Agricultural Chemical Usage

Apples: Agricultural chemical applications, 2019 [1]

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Herbicides					
2,4-D, dimeth. salt	11	1.2	1.086	1.277	4,600
Clopyralid mono salt	1	1.1	0.218	0.240	100
Diuron	7	1.0	1.761	1.811	3,900
Glufosinate-ammonium	6	1.1	0.775	0.850	1,600
Glyphosate iso. salt	15	1.1	1.086	1.215	5,900
Glyphosate pot. salt	1	1.3	0.511	0.679	300
Paraquat	7	1.2	0.685	0.802	2,000
Pendimethalin	4	1.0	1.701	1.783	2,400
Terbacil	2	1.0	0.493	0.493	300
TOTAL	29				23,200
Insecticides					
Abamectin	54	1.2	0.018	0.021	400
Acetamiprid	41	1.5	0.114	0.173	2,300
Carbaryl	23	1.1	0.895	1.018	7,600
Chlorantraniliprole	78	1.9	0.070	0.132	3,400
Chlorpyrifos	39	1.1	1.267	1.427	18,000
Clothianidin	49	1.5	0.096	0.148	2,400
Cyflumetofen	5	1.0	0.177	0.179	300
Cyfluthrin	4	1.5	0.055	0.084	100
Esfenvalerate	13	1.1	0.047	0.053	200
Fenpropathrin	2	1.3	0.323	0.419	200
Fenpyroximate	3	1.1	0.100	0.112	100
Imidacloprid	44	2.1	0.082	0.172	2,500
Lambda-cyhalothrin	38	1.6	0.028	0.045	500
Phosmet	42	1.8	1.480	2.714	37,200
Pyridaben	4	1.0	0.377	0.389	500
Pyriproxyfen	10	1.6	0.108	0.167	500
Spinetoram	29	1.6	0.082	0.130	1,200
Spirotetramat	4	1.5	0.104	0.152	200
Thiamethoxam	55	1.9	0.065	0.125	2,200
Zeta-cypermethrin	11	1.0	0.024	0.024	100
TOTAL	85				102,700

See footnote(s) at end of table.

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Apples: Agricultural chemical applications, 2019 [1] (continued)

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Fungicides /2					
Basic copper sulfate	14	1.2	1.251	1.564	7,000
Benzovindiflupyr	34	1.6	0.037	0.058	600
Boscalid	2	1.1	0.218	0.248	100
Captan	80	5.8	2.207	12.716	330,800
Copper chloride hyd.	25	1.5	1.115	1.633	13,200
Copper hydroxide	48	1.3	1.438	1.898	29,400
Copper sulfate	6	2.2	0.141	0.311	600
Cyprodinil	63	2.2	0.175	0.393	8,100
Difenoconazole	55	1.9	0.060	0.116	2,000
Fenbuconazole	10	2.7	0.119	0.317	1,000
Fluazinam	18	2.3	0.406	0.944	5,500
Fluopyram	12	2.0	0.072	0.147	600
Fluxapyroxad	18	2.0	0.076	0.152	900
Kasugamycin	26	1.4	0.070	0.096	800
Mancozeb	74	6.0	2.580	15.368	367,800
Mono-potassium salt	3	2.2	1.073	2.393	2,000
Myclobutanil	23	2.1	0.109	0.226	1,700
Oxytetracycline calcium	4	1.6	0.160	0.256	300
Pyraclostrobin	19	1.9	0.077	0.150	900
Pyrimethanil	14	1.6	0.308	0.500	2,300
Streptomycin sulfate	29	1.8	0.255	0.452	4,300
Sulfur	9	2.8	5.855	16.155	49,600
Tebuconazole	2	2.0	0.157	0.319	200
Thiophanate-methyl	38	2.0	0.580	1.182	14,800
Trifloxystrobin	60	2.4	0.066	0.161	3,100
Ziram	37	2.3	3.457	7.796	93,600
TOTAL	87				963,700
Other chemicals					
Benzyladenine	12	1.3	0.039	0.051	200
Butenoic acid hydro	17	1.2	0.051	0.061	300
Dodecadien-1-OL	16	1.1	0.076	0.081	400
Dodecanol	13	1.1	0.027	0.029	100
Flutriafol	37	1.6	0.075	0.121	1,500
Indaziflam	4	1.0	0.044	0.044	100
Oxytetracycline HCl	24	1.4	0.196	0.266	2,000
Prohexadione calc.	39	1.4	0.135	0.191	2,400
Spirodiclofen	3	1.0	0.245	0.246	200
Fertilizer					
Nitrogen	58	2.6	12	31	557,000
Phosphate	44	3.9	6	24	323,000
Potassium	61	3.5	11	39	725,000
Sulfur	34	2.1	17	36	371,000

[1] Bearing acres in 2019 were 31,000 acres.
[2] Includes antibiotics.

