Appendix C: Methidathion Usage in CA - Data from BEAD and Supporting Material

Purpose

Calculate pesticide usage data for California as follows:
(1) Average annual pounds applied **across eight years (1999-2006),**
(2) Average annual area treated **across eight years (1999-2006),**
(3) Average, Maximum, 95th Percentile, and 99th Percentile for the application rate **across all observations** for eight years (1999-2006).

Notes on Calculating Average Annual Values

When calculating Average annual pounds applied and Average annual area treated (but not Application rates) across eight years, zeros are added when no usage or area is reported for a certain year.
Records with missing values for a certain year (i.e., unknown non-zero values) remain as missing.

Application Rate Estimation

Application rate is calculated as "pounds of active ingredient applied" divided by "acres treated"

Data Source

Pesticide Use Report Data, California Department of Pesticide Regulation
http://calpip.cdpr.ca.gov/cfdocs/calpip/prod/main.cfm

Data Description

Years: 1999 through 2006
58 counties for each year

Date Created:

13-Aug-08

Estimation Steps

1. Combine pesticide usage data for 58 counties for all eight years.
2. Keep information only on 14 chemicals of interest.
3. Application Rate: Calculate across all observations for eight years for each chemical-county-site-unit treated combination:
Average, Maximum, 95th Percentile, 99th Percentile for application rates, and the Number of records.
The number of records represents the number of non-missing records used to calculate average/max/percentile values.
4. Pounds Applied and Area Treated: Calculate for each year and chemical-county-site-unit treated combination: Total pounds applied, Total area treated, and the Number of records.
The number of records represents the number of non-missing records used to calculate average pounds applied and average area treated.
4a. Combine estimated values for all eight years.
4b. Calculate **eight-year** Average annual pounds applied and Average annual area treated.
5. Populate chemical, county, and site names.

Estimation Steps for Aggregated Usage

1. Combine pesticide usage data for 58 counties for all eight years.
2. Keep information only on 14 chemicals of interest.
3. Application Rate: Calculate across all observations for eight years for each chemical-county-unit treated combination:
Average, Maximum, 95th Percentile, 99th Percentile for application rates, and the Number of records.
The number of records represents the number of non-missing records used to calculate average/max/percentile values.
4. Pounds Applied and Area Treated: Calculate for each year and chemical-county-unit treated combination: Total pounds applied, Total area treated, and the Number of records.

The number of records represents the number of non-missing records used to calculate average pounds applied and average area treated.
4a. Combine estimated values for all eight years.
4b. Calculate **eight-year** Average annual pounds applied and Average annual area treated.
5. Populate chemical and county names.

Output variables

Pesticide Use_1999_2006

Active Ingredient, County, Site Name, Average Annual Pounds Applied, Number Records Pounds, Average Annual Area Treated, Unit Area Treated, Number Records Area,
Average Application Rate, 95th Percentile Application Rate, 99th Percentile Application Rate, Maximum Application Rate, Number Records Rate.

Total Annual Usage (same as above plus additional variables)

Active Ingredient, County, Site Name, Total Pounds 1999, Total Pounds 2000, Total Pounds 2001, Total Pounds 2002, Total Pounds 2003, Total Pounds 2004, Total Pounds 2005, Total Pounds 2006,
Average Annual Pounds Applied, Number Records Pounds,
Total Area 1999, Total Area 2000, Total Area 2001, Total Area 2002, Total Area 2003, Total Area 2004, Total Area 2005, Total Area 2006, Average Annual Area Treated, Unit Area Treated, Number Records Area,
Average Application Rate, 95th percentile Application Rate, 99th percentile Application Rate, Maximum Application Rate, Number Records Rate.

Aggregated_Usage

Active Ingredient, County, Average Annual Pounds Applied, Number Records Pounds, Average Annual Area Treated, Unit Area Treated, Number Records Area,
Average Application Rate, 95th Percentile Application Rate, 99th Percentile Application Rate, Maximum Application Rate, Number Records Rate.

Notes on the Output

Missing values are presented as blanks.

