



Minnesota Ag News – Chemical Use

Barley and Spring Wheat: Fall 2019

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Cooperating with the Minnesota Department of Agriculture

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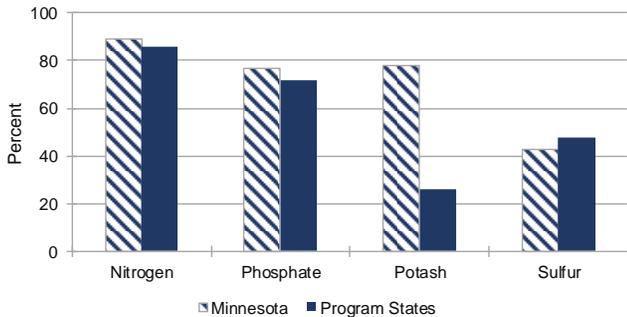
The National Agricultural Statistics Service (NASS) Agricultural Chemical Use Program is the U.S. Department of Agriculture’s official source of statistics about on-farm and post-harvest fertilizer and pesticide use and pest management practices.

In the fall of 2019, NASS collected data for the 2019 crop year, the one-year period beginning after the 2018 harvest and ending after the 2019 harvest, about chemical use and pest management practices used on Barley and Spring Wheat production. The data was collected as part of the Agricultural Resource Management Survey (ARMS) and the results are presented here.

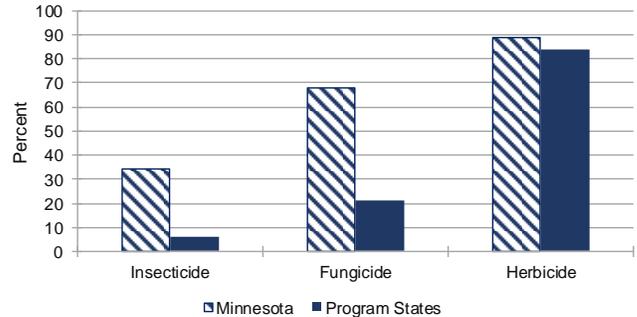
Fertilizer Use: Of the three primary macronutrients, nitrogen (N) was the most widely used on Barley. Minnesota farmers applied nitrogen to 89 percent of planted acres at an average rate of 89 pounds per acre per year. Macronutrients phosphate (P) and potash (K) were applied to roughly three quarters of planted acres, at an average rate of 41 and 37 pounds per acre per year, respectively. The secondary macronutrient, sulfur (S), was applied to 43 percent of acres planted to Barley.

Pesticide Use: Herbicide active ingredients were applied to 89 percent of the Barley acres planted in Minnesota. Bromoxynil Octanoate was the most widely used herbicide overall applied to 57 percent of the planted acres. MCPA, 2-Ethylhexyl was the active ingredient with the greatest total amount applied in Minnesota. Fungicide and insecticide active ingredients were applied to 68 percent and 34 percent of Barley acres planted, respectively.

Fertilizers, Barley Planted Acres Treated
Minnesota and Program States: 2019



Pesticides, Barley Planted Acres Treated
Minnesota and Program States: 2019



Fertilizer Use On Barley – Minnesota and Program States: 2019

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Nitrogen	89	89	5,500	86	67	150,300
Phosphate	77	41	2,200	72	33	60,800
Potash	78	37	2,000	26	22	15,100
Sulfur	43	9	300	48	13	15,700

Pesticide Use On Barley – Minnesota and Program States: 2019

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Fungicide:						
Propiconazole	48	0.079	3	14	0.089	33
Prothioconazole	48	0.095	3	6	0.088	13
Tebuconazole	58	0.098	4	8	0.094	19
Total ²	68		11	21		81
Herbicide:						
Bromoxynil Heptan	47	0.090	3	10	0.110	27
Bromoxynil Octanoate	57	0.127	5	21	0.190	104
Clopyralid Mono Salt	11	0.103	1	13	0.101	34
Fluroxypyr 1-MHE	11	0.103	1	42	0.099	106
MCPA, 2-Ethylhexyl	43	0.249	7	25	0.288	183
Methanone	38	0.027	1	7	0.033	6
Pinoxaden	43	0.049	1	28	0.052	37
Total ²	89		24	84		1,829
Insecticide:						
Lambda-Cyhalothrin	34	0.036	1	5	0.036	4
Total ²	34		1	6		5

