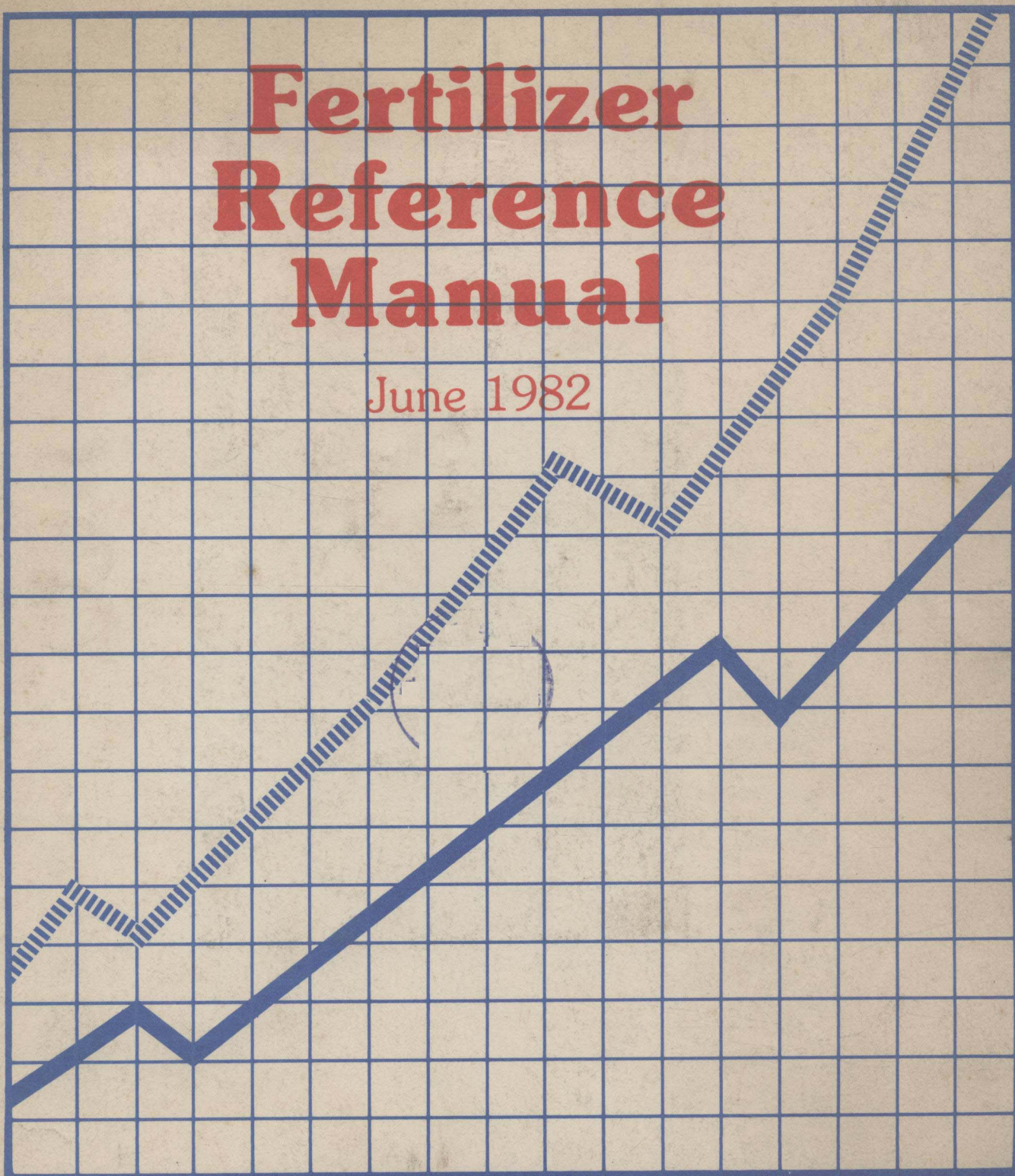


Fertilizer Reference Manual

June 1982



Published by The Fertilizer Institute



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EDWIN M. WHEELER
President

June 1982

To Those Interested in the U.S. Fertilizer Industry:

A picture of the fertilizer industry is as a mosaic. Many pieces portray this industry, consisting of numbers for production capacities, operating rates, exports/imports, prices paid for various fertilizers, and on and on.