Error Notes

Errors identified in the process of estimating outliers by California Department of Pesticide Regulation are treated as follows:
Application rate, area treated and pounds applied values are replaced with missing values when the "error" file indicated a potential error:
"Pounds of AI per area treated is greater than 200 for non-fumigants or 1,000 for fumigants, or pounds of product per area treated is greater than 50 times the median rate for this product on this commodity."
"Pounds of product divided by the area treated is greater than an outlier limit set by a neural network procedure".
Errors are reported for all eight years.
The "outliers" files for 2001 is in a different format than that for other years. Error data were brought to the same format for processing.

TABLE A. Methidathion Usage Information for CA (1996 – 2005)

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
BUTTE	ALMOND	600	498	1.2	2.0	70
BUTTE	APPLE	33	22	1.6	2.0	18
BUTTE	CHERRY	92	82	1.1	1.5	28
BUTTE	CITRUS	3	5	0.6	1.3	4
BUTTE	KIWI	115	88	1.3	2.0	66
BUTTE	PEACH	219	162	1.4	2.0	64
BUTTE	PLUM	0	0	0.8	0.8	1
BUTTE	PRUNE	210	167	1.3	2.0	44
BUTTE	WALNUT	208	157	1.6	2.2	35
CALAVERAS	APPLE	2	1	1.5	1.5	2
COLUSA	ALMOND	40	35	1.1	1.5	5
COLUSA	PEAR	13	8	1.5	2.0	2
COLUSA	WALNUT	77	46	1.5	2.0	14
CONTRA COSTA	APPLE	99	87	1.3	1.5	13
CONTRA COSTA	APRICOT	1	1	1.1	1.3	2
CONTRA COSTA	NECTARINE	1	1	1.0	1.0	3
CONTRA COSTA	PEACH	7	7	1.1	1.3	5
CONTRA COSTA	PLUM	2	2	1.0	1.0	2
FRESNO	ALFALFA	1187	1272	0.9	1.0	177
FRESNO	ALMOND	746	553	1.4	5.3	83
FRESNO	APPLE	169	119	1.5	3.0	51
FRESNO	APRICOT	139	78	1.7	3.0	71
FRESNO	CHERRY	304	216	1.5	2.0	53
FRESNO	CITRUS	145	69	2.2	16.1	47
FRESNO	CLOVER	46	46	1.0	1.0	4
FRESNO	COTTON	9	19	0.5	0.5	1
FRESNO	GRAPE	73	27	3.2	4.9	14
FRESNO	GRAPEFRUIT	10	4	2.5	3.0	5
FRESNO	KIWI	14	10	1.4	1.5	4
FRESNO	LEMON	48	20	2.2	4.0	10
FRESNO	NECTARINE	1285	801	2.0	15.4	396
FRESNO	N-OUTDR PLANTS IN CONTAINERS	0	0	0.0	0.0	1
FRESNO	OLIVE	51	28	2.3	3.0	4
FRESNO	ORANGE	2408	1063	2.3	16.1	283
FRESNO	PEACH	1215	759	1.7	19.5	423
FRESNO	PEAR	5	3	1.8	2.3	11
FRESNO	PLUM	667	363	1.9	12.0	281
FRESNO	PRUNE	106	69	1.5	2.0	7
FRESNO	SAFFLOWER	181	373	0.5	0.5	30
FRESNO	TANGELO	21	7	3.0	3.0	1
FRESNO	TANGERINE	68	30	2.1	3.0	27

