United States Department of Agriculture
National Agricultural Statistics Service

California Agricultural Chemical Use: Vegetables 2010

Cooperating with the California Department of Food and Agriculture
California Field Office · P.O. Box 1258 · Sacramento, CA 95812 · (916) 498-5161 · (916) 498-5186 Fax · www.nass.usda.gov/ca

Released: August 8, 2011

OVERVIEW

The National Agricultural Statistics Service (NASS) Agricultural Chemical Use Program is the U.S. Department of Agriculture's official source of statistics about on-farm fertilizer and pesticide use and pest management practices. In the fall of 2010, NASS collected data about chemical use and pest management practices for 29 vegetable crops in 19 states. In California, NASS collected data for the following 24 vegetable crops: Asparagus, Snap Beans (FM), Broccoli, Cabbage (FM), Cantaloupes, Carrots (FM), Carrots (PR), Cauliflower, Celery, Sweet Corn (FM), Cucumbers (FM), Garlic, Honeydews, Head Lettuce, Other Lettuce, Onions, Bell Peppers, Pumpkins, Spinach (FM), Squash, Strawberries, Tomatoes (FM), Tomatoes (PR), and Watermelons.

(FM) = Fresh Market, (PR) Processing

Below are highlights for chemical use and pest management practices in California. The full data summary can be found at http://quickstats.nass.usda.gov under Sector: Environmental, Groups: Vegetables, Commodity: Vegetable Crop.

PEST MANAGEMENT PRACTICES

Vegetable growers reported using several management practices to aid in the deterrence of pests through prevention, monitoring, suppression and avoidance. In California, the most common pest management practice was scouting for insects and mites, used by 97% of all vegetable operations.