The purpose of The Fertilizer Institute's Fertilizer Reference Manual is to provide a convenient compilation of those items used most often in piecing together descriptions of the fertilizer industry. Accurate, complete data are essential to completing descriptions of the industry, whether from the viewpoint of the production engineer, market analyst or international merchant. Thus, we have sought to compile in this manual current facts available on those items essential to describing various aspects of the industry.

We hope this edition continues to meet your needs in studying, in understanding, the record of the U.S. fertilizer industry. We also hope it will be a useful instrument in planning future growth of the industry.

Edwin M. Wheeler

Ernst & Whinney

Table of Contents

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June 1982

To Members of the Fertilizer Industry:

The Fertilizer Institute asked us to assist in the development of the Fertilizer Reference Manual, 1982 Edition, which contains timely data on the industry gathered from a variety of sources. Our efforts were limited to the tabular presentation of that data.

Most of the information included in this manual is publicly available from the source references indicated. Some of the information was provided from surveys conducted by The Fertilizer Institute.

We are pleased to have had the opportunity to consolidate and present vital operational data to the industry. We hope the manual proves both informative and useful.

Very truly yours,

Ernst & Whinney

FERTILIZER REFERENCE MANUAL

Table of Contents

	Page
I. PRODUCTION	1
Capacity	2
Operating Rates	5
Production:	
Nitrogen	7
Phosphate	9
Potash	11
Sulfur	13
II. INVENTORY	15
Index Values	
On-Site	16
Primary	17
Total	18
Production — Days Equivalent	19,21,23
III. INTERNATIONAL	25
Imports:	
Tonnage	26
Value	28
Product, Country Profiles	30,31,33
Exports:	
Tonnage	34
Value	36
Product, Country Profiles	38,39,40
Duties on U.S. Exports	42

IV. CONSUMPTION (USE)	45
Nutrients, Total Material	46
Micronutrients	48, 49
Application Rates:	
Corn	51
Cotton	53
Soybeans	55
Wheat	57
Demand Patterns:	
Phosphate Rock	59
Potash	61
Nonfarm Use	62
Consumption by State and Product	63, 64, 66
V. FINANCIAL	69
Key Financial Ratios	70, 71, 72
Quarterly Financial Ratios:	
Nitrogen and Phosphate	75
Potash	77
Prices Paid by Farmers	78
VI. ENERGY	81
Ammonia Loss from Natural Gas Curtailments	82
Natural Gas Costs for Anhydrous Ammonia Production	84
Energy Consumption in Ammonia Production	86
Energy Consumption for Fertilizer Production	87
Energy Conservation Goals, Progress Reported	89
VII. INJURY/ILLNESS INCIDENT RATE	91
Employee Injury/Illness Rates	92, 94, 95

VIII.	TRANSPORTATION	97
	Transportation by Mode	98,99
	Percent of Fertilizer Tonnage by Carrier	101
IX.	U.S. AGRICULTURE	103
	Acres Planted, Yield/Acre, Farm Prices:	
	Corn	104
	Cotton	105
	Soybeans	106
	Wheat	107
	Quantity of Crop to Buy One Ton of Fertilizer	110
	Realized Farm Income, Total Planted Acres	112
	Fertilizer and Lime Expenses	114
	Tonnage, Value of Key Exports:	
	Feed Grains and Products	115
	Soybeans	116
	Wheat and Wheat Products	117
	U.S. Grain Exports, Tonnage and Value	118
	Projected Grain Exports	120
X.	INTERNATIONAL FERTILIZER DATA	123
	Nutrient Consumption:	
	1968–1981, World Total	124
	Major Regions, 1981	126
	Major Countries, 1981	128
	Nutrient Production:	
	1968–1981, World Total	130
	Major Regions, 1981	132
	Major Countries, 1981	134