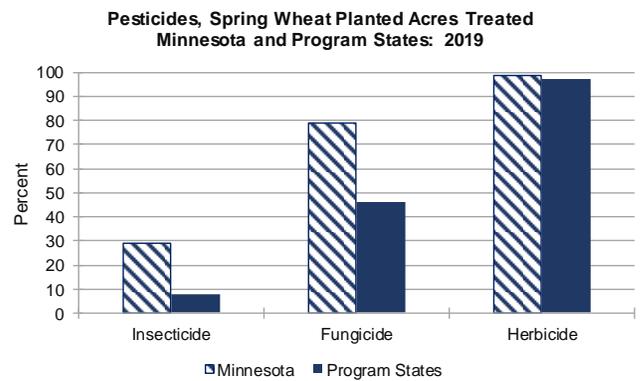
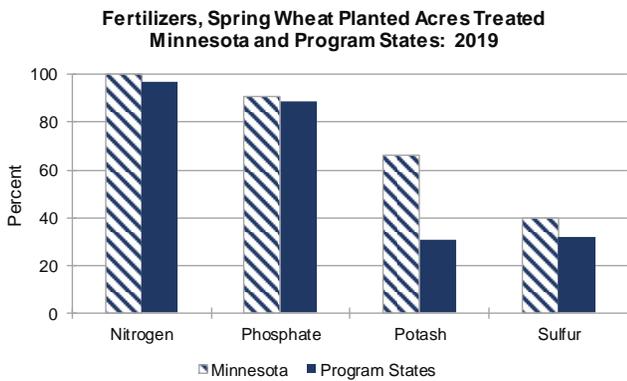
¹The 14 program states surveyed about Barley in the 2019 ARMS were Arizona, California, Colorado, Idaho, Minnesota, Montana, North Dakota, Oregon, Pennsylvania, South Dakota, Virginia, Washington, Wisconsin, and Wyoming.

²Total Fungicide, Herbicide, and Insecticide includes pesticides that are not listed in this table.

The 2019 Agricultural Chemical Use Survey of Spring Wheat producers collected data about fertilizer and pesticide use as well as pest management practices in growing Spring Wheat.

Fertilizer Use: Of the three primary macronutrients, nitrogen (N) was the most widely used on Spring Wheat acres planted in Minnesota. Farmers applied potash to 100 percent of planted acres at an average rate of 118 pounds per acre per year. Macronutrients phosphate (P) and potash (K) were applied at an average rate of 42 and 25 pounds per acre per year, respectively. The secondary macronutrient, sulfur, was applied to 40 percent of acres planted to Spring Wheat.

Pesticide Use: Herbicide active ingredients were applied to 99 percent of the Spring Wheat acres planted. Tebuconazole was the most widely used pesticide on Spring Wheat acres, but MCPA, 2-Ethylhexyl was the active ingredient with the greatest total amount applied. Fungicides and insecticides were applied to 79 and 29 percent of Spring Wheat acres planted in Minnesota, respectively.



Fertilizer Use On Spring Wheat – Minnesota and Program States: 2019

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Nitrogen	100	118	170,800	97	102	1,246,600
Phosphate	91	42	55,900	89	39	437,300
Potash	66	25	23,800	31	25	96,600
Sulfur	40	7	4,200	32	10	39,100

Pesticide Use On Spring Wheat – Minnesota and Program States: 2019

Active ingredient	Minnesota			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Fungicide:						
Propiconazole	41	0.104	62	28	0.082	290
Prothioconazole	40	0.089	51	20	0.089	226
Pyraclostrobin	6	0.063	6	4	0.088	44
Tebuconazole	54	0.107	84	26	0.094	308
Total ²	79		226	46		1,000
Herbicide:						
Bromoxynil Heptan	20	0.121	35	14	0.107	185
Bromoxynil Octanoate	49	0.143	102	37	0.155	721
Clopyralid	12	0.092	16	2	0.090	17
Clopyralid Mono Salt	18	0.091	23	32	0.090	364
Fenoxaprop-P-Ethyl	17	0.044	11	5	0.053	32
Fluroxypyr 1-MHE	31	0.089	40	46	0.089	526
MCPA, 2-Ethylhexyl	38	0.347	189	22	0.289	812
Methanone	39	0.025	14	23	0.027	79
Pinoxaden	22	0.054	17	12	0.046	70
Thiencarbazone-Methyl	24	0.004	1	12	0.004	6
Thifensulfuron	20	0.016	4	20	0.014	34
Tribenuron-Methyl	17	0.006	2	21	0.007	19
Total ²	99		537	97		10,171
Insecticide:						
Lambda-Cyhalothrin	29	0.019	8	7	0.019	16
Total ²	29		8	8		33

¹The 8 program states surveyed about Spring Wheat in the 2019 ARMS were Colorado, Idaho, Minnesota, Montana, North Dakota, Oregon, South Dakota, and Washington.

