MINNESOTA AG NEWS

POSTHARVEST CHEMICAL USE - CORN AND SOYBEANS

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Postharvest Chemical Use Applications for Corn and Soybeans

OVERVIEW: The agricultural chemical use estimates in this report are based on data from the 2003 Postharvest Chemical Use Survey, conducted for corn and soybeans in the summer of 2003 and covering applications made from September 1, 2002 to August 31, 2003 to the 2002 crop. All results refer to post-harvest pesticide applications made at off-farm storage facilities. On-farm postharvest applications were beyond the scope of this survey. For corn, 1613 reports were summarized for eight Program States (IL, IN, IA, KS, MN, NE, OH, and TX); for soybeans, 1548 reports were summarized from nine Program States (AR, IL, IN, IA, KS, MN, MO, NE, and OH), to provide the data tabulated in this release.

CORN: The eight Program States account for 77 percent of the total U.S. corn production. During the 2002 marketing year, the off-farm storage facilities in the eight Program States handled 6,734.8 million bushels of corn. Insecticdes were applied to 1.82 percent of the bushels handled. Based on total pounds applied, the primary postharvest chemicals used as insecticides on the 2002 crop year corn stored off-farm were aluminum phosphide and silicon dioxide (see Table 1). The total weight of insecticides applied was 35,600 pounds. Fungicides were applied postharvest to 0.03 percent of the corn handled in the Program States, with a total of 98,400 pounds applied. For the 902.1 million bushels of corn handled in Minnesota alone, the percent treated and the total pounds of insecticides and fungicides applied could not be published due to National Agricultural Statistics Service (NASS) confidentiality and disclosure restrictions.

Table 1. Corn: Postharvest Chemical Applications, Application Rates, and Total Applied, Total of Program States, 2002 Marketing Year [1] [2]

Agricultural Chemical	Volume Treated	Appli-cations	Rate per Application	Rate per Market Year	Total Applied
	Percent	*Number*	*Pounds/1,000 bu.*	*Pounds /1,000 bu.*	*1,000 Pounds*
Insecticides:					
Aluminum phosphide	1.76	1.0	0.17	0.17	19.9
Malathion	0.17	1.0	0.20	0.20	2.3
Pirimiphos-methyl	0.05	1.0	0.30	0.30	1.0
Silicone dioxide	0.09	1.0	1.03	1.03	6.4

[1] Volume handled by grain storage facilities in the eight Program States was 6,734.8 million bushels.

[2] Insufficient reports were available to publish usage data for carbon dioxide, chlorpyrifos-methyl, fludioxonil, metalaxyl, methyl bromide, N-octy-bicycloheptene dicarbo., piperonyl butoxide, phosphine gas, propionic acid, pyrethrins, and silica gel.

SOYBEANS: The nine Program States surveyed accounted for 78 percent of the total U.S. soybean production. The off-farm storage facilities in the nine Program States handled 2,939.4 million bushels of soybeans during the 2002 marketing year, with Minnesota's portion of the figure being 482.6 million bushels. Based on total pounds applied, the primary postharvest chemicals used on 2002 crop year soybeans stored off-farm were the fungicides carboxin and thiram (see Table 2). Indiana, Kansas, Minnesota, and Nebraska reported no post-harvest applications of pesticides used on 2002 crop year soybeans stored off-farm. In the nine-state area, insecticides were applied to 0.02 percent of the soybeans handled. The total weight of insecticides applied was 100 pounds. Fungicides were applied to less than 0.005 percent of the soybeans handled in the nine states, with the total amount applied being 5,400 pounds.

Table 2. Soybeans: Postharvest Chemical Applications Application Rates, and Total Applied, Total of Program States, 2002 Marketing Year[1]

Agricultural Chemical	Volume Treated[2]	Appli-cations	Rate per Application	Rate per Market Year	Total Applied
	Percent	*Number*	*Pounds/1,000 bu.*	*Pounds/1,000 bu.*	*1,000 Pounds*
Fungicides:					
Carboxin[3]		1.0	28.00	28.00	2.7
Thiram[3]		1.0	28.00	28.00	2.7

[1] Soybean volume handled by grain storage facilities in the nine Program States was 2,939.4 million bushels.
[2] Fungicide percent treated is less than 0.005 percent.
[3] Insufficient reports were available to publish usage data for allethrin, aluminum phosphide, chlorpyrifos, fludioxonil, malathion, metalaxyl, N-octy-bicyclohepteme dicarbo., petroleum distillate, piperonyl butoxide, and pyrethrins.

PEST MANAGEMENT PRACTICES: It was discovered during pre-survey research that pest management practices varied considerably depending on the time of year. Therefore, seasonal data were collected on this survey and are published in separate columns labeled “Spring and Summer” (S,S) and “Fall and Winter” (F,W) for Minnesota and three nearby states. The percentages shown in data tables 3, 4, 5, and 6 pertain to pest management practices for all grains handled by the facilities sampled, not just corn and soybeans.

