

1976

Fertilizer Summary Data



1976 FERTILIZER SUMMARY DATA

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TENNESSEE VALLEY AUTHORITY
MUSCLE SHOALS, ALABAMA**

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FERTILIZER SUMMARY DATA

By States and Geographical Areas

This revision of *Fertilizer Summary Data* summarizes the U.S. consumption of fertilizer and plant nutrients through fiscal year 1976. It includes Alaska, Hawaii, and Puerto Rico. It also includes TVA's distribution of fertilizer materials for the industry demonstration program for fiscal years 1973 through 1976. Charts show the use of plant nutrients, selected direct application materials, and fertilizer mixtures and materials. Related information includes farm income and expenses.

Acreage harvested and plant nutrients used are shown on two of the leading crops for the states and regions where data is available. This data is the result of an annual survey, and represents estimated figures and includes only four crops (corn for grain, wheat, soybeans, and cotton); totals are shown for the states where these crops are primarily grown. This is the best available data on N, P_2O_5 , and K_2O use by crops. The harvested crop acreage is the total of all the principal crops including commercial vegetables.

Fertilizer Summary Data is published as part of TVA's fertilizer research, development, and education program. In meeting the national responsibilities set forth by Congress, TVA has three objectives: (1) to develop new and improved fertilizers and processes for their manufacture in order to lower their cost to the farmer and to increase their effectiveness; (2) to demonstrate the value of the best methods of fertilizer use; and (3) to develop the agricultural resources of the Tennessee Valley. The first two objectives are national in scope; the third is regional.

TVA meets these objectives through research and education—research to develop improved fertilizers and agricultural practices and education to promote their use. The main strength of the program lies in its comprehensive scope of activities, all directed toward the prime objective of benefiting the ultimate consumer—the farmer—rather than toward the profit of some segment of industry that serves the farmer.

To carry out the comprehensive program, TVA has created a unique National Fertilizer Development Center at Muscle Shoals, Alabama. The center consists of facilities and staff for all phases of research related to fertilizer production and use—from fundamental research in test tubes and greenhouses to large-scale research and development in demonstration plants—and provides a base for educational programs carried on throughout the Nation.

Most research and development is conducted in laboratories and small pilot plants. Industry is encouraged to follow all TVA developments closely through visits, special

demonstrations, use of royalty-free licenses on TVA patents, and publications of findings in scientific and trade journals. Successful introduction of new fertilizer materials, however, often requires larger amounts than can be produced either physically or economically in a small pilot plant, and larger scale "demonstration" plants are required. Demonstration plants also provide a proving ground where the more revolutionary new processes can be perfected to a stage that will insure their adoption by industry.

The national farm demonstration program provides experimental fertilizers to cooperating farmers who, under the leadership of agricultural land-grant universities, demonstrate fertilizer use and other improved farming practices. Objectives of the farm demonstration program are: to investigate specific soil fertility and fertilizer use problems important to U.S. agriculture; to evaluate new TVA fertilizers and fertilizer technology; to introduce new TVA fertilizers and fertilizer technology; and to improve fertilizer use efficiency.

The industry demonstration program is more extensive and is aimed at fertilizer manufacturers, distributors, and dealers. Its purpose is to make available to farmers on a large scale the benefits of TVA's research and development. This program introduces new products and encourages improvements in fertilizers, processes, and marketing systems. Fertilizer manufacturers and distributors and their local dealers participate in conveying fertilizer use information to farmers and undertake experiments to improve industry processes and products.

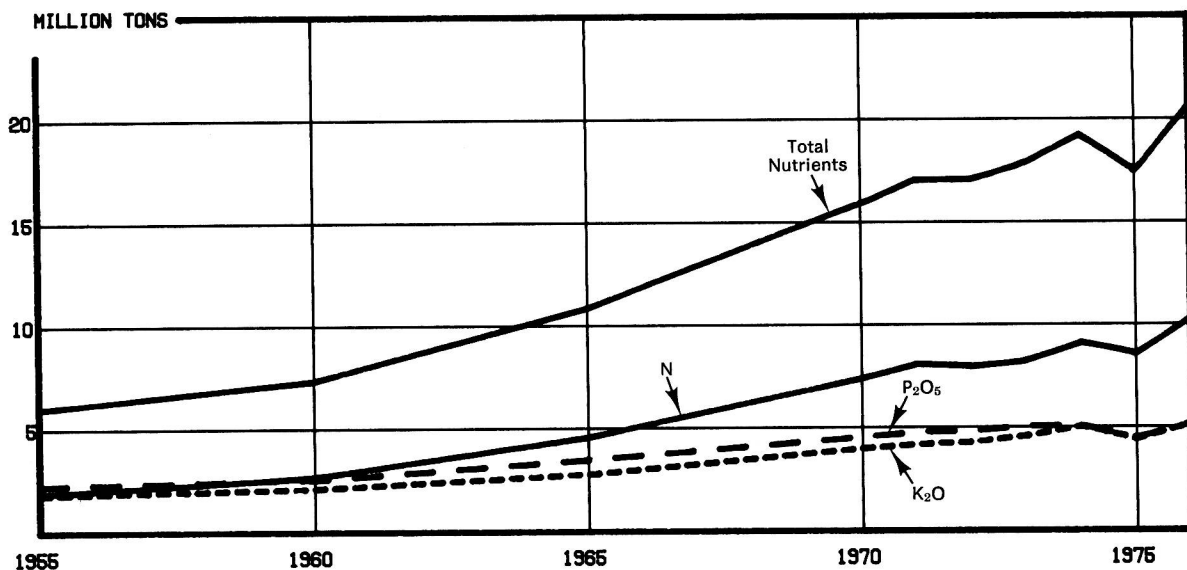
The agricultural resource development program strengthens agriculture in the Tennessee Valley. Its objective is to identify problems and encourage changes which will improve agricultural incomes and resource use. Portions of the Valley program involving fertilizer include rapid adjustment and resource management farms, both of which are demonstrations heavily oriented toward improving management skills and enterprise demonstrations.

TVA's production of experimental fertilizers is determined by the agronomic, economic, and educational contributions each fertilizer can make to the national program. About 20% of all TVA fertilizer is sold for direct application by farmers. The remainder is used by manufacturers who experiment with new techniques to improve their processes and products.

This TVA-college-industry team provides a continuous, integrated fertilizer program from laboratory to farm.

UNITED STATES

PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	22,723,705	24,877,415	31,836,403	39,588,637	43,288,550	47,094,016	42,508,030	48,864,814
Total N	1,960,536	2,738,047	4,638,538	7,459,004	8,295,218	9,157,208	8,607,740	10,344,929
N in mixtures	803,541	1,017,415	1,452,084	1,939,077	2,301,343	2,431,387	2,099,916	2,417,150
Total P ₂ O ₅	2,284,362	2,572,348	3,512,207	4,573,758	5,085,359	5,098,626	4,510,978	5,215,246
P ₂ O ₅ in mixtures	1,821,087	2,033,316	2,816,056	3,709,062	4,237,598	4,271,429	3,717,825	4,422,380
Total K ₂ O	1,874,943	2,153,319	2,834,537	4,035,511	4,622,220	5,082,605	4,452,632	5,207,551
K ₂ O in mixtures	1,657,864	1,886,798	2,300,209	2,663,457	2,877,782	3,047,938	2,579,669	2,866,120
Total plant nutrients	6,119,841	7,463,714	10,985,282	16,068,274	18,002,797	19,338,439	17,571,351	20,767,726
Average Analysis	27.9	31.8	36.8	42.0	43.0	43.0	43.3	44.5
Total nutrients in mixtures	4,282,492	4,937,529	6,568,349	8,311,596	9,416,723	9,750,753	8,397,410	9,705,650
Average analysis of mixtures	27.9	31.6	36.1	39.7	41.6	40.5	40.7	42.3