I. PRODUCTION

Table 1

U.S. PRODUCTION CAPACITY, ANNUAL

(thou. short tons)

Product (and Unit)	Fertilizer Year										
	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983*	
Anhydrous Ammonia (Product)	16,878	18,392	18,836	21,556	22,028	20,440	20,875	20,861	19,529	19,379	
Nitrogen Solutions (Product)	5,001	5,855	6,952	7,366	8,538	8,839	9,905	9,795	9,735	9,685	
Ammonium Nitrate (Product)	9,192	8,654	9,262	9,633	10,159	10,336	10,924	10,769	10,534	10,527	
Ammonium Sulfate (Product)**	3,883	3,758	3,720	3,457	3,409	3,243	3,153	3,203	3,156	3,156	
Urea (Product)	4,446	5,665	6,456	6,277	7,235	7,340	7,874	7,941	7,597	7,527	
Phosphate Rock (Product)	44,830	54,725	57,225	57,625	60,645	63,745	66,095	65,945	67,445	72,445	
Nitric Acid (100%)	9,432	9,934	10,852	11,790	12,914	13,465	13,842	13,997	13,878	13,866	
Phosphoric Acid (P ₂ O ₅)	5,991	8,561	8,994	9,356	9,601	9,729	10,354	10,663	11,038	11,748	
Superphosphoric Acid (P ₂ O ₅)	552	877	1,012	1,037	893	1,243	1,593	1,593	1,666	1,666	
Normal Superphosphate (P ₂ O ₅)	1,438	580	492	469	432	432	432	432	432	432	
Conc. Superphosphate (P ₂ O ₅)	2,035	2,275	2,504	2,348	2,225	2,225	2,303	2,184	2,073	2,073	
Ammonium Phosphate (P ₂ O ₅)	2,748	4,678	4,851	5,462	5,366	5,409	5,473	5,567	6,188	6,722	
Muriate of Potash (K ₂ O)	3,891	3,437	3,437	3,242	3,242	3,001	3,001	3,001	3,001	2,931	

*Estimate as of March 1982.

**Synthetic, by-product and coke oven.

SOURCE: Tennessee Valley Authority, World Fertilizer Market Information Service.

Figure 1.