PEST MANAGEMENT PRACTICES IN CALIFORNIA

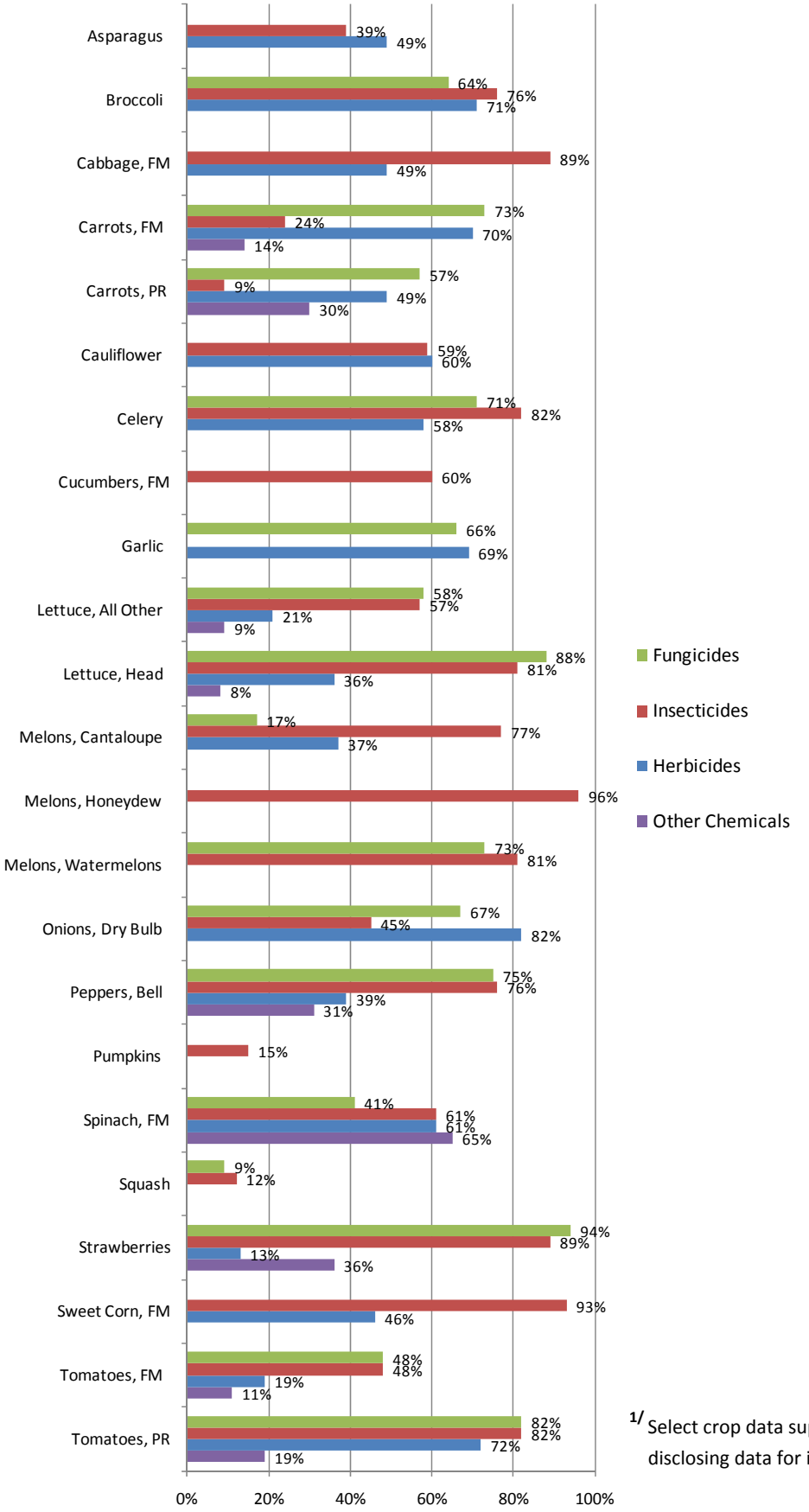
Practice		*% All Planted Area*	*% All Vegetable Operations*
Prevention	FIELD EDGES, DITCHES, OR FENCE LINES WERE CHOPPED, SPRAYED, MOWED, PLOWED, OR BURNED	85	85
	EQUIPMENT AND IMPLEMENTS CLEANED AFTER FIELD WORK TO REDUCE SPREAD OF PESTS	74	70
	WATER MANAGEMENT PRACTICES USED	73	70
Monitoring	SCOUTED FOR INSECTS & MITES	100	97
	SCOUTED FOR DISEASES	100	96
	SCOUTED FOR WEEDS	99	95
Suppression	PESTICIDES WITH DIFFERENT MECHANISMS OF ACTION USED TO KEEP PEST FROM BECOMING RESISTANT TO PESTICIDES	67	57
	SCOUTING DATA COMPARED TO PUBLISHED INFORMATION TO ASSIST DECISIONS	57	44
	BIOLOGICAL PESTICIDES APPLIED	41	29
Avoidance	ROTATED CROPS DURING PAST 3 YEARS	76	67
	PLANTING LOCATIONS PLANNED TO AVOID CROSS INFESTATION OF PESTS	57	45
	CROP OR PLANT VARIETY CHOSEN FOR SPECIFIC PEST RESISTANCE	50	47

Inside this issue:

Pest Management Practices In California 1
Percent Of Acres Treated With Pesticides In California 2
Top Insecticides Used On Vegetable Crops In California 3
Top Herbicides Used On Vegetable Crops In California 4
Top Fungicides Used On Vegetable Crops In California 5
Percent of Acres Treated With Fertilizers In California 6
Selected Terms and Definitions 7
For More Information 8

USDA is an equal opportunity provider and employer.

PERCENT OF ACRES TREATED WITH PESTICIDES IN CALIFORNIA [1/]



[1/] Select crop data suppressed to avoid disclosing data for individual farms.

TOP INSECTICIDES USED ON VEGETABLE CROPS IN CALIFORNIA, BY PERCENT ACRES TREATED [1/]