²Total Fungicide, Herbicide, and Insecticide includes pesticides that are not listed in this table.

Scouting for weeds was the top pest management practice on Barley and Spring Wheat acreage in Minnesota.

Pest Management Practices – Minnesota and Program States: 2019

	Minnesota				Program states			
	Barley		Spring Wheat		Barley ¹		Spring Wheat ²	
	% of area planted	% of operations	% of area planted	% of operations	% of area planted	% of operations	% of area planted	% of operations
Avoidance								
Crop or plant variety chosen for specific pest resistance	16	18	66	60	34	26	55	51
Planting locations planned to avoid cross infestation of pests	36	21	46	40	23	17	33	31
Planting or harvesting dates adjusted	11	13	5	5	21	19	16	18
Rotated crops during past 3 years	90	89	96	95	77	68	91	91
Row spacing, plant density, or row directions adjusted	8	10	9	9	27	18	24	22
Monitoring								
Diagnostic laboratory services used for pest detection via soil or plant tissue analysis	22	12	17	13	8	6	12	10
Field mapping data used to assist decisions	25	13	37	29	18	11	26	24
Scouted-								
established process used	32	17	55	43	15	10	28	25
for pests due to a pest advisory warning	26	13	39	30	4	3	13	13
for pests due to a pest development model	34	15	34	28	8	5	14	15
for pests or beneficial organisms-not scouted	2	9	1	1	9	14	3	2
for pests or beneficial organism by conducting general observations while performing routine tasks	14	37	8	10	24	35	18	18
for pests or beneficial organism by deliberately going to the crop acres or growing areas	83	53	90	89	68	50	79	80
Scouted for diseases-								
by employee	92	77	94	93	70	59	84	83
by farm supply company or chemical dealer	0	0	2	2	3	3	3	2
by independent crop consultant or commercial scout	21	13	30	32	3	4	10	12
by operator, partner, or family member	32	21	25	22	14	13	19	19
by operator, partner, or family member	47	66	43	44	80	81	68	67
Scouted for insects & mites-								
by employee	92	77	94	92	69	56	79	79
by employee	0	0	2	2	3	3	3	2
by farm supply company or chemical dealer	21	13	25	30	3	4	10	12
by independent crop consultant or commercial scout	33	21	25	22	14	13	19	19
by operator, partner, or family member	46	66	48	46	79	80	68	66
Scouted for weeds-								
by employee	97	89	99	99	87	80	97	98
by employee	0	0	2	2	2	2	3	3
by farm supply company or chemical dealer	17	10	27	30	3	4	8	10
by independent crop consultant or commercial scout	31	18	24	20	13	11	17	17
by operator, partner, or family member	52	71	47	48	82	83	71	70
Weather data used to assist decisions	80	55	79	78	50	39	77	71
Written or electronic records kept to track pest activity	51	34	71	69	34	25	61	58
Prevention								
Beneficial insect or vertebrate habitat maintained	12	12	11	7	14	12	9	11
Crop residues removed or burned down	5	4	1	1	7	10	8	8
Equipment & implements cleaned after field work to reduce spread of pests	64	40	68	66	63	46	64	59
Field edges, ditches, or fence lines were chopped, sprayed, mowed, plowed, or burned	72	66	61	59	37	40	43	44
Field left fallow previous year to manage insects	0	0	2	2	6	4	5	4
Flamer used to kill weeds	0	0	0	0	1	2	1	2
No-till or minimum-till used	36	48	59	50	64	55	67	64
Plowed down crop residue using conventional tillage	39	36	30	38	25	29	29	32
Seed treated for insect or disease control after purchase	29	25	44	38	40	28	59	58
Water management practices used	2	2	2	2	11	11	5	5
Suppression								
Beneficial organisms applied or released	0	0	2	1	1	(Z)	(Z)	(Z)
Biological pesticides applied	0	0	2	2	2	2	4	4
Buffer strips or border rows maintained to isolate organic from non-organic crops	12	21	8	7	10	8	8	8
Floral lures, attractants, repellants, pheromone traps, or biological pest controls used	0	0	0	0	(Z)	1	1	2
Ground covers, mulches, or other physical barriers maintained	46	41	46	42	46	39	56	52
Pesticides with different mechanisms of action to keep pest from becoming resistant to pesticides	40	26	48	42	45	28	56	49
Scouting data compared to published information to assist decisions	41	27	57	52	24	16	39	40
Trap crop grown to manage insects	0	0	0	0	(Z)	1	1	1

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(Z) Less than half the rounding unit.