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
FRESNO	WALNUT	108	57	1.9	2.0	25
GLENN	ALMOND	240	176	1.3	2.0	27
GLENN	KIWI	5	4	1.6	1.6	5
GLENN	OLIVE	17	27	0.6	1.0	8
GLENN	ORANGE	1	1	1.0	1.0	1
GLENN	PRUNE	54	68	0.9	1.0	12
GLENN	RIGHTS OF WAY	1	0			0
GLENN	WALNUT	151	94	1.6	2.0	23
IMPERIAL	ALFALFA	324	439	0.7	1.0	43
IMPERIAL	COTTON	6	8	0.8	0.8	2
IMPERIAL	GRAPEFRUIT	5	1	3.8	3.8	1
IMPERIAL	TANGERINE	19	5	3.7	3.7	1
KERN	ALMOND	11171	7232	1.6	28.0	691
KERN	APPLE	1198	636	1.9	3.8	72
KERN	APRICOT	247	112	2.2	3.2	39
KERN	CHERRY	78	50	1.6	2.1	12
KERN	GRAPEFRUIT	61	18	3.2	4.0	7
KERN	KIWI	53	32	1.6	2.0	5
KERN	LANDSCAPE MAINTENANCE	1	0			0
KERN	LEMON	189	51	3.2	4.2	10
KERN	NECTARINE	225	84	2.6	3.0	25
KERN	N-OUTDR PLANTS IN CONTAINERS	113	205	0.5	3.5	72
KERN	ORANGE	2526	834	2.9	4.9	152
KERN	PEACH	654	293	2.2	3.0	104
KERN	PEAR	63	28	1.9	3.0	11
KERN	PLUM	2665	1070	2.3	3.0	169
KERN	PRUNE	23	10	2.1	2.3	2
KERN	SAFFLOWER	4	10	0.3	0.3	1
KERN	TANGELO	67	25	2.5	3.0	2
KERN	TANGERINE	726	294	2.7	11.3	29
KERN	WALNUT	106	63	1.5	2.0	11
KINGS	ALMOND	26	15	1.5	1.7	4
KINGS	APPLE	166	101	1.7	2.0	59
KINGS	APRICOT	1	1	2.0	2.0	1
KINGS	BEAN, DRIED	10	20	0.5	0.5	1
KINGS	CHERRY	7	5	1.4	1.5	3
KINGS	COTTON	7	15	0.5	0.5	5
KINGS	KIWI	24	16	1.5	1.5	4
KINGS	NECTARINE	157	114	1.5	2.0	39
KINGS	N-OUTDR PLANTS IN CONTAINERS	5	3	1.5	1.5	1

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
KINGS	PEACH	148	119	1.4	2.0	71
KINGS	PLUM	73	37	1.9	2.5	22
KINGS	SAFFLOWER	420	839	0.5	0.5	44
KINGS	WALNUT	308	185	1.8	2.5	59
LASSEN	FORAGE HAY/SILAGE	101	122	0.8	1.0	20
LOS ANGELES	N-OUTDR PLANTS IN CONTAINERS	0	0	0.6	0.6	1
MADERA	ALMOND	302	259	1.3	2.8	29
MADERA	APPLE	357	238	1.7	3.0	62
MADERA	CHERRY	5	5	1.0	1.0	2
MADERA	CITRUS	0	0	2.0	2.0	1
MADERA	NECTARINE	40	32	1.1	1.5	10
MADERA	OLIVE	547	221	2.5	3.0	11
MADERA	ORANGE	222	100	2.4	3.0	23
MADERA	PEACH	39	34	1.1	1.5	12
MADERA	PEAR	23	16	1.5	2.0	5
MADERA	PLUM	456	172	2.6	3.0	16
MADERA	PRUNE	110	76	1.5	2.0	5
MADERA	TANGELO	16	8	1.6	3.0	2
MERCED	ALMOND	648	804	1.0	1.5	57
MERCED	APPLE	16	14	1.2	1.5	9
MERCED	APRICOT	69	48	1.4	1.6	10
MERCED	NECTARINE	19	16	1.2	1.5	16
MERCED	N-OUTDR PLANTS IN CONTAINERS	25	18	1.4	1.9	7
MERCED	PEACH	1309	948	1.4	1.8	308
MERCED	PLUM	8	6	1.6	2.0	7
MERCED	PRUNE	8	6	1.5	1.5	1
MERCED	SAFFLOWER	26	52	0.5	0.5	3
MERCED	WALNUT	92	51	1.8	6.5	25
MONTEREY	ARTICHOKE, GLOBE	11618	11884	1.0	8.0	2,613
MONTEREY	ONION, GREEN	5	5	1.0	1.0	1
MONTEREY	RESEARCH COMMODITY	1	0			0
NAPA	N-GRNHS PLANTS IN CONTAINERS	0	0	0.2	0.4	3
ORANGE	N-OUTDR PLANTS IN CONTAINERS	0	0	1.9	1.9	1
PLACER	APPLE	3	4	0.7	0.7	4