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)								
Ammonium nitrate	1,115,358	1,231,294	1,634,294	2,844,360	3,280,623	3,169,382	2,811,584	2,938,589
Anhydrous ammonia	353,681	708,798	1,563,376	3,468,363	3,411,745	4,180,088	4,018,042	4,907,944
Aqua ammonia	231,808	427,062	819,665	701,354	664,559	723,569	702,192	679,197
Nitrogen solutions	108,766	650,259	1,922,126	3,242,892	3,799,572	4,048,551	4,110,161	5,545,212
Urea	68,585	142,198	427,555	533,535	960,480	1,028,426	1,152,046	1,618,854
Ammonium sulfate	519,968	534,795	774,503	781,874	952,828	927,090	815,787	1,037,105
Sodium nitrate	615,842	454,341	301,111	85,531	58,766	47,691	84,703	64,782
Ordinary superphosphate	685,722	506,811	455,437	312,032	179,451	195,184	183,916	142,645
Concentrated superphosphate	341,940	403,047	729,374	1,204,566	1,188,109	1,183,092	1,169,793	1,199,095
Ammoniated phosphates	336,298	601,563	719,537	644,120	710,089	756,309	659,135	621,227
Secondary and micronutrients	—	—	—	1,296,486	1,465,835	2,129,628	1,878,185	2,188,056

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)								
Dry direct application materials	6,569,297 ^a	7,531,202 ^b	8,853,498	9,791,700	11,314,400	11,708,232	10,952,459	...
Dry mixtures	15,230,505 ^a	14,868,024 ^b	17,229,239	18,176,900	19,250,000	20,610,856	17,482,386	...
Fluid direct application materials	534,689 ^a	2,184,425 ^b	4,320,227	7,436,700	7,866,100	9,188,800	9,024,800	...
Fluid mixtures	27,548 ^a	578,955 ^b	1,032,112	2,540,500	3,152,000	3,456,500	3,170,200	...

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SEASONAL FERTILIZER CONSUMPTION (%)								
Mixtures used in fall	23.5	23.9	25.1	27.4	25.8	34.5	37.7	...
Straight materials used in fall	33.8	34.7	33.4	34.4	31.6	32.3	40.7	...
All fertilizers used in fall	26.9	27.9	28.6	30.7	28.6	36.8	39.2	...

a. 1954 data. b. 1961 data.

UNITED STATES

MIXED FERTILIZERS

1960		1965		1970		1974		1975	
Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons
5-10-10	1,567,900	5-10-10	1,277,297	18-46-0	1,514,911	18-46-0	2,267,174	18-46-0	2,242,365
4-12-12	1,165,698	5-20-20	1,026,010	6-24-24	1,204,296	10-10-10	1,207,741	10-10-10	1,155,311
5-20-20	951,858	10-10-10	915,611	5-10-15	908,924	6-24-24	1,004,731	5-10-15	895,556
12-12-12	882,726	12-12-12	864,158	10-10-10	829,230	5-10-15	943,329	6-24-24	708,318
10-10-10	706,277	4-12-12	845,117	5-10-10	766,733	13-13-13	718,054	5-20-20	656,215
6-12-12	495,611	5-10-15	834,134	12-12-12	626,405	12-12-12	670,705	13-13-13	603,597
3-12-12	471,000	6-24-24	828,216	6-12-12	498,865	5-10-10	634,559	12-12-12	544,751
3-9-9	463,157	4-12-12	572,806	10-20-10	466,481	5-20-20	550,086	5-10-10	500,052
5-10-15	397,461	18-46-0	504,481	3-32-16	448,536	10-20-20	412,438	3-9-9	369,083
4-16-16	371,926	3-9-9	426,610	10-20-20	410,044	6-12-12	407,321	3-9-18	368,786
Total 10 Leading Grades	7,473,614		8,094,440		7,674,425		8,816,138		8,044,032
Total All Grades	15,377,405		18,088,592		20,717,798		24,067,356		20,652,586

FERTILIZER AND HARVESTED ACREAGE

	1965	1970	1971	1972	1973	1974	1975	1976
Harvested crop acreage (thousand acres)	294,121	283,180	295,319	283,458	310,805	318,946	324,808	...
Total plant nutrients (lbs/acre harvested)	75	113	115	121	116	121	108	...
Total corn acreage (thousand acres) ^a	54,170	55,984	59,618	53,558	57,194	59,376	61,175	66,608
Nitrogen applied (lbs/acre)	65	106	101	107	106	96	99	123
P ₂ O ₅ applied (lbs/acre)	40	63	54	57	55	54	50	60
K ₂ O applied (lbs/acre)	36	61	51	58	57	60	55	66
Total wheat acreage (thousand acres) ^b	46,032	40,743	44,584	43,516	49,420	58,639	63,980	65,292
Nitrogen applied (lbs/acre)	15	24	23	28	31	31	29	36
P ₂ O ₅ applied (lbs/acre)	12	15	15	16	17	18	15	19
K ₂ O applied (lbs/acre)	5	5	5	6	6	7	7	8

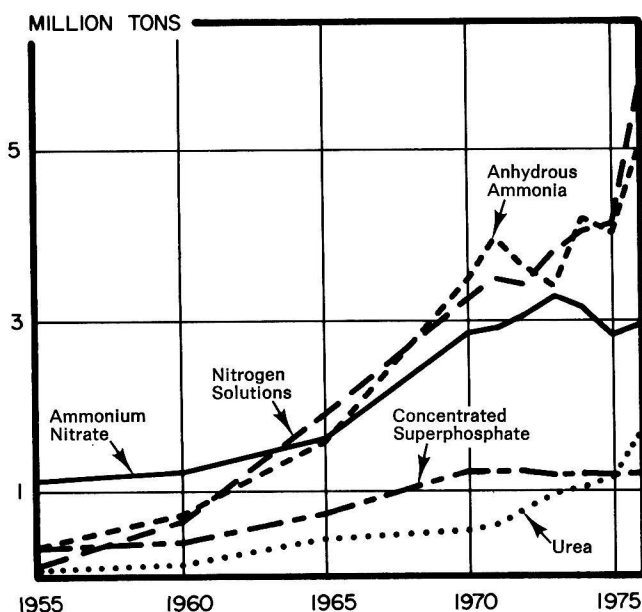
a. Total for 19 states (corn for grain).

b. Total for 17 states.

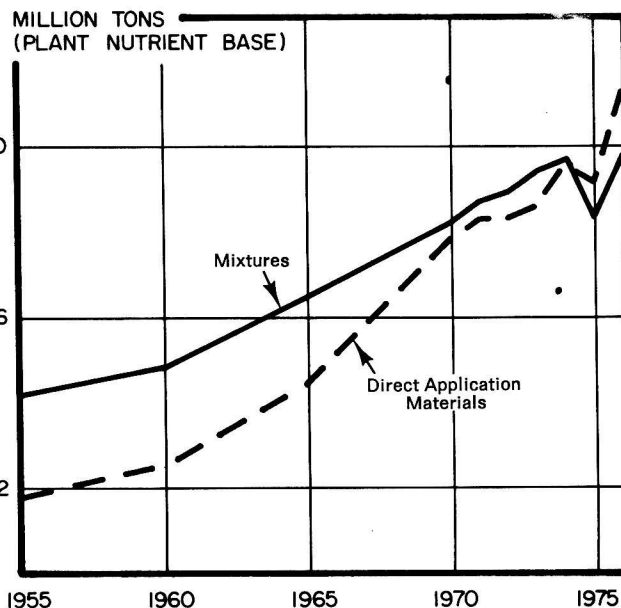
FARM INCOME AND EXPENSE (Million Dollars)