Table 3. Pest Management Practices, Percent of Operations Utilizing Practice, All Grains Handled, 2002

Practice	Selected and All Program States				
	Illinois	Iowa	Minnesota	Nebraska	All [1]
	Percent of Operations				
Mechanical Devices:					
Aeration controller	30	38	43	26	33
Deep bin sampler	6	3	4	6	6
Grain spreader in bins	24	34	31	15	22
Phosphine pellet dispenser	16	6	3	19	15
Power probe	49	41	17	47	38
Protein analyzer	4	9	22	19	10
Re-circulation fumigation device	6	2	1	9	5
Temperature cables in bins	57	40	39	52	49
Cleaning Activities:					
Clean aeration ducts	88	81	76	75	80
Control vegetation around bins	96	99	96	98	96
Core bins after filling	89	82	73	70	72
Spray/fumigate empty bins	47	55	22	57	51
Hose down empty bins	8	12	7	12	13
Pick up spilled grain/clean surrounding area	97	99	95	100	98
Sweep/vaccum empty bins	92	98	90	89	92
Other cleaning activities	7	5	4	3	

[1] All Program States include AR, IL, IN, IA, KS, MN, MO, NE, OH, and TX.

Table 4. Pest Management Practices, Percent of Operations Utilizing Practice, All Grains Handled, 2002

Practice	Selected and All Program States									
	Illinois		Iowa		Minnesota		Nebraska		All [1]	
Seasons when Utilized:	S,S	F,W	S,S	F,W	S,S	F,W	S,S	F,W	S,S	F,W
	Percent of Operations									
Inspect for Insects:										
Concrete Silos:										
Daily	1	1	3	3	1	1	4	4	3	3
Twice a week	2	1	2	2	1	1	6	6	3	3
Weekly	28	22	12	11	5	5	21	21	18	16
Every two weeks	9	15	8	7	3	3	4	4	7	8
Monthly	23	25	13	13	7	7	24	25	16	17
Other	1	1	3	4	1	1			3	3
Do not inspect	2	1	2	3	5	5	1	1	3	3
Do not have this structure	34	34	57	57	77	77	38	38	47	47
Steel Tanks or Bins:										
Daily	1	1	5	4	9	9	3	3	4	4
Twice a week	3	3	7	7	3	3	3	2	5	4
Weekly	37	30	29	23	19	19	28	28	27	24
Every two weeks	19	23	18	18	19	19	13	10	15	15
Monthly	32	35	29	32	28	28	34	37	28	31
Other	2	2	4	5	3	3	1	1	4	5
Do not inspect	1	1	4	6	10	10	8	9	6	6
Do not have this structure	5	5	5	5	9	9	9	9	11	11
Other Structures:										
Daily			3	3	3	3	2	2	2	2
Twice a week	1	1	6	6	2	2	3	2	2	2
Weekly	13	9	15	14	10	10	17	17	10	8
Every two weeks	6	10	9	8	12	12	6	6	5	6
Monthly	15	16	10	11	21	21	24	25	12	12
Other	2	1	2	3	3	3			1	1
Do not inspect	1	1	2	2	5	5	4	4	2	2
Do not have this structure	62	62	53	53	43	43	43	43	66	66

[1] All Program States include AR, IL, IN, IA, KS, MN, MO,NE, OH, and TX.

Table 5. Pest Management Practices,
Percent of Operations Utilizing Practice,
All Grains Handled, 2002

Practice	Selected and All Program States									
	Illinois		Iowa		Minnesota		Nebraska		All[1]	
Seasons when Utilized:	S,S	F,W	S,S	F,W	S,S	F,W	S,S	F,W	S,S	F,W
	Percent of Operations									
Measure Grain Temperature:										
Concrete Silos:										
Daily	2	2	2	2			4	3	4	4
Twice a week	4	4	3	2	1	1	4	4	4	5
Weekly	21	21	14	13	4	5	25	26	19	18
Every two weeks	9	9	5	5	3	3	3	3	6	6
Monthly	15	15	4	5	5	5	17	17	9	10
Other	3	3	2	3	2	2	3	3	2	2
Do not inspect	12	12	12	12	8	8	5	5	9	9
Do not have this structure	34	34	57	57	77	77	38	38	47	47
Steel Tanks or Bins:										
Daily	2	2	2	2	3	3	4	2	4	4
Twice a week	7	7	4	4	3	3	2	2	5	5
Weekly	28	30	22	19	17	16	27	30	23	23
Every two weeks	15	14	11	11	11	12	8	8	10	10
Monthly	24	24	20	23	23	24	24	23	20	20
Other	4	4	9	10	10	10	5	4	6	6
Do not inspect	16	15	26	26	24	23	21	21	21	21
Do not have this structure	5	5	5	5	9	9	9	9	11	11
Other Structures:										
Daily	1	1	1		1	1	4	2	1	1
Twice a week	1	1	2	2	2	2	1	2	1	1
Weekly	12	12	13	12	9	10	14	16	8	9
Every two weeks	4	4	5	4	6	6	6	6	3	3
Monthly	11	10	7	9	13	14	15	15	8	8

[1]All Program States include AR, IL, IN, IA, KS, MN, MO, NE, OH and TX.

Table 6. Pest Management Practices,
Strategies Used in Determining Fumigation Schedule,
All Grains Handled, 2002 Crop Year

Practice	Selected and All Program States				
	Illinois	Iowa	Minnesota	Nebraska	All[1]
	Percent of Operations				
Preset Calendar Date					2
Bin Samples	5	5		17	15
Scheduled with other handling operations	13	10		2	8
Insect trap counts	3	5		3	3
Visual grain inspection	54	69	100	62	59
Customer request	20	5		3	6
Other	5	5		12	6

[1]All Program States include AR, IL, IN, IA, KS, MN, MO, NE, OH and TX.

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