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
PLACER	N-OUTDR PLANTS IN CONTAINERS	3	2	1.5	1.7	6
PLACER	PEACH	4	5	0.7	0.7	2
PLACER	PEAR	0	0	0.7	0.7	1
RIVERSIDE	GRAPEFRUIT	307	93	3.5	4.8	43
RIVERSIDE	LEMON	94	38	2.6	5.0	11
RIVERSIDE	N-OUTDR PLANTS IN CONTAINERS	0	0 (misc. unit)	0.1	0.1	1
RIVERSIDE	ORANGE	174	59	3.4	6.9	11
SACRAMENTO	ALMOND	14	14	1.0	1.0	1
SACRAMENTO	ARTICHOKE, GLOBE	3	8	0.5	1.0	3
SAN JOAQUIN	ALMOND	3416	2739	1.2	11.0	441
SAN JOAQUIN	APPLE	713	783	1.0	2.1	196
SAN JOAQUIN	APRICOT	116	116	1.0	1.0	17
SAN JOAQUIN	CHERRY	614	465	1.3	8.0	162
SAN JOAQUIN	NECTARINE	10	7	1.3	2.4	12
SAN JOAQUIN	PEACH	376	322	1.1	2.9	104
SAN JOAQUIN	PEAR	8	4	1.3	2.0	3
SAN JOAQUIN	PLUM	6	5	1.2	1.5	13
SAN JOAQUIN	PRUNE	7	5	1.3	1.3	2
SAN JOAQUIN	WALNUT	635	518	1.4	10.0	83
SAN LUIS OBISPO	ARTICHOKE, GLOBE	5	5	1.0	1.0	7
SAN LUIS OBISPO	N-OUTDR PLANTS IN CONTAINERS	0	1	0.5	0.5	3
SAN MATEO	ARTICHOKE, GLOBE	3	3	0.9	1.0	2
SANTA BARBARA	ARTICHOKE, GLOBE	129	129	1.0	1.0	91
SANTA BARBARA	N-OUTDR FLOWER	0	0	0.1	0.1	1
SANTA CLARA	ARTICHOKE, GLOBE	6	6	1.0	1.0	2
SANTA CLARA	LANDSCAPE MAINTENANCE	1	0			0
SANTA CRUZ	ARTICHOKE, GLOBE	31	34	0.9	1.0	19
SHASTA	ALFALFA	3	3	1.0	1.0	1
SHASTA	APPLE	31	18	1.6	2.0	9
SHASTA	FORAGE HAY/SILAGE	375	424	0.9	4.0	75
SHASTA	UNKNOWN	46	49	0.9	1.0	8
SHASTA		137	155	0.9	2.5	30

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
SOLANO	ALMOND	9	6	1.5	1.5	4
SOLANO	PRUNE	9	34	0.4	1.3	8
STANISLAUS	ALMOND	1301	1283	1.1	2.1	235
STANISLAUS	APPLE	123	110	1.1	1.6	52
STANISLAUS	APRICOT	1	1	1.4	1.5	4
STANISLAUS	CHERRY	60	52	1.3	6.0	49
STANISLAUS	CITRUS	1	1	1.5	1.5	1
STANISLAUS	NECTARINE	28	25	1.2	1.6	23
STANISLAUS	N-GRNHS PLANTS IN CONTAINERS	0	0	0.4	0.6	4
STANISLAUS	N-OUTDR PLANTS IN CONTAINERS	3	3	1.0	1.0	1
STANISLAUS	N-OUTDR TRANSPLANTS	134	115	1.2	10.0	53
STANISLAUS	PEACH	971	865	1.2	7.5	340
STANISLAUS	PEAR	0	0	1.6	1.6	2
STANISLAUS	PLUM	12	9	1.3	1.6	18
STANISLAUS	WALNUT	516	360	1.4	2.1	99
SUTTER	ALMOND	13	11	1.0	2.0	5
SUTTER	APPLE	187	126	1.6	3.0	38
SUTTER	FUMIGATION, OTHER	1	0			0
SUTTER	KIWI	23	15	1.5	2.0	8
SUTTER	N-OUTDR PLANTS IN CONTAINERS	50	33	1.6	3.8	26
SUTTER	N-OUTDR TRANSPLANTS	15	10	1.5	1.5	4
SUTTER	PEACH	962	708	1.4	11.3	258
SUTTER	PEAR	66	49	1.5	2.8	10
SUTTER	PLUM	29	20	1.4	2.0	14
SUTTER	PRUNE	1203	944	1.3	4.5	169
SUTTER	RICE	7	5	1.5	1.5	1
SUTTER	SAFFLOWER	29	58	0.5	0.5	4
SUTTER	SUNFLOWER	13	25	0.5	0.5	2
SUTTER	WALNUT	383	254	1.6	3.8	54
TEHAMA	ALMOND	31	28	1.2	1.5	3
TEHAMA	OLIVE	15	28	0.5	0.5	1
TEHAMA	PRUNE	124	106	1.1	1.5	21
TEHAMA	WALNUT	370	236	1.6	3.3	49
TULARE	ALMOND	213	152	1.6	3.0	14
TULARE	APPLE	139	71	2.1	3.0	26
TULARE	APRICOT	52	28	1.8	2.0	34
TULARE	CHERRY	521	229	2.2	21.7	99