	1960	1965	1970	1971	1972	1973	1974	1975
Cash receipts from crops	15,103	17,241	20,911.2	22,276.3	25,339.8	41,132	51,271	46,662
Cash receipts from livestock and livestock products	15,909	21,919	29,543.0	30,583.2	35,653.4	45,936	41,377	42,902
Total expenditures for fertilizer and lime	1,305	1,742	2,209.0	2,633.0	2,683.0	3,354	5,822	6,847
Total expense for feed	4,911	5,735	7,197.0	8,090.0	8,474.0	13,224	14,901	12,902
Total expense for hired labor	2,864	2,783	3,643.0	4,367.0	4,617.0	5,232	6,021	6,516
Total current operating expense	18,871	21,492	28,323.0	33,756.0	36,761.0	45,558	50,611	51,377

CONSUMPTION OF SELECTED MATERIALS



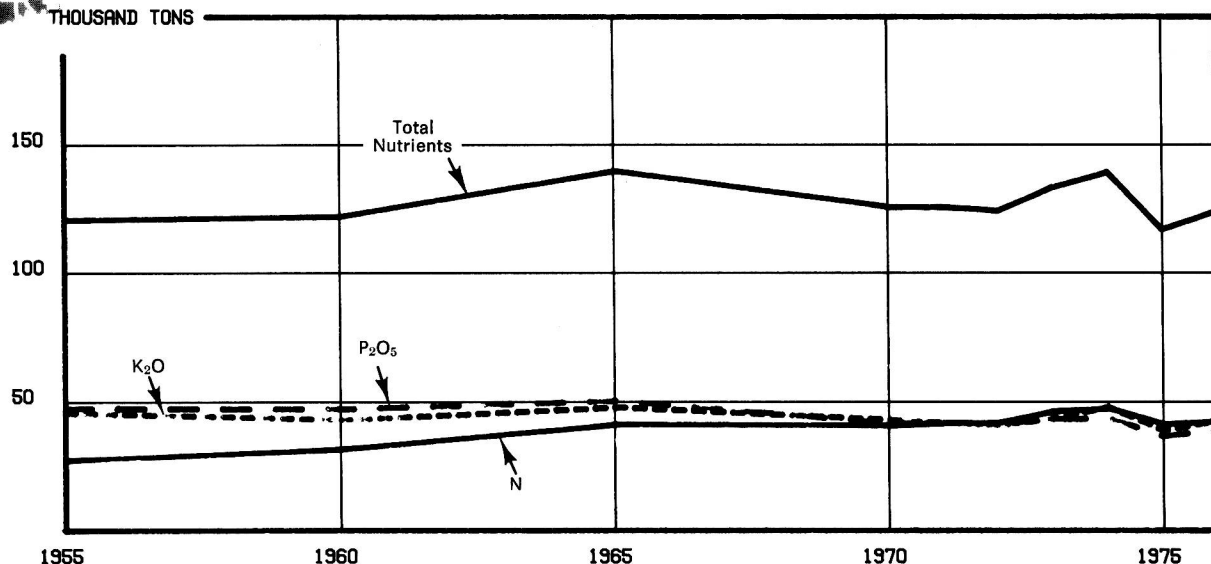
CONSUMPTION OF MIXTURES AND MATERIALS



NEW ENGLAND STATES



PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	439,638	409,462	457,778	359,160	372,951	407,932	335,030	353,758
Total N	27,410	31,742	41,533	40,863	46,509	47,613	41,356	42,569
N in mixtures	23,460	27,126	36,301	34,028	36,326	38,357	31,282	33,823
Total P ₂ O ₅	47,619	47,388	50,538	41,799	43,390	43,731	36,715	39,121
P ₂ O ₅ in mixtures	39,367	40,294	44,797	38,649	40,556	40,640	33,324	34,962
Total K ₂ O	45,849	43,093	47,986	43,080	43,619	48,073	38,950	42,690
K ₂ O in mixtures	43,839	41,806	46,504	38,272	38,362	41,530	33,063	35,982
Total plant nutrients	120,878	122,223	140,057	125,742	133,518	139,413	117,023	124,381
Average analysis	27.5	29.9	30.6	35.0	35.8	34.3	35.0	35.2
Total nutrients in mixtures	106,666	109,226	127,602	110,949	115,244	120,526	97,668	104,768
Average analysis of mixtures	29.2	31.6	31.9	36.1	36.5	35.1	35.7	35.7

SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)								
Ammonium nitrate	4,611	5,196	5,032	6,963	10,736	5,084	9,009	4,022
Anhydrous ammonia	14	—	—	56	212	107	301	140
Aqua ammonia	—	—	—	—	—	—	74	—
Nitrogen solutions	26	1,795	2,233	4,526	4,160	4,663	3,452	2,874
Urea	311	1,248	2,776	4,289	8,895	8,917	9,024	10,259
Ammonium sulfate	—	—	—	414	260	471	847	174
Sodium nitrate	2,066	1,605	876	321	566	220	94	147
Ordinary superphosphate	32,304	30,057	18,412	6,329	1,455	1,469	1,026	630
Concentrated superphosphate	124	69	1,156	1,568	2,383	2,344	2,620	3,167
Ammoniated phosphates	...	4	790	1,396	1,345	3,394	3,423	4,912
Secondary and micronutrients	—	—	—	193	248	940	709	709

CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)								
Dry direct application materials	64,839 ^a	59,195 ^b	56,199	46,800	52,241	58,621	57,187	...
Dry mixtures	351,822 ^a	351,871 ^b	399,160	293,600	290,510	318,771	261,834	...
Fluid direct application materials	3 ^a	1,134 ^b	2,233	4,700	4,400	4,800	3,700	...
Fluid mixtures	91 ^a	111 ^b	186	14,000	25,800	24,800	11,600	...

SEASONAL FERTILIZER CONSUMPTION (%)								
Mixtures used in fall	11.4	13.5	18.6	14.1	16.7	18.3	19.3	...
Straight materials used in fall	32.7	42.9	27.1	18.9	19.4	16.2	28.4	...
All fertilizers used in fall	15.0	18.0	19.7	14.8	17.1	15.4	21.0	...

a. 1954 data. b. 1961 data.

NEW ENGLAND STATES

MIXED FERTILIZERS

1960		1965		1970		1974		1975	
Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons
8-12-12	64,336	10-10-10	83,805	10-15-15	43,133	10-15-15	51,023	10-15-15	35,495
10-10-10	61,605	8-12-12	45,069	15-15-15	39,694	10-10-10	45,149	10-10-10	29,829
5-10-10	36,358	15-10-10	33,595	10-10-10	29,162	15-15-15	19,877	15-15-15	25,312
8-16-16	33,167	5-10-10	24,757	8-12-12	16,112	15-8-12	18,978	5-10-10	15,823
0-20-20	12,831	10-15-15	23,834	5-10-10	15,631	5-10-10	17,210	10-12-15	13,882
15-10-10	12,578	8-16-16	20,579	15-8-12	12,407	15-10-10	11,048	15-8-12	13,831
6-9-12	12,285	10-6-4	18,863	10-6-4	11,600	10-20-10	10,186	10-6-4	7,293
0-15-30	10,705	11-12-14	11,172	15-10-10	8,585	10-6-4	9,771	10-20-10	6,609
11-12-14	8,744	8-10-14	8,978	12-12-12	6,903	12-12-12	7,367	8-10-10	5,379
10-15-15	7,598	0-15-30	7,837	12-18-18	6,641	10-20-20	6,525	12-12-12	5,284
Total 10 Leading Grades									
260,207		278,489		189,868		197,134		158,737	
Total All Grades									
346,028		399,346		307,603		343,571		273,434	