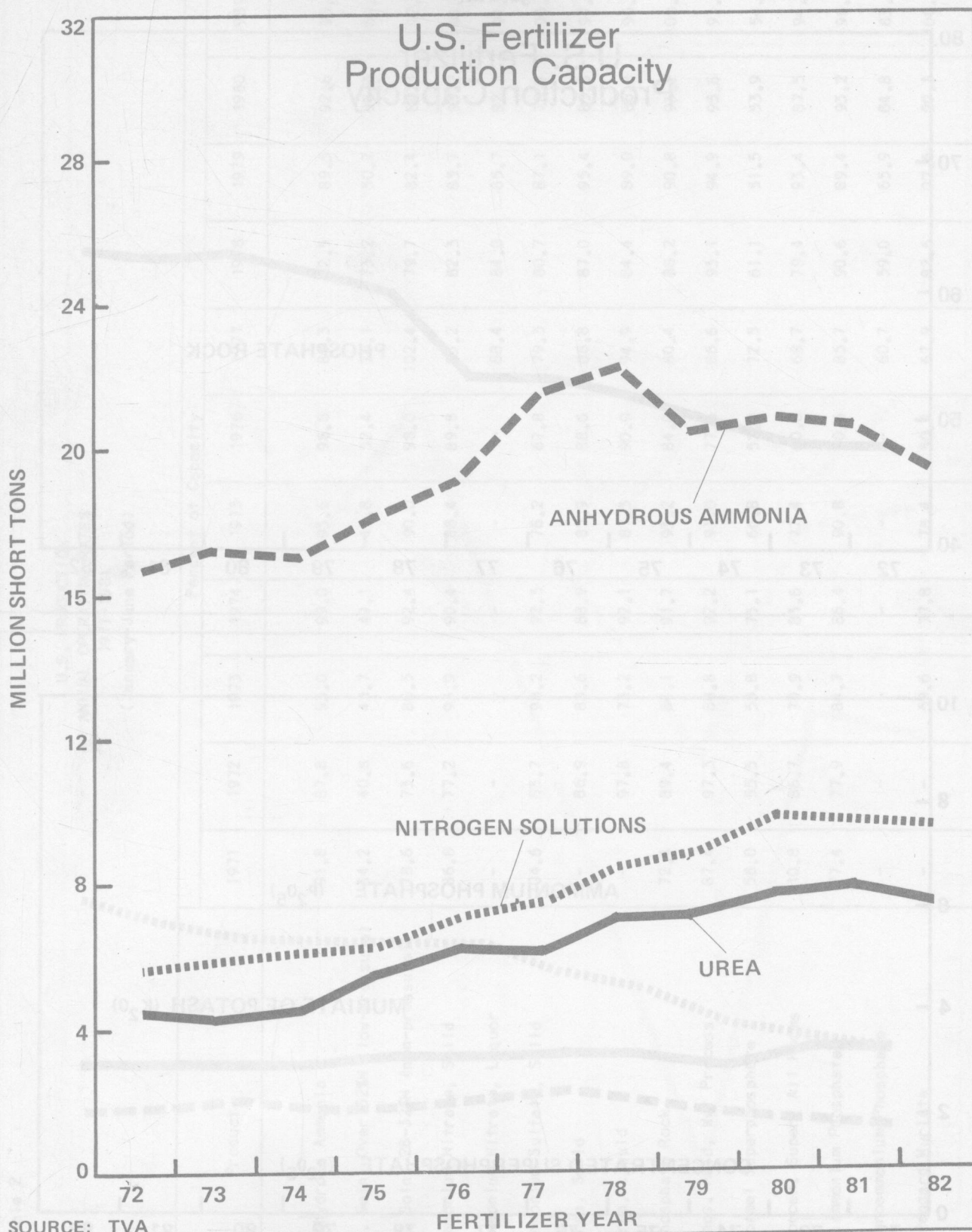
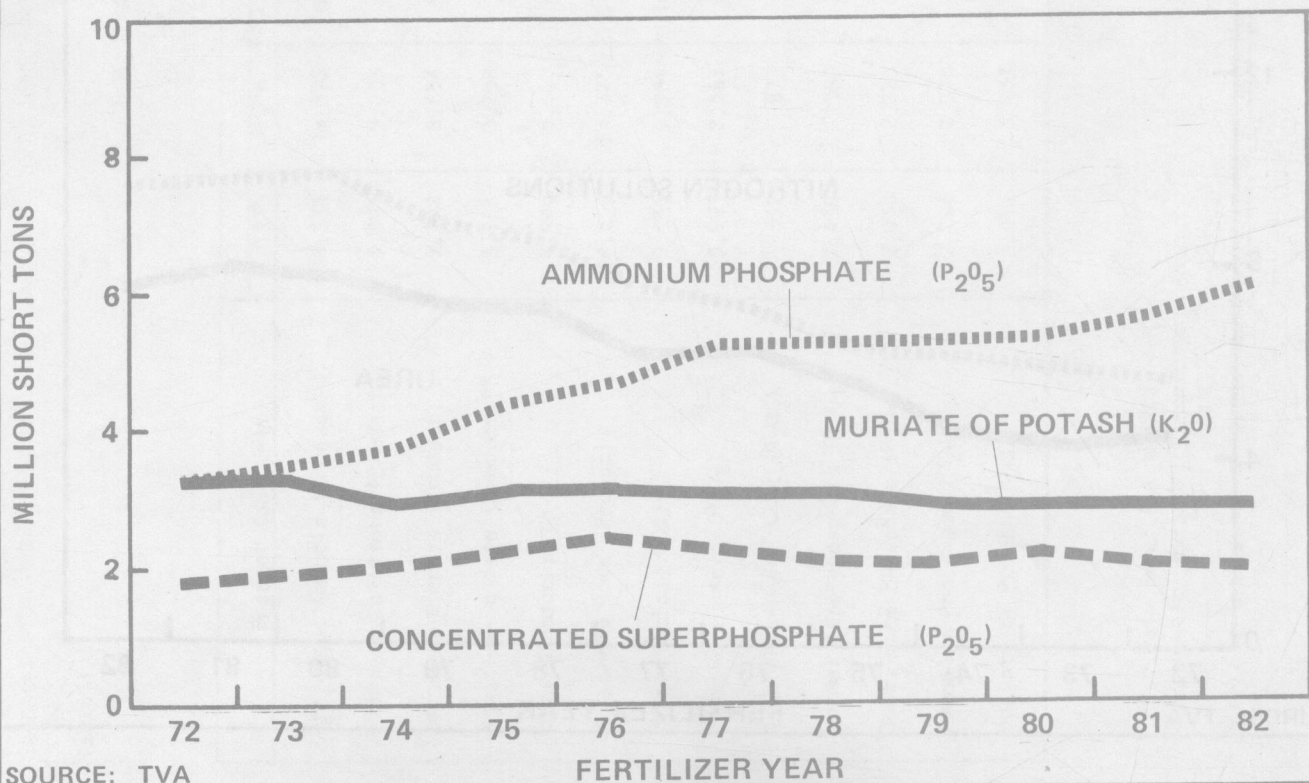