Vegetable	Insecticide Active Ingredient	Acres Treated	Rate per Crop Year	Total Applied
		%	Lbs/Acre	Lbs
Broccoli	IMIDACLOPRID	64%	0.080	6,000
	INDOXACARB	59%	0.079	55,000
	OXYDEMETON-METHYL	55%	0.569	36,400
Cabbage, (FM)	INDOXACARB	72%	0.096	900
	IMIDACLOPRID	66%	0.120	1,000
	SPIROTETRAMAT	57%	0.071	500
Cauliflower	INDOXACARB	52%	0.137	2,400
	SPIROTETRAMAT	46%	0.117	1,800
	IMIDACLOPRID	44%	0.127	1,900
Celery	METHOXYFENOZIDE	48%	0.193	2,500
	ZETA-CYPERMETHRIN	43%	0.086	1,000
	OXAMYL	42%	0.898	10,100
Lettuce, All Other	IMIDACLOPRID	53%	0.088	4,800
	LAMBDA-CYHALOTHRIN	49%	0.042	2,200
	SPIROTETRAMAT	39%	0.115	4,600
Lettuce, Head	LAMBDA-CYHALOTHRIN	73%	0.041	3,200
	ZETA-CYPERMETHRIN	71%	0.080	6,000
	IMIDACLOPRID	65%	0.129	8,900
Melons, Cantaloupe	ABAMECTIN	59%	0.013	300
	BIFENTHRIN	58%	0.096	2,300
	IMIDACLOPRID	48%	0.343	6,700
Melons, Watermelons	ABAMECTIN	71%	0.029	200
	IMIDACLOPRID	53%	0.443	2,600
Onions, Dry Bulb	ZETA-CYPERMETHRIN	20%	0.102	900
	METHOMYL	11%	0.770	3,600
	LAMBDA-CYHALOTHRIN	10%	0.047	200
	PERMETHRIN	10%	0.264	1,200
Peppers, Bell	IMIDACLOPRID	59%	0.247	3,000
	ZETA-CYPERMETHRIN	53%	0.141	1,500
	SPIROTETRAMAT	40%	0.170	1,400
Spinach, (FM)	PERMETHRIN	48%	0.223	2,900
	SPINETORAM-J	37%	0.029	300
	SPINETORAM-L	37%	0.029	300
Strawberries	MALATHION	45%	4.771	83,000
	BIFENAZATE	44%	0.824	13,900
	BT SUBSP. KURSTAKI	42%	(NA)	(NA)
Sweet Corn, (FM)	METHOMYL	86%	0.927	23,900
	ESFENVALERATE	79%	0.262	6,200
	CHLORANTRANILIPROLE	70%	0.014	300
Tomatoes, (FM)	ZETA-CYPERMETHRIN	22%	0.098	800
	IMIDACLOPRID	19%	0.299	2,200
	ESFENVALERATE	15%	0.082	500
Tomatoes, (PR)	IMIDACLOPRID	49%	0.361	47,500
	INDOXACARB	44%	0.165	19,800
	METHOXYFENOZIDE	28%	0.166	12,800

(FM) = Fresh Market, (NA) = Not Applicable, (PR) = Processing

[1/] Select crop data suppressed to avoid disclosing data for individual farms.

TOP HERBICIDES USED ON VEGETABLE CROPS IN CALIFORNIA, BY PERCENT ACRES TREATED [1/]

