

FERTILIZER Situation

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FERTILIZER USE ON CROPS—1975

A combination of fewer acres fertilized and diminished fertilizer use per acre in 1975 resulted in the first downturn in fertilizer use in nearly 20 years. High fertilizer prices in the face of prospective lower crop prices in 1975 were primarily responsible for the drop. However, shifts in crop mix to include more soybeans and less cotton also contributed to an overall decline.

Last year corn, cotton, soybeans and wheat accounted for 61 percent of the acres of "principal" crops harvested in the United States (325 million acres in 1975) and 55 percent of total fertilizer use (table 1). By plant nutrient, these four crops accounted for an estimated 54 percent of the nitrogen, 57 percent of the phosphate (P_2O_5), and 58 percent of the potash (K_2O) reported used in 1975. If corn silage and forage, and soybean hay and forage are included, the share of fertilizer used on these crops approached 62 percent of all plant nutrients used in 1975.

Even though a larger percentage of total fertilizer used, was applied to the four crops, farmers generally fertilized a smaller proportion of the harvested acres

of these crops, particularly cotton (table 2). Also, they tended to use less phosphate and potash per acre.

Corn for Grain

Corn is the largest single user of fertilizer in the United States. About 45 percent of all fertilizer is applied to corn. Corn for grain—66.6 million harvested acres in 1975—took 38 percent of the nitrogen, 37 percent of the P_2O_5 , and 42 percent of the K_2O used.

Well over two-thirds of the 19 states included in the 1975 survey reported 95 percent or more of the corn acres harvested received some fertilizer (table 3). Customarily, nitrogen is the principal fertilizer used and it is thought to be the limiting fertilizer element in corn production. During the past 10 years, 1966-75, corn yields have tended to follow nitrogen application rates fairly closely. Adequate quantities of phosphate and potash must also be applied to achieve full yield potential.

In 1975, more than two-thirds of the corn acres were fertilized "at/or before seeding." This corresponds closely with fertilizer consumption data that indicate 70 percent of the fertilizer is used in the United States in the first half of the year.

Cotton

Close to two-thirds of the cotton received some fertilizer in 1975 (table 4), a sharp drop from the 79 percent reported fertilized a year earlier. Much of the decline was in Oklahoma and Texas where only 32 percent of the harvested acres were fertilized. In 1974,

Table 1—Percentage of U.S. total acreage harvested and total fertilizer used accounted for by 4 major crops 1973-75¹

Item	1973	1974	1975
	Percent	Percent	Percent
Harvested acres	59	61	61
Nitrogen	54	51	54
Phosphate	54	56	57
Potash	56	55	58

¹ Crops included are corn for grain, cotton soybeans for beans, and wheat.

Table 2—Estimates of fertilizers used on harvested acres of corn, cotton, soybeans, and all wheat, United States, 1970-75

Crop and year	Acres receiving				Rate per acre receiving			Harvested acreage all State 1,000 acres
	Any fertilizer	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	
	Percent	Percent	Percent	Percent	Pounds	Pounds	Pounds	
Corn								
1970	95	94	90	85	112	71	72	57,224
1971	94	94	88	82	107	62	64	64,047
1972	96	96	90	86	115	66	69	57,421
1973	94	93	86	80	114	64	71	61,894
1974	94	94	87	83	103	62	73	65,194
1975	94	94	86	82	105	58	67	66,573
Cotton								
1970	72	72	48	36	75	55	57	11,160
1971	75	74	50	39	75	53	58	11,471
1972	77	77	55	41	75	55	61	12,984
1973	75	74	55	39	73	53	62	11,970
1974	79	79	58	46	78	53	55	12,547
1975	65	65	43	33	78	50	55	9,307
Soybeans								
1970	29	21	27	28	14	37	51	42,056
1971	28	19	27	27	15	39	48	42,701
1972	31	22	29	31	14	42	51	45,698
1973	33	24	32	32	14	42	55	55,796
1974	30	22	28	28	15	41	55	52,460
1975	28	18	25	26	15	40	53	53,533
All wheat								
1970	63	61	44	20	39	30	36	44,141
1971	58	57	41	14	40	34	36	47,674
1972	63	62	44	15	46	37	38	47,284
1973	64	63	45	17	48	38	36	53,869
1974	66	66	46	20	46	38	37	65,459
1975	63	63	43	21	46	35	35	68,861

Table 3—Fertilizer use on corn acreage harvested for grain, selected States, 1975