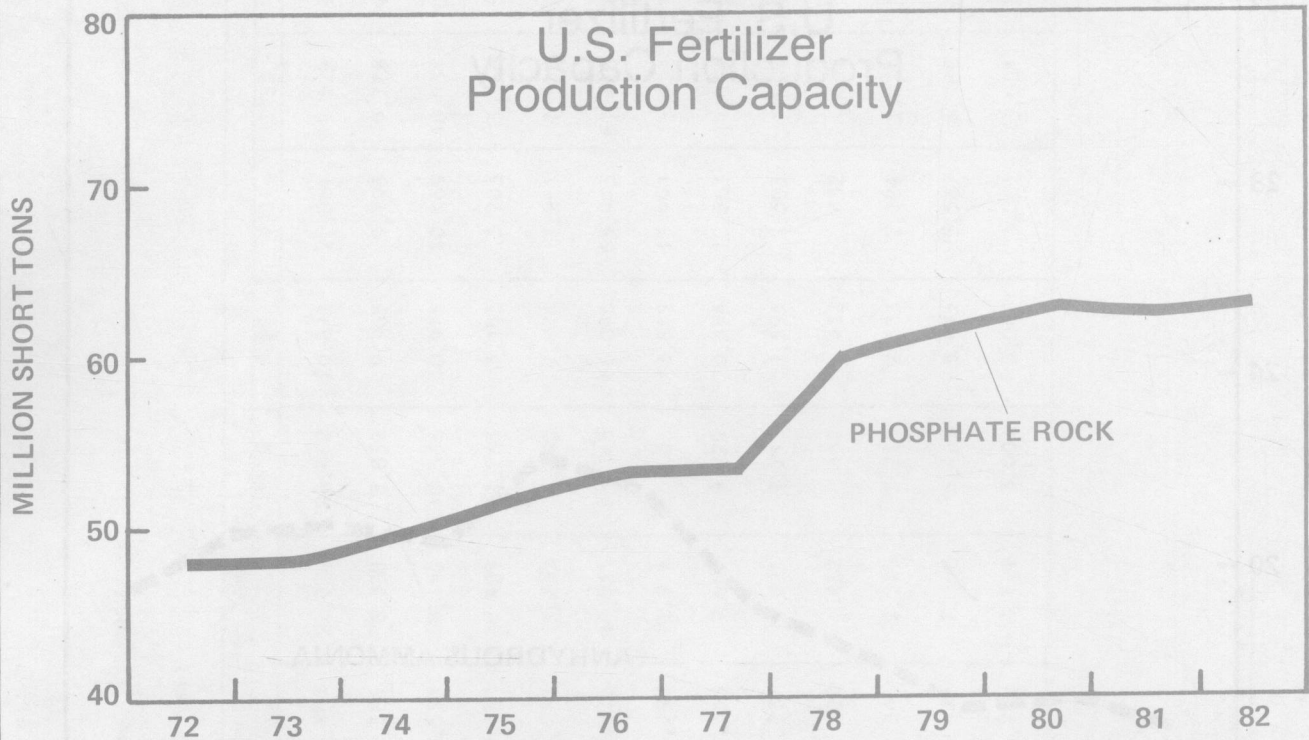