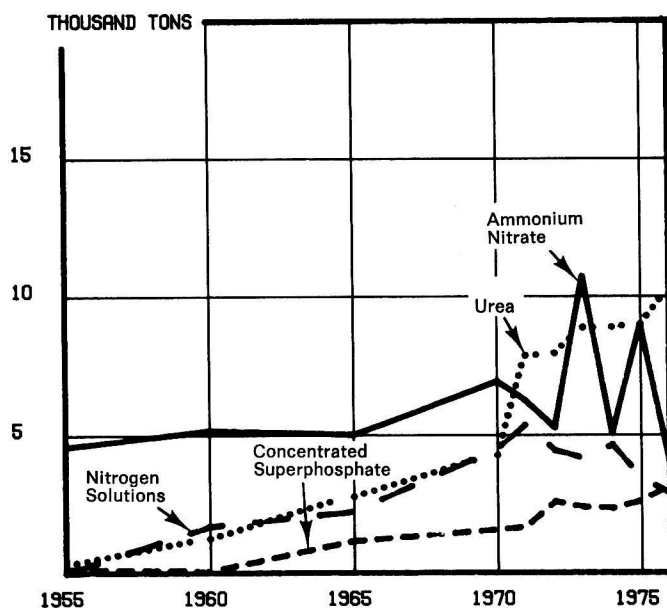
FERTILIZER AND HARVESTED ACREAGE

	1965	1970	1971	1972	1973	1974	1975	1976
Harvested crop acreage (thousand acres)	2,015	1,439	1,462	1,421	1,436	1,442	1,436	...
Total plant nutrients (lbs/acre harvested)	139	175	172	175	186	193	163	...

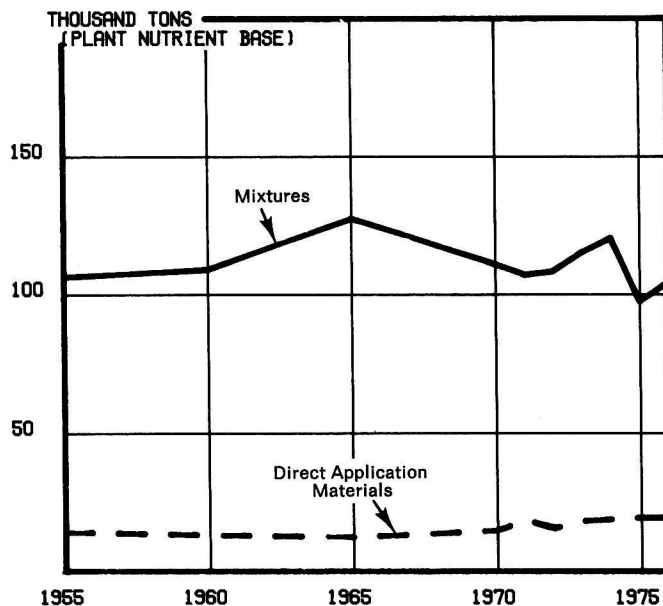
FARM INCOME AND EXPENSE (Million Dollars)

	1960	1965	1970	1971	1972	1973	1974	1975
Cash receipts from crops	233.0	312.3	259.6	259.4	263.9	377.7	409.7	368.9
Cash receipts from livestock and livestock products	495.4	485.2	538.1	530.4	559.1	711.0	727.8	739.8
Total expenditures for fertilizer and lime	24.2	24.8	20.4	25.2	25.1	31.8	54.1	61.5
Total expense for feed	194.1	193.6	192.8	189.9	179.5	265.9	337.4	304.8
Total expense for hired labor	102.6	93.5	101.5	111.5	114.0	128.5	133.2	148.6
Total current operating expense	482.0	468.9	488.2	527.3	528.9	651.4	787.9	763.2

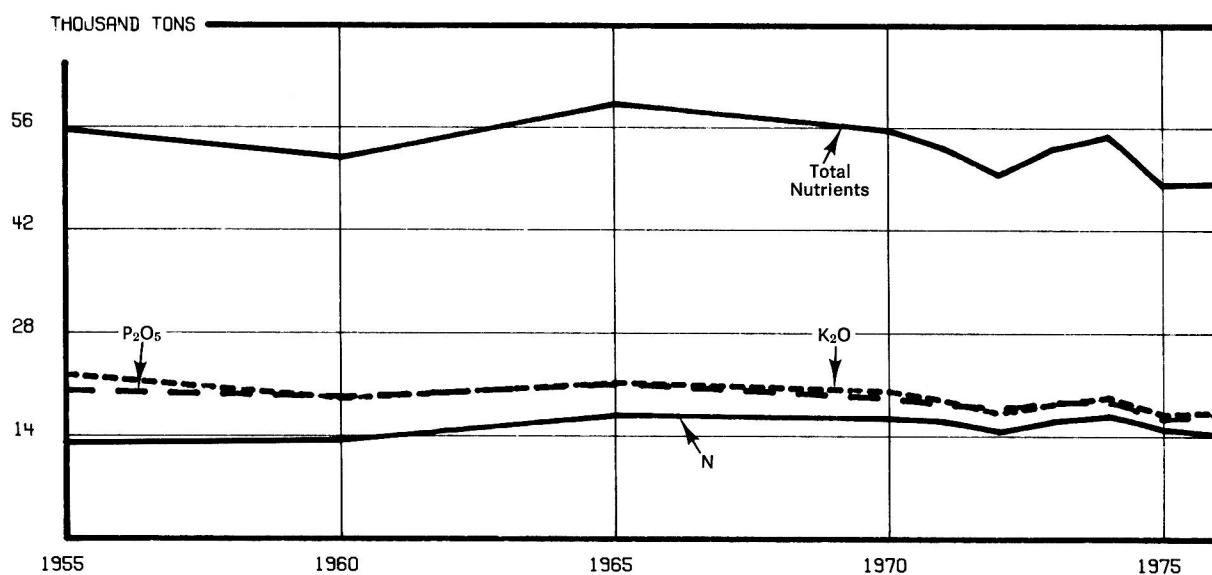
CONSUMPTION OF SELECTED MATERIALS



CONSUMPTION OF MIXTURES AND MATERIALS



PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	182,312	160,353	178,805	143,924	137,147	146,819	124,997	123,971
Total N	13,055	13,462	16,850	16,400	16,128	16,798	14,929	14,179
N in mixtures	12,469	12,738	15,548	14,945	13,686	14,549	12,186	12,340
Total P ₂ O ₅	20,207	19,312	21,131	19,135	18,657	18,760	16,316	17,006
P ₂ O ₅ in mixtures	19,377	18,230	20,487	18,941	18,546	18,225	15,524	15,768
Total K ₂ O	22,344	19,112	21,291	20,099	18,421	19,325	16,972	17,286
K ₂ O in mixtures	22,291	19,055	21,117	19,319	17,625	18,245	15,911	16,339
Total plant nutrients	55,606	51,886	59,272	55,634	53,206	54,882	48,217	48,472
Average analysis	30.5	32.4	33.8	38.7	38.8	37.5	38.7	39.2
Total nutrients in mixtures	54,137	50,023	57,152	53,204	49,857	51,019	43,621	44,446
Average analysis of mixtures	30.9	32.9	34.1	38.7	39.0	37.4	38.8	38.9

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)								
Ammonium nitrate	1,122	1,228	2,164	2,164	4,633	3,473	3,971	1,544
Nitrogen solutions	24	264	773	375	—	—	4	—
Urea	81	162	537	1,267	1,803	1,934	2,211	2,021
Ammonium sulfate	—	—	—	38	74	282	677	16
Sodium nitrate	135	146	102	23	—	—	46	—
Ordinary superphosphate	3,708	5,024	2,771	130	53	12	45	38
Concentrated superphosphate	—	30	33	280	133	339	237	177
Ammoniated phosphates	...	3	38	—	—	834	1,635	2,894
Secondary and micronutrients	—	—	—	3	50	352	339	433

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)								
Dry direct application materials	—	—	—	—	9,361	10,183	12,213	...
Dry mixtures	—	—	—	—	120,086	133,184	111,845	...
Fluid direct application materials	—	—	—	—	—	—	—	...
Fluid mixtures	—	—	—	—	7,700	3,100	600	...