State	Acres for harvest ¹	Fields in survey	Acres receiving				Rate per acre receiving			Acres fertilized ²		
			Any fertilizer	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	At or before seeding	After seeding	At or before and after seeding
			Percent	Percent	Percent	Percent	Pounds	Pounds	Pounds	Percent	Percent	Percent
Pennsylvania	1,080	117	95.7	95.7	95.7	93.2	79.2	58.6	47.7	93.7	0.0	6.3
Delaware	192	81	96.3	96.3	90.1	93.8	108.2	66.3	83.8	38.5	2.6	58.9
Maryland	550	73	100.0	100.0	100.0	93.2	98.5	78.2	83.8	61.6	0.0	38.4
3 States	1,822	271	97.1	97.1	96.4	93.2	88.2	65.5	62.4	78.0	0.3	21.7
Michigan	1,820	92	100.0	98.9	100.0	98.9	82.7	56.9	70.2	62.0	0.0	38.0
Wisconsin	2,350	125	97.6	97.6	96.8	96.0	73.0	55.2	84.4	69.7	1.6	28.7
Minnesota	5,800	150	93.3	92.7	92.0	92.0	91.3	57.9	61.1	87.1	0.0	12.9
3 States	9,970	367	95.5	94.9	94.5	94.2	85.4	57.0	68.3	78.3	0.4	21.3
Ohio	3,500	147	98.6	98.6	95.9	95.2	95.4	63.7	67.5	76.5	1.4	22.1
Indiana	5,650	179	98.3	98.3	97.8	95.5	105.5	63.3	87.5	67.0	0.6	32.4
Illinois	10,650	223	96.0	95.5	87.9	89.2	116.7	66.8	78.0	57.0	3.7	39.3
Iowa	12,000	190	93.7	92.6	85.3	82.1	102.4	58.6	62.2	80.3	6.2	13.5
Missouri	2,700	147	93.2	93.2	83.7	83.0	107.2	50.5	60.9	81.7	1.5	16.8
5 States	34,500	886	95.6	95.1	89.1	87.9	107.0	61.9	72.2	70.6	3.6	25.8
South Dakota	2,400	83	62.7	62.7	59.0	25.3	59.6	30.2	17.8	92.3	5.8	1.9
Nebraska	5,850	156	90.9	90.9	56.6	42.6	120.4	36.3	18.5	51.7	11.1	37.2
Kansas	1,560	134	98.5	98.5	73.1	47.0	141.9	40.7	20.6	78.1	8.3	13.6
3 States	9,810	373	85.2	85.2	59.8	39.1	113.4	35.7	18.8	63.9	9.6	26.5
Virginia	550	125	100.0	100.0	97.6	97.6	127.0	71.6	95.5	36.0	4.0	60.0
North Carolina	1,540	132	100.0	100.0	99.2	99.2	140.2	56.3	77.1	22.7	1.5	75.8
Kentucky	1,160	112	100.0	99.1	98.2	99.1	104.0	68.4	71.8	73.2	0.9	25.9
3 States	3,250	369	100.0	99.7	98.6	98.9	125.1	63.2	78.3	43.0	1.7	55.3
Georgia	1,900	99	99.0	99.0	96.0	96.0	110.8	46.8	67.7	19.4	4.1	76.5
Colorado	520	113	91.2	87.6	60.2	19.5	128.0	47.4	22.7	42.7	18.5	38.8
19 States	61,772	2,478	94.3	93.9	86.0	81.6	104.9	57.7	67.2	67.8	3.9	28.3

¹ "Crop Production" CrPr 2-2 (11-75) Crop Reporting Board, SRS, USDA, November 10, 1975. ² Percentages apply to acres receiving fertilizer.