Vegetable	Herbicide Active Ingredient	Acres Treated	Rate per Crop Year	Total Applied
		%	Lbs/Acre	Lbs
Broccoli	OXYFLUORFEN	60%	0.166	11,600
	NAPROPAMIDE	10%	0.536	6,300
	BENSULIDE	9%	3.878	41,700
Cabbage, (FM)	OXYFLUORFEN	47%	0.442	2,600
Carrots, (FM)	LINURON	60%	0.823	29,300
	PENDIMETHALIN	20%	1.118	13,200
	TRIFLURALIN	6%	1.250	4,700
Carrots, (PR)	LINURON	43%	1.306	600
	PENDIMETHALIN	27%	1.082	300
	TRIFLURALIN	9%	1.018	100
Cauliflower	OXYFLUORFEN	60%	0.237	4,700
Celery	PROMETRYN	55%	1.594	23,600
	LINURON	19%	0.374	1,900
Garlic	PENDIMETHALIN	53%	1.838	21,600
	OXYFLUORFEN	48%	0.542	5,700
	BROMOXYNIL OCTANOATE	26%	2.512	14,600
Lettuce, All Other	PRONAMIDE	13%	0.836	10,800
	BENSULIDE	8%	5.395	44,200
Lettuce, Head	PRONAMIDE	25%	0.836	22,000
	BENEFIN	14%	1.479	21,600
	BENSULIDE	14%	3.469	53,200
Melons, Cantaloupe	BENSULIDE	5%	2.930	5,500
	GLYPHOSATE ISO. SALT	5%	1.682	3,100
	TRIFLURALIN	4%	0.605	1,100
Onions, Dry Bulb	OXYFLUORFEN	78%	0.239	8,100
	PENDIMETHALIN	39%	1.231	20,800
	BROMOXYNIL	30%	0.229	3,000
Peppers, Bell	TRIFLURALIN	15%	0.858	2,600
	S-METOLACHLOR	5%	2.962	2,900
Spinach, (FM)	CYCLOATE	61%	1.707	27,800
Strawberries	FLUMIOXAZIN	8%	0.069	200
	NAPROPAMIDE	5%	1.961	3,400
	OXYFLUORFEN	3%	0.347	400
Sweet Corn, (FM)	ATRAZINE	10%	1.447	4,300
	PENDIMETHALIN	8%	1.347	3,300
	CARFENTRAZONE-ETHYL	7%	0.036	100
Tomatoes, (FM)	OXYFLUORFEN	8%	0.317	900
	S-METOLACHLOR	7%	1.761	4,700
	GLYPHOSATE ISO. SALT	5%	1.177	2,100
Tomatoes, (PR)	TRIFLURALIN	55%	1.237	184,900
	GLYPHOSATE ISO. SALT	37%	1.539	155,100
	S-METOLACHLOR	36%	2.431	240,200

(FM) = Fresh Market, (PR) = Processing

[1/] Select crop data suppressed to avoid disclosing data for individual farms.

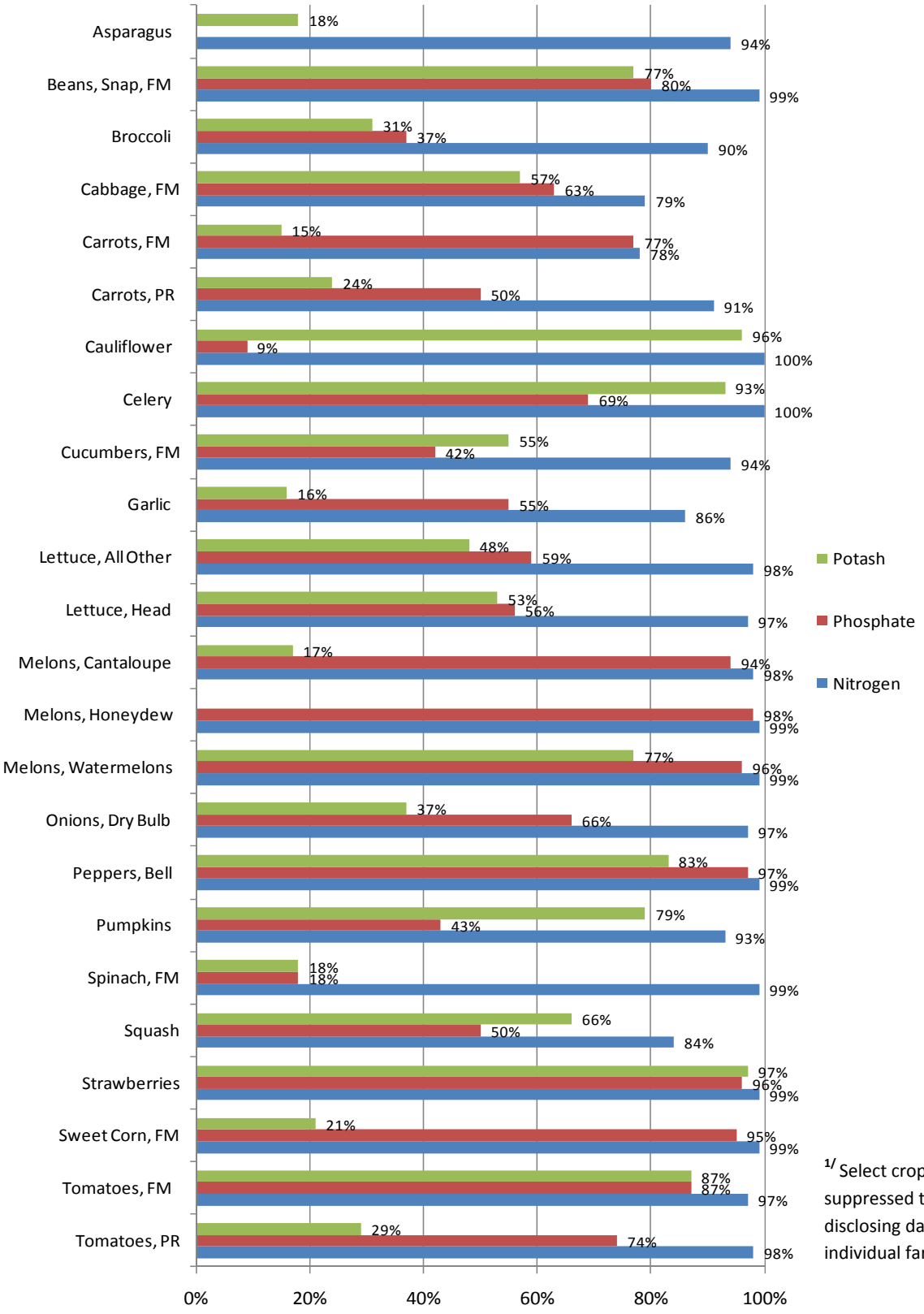
TOP FUNGICIDES USED ON VEGETABLE CROPS IN CALIFORNIA, BY PERCENT ACRES TREATED [1/]

