6	1.2	1.1	1.1	TX 100%
Squash	53	2	5	4%	9%	2	4	0.7	-	-	CA 100%
Stone Fruit, Other	189	26	39	14%	21%	62	89	2.4	1.3	1.8	CA 91%
- Apricots	19	10	13	52%	68%	29	40	2.9	1.4	2.1	-
- Nectarines	29	16	29	54%	100%	51	108	3.2	1.4	2.3	-
- Olives	30	1	1	2%	4%	0	1	0.5	-	-	-
Sugar Beets	1,415	34	81	2%	6%	34	77	1.0	1.6	0.6	CA MI ID 94%
Sugarcane (*)	852	5	19	1%	2%	10	36	1.9	1.9	1.0	FL 100%
Sunflower (*)	2,745	0	0	0%	0%	0	0	1.0	1.0	1.0	AZ CA 100%
Sweet Corn, Fresh	195	17	25	9%	13%	48	73	2.9	2.5	1.2	FL CA 91%
Sweet Potatoes	85	7	11	9%	13%	21	32	2.9	-	-	NC GA CA 82%
Tobacco	695	10	20	1%	3%	14	28	1.5	1.2	1.2	NC SC KY OH TN 85%
Tomatoes, Fresh	116	4	9	4%	7%	7	14	1.6	3.7	0.4	FL CA 92%

Site	Acres (000) Grown	Acres Treated (000) Wtd Ave	Acres Treated (000) Est Max	% Crop Treated Wtd Ave	% Crop Treated Est Max	Lbs AI Applied (000) Wtd Ave	Lbs AI Applied (000) Est Max	Average Application Rates lb ai/ A/yr	Average Application Rates # appl/ year	Average Application Rates lb ai/ A/appl	States of Most Usage (% of total lb ai used by these states)
Tomatoes, Proc.	324	29	69	9%	21%	18	44	0.6	1.3	0.5	CA 100%
Walnuts	205	14	28	7%	14%	33	65	2.4	1.4	1.7	CA 98%
Watermelons	258	6	12	2%	5%	5	11	0.9	-	-	CA TX AZ 87%
Wheat, Spring (*)	20,799	1	1	0%	0%	0	0	0.1	1.0	0.1	WA 100%
Wheat, Winter	43,282	9	30	0%	0%	8	27	0.8	1.0	0.8	CA OR NE SC 80%
Woodland (*)	62,825	1	6	0%	0%	1	4	0.6	1.5	0.4	MN GA WI 82%
Cemeteries	493	<9	<13	<2%	<3%	23	42	>2.7	-	2.7	-
Educational Facilities	1,420	<35	<56	<3%	<4%	84	114	>2.4	-	2.4	-
Horticulture	518	39	53	8%	10%	192	314	4.9	3.6	1.4	-
Landscape Contractors	22,128	9	22	0%	0%	33	38	3.5	1.8	1.9	-
Lawn Care Operators	31,948	137	177	0%	1%	1,135	1,294	8.3	2.2	3.7	-
Off Retail Indoor by CPA	-	-	-		-	20	30	-	-	-	-
Off Retail Outdr by CPA	-	-	-	-	-	100	126	-	-	-	-
Outdoor By Owners	-	-	-	-	-	2,290	2,338	-	-	-	-
Parks	2,157	<29	<32	<1%	<2%	110	129	>3.8	-	3.8	-
Pest Control Operators		-	-	-	-	621	1,261	-	-	-	-
Recreation Outdoor by CPA	-	-			-	11	15	-	-	-	-
Residential Indoor By CPA	-	-	-	-	-	149	220	-	-	-	-
Residential Outdr By CPA	-	-	-	-	-	716	855	-	-	-	-
Roadways	11,500	<21	<32	0%	0%	25	37	>1.2	-	1.2	-
Wholsle/Manu Indr by CPA	-	-	-	-	-	11	20	-	-	-	-
Wholsle/Manu Outdr by CPA	-	-	-	-	-	13	20	-	-	-	-
TOTAL						5,830	8,778				

NOTES ON COLUMN HEADINGS
- Weighted average - the most recent years and more reliable data are weighted more heavily.
- Average application rates are calculated from the weighted averages.

NOTES ON TABLE DATA
- Usage estimates primarily based on 1987 - 1996 for agriculture and 1992 - 1997 for non-agriculture.
- A star (*) after an agricultural site name indicates that no usage for this site was found for 1997.
  Calculations of the above numbers may not appear to agree because they are displayed as rounded:
  to the nearest 1000 for acres treated or lb. a.i. (Therefore 0 = < 500.)
  to the nearest whole percentage point for % of crop treated. (Therefore 0% = < 0.5%.)
- A dash (-) indicates that information on this site is NOT available in EPA sources or is insufficient.

NOTES ON CROP/SITE GROUPS AND ABBREVIATIONS
- Bulb Vegetables include garlic, leeks, and onions.
- Cole Crops include broccoli, Brussels sprouts, cabbage, cauliflower, mustard greens, collards, bok choy, and chard.
- Nut Trees, Other include chestnuts, filberts, hazelnuts, hickory nuts, macadamia nuts, pistachios, lychie nuts, and palm.
- Stone Fruit, Other include apricots, avocados, dates, nectarines, olives, coconuts, mangoes, and feijoa.
- CPA = Certified Commercial Pesticide Applicators.
- Several non-agricultural sites overlap.

AGRICULTURE SOURCES
- EPA proprietary sources, 1987 - 1997
- USDA/NASS, 1990 - 1997
- NCFAP
- California, 1993 - 1995

NON-AGRICULTURE SOURCES
- EPA proprietary sources, 1991 - 1997
- Kline & Co., 1991 - 1995