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SEASONAL FERTILIZER CONSUMPTION (%)								
Mixtures used in fall	10.5	9.0	14.9	12.0	9.0	8.5	19.0	...
Straight materials used in fall	29.0	31.0	17.0	15.0	12.0	12.0	33.0	...
All fertilizers used in fall	11.3	10.2	15.0	12.1	9.2	8.8	20.4	...

MIXED FERTILIZERS

1960		1965		1970		1974		1975	
Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons
8-12-12	60,499	10-10-10	42,771	10-15-15	40,888	10-15-15	46,667	10-15-15	32,854
10-10-10	25,306	8-12-12	41,597	15-15-15	25,355	10-10-10	17,433	15-15-15	18,055
8-16-16	13,116	10-15-15	21,029	8-12-12	13,469	15-15-15	11,670	10-12-15	13,882
6-9-12	12,285	11-12-14	11,172	10-10-10	8,471	12-12-12	7,367	10-10-10	6,922
11-12-14	8,744	8-10-14	8,978	12-12-12	6,741	15-8-12	7,222	12-12-12	5,284
8-9-10	6,845	5-20-20	5,916	12-18-18	6,641	10-10-15	4,812	11-13-13	4,014
10-15-15	6,667	15-10-10	4,884	15-8-12	5,619	8-12-16	4,737	8-12-18	3,950
5-10-10	5,197	5-10-10	3,816	5-10-10	2,831	10-12-15	4,335	8-12-12	3,577
15-10-10	1,673	8-16-16	3,717	10-20-10	1,076	10-15-10	4,335	5-10-10	3,317
5-8-7	1,401	10-6-4	737	10-20-20	837	10-20-10	3,067	5-20-20	3,081
Total 10 Leading Grades									
141,733		144,617		111,928		111,645		94,936	
Total All Grades									
152,116		170,763		137,448		136,284		112,445	

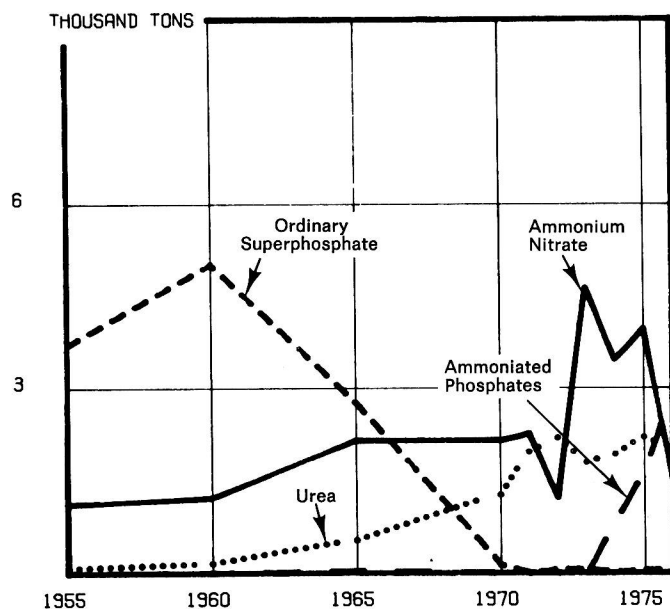
FERTILIZER AND HARVESTED ACREAGE

	1965	1970	1971	1972	1973	1974	1975	1976
Harvested crop acreage (thousand acres)	634	435	447	430	448	438	422	...
Total plant nutrients (lbs/acre harvested)	187	256	238	231	238	251	228	...

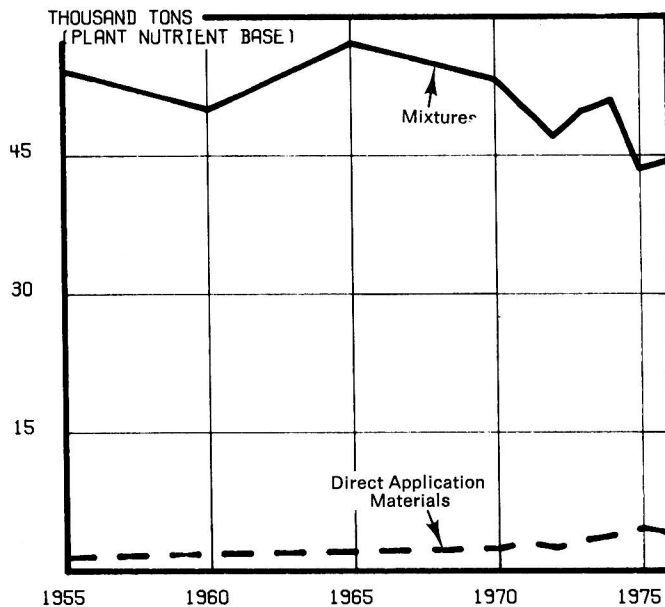
FARM INCOME AND EXPENSE (Million Dollars)

	1960	1965	1970	1971	1972	1973	1974	1975
Cash receipts from crops	92.8	143.4	91.0	78.7	81.8	170.9	190.4	124.4
Cash receipts from livestock and livestock products	121.2	130.4	155.8	149.2	157.1	227.7	227.7	246.1
Total expenditures for fertilizer and lime	9.4	9.9	8.7	10.3	9.7	12.3	20.7	24.6
Total expense for feed	49.7	54.7	63.8	69.4	63.7	101.5	126.3	115.3
Total expense for hired labor	23.3	20.6	25.4	22.2	20.6	24.1	27.8	28.0
Total current operating expense	129.8	134.9	155.0	166.1	159.3	211.8	265.3	254.5