Figure 2.



SOURCE: TVA

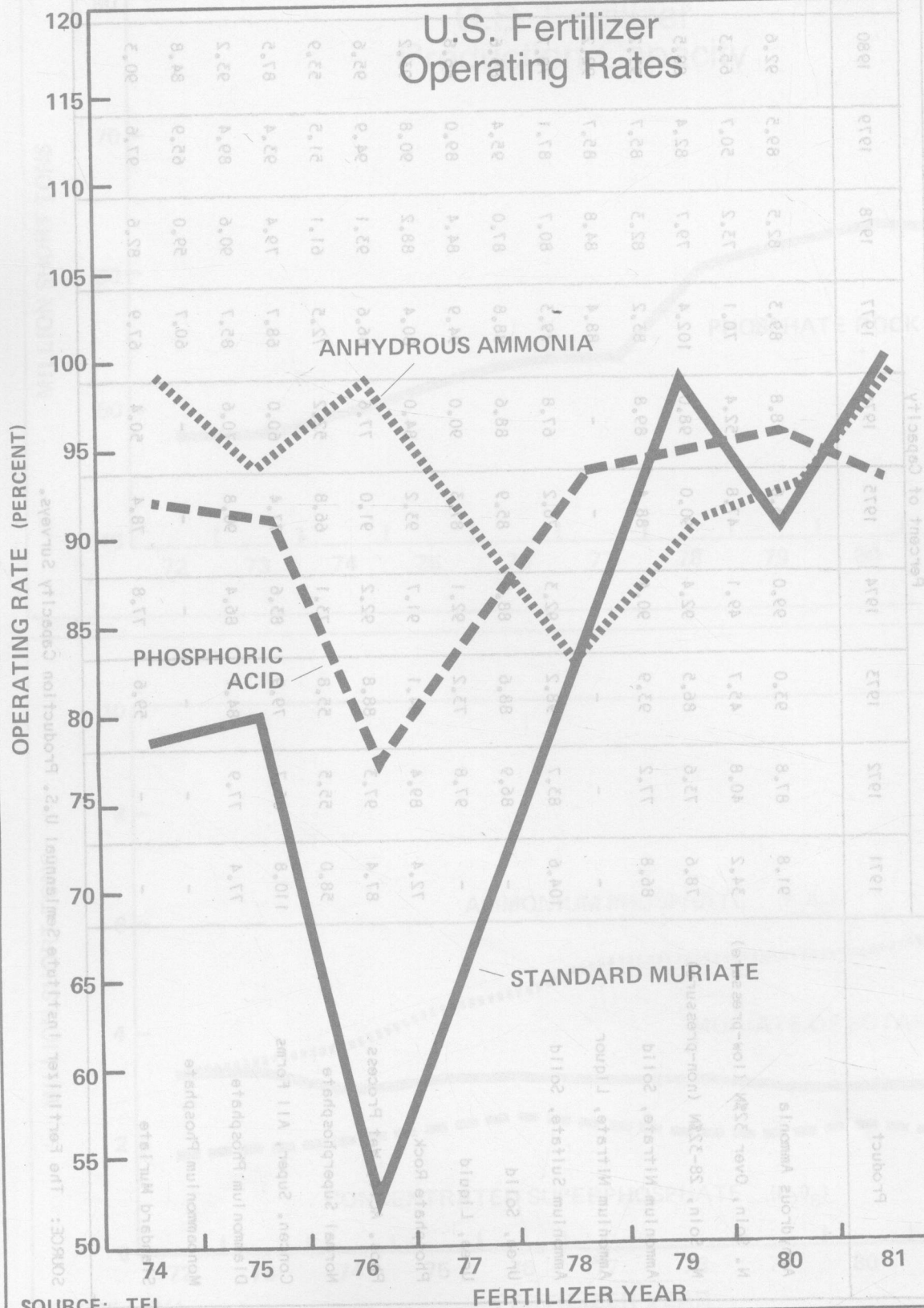
Table 2

U.S. PRODUCTION
ANNUAL OPERATING RATES
1971-1981
(January-June Period)

Product	Percent of Capacity										
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Anhydrous Ammonia	91.8	87.8	93.0	99.0	93.6	98.8	89.3	82.5	89.5	92.6	99.0
N. Soln, Over 32%N (low-pressure)	34.2	40.8	45.7	49.1	47.8	52.4	70.1	73.2	50.7	65.3	69.0
N. Soln, 28-32%N (non-pressure)	78.6	73.6	86.5	92.4	90.0	98.0	102.4	79.7	82.4	88.5	92.2
Ammonium Nitrate, Solid	86.8	77.2	93.9	90.4	88.4	89.8	83.2	82.3	85.7	93.2	94.3
Ammonium Nitrate, Liquor	-	-	-	-	-	-	88.4	84.8	85.7	92.2	91.1
Ammonium Sulfate, Solid	104.6	83.7	98.2	92.3	76.2	67.8	79.3	80.7	87.1	78.7	90.2
Urea, Solid	-	86.9	88.6	88.9	85.9	88.6	88.8	87.0	95.4	85.6	97.0
Urea, Liquid	-	97.8	73.2	92.1	87.3	90.0	94.9	84.4	89.0	86.8	96.0