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
TULARE	CITRUS	41	19	2.2	4.0	26
TULARE	COTTON	8	30	0.3	0.3	5
TULARE	GRAPEFRUIT	52	22	2.5	4.8	27
TULARE	KIWI	223	128	1.8	2.1	39
TULARE	LEMON	42	18	2.4	3.8	12
TULARE	LIME	1	0	2.5	2.5	2
TULARE	NECTARINE	822	519	1.7	3.0	209
TULARE	N-OUTDR PLANTS IN CONTAINERS	24	12	2.0	2.0	9
TULARE	N-OUTDR TRANSPLANTS	4	2	2.0	2.0	1
TULARE	OLIVE	1930	873	2.3	3.0	289
TULARE	ORANGE	8236	3147	2.7	9.0	1,230
TULARE	ORANGE	4	2 (sq ft)	1.9	1.9	1
TULARE	PEACH	657	400	1.8	4.5	169
TULARE	PEAR	89	42	2.1	3.0	29
TULARE	PISTACHIO	3	1	3.5	3.5	1
TULARE	PLUM	1687	883	2.0	3.5	441
TULARE	PRUNE	471	240	2.0	3.0	78
TULARE	SAFFLOWER	75	297	0.3	0.3	9
TULARE	TANGELO	156	58	2.8	11.3	39
TULARE	TANGERINE	169	80	2.3	4.0	54
TULARE	WALNUT	1385	743	1.9	3.0	182
VENTURA	ARTICHOKE, GLOBE	3	5	0.6	1.3	2
VENTURA	LEMON	43	24	1.8	2.2	3
VENTURA	PEPPER, SPICE	0	4	0.1	0.1	1
YOLO	ALMOND	48	38	1.3	1.3	4
YOLO	APPLE	0	0	1.0	1.0	1
YOLO	APRICOT	1	1	1.5	1.5	2
YOLO	NECTARINE	0	0	1.0	1.0	1
YOLO	PEAR	0	0	1.0	1.0	1
YOLO	PRUNE	7	6	1.3	1.5	3
YOLO	RESEARCH COMMODITY	42	0			0
YUBA	ALMOND	49	26	1.7	2.0	2
YUBA	APPLE	63	55	1.1	2.0	33
YUBA	APRICOT	1	1	0.8	1.5	6
YUBA	CHERRY	23	21	1.1	1.5	19
YUBA	KIWI	35	24	1.2	2.5	24
YUBA	NECTARINE	1	1	1.2	1.5	5
YUBA	ORANGE	0	0	0.5	0.5	1
YUBA	PEACH	538	418	1.3	2.0	103
YUBA	PEAR	445	311	1.4	1.5	126

County	Site Name	AVG Annual Pounds Applied	AVG Annual Area Treated (Acres)	AVG Application Rate	MAX Application Rate	No. of Records
YUBA	PLUM	0	0	1.4	1.5	2
YUBA	PRUNE	642	523	1.2	2.0	50
YUBA	WALNUT	5	6	0.8	2.0	6