CONSUMPTION OF
SELECTED MATERIALS

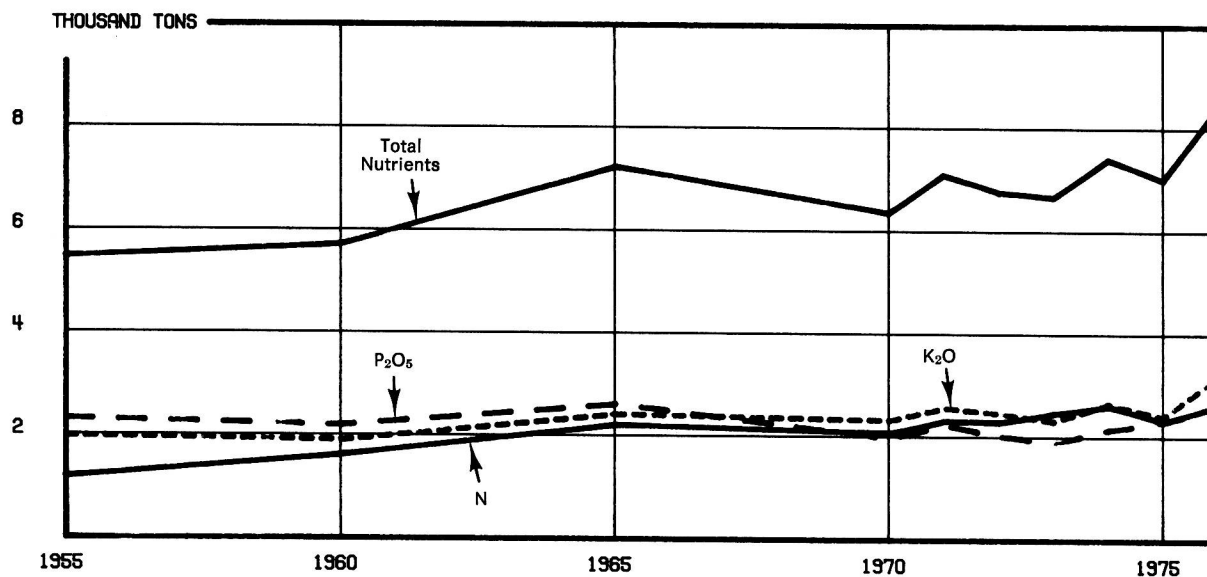


CONSUMPTION OF
MIXTURES AND MATERIALS



NEW HAMPSHIRE

PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	18,443	18,277	22,069	18,132	18,221	21,132	19,575	23,261
Total N	1,191	1,620	2,209	2,071	2,468	2,611	2,310	2,633
N in mixtures	797	1,146	1,724	1,667	2,121	2,177	1,854	2,267
Total P ₂ O ₅	2,312	2,195	2,613	1,967	1,894	2,149	2,306	2,601
P ₂ O ₅ in mixtures	1,765	1,768	2,090	1,733	1,821	2,061	1,899	2,078
Total K ₂ O	1,974	1,903	2,415	2,317	2,309	2,652	2,396	3,182
K ₂ O in mixtures	1,906	1,841	2,305	1,951	2,116	2,410	1,837	2,342
Total plant nutrients	5,477	5,718	7,237	6,354	6,671	7,411	7,013	8,416
Average analysis	29.8	31.3	34.0	35.1	36.6	35.1	35.8	36.2
Total nutrients in mixtures	4,468	4,755	6,119	5,351	6,058	6,648	5,590	6,687
Average analysis of mixtures	32.3	33.5	35.6	36.2	37.8	37.1	36.6	35.4

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)								
Ammonium nitrate	939	900	838	232	365	249	542	614
Anhydrous ammonia	—	—	—	—	—	—	77	—
Nitrogen solutions	—	149	174	352	458	373	267	331
Urea	3	116	221	336	99	281	136	9
Ammonium sulfate	—	—	—	57	2	44	3	14
Sodium nitrate	160	50	35	51	9	1	1	3
Ordinary superphosphate	2,488	1,834	1,194	610	110	112	112	62
Concentrated superphosphate	4	—	523	170	21	33	706	1,097
Ammoniated phosphates	...	—	—	—	—	15	—	—
Secondary and micronutrients	—	—	—	36	2	5	11	25

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)								
Dry direct application materials	—	—	—	—	1,718	2,839	3,996	...
Dry mixtures	—	—	—	—	15,203	17,588	14,768	...
Fluid direct application materials	—	—	—	—	500	400	300	...
Fluid mixtures	—	—	—	—	800	300	500	...

	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
SEASONAL FERTILIZER CONSUMPTION (%)								
Mixtures used in fall	11.6	18.1	17.3	21.7	13.1	25.2	30.0	...
Straight materials used in fall	22.3	30.5	26.8	21.0	10.3	22.9	29.7	...
All fertilizers used in fall	14.2	20.9	19.1	21.6	12.8	24.8	29.9	...

NEW HAMPSHIRE

MIXED FERTILIZERS

1960		1965		1970		1974		1975	
Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons
8-16-16	4,400	15-10-10	3,449	15-8-12	1,570	10-10-10	2,441	15-8-12	2,241
10-10-10	2,567	8-16-16	3,381	15-15-15	1,343	15-8-12	1,870	10-10-10	1,859
15-10-10	1,547	10-10-10	2,771	8-16-16	1,304	15-10-10	1,784	5-10-10	1,314
5-10-10	1,382	5-10-10	1,508	5-10-10	1,286	10-20-20	1,101	10-20-10	1,162
0-15-30	901	0-10-30	885	15-10-10	957	23-12-18	1,052	15-10-10	1,010
8-12-12	541	10-6-4	796	10-20-20	910	5-10-10	926	10-20-20	809
5-8-7	476	8-6-4	309	10-10-10	858	10-20-10	595	15-15-15	699
5-10-5	385	8-12-12	291	10-6-4	574	8-16-16	558	18-46-0	492
10-6-4	222	0-15-30	291	10-20-10	441	6-24-24	557	8-16-16	454
10-15-15	217	5-10-5	233	8-12-12	307	15-15-15	502	20-0-10	359
Total 10 Leading Grades									
12,638		13,914		9,550		11,386		10,599	
Total All Grades									
14,177		17,852		14,769		17,888		15,268	

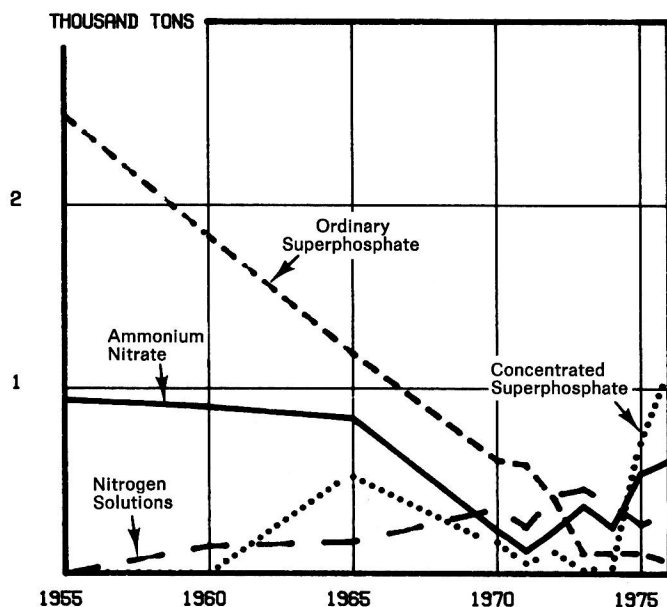
FERTILIZER AND HARVESTED ACREAGE

	1965	1970	1971	1972	1973	1974	1975	1976
Harvested crop acreage (thousand acres)	164	112	112	111	108	108	110	...
Total plant nutrients (lbs/acre harvested)	88	113	127	122	124	137	128	...

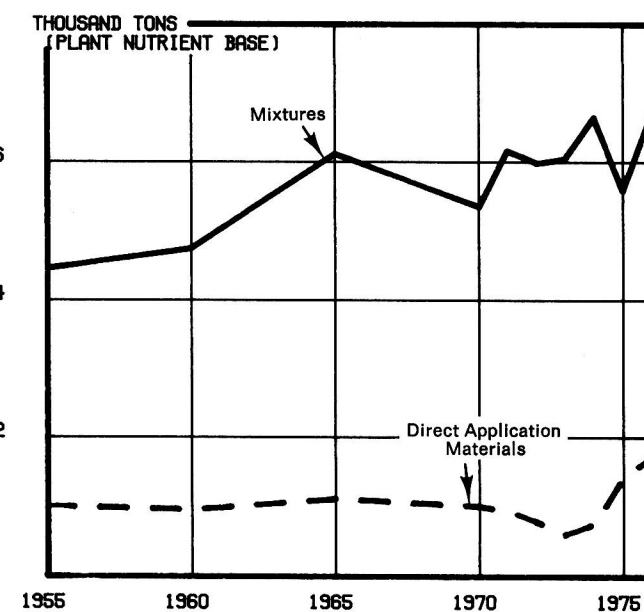
FARM INCOME AND EXPENSE (Million Dollars)

	1960	1965	1970	1971	1972	1973	1974	1975
Cash receipts from crops	11.0	12.2	12.1	13.3	15.2	17.7	19.1	19.9
Cash receipts from livestock and livestock products	45.8	42.7	41.6	42.0	43.4	52.9	52.1	54.1
Total expenditures for fertilizer and lime	1.1	1.3	1.1	1.5	1.4	1.7	2.9	3.6
Total expense for feed	20.8	20.2	16.4	14.1	13.3	19.4	23.8	21.9
Total expense for hired labor	7.4	6.8	8.0	6.1	5.6	5.9	5.8	19.6
Total current operating expense	43.0	40.2	37.8	36.5	36.4	42.2	50.6	49.8