Vegetable	Fungicide Active Ingredient	Acres Treated	Rate per Crop Year	Total Applied
		%	Lbs/Acre	Lbs
Broccoli	AZOXYSTROBIN	56%	0.262	17,000
	MANEB	9%	1.355	13,600
	PYRACLOSTROBIN	7%	0.183	1,400
Carrots, (FM)	MEFENOXAM	61%	0.272	9,900
	SULFUR	52%	9.714	300,800
	PYRACLOSTROBIN	7%	0.156	700
Carrots, (PR)	SULFUR	48%	24.395	11,800
	PYRACLOSTROBIN	31%	0.114	(Z)
	MEFENOXAM	29%	0.413	100
Celery	PROPICONAZOLE	64%	0.194	3,300
	COPPER HYDROXIDE	58%	1.112	17,200
	CHLOROTHALONIL	56%	3.734	55,800
Garlic	TEBUCONAZOLE	56%	0.419	5,200
	AZOXYSTROBIN	38%	0.382	3,200
Lettuce, All Other	MANEB	55%	2.056	117,000
	MANDIPROPAMIDE TECHN	41%	0.195	8,300
	FOSETYL-AL	24%	4.352	106,900
Lettuce, Head	MANEB	84%	2.094	186,600
	FENAMIDONE	45%	0.271	12,800
	MANDIPROPAMIDE TECHN	39%	0.156	6,400
Melons, Cantaloupe	MYCLOBUTANIL	6%	0.166	400
	SULFUR	6%	15.417	36,800
Onions, Dry Bulb	MEFENOXAM	45%	0.158	3,000
	CHLOROTHALONIL	40%	1.852	32,100
	COPPER HYDROXIDE	38%	0.842	13,800
Peppers, Bell	MYCLOBUTANIL	61%	0.296	3,700
	AZOXYSTROBIN	44%	0.189	1,700
	SULFUR	42%	4.622	39,600
Spinach, (FM)	MANDIPROPAMIDE TECHN	30%	0.130	1,000
	MEFENOXAM	27%	0.729	5,300
	FENAMIDONE	20%	0.271	1,500
Strawberries	CAPTAN	88%	7.825	266,400
	SULFUR	71%	14.031	382,500
	PYRACLOSTROBIN	61%	0.053	1,200
Tomatoes, (FM)	SULFUR	37%	30.165	425,000
	CHLOROTHALONIL	35%	4.435	59,700
	COPPER HYDROXIDE	31%	1.104	13,000
Tomatoes, (PR)	SULFUR	74%	83.982	16,773,000
	COPPER HYDROXIDE	49%	1.350	179,500
	MANCOZEB	46%	2.762	342,000

(FM) = Fresh Market, (PR) = Processing, (Z) = Less than one half of the Unit Shown

[1/] Select crop data suppressed to avoid disclosing data for individual farms.