Blueberries: Agricultural chemical applications, 2019 [1]

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Herbicides					
Clethodim	23	1.3	0.125	0.162	700
Diuron	32	1.1	1.843	2.091	13,200
Flumioxazin	18	1.2	0.300	0.357	1,300
Glufosinate-ammonium	5	1.1	0.384	0.438	500
Glyphosate iso. salt	4	1.0	0.441	0.441	300
Glyphosate pot. salt	4	1.2	2.176	2.629	2,300
Hexazinone	5	1.9	1.113	2.133	1,900
Mesotrione	29	1.0	0.172	0.178	1,000
Norflurazon	8	1.0	2.079	2.094	3,500
Paraquat	17	1.9	0.535	0.999	3,400
Simazine	10	2.7	2.086	5.646	10,800
S-metolachlor	18	1.1	1.261	1.436	5,200
Terbacil	18	2.1	0.568	1.168	4,100
TOTAL	56				50,900
Insecticides					
Acetamiprid	31	1.6	0.091	0.146	900
Bifenthrin	67	2.1	0.099	0.207	2,700
Esfenvalerate	51	1.7	0.049	0.082	800
Fenpropathrin	6	1.4	0.286	0.389	400
Flupyradifurone	3	1.8	0.168	0.311	200
Imidacloprid	33	1.4	0.102	0.143	900
Malathion	12	1.9	1.432	2.788	6,600
Methomyl	46	1.8	0.868	1.548	14,100
Methoxyfenozide	29	1.2	0.202	0.238	1,300
Phosmet	75	2.3	0.900	2.057	30,600
Spinosad	5	1.6	0.120	0.190	200
Zeta-cypermethrin	86	2.4	0.026	0.062	1,100
TOTAL	97				60,600
Fungicides					
Azoxystrobin	59	2.3	0.190	0.431	5,000
Boscalid	15	1.3	0.316	0.397	1,200
Calcium polysulfide	52	1.2	2.419	2.945	30,000
Captan	30	2.0	2.242	4.502	26,300
Chlorothalonil	9	1.3	1.802	2.324	4,300
Copper chloride hyd.	4	1.0	0.623	0.626	500
Copper sulfate	29	1.9	0.106	0.203	1,200
Cyprodinil	24	1.3	0.289	0.378	1,800
Difenoconazole	5	1.0	0.085	0.087	100
Fenbuconazole	73	1.4	0.122	0.177	2,500
Fludioxonil	20	1.3	0.199	0.259	1,000
Fluopyram	34	1.3	0.172	0.216	1,400
Metconazole	65	1.7	0.079	0.133	1,700
Mono-potassium salt	16	1.9	2.226	4.280	13,500
Propiconazole	23	1.3	0.149	0.196	900
Prothioconazole	39	1.1	0.177	0.200	1,500
Pyraclostrobin	15	1.3	0.160	0.202	600
Pyrimethanil	5	1.1	0.391	0.444	400
Ziram	33	1.2	2.801	3.325	21,700
TOTAL	93				121,100
Others					
Peroxyacetic acid	44	2.5	0.196	0.489	4,300
Fertilizer					
Nitrogen	74	3.2	21	67	973,000
Phosphate	52	2.2	11	23	238,000
Potash	68	2.3	29	67	894,000
Sulfur	57	3.3	12	39	426,000

[1] Bearing acres in 2019 for Michigan were 20,600 acres.

Cherries, tart: Agricultural chemical applications, 2019 [1]

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Herbicides					
Glyphosate iso. salt	26	1.3	0.942	1.178	8,000
Glyphosate pot. salt	3	1.4	0.925	1.325	1,100
Pendimethalin	4	1.0	1.834	1.834	1,900
TOTAL	43				20,400
Insecticides					
Chlorantraniliprole	7	1.3	0.051	0.064	100
Chlorpyrifos	11	1.4	0.873	1.199	3,400
Cyantraniliprole	3	1.2	0.098	0.121	100
Fenpropathrin	13	1.1	0.250	0.265	900
Imidacloprid	27	1.6	0.131	0.204	1,500
Lambda-cyhalothrin	62	1.9	0.036	0.069	1,100
Permethrin	4	1.3	0.127	0.165	200
Phosmet	79	1.8	1.132	2.019	42,400
Spinetoram	3	1.5	0.081	0.125	100
Thiamethoxam	62	1.5	0.068	0.102	1,700
Zeta-cypermethrin	60	1.7	0.023	0.040	600
TOTAL	93				54,700
Fungicides					
Calcium polysulfide	14	1.7	0.789	1.353	5,000
Captan	88	4.1	1.703	6.985	162,100
Chlorothalonil	88	2.3	2.289	5.312	124,100
Copper chloride hyd.	33	2.0	0.233	0.455	4,000
Copper hydroxide	35	2.1	0.314	0.648	6,000
Copper sulfate	14	2.0	0.108	0.221	800
Fenbuconazole	37	1.9	0.101	0.195	1,900
Fluopyram	10	1.2	0.093	0.115	300
Fluxapyroxad	35	1.3	0.080	0.105	1,000
Iprodione	6	1.5	0.605	0.904	1,500
Myclobutanil	21	1.4	0.104	0.151	900
Propiconazole	20	1.2	0.103	0.120	600
Pyraclostrobin	35	1.3	0.080	0.105	1,000
Sulfur	51	3.1	3.361	10.386	140,500
Thiophanate-methyl	4	2.0	0.427	0.854	900
Trifloxystrobin	58	1.7	0.090	0.154	2,400
TOTAL	97				489,600
Other chemicals					
Ethephon	67	1.1	0.183	0.195	3,500
Fertilizer					
Nitrogen	78	1.9	29	53	1,069,000
Phosphate	29	1.5	12	17	131,000
Potassium	62	1.4	51	73	1,164,000
Sulfur	14	1.5	51	76	268,000