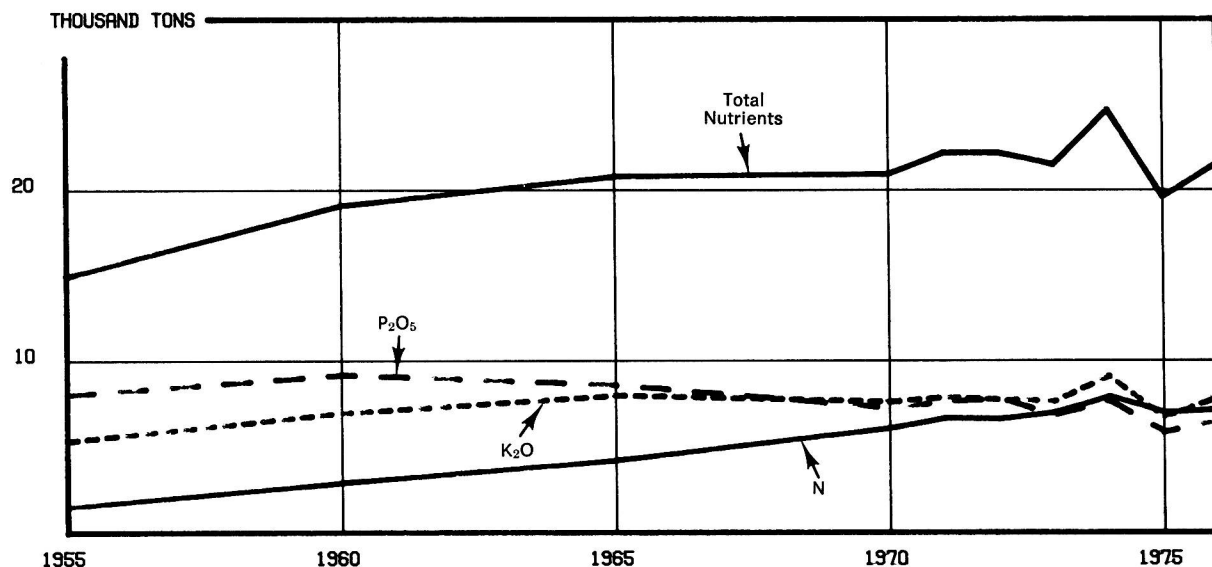
CONSUMPTION OF SELECTED MATERIALS



CONSUMPTION OF MIXTURES AND MATERIALS



PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	48,489	59,116	60,137	53,742	54,418	64,857	51,167	54,902
Total N	1,519	2,930	4,222	6,100	7,011	7,926	7,002	7,180
N in mixtures	1,249	2,350	3,789	4,490	4,740	6,071	4,756	5,237
Total P ₂ O ₅	8,069	9,206	8,600	7,246	6,834	7,676	5,862	6,534
P ₂ O ₅ in mixtures	4,509	6,055	6,555	6,241	6,481	7,035	5,462	6,049
Total K ₂ O	5,351	6,979	8,001	7,625	7,653	9,112	6,737	7,876
K ₂ O in mixtures	5,136	6,820	7,694	6,867	6,562	7,787	5,459	6,320
Total plant nutrients	14,939	19,115	21,023	20,971	21,498	24,714	19,601	21,589
Average analysis	30.8	32.3	35.7	39.1	39.5	38.3	38.3	39.4
Total nutrients in mixtures	10,894	15,225	18,038	17,599	17,783	20,892	15,677	17,606
Average analysis in mixtures	35.5	37.0	38.5	40.4	39.6	38.3	38.2	39.0

SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)

Ammonium nitrate	535	888	651	1,672	3,232	316	1,480	1,281
Anhydrous ammonia	—	—	—	54	198	45	224	140
Aqua ammonia	—	—	—	—	—	—	74	—
Nitrogen solutions	—	319	414	2,521	2,398	3,236	2,227	1,455
Urea	79	334	546	361	541	878	1,281	1,558
Ammonium sulfate	—	—	—	3	5	58	15	66
Sodium nitrate	64	76	—	—	1	100	—	—
Ordinary superphosphate	16,067	15,554	9,577	3,392	393	306	209	188
Concentrated superphosphate	5	5	107	419	553	813	718	946
Ammoniated phosphates	...	—	118	234	40	—	—	—
Secondary and micronutrients	—	—	—	51	44	379	38	67

CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)

Dry direct application materials	—	—	—	—	6,968	6,654	7,596	...
Dry mixtures	—	—	—	—	36,750	48,524	37,733	...
Fluid direct application materials	—	—	—	—	2,600	3,300	2,500	...
Fluid mixtures	—	—	—	—	8,100	6,000	3,300	...

SEASONAL FERTILIZER CONSUMPTION (%)

Mixtures used in fall	9.3	14.4	22.6	9.5	12.1	17.0	14.3	...
Straight materials used in fall	68.8	78.0	30.0	28.0	22.6	17.2	21.3	...
All fertilizers used in fall	31.2	33.7	24.0	13.0	13.9	17.0	15.7	...

VERMONT

MIXED FERTILIZERS

1960		1965		1970		1974		1975	
Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons	Grade	Tons
0-20-20	11,481	10-10-10	9,369	15-15-15	11,056	15-15-15	7,705	15-8-12	7,125
10-10-10	8,882	15-10-10	8,737	10-10-10	3,190	15-8-12	6,981	15-15-15	4,770
8-16-16	7,398	8-16-16	6,945	15-10-10	2,465	10-10-10	6,767	10-10-10	3,423
0-15-30	4,097	0-15-30	5,016	8-16-16	2,237	15-10-10	3,557	15-10-10	2,544
15-10-10	3,827	0-25-25	4,803	10-20-10	1,431	10-20-10	2,918	10-20-10	2,477
5-10-10	3,271	0-10-30	1,767	15-8-12	1,385	8-16-16	2,353	5-10-10	2,243
8-12-12	325	5-10-10	1,386	10-20-20	1,301	5-10-10	2,086	5-20-20	1,994
10-15-15	112	8-12-12	663	5-10-10	1,083	10-8-10	1,730	8-12-12	1,587
5-10-5	112	5-20-20	426	18-46-0	710	0-10-30	1,525	18-46-0	1,312
8-6-4	60	10-6-4	166	8-12-12	445	10-20-20	1,418	8-16-16	1,216
Total 10 Leading Grades									
	39,565		39,278		25,330		37,040		28,691
Total All Grades									
	41,160		47,946		43,519		54,524		41,033

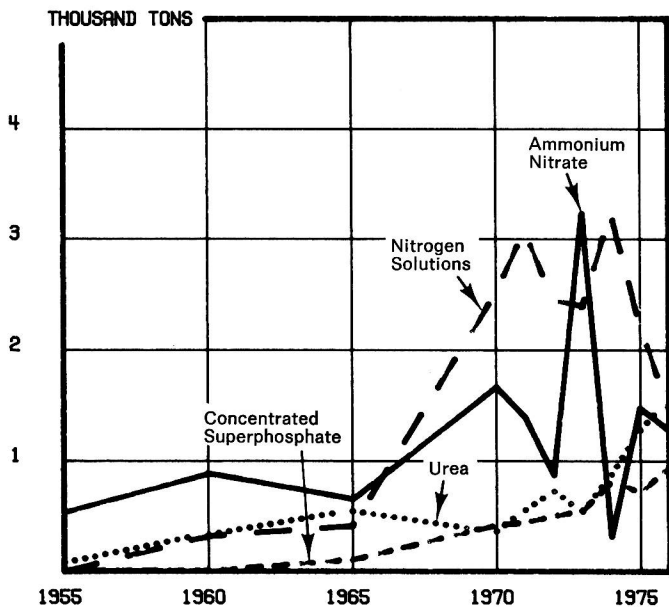
FERTILIZER AND HARVESTED ACREAGE

	1965	1970	1971	1972	1973	1974	1975	1976
Harvested crop acreage (thousand acres)	717	577	584	574	566	574	580	...
Total plant nutrients (lbs/acre harvested)	59	73	76	77	76	86	68	...