Table 4—Fertilizer use on cotton acreage harvested, selected States 1975

State	Acres for harvest ¹	Fields in survey	Acres receiving				Rate per acre receiving			Acres fertilized ²		
			Any fertilizer	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	At or before seeding	After seeding	At or before and after seeding
	1,000 acres	Number	Percent	Percent	Percent	Percent	Pounds	Pounds	Pounds	Percent	Percent	Percent
Missouri	210	69	95.7	95.7	84.1	87.0	55.8	43.1	56.3	56.1	24.2	19.7
North Carolina	54	43	100.0	100.0	90.7	97.7	83.5	52.2	82.2	14.0	2.3	83.7
Tennessee	350	87	100.0	100.0	97.7	98.9	68.5	52.2	57.8	85.1	0.0	14.9
2 States	404	130	100.0	100.0	96.8	98.7	70.5	52.2	61.0	75.6	0.3	24.1
South Carolina	115	79	100.0	98.7	91.1	100.0	109.3	65.8	98.5	25.3	12.7	62.0
Georgia	200	71	100.0	100.0	100.0	100.0	130.3	53.4	83.6	15.5	2.8	81.7
Alabama	485	119	100.0	100.0	92.4	98.3	73.7	57.3	65.8	45.4	9.2	45.4
3 States	800	269	100.0	99.8	94.1	99.0	92.9	57.4	75.0	35.0	8.1	56.9
Mississippi	1,125	339	99.7	99.7	47.2	48.4	92.3	58.6	65.5	54.4	22.5	23.1
Arkansas	780	254	97.6	97.6	67.3	71.7	56.6	40.1	46.3	70.6	13.7	15.7
Louisiana	290	119	97.5	97.5	50.4	50.4	68.7	44.6	45.4	56.0	31.9	12.1
3 States	2,195	712	98.7	98.7	54.8	56.9	76.6	48.9	54.6	60.3	20.6	19.1
Oklahoma	380	87	28.7	28.7	28.7	16.1	28.0	28.6	16.0	100.0	0.0	0.0
Texas	4,000	648	32.4	32.4	23.1	8.5	39.4	39.2	12.0	76.1	19.7	4.2
2 States	4,380	735	32.0	32.0	23.6	9.2	38.5	38.1	12.6	77.9	18.2	3.9
New Mexico	113	56	44.6	44.6	32.1	12.5	54.2	57.8	18.0	68.0	32.0	0.0
Arizona	298	98	82.7	81.6	33.7	2.0	116.7	49.4	22.0	9.8	54.4	35.8
2 States	411	154	71.5	70.8	33.2	5.1	105.2	51.8	19.1	20.5	50.2	29.3
California	875	233	85.9	85.9	30.1	0.3	137.0	74.2	42.5	35.2	33.5	31.3
14 States	9,275	2,302	65.0	64.9	42.7	32.9	77.7	49.5	55.1	56.8	20.3	22.9

¹"Crop Production" CrPr 2-2 (11-75) Crop Reporting Board, SRS, USDA, November 10, 1975. ²Percentages apply to acres receiving fertilizer.

54 percent of the cotton acres were reported fertilized in these two States.

Soybeans for Beans

Because of the relatively high price level for fertilizers in the spring of 1975, farmers tended to restrict fertilizer applications on soybeans as they did for other crops. Less than 10 percent of the acres in Nebraska and Kansas received any fertilizer (table 5). However, the handful of farmers in these States who used fertilizer applied liberal quantities of nitrogen considerably above the national average. Use of nitrogen on soybeans is somewhat experimental in some parts of the country. Many colleges and universities in these localities believe that use of supplemental nitrogen on this crop has not

been of enough value to warrant application to the crop.

Wheat

Wheat is second to corn in both acres harvested and total fertilizer used. In the humid section of the country, wheat is heavily fertilized because it responds well to fertilization where moisture is adequate. In the Corn Belt, the proportion of wheat acres receiving any fertilizer average 96.6 percent for the crop harvested in 1975 (table 6). This was the same as the percentage of corn acres fertilized in these same four States. In the more arid parts of the country, where wheat is a principal crop, the share of acres fertilized falls considerably and farmers tend to use less plant nutrients per acre.



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Table 5—Fertilizer use on soybean acreage harvested for beans, selected States 1975

State	Acres for harvest ¹	Fields in survey	Acres receiving				Rate per acre receiving			Acres fertilized ²		
			Any fertilizer	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	At or before seeding	After seeding	At or before and after seeding
	1,000 acres	Number	Percent	Percent	Percent	Percent	Pounds	Pounds	Pounds	Percent	Percent	Percent
Minnesota	3,670	113	13.3	10.6	9.7	9.7	42.2	43.7	53.2	100.0	0.0	0.0
Ohio	3,150	113	47.8	41.6	46.0	46.9	11.2	36.8	38.2	96.3	3.7	0.0
Indiana	3,630	124	54.8	46.0	50.8	54.8	8.5	32.4	55.0	95.6	4.4	0.0
Illinois	8,190	145	20.0	9.0	14.5	17.9	11.4	42.7	55.7	100.0	0.0	0.0
Iowa	6,950	143	11.2	8.4	11.2	11.2	9.1	27.1	33.9	100.0	0.0	0.0
Missouri	4,450	140	12.9	7.9	10.7	12.9	25.6	38.0	60.9	100.0	0.0	0.0
5 States	26,370	665	24.6	17.6	21.7	23.8	11.1	35.4	49.1	97.8	2.2	0.0
Nebraska	1,230	55	9.1	9.1	7.3	5.5	22.3	14.8	16.0	80.0	20.0	0.0
Kansas	1,020	50	6.0	6.0	2.0	0.0	102.7	46.0	0.0	100.0	0.0	0.0
2 States	2,250	105	7.7	7.7	4.9	3.0	50.7	20.6	16.0	87.1	12.9	0.0
North Carolina	1,450	65	63.1	56.9	61.5	63.1	12.1	33.7	65.1	100.0	0.0	0.0
Tennessee	1,850	81	53.1	32.1	51.9	53.1	17.3	41.4	44.7	97.7	2.3	0.0
2 States	3,300	146	57.5	43.0	56.9	57.5	14.3	37.7	54.6	98.8	1.2	0.0
South Carolina	1,400	73	78.1	53.4	76.7	78.1	13.6	40.0	70.9	93.0	3.5	3.5
Mississippi	3,080	129	29.5	10.9	28.7	28.7	17.0	52.1	52.7	100.0	0.0	0.0
Arkansas	4,650	155	30.3	9.7	25.8	27.7	18.0	45.8	50.3	83.0	17.0	0.0
Louisiana	1,850	79	22.8	8.9	22.8	22.8	13.7	60.3	56.8	100.0	0.0	0.0
3 States	9,580	363	28.6	9.9	26.1	27.1	16.9	50.5	52.2	91.2	8.8	0.0
14 States	46,570	1,465	27.6	17.9	25.0	26.4	14.8	39.5	52.5	96.1	3.6	0.3