PERCENT OF ACRES TREATED WITH FERTILIZERS IN CALIFORNIA [1/]



[1/] Select crop data suppressed to avoid disclosing data for individual farms.

Sulfur is excluded from the table, but data can be obtained from the full Summary found on Quickstats at http://quickstats.nass.usda.gov.

SELECTED TERMS AND DEFINITIONS

Active Ingredient: The specific pesticide ingredient which kills or controls the target pest(s) or other target material(s), or otherwise results in the pesticide effect(s). All pesticide-use estimates in the report are at the active ingredient level; one or more active ingredients are present in known amounts in the pesticide products reported in survey.

Pesticide: Defined by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as "(1) any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer…(Title 7, U.S. Code, 136)." Under FIFRA, pesticides are registered and regulated through the Environmental Protection Agency's Office of Pesticide Programs. Four classes of pesticides are included in report: (1) herbicides targeting weeds, (2) insecticides targeting insects (3) fungicides targeting fungi, and (4) other chemicals targeting all other pests or other materials (including extraneous crop foliage).

Other Chemicals: Any other agricultural chemicals such as growth regulators, microbial agents, rodenticides, repellents, thinners, soil fumigants, pheromones, defoliants, desiccants, etc.

Rate per Application: Ratio indicating pounds (lbs) of a fertilizer primary nutrient or pesticide active ingredient applied, per single application, per planted acre. (In Quick Stats: Applications, Measured in Lb/Acre/Application)

Rate per Crop Year: Ratio indicating pounds (lbs) of a fertilizer primary nutrient or pesticide active ingredient applied, counting all applications per crop year, per planted acre. (In Quick Stats: Applications, Measured in Lb/Acre/Year)

Number of Applications: The average number of times a treated acre received a specific fertilizer primary nutrient or pesticide active ingredient. (In Quick Stats: Applications, Measured in Number)

Fertilizer: A soil-enriching agricultural input which contains one or more of the four primary nutrients: nitrogen, phosphate, potash, and sulfur.

Mechanism of Action (MOA): The method or biological pathway by which the pesticide or active ingredient kills or controls the target pest(s) or other target material(s).

Avoidance: A strategy in which the detrimental effects of pests on crops are mitigated or eliminated solely through various cultural practices.

Monitoring: A strategy involving the observance or detection of pests through systematic sampling, counting, or other forms of scouting. Monitoring may include prediction of pest population levels through the observance of environmental factors such as weather or soil and crop quality. Monitoring is one of four classes of pest-management practices for which data is included in report.

Prevention: A strategy in which a pest population is kept from infesting a crop or field, by taking various preceding actions. Prevention is one of four classes of pest-management practices for which data is included in report.

Suppression: A strategy which involves the control or reduction of existing pest populations in order to mitigate crop damage. May include physical or biological controls, or management of resistance build-up through pesticide rotation. Suppression is one of four classes of pest-management practices for which data is included in report.

Farm: Any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year. Government payments are included in sales.

Crop Year: The period starting immediately after harvest of the previous year's crop, and ending at harvest of the current year's crop.

FOR MORE INFORMATION

The 2010 agricultural chemical use data for vegetable were published July 27, 2011, and are available through the Quick Stats database on the NASS website: http://www.nass.usda.gov.

Information on survey methods can be found by selecting Methodology at: http://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Chemical_Use/

To access the database directly, go to http://quickstats.nass.usda.gov and under Sector: Environmental, Groups: Vegetables, Commodity: Vegetable Crop, State: California.

To access strawberry data go under Sector: Environmental, Groups: Fruit & Tree Nuts, Commodity: Strawberries. If you need additional assistance, please call us at (916) 498-5161.

USDA-NASS, California Field Office publications are available free-of-charge on the Internet at:

www.nass.usda.gov/ca

Go Mobile! Subscribe to our RSS feed here:
http://www.nass.usda.gov/rss/ca/news.xml