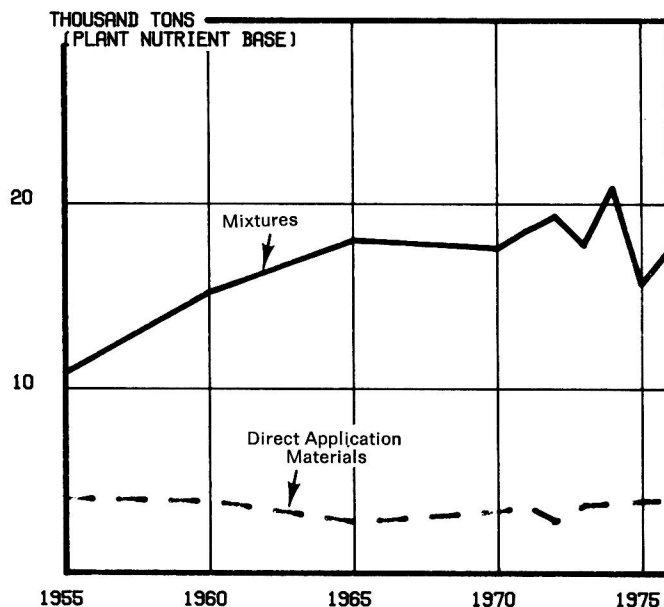
FARM INCOME AND EXPENSE (Million Dollars)

	1960	1965	1970	1971	1972	1973	1974	1975
Cash receipts from crops	13.7	15.1	14.3	11.3	14.3	16.1	17.1	17.0
Cash receipts from livestock and livestock products	113.4	116.5	146.5	152.8	162.3	186.6	203.5	202.9
Total expenditures for fertilizer and lime	4.2	4.1	3.8	5.2	5.3	5.9	11.2	12.3
Total expense for feed	37.6	38.8	42.2	40.3	40.2	55.3	75.7	68.9
Total expense for hired labor	12.3	9.4	11.5	13.9	13.2	15.1	15.1	15.4
Total current operating expense	80.7	77.8	90.8	100.0	101.4	120.4	151.3	146.0

CONSUMPTION OF SELECTED MATERIALS

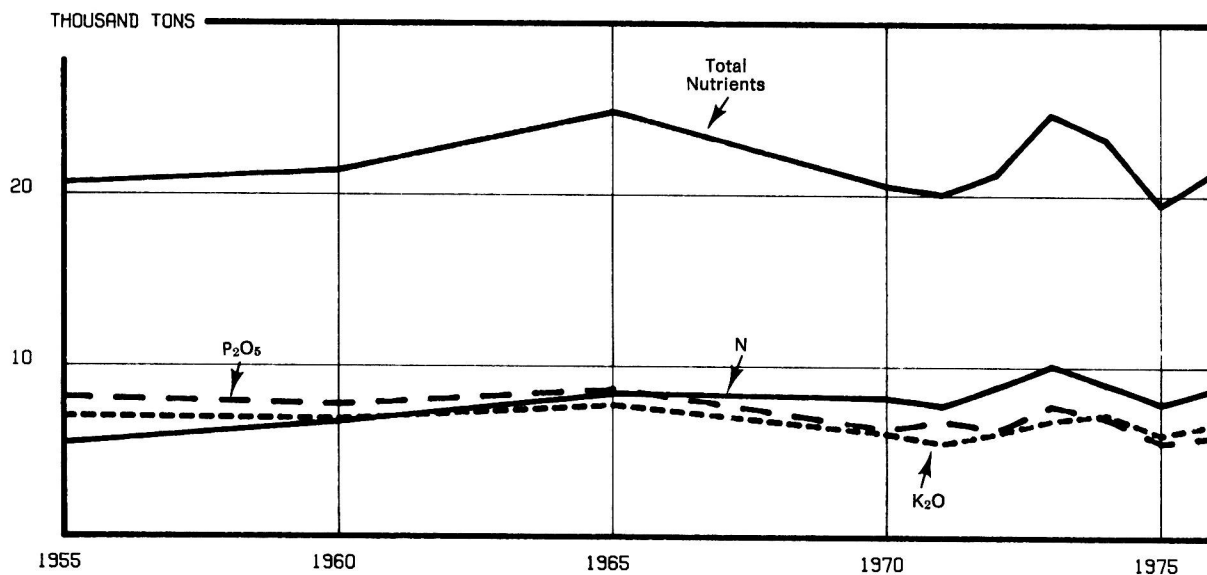


CONSUMPTION OF MIXTURES AND MATERIALS



MASSACHUSETTS

PLANT NUTRIENT CONSUMPTION



	1955	1960	1965	1970	1973	1974	1975	1976 (Prelim.)
COMMERCIAL FERTILIZERS (Tons)								
Total fertilizer material	85,355	83,267	93,321	69,596	76,738	77,373	67,066	71,523
Total N	5,484	6,761	8,425	8,159	10,095	8,999	7,866	8,795
N in mixtures	4,316	5,412	6,977	6,186	7,803	7,337	6,271	7,066
Total P ₂ O ₅	8,146	7,766	8,684	6,325	7,726	7,031	5,588	5,966
P ₂ O ₅ in mixtures	6,807	6,826	7,560	5,516	6,728	6,256	4,961	5,410
Total K ₂ O	7,055	6,912	7,741	6,071	6,899	7,246	6,049	6,693
K ₂ O in mixtures	6,677	6,581	7,329	4,924	5,801	6,103	4,897	5,244
Total plant nutrients	20,685	21,439	24,850	20,554	24,720	23,275	19,503	21,454
Average analysis	24.3	25.8	27.4	29.6	32.2	30.1	29.1	30.1
Total nutrients in mixtures	17,800	18,819	21,866	16,626	20,332	19,696	16,129	17,720
Average analysis of mixtures	26.2	27.6	29.3	31.4	34.1	32.0	31.1	32.1

SELECTED DIRECT APPLICATION MATERIALS (Tons of Material)

Ammonium nitrate	1,221	1,299	979	1,868	1,692	785	863	256
Nitrogen solutions	—	199	100	240	198	611	341	799
Urea	88	296	873	1,331	2,449	1,592	1,554	2,118
Ammonium sulfate	—	—	—	296	175	69	96	78
Sodium nitrate	1,013	752	431	116	45	9	19	37
Ordinary superphosphate	4,585	2,896	2,271	527	306	449	321	339
Concentrated superphosphate	—	—	159	139	526	396	192	267
Ammoniated phosphates	...	1	289	967	1,081	612	671	258
Secondary and micronutrients	—	—	—	63	50	23	36	149

CONSUMPTION OF FERTILIZERS BY CLASS (Tons of Material)

Dry direct application materials	—	—	—	—	16,895	15,210	14,916	...
Dry mixtures	—	—	—	—	56,043	52,440	49,214	...
Fluid direct application materials	—	—	—	—	200	600	300	...
Fluid mixtures	—	—	—	—	3,600	9,100	2,600	...

SEASONAL FERTILIZER CONSUMPTION (%)

Mixtures used in fall	15.2	19.9	19.6	19.8	34.4	29.8	22.9	...
Straight materials used in fall	31.2	26.7	32.9	17.2	22.4	17.2	19.2	...
All fertilizers used in fall	18.5	21.2	21.9	19.2	31.7	27.2	22.1	...