[1] Bearing acres in 2019 for Michigan were 25,600 acres.

Peaches: Agricultural chemical applications, 2019 [1]

Agricultural chemical	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Herbicides					
2,4-D, Dimeth. salt	4	1.1	0.824	0.883	100
Glyphosate iso. salt	4	1.0	0.844	0.855	100
Glyhosate pot. salt	3	1.0	0.626	0.626	100
Paraquat	10	2.0	0.632	1.248	300
TOTAL	19				900
Insecticides					
Acetamiprid	40	1.5	0.109	0.168	200
Chlorpyrifos	8	1.0	1.237	1.237	200
Fenpropathrin	19	1.9	0.266	0.509	200
Lambda-cyhalothrin	33	1.9	0.035	0.069	100
Phosmet	36	2.0	1.354	2.698	2,300
Thiamethoxam	29	1.5	0.069	0.107	100
TOTAL	59				4,100
Fungicides					
Basic copper sulfate	15	1.0	1.630	1.668	600
Captan	40	3.6	1.975	7.125	6,800
Chlorothalonil	17	1.6	2.599	4.207	1,700
Copper chloriide hyd.	22	1.5	1.696	2.568	1,400
Copper hydroxide	17	1.9	1.454	2.735	1,100
Fenbuconazole	42	2.3	0.189	0.435	400
Fluxapyroxad	22	1.5	0.092	0.135	100
Iprodione	34	1.5	0.955	1.405	1,200
Pyraclostrobin	22	1.5	0.090	0.135	100
Sulfur	43	3.8	5.026	18.945	19,400
Tebuconazole	8	2.1	0.194	0.403	100
Trifloxystrobin	19	1.3	0.088	0.116	100
Ziram	14	1.1	3.973	4.274	1,400
TOTAL	62				35,200
Fertilizer					
Nitrogen	49	1.4	36	49	55,000
Phosphate	21	1.2	23	27	13,000
Potassium	43	1.1	35	38	37,000
Sulfur	12	1.0	46	46	13,000

[1] Bearing acres in 2019 for Michigan were 2,400 acres.

Fertilizer applications: Winter wheat, 2019 [1]

Fertilizer	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Thous. pounds*
Nitrogen (N)	96	2.4	47	111	57,600
Phosphate (P_2O_5)	81	1.1	48	54	23,800
Potash (K_2O)	78	1.1	62	68	28,900
Sulfur (S)	53	1.6	10	16	4,700

[1] Planted acres in 2019 were 540,000 acres.

Chemical applications: Winter wheat, 2019 [1]

Fertilizer	Area applied	Applications	Rate per application	Rate per crop year	Total applied
	Percent	*Number*	*Pounds per acre*	*Pounds per acre*	*Pounds*
Herbicides					
Bromoxynil heptan.	22	1.1	0.088	0.097	11,000
Bromoxynil octanoate	36	1.1	0.116	0.124	24,000
Clopyralid mono salt	8	1.0	0.094	0.094	4,000
Fluroxypyr 1-MHE	9	1.0	0.093	0.093	5,000
MCPA, Dimethyl salt	7	1.0	0.246	0.246	10,000
Methanone	35	1.1	0.029	0.031	6,000
Pinoxaden	3	1.0	0.046	0.046	1,000
Pyroxsulam	9	1.0	0.019	0.019	1,000
TOTAL	79				123,000
Insecticides					
Beta-cyfluthrin	11	1.0	0.016	0.016	1,000
TOTAL	34				4,000
Fungicides					
Fluxapyroxad	11	1.0	0.027	0.027	2,000
Metconazole	16	1.1	0.080	0.092	8,000
Propiconazole	14	1.2	0.103	0.125	9,000
Prothioconazole	44	1.4	0.087	0.122	29,000
Pyraclostrobin	11	1.0	0.084	0.084	5,000
Tebuconazole	42	1.1	0.096	0.108	25,000
Trifloxystrobin	20	1.0	0.075	0.075	8,000
TOTAL	62				88,000
Other chemicals					
Trinexapac-ethyl	19	1.0	0.091	0.091	9,000

[1] Planted acres in 2019 were 540,000.