¹ "Crop Production" CrPr 2-2 (11-75) Crop Reporting Board, SRS, USDA, November 10, 1975. ² Percentages apply to acres receiving fertilizer.

Table 6—Fertilizer use on all wheat acreage harvested, selected States 1975

State	Acres for harvest ¹	Fields in survey	Acres receiving				Rate per acre receiving			Acres fertilized ²		
			Any fertilizer	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	At or before seeding	After seeding	At or before and after seeding
	1,000 acres	Number	Percent	Percent	Percent	Percent	Pounds	Pounds	Pounds	Percent	Percent	Percent
Michigan	1,000	56	98.2	98.2	89.3	89.3	37.2	52.0	49.0	56.3	7.3	36.4
Minnesota	2,946	71	90.1	90.1	81.7	59.2	54.3	37.5	24.2	96.9	0.0	3.1
2 States	3,946	127	92.3	92.3	83.7	67.1	49.5	41.6	32.9	85.6	2.0	12.4
Ohio	1,770	73	100.0	100.0	98.6	98.6	48.8	54.0	54.5	53.5	2.7	43.8
Indiana	1,500	65	100.0	100.0	84.6	98.5	58.9	53.9	62.6	18.5	23.1	58.4
Illinois	1,800	70	91.4	87.1	82.9	78.6	49.6	54.1	51.9	40.6	9.4	50.0
Missouri	1,500	83	95.2	95.2	69.9	68.7	50.0	40.9	43.8	39.2	31.7	29.1
4 States	6,570	291	96.6	95.4	84.5	86.3	51.7	51.5	54.0	38.6	15.8	45.6
North Dakota	9,866	252	57.1	56.7	53.6	10.7	24.7	24.1	9.2	96.5	1.4	2.1
South Dakota	3,053	129	28.7	28.7	25.6	8.5	21.3	20.9	7.9	91.9	8.1	0.0
Nebraska	2,980	134	55.2	55.2	26.1	8.2	43.2	35.0	11.8	81.0	12.2	6.8
Kansas	11,900	245	69.0	68.2	42.0	11.0	46.8	31.6	19.2	76.3	8.9	14.8
4 States	27,799	760	58.9	58.4	42.6	10.3	37.5	27.8	13.9	84.6	6.6	8.8
Oklahoma	6,700	186	65.6	65.1	41.4	19.4	44.6	31.2	11.7	59.0	13.9	27.1
Texas	5,700	178	36.7	36.7	16.6	9.3	73.9	24.8	11.0	66.6	17.2	16.2
2 States	12,400	364	52.3	52.0	30.0	14.7	54.1	29.6	11.5	61.4	15.0	23.6
Montana	4,935	180	43.3	42.8	41.1	1.7	10.7	23.6	4.9	96.1	1.3	2.6
Idaho	1,350	130	66.2	64.6	22.3	4.6	96.4	43.0	9.8	64.0	15.1	20.9
Colorado	2,071	104	16.3	16.3	0.0	0.0	39.1	0.0	0.0	100.0	0.0	0.0
3 States	8,356	414	40.4	39.8	28.0	1.7	36.1	26.1	7.0	88.0	4.8	7.2
Washington	3,020	123	96.7	96.7	15.4	0.0	69.7	42.9	0.0	90.0	0.8	9.2
Oregon	1,210	71	87.3	87.3	15.5	7.0	66.0	61.5	25.2	61.3	22.6	16.1
2 States	4,230	194	94.0	94.0	15.5	2.1	68.7	48.3	25.2	82.2	6.7	11.1
17 States	63,301	2,150	63.2	62.8	43.4	21.0	46.3	34.8	34.6	73.6	8.9	17.5

¹ "Crop Production" CrPr 2-2 (10-75) Crop Reporting Board, SRS, USDA, October 10, 1975. ² Percentages apply to acres receiving fertilizer.