Phosphate Rock	72.4	89.4	84.1	91.7	93.2	84.0	80.4	88.2	90.8	93.2	100.9
Phos. Acid, Wet Process	87.4	97.3	88.8	92.2	91.0	77.6	86.6	93.1	94.9	95.6	93.3
Normal Superphosphate	58.0	55.5	55.8	73.1	66.8	52.2	72.5	61.1	51.5	53.9	54.1
Concen. Super, All Forms	110.8	86.7	79.9	83.6	77.4	60.0	68.7	79.4	93.4	87.5	94.1
Diammonium Phosphate	77.4	77.9	84.7	86.4	90.8	70.6	85.7	90.6	89.4	93.2	98.1
Monoammonium Phosphate	-	-	-	-	-	-	60.7	59.0	65.9	84.8	83.4
Standard Muriate	-	-	59.6	77.8	78.4	50.4	67.9	82.6	97.6	90.3	100.0

SOURCE: The Fertilizer Institute Semiannual U.S. Production Capacity Surveys.

Figure 3.



SOURCE: TFI

Table 3

U.S. PRODUCTION - NITROGEN PRODUCTS
(thou. short tons)

Product (and Unit)	Fertilizer Year								
	1965	1970	1975	1976	1977	1978	1979	1980	1981
Anhydrous Ammonia (Product)	8,116	13,431	15,958	16,619	16,791	17,490	17,222	18,902	19,235
Nitrogen Solutions with Ammonia (N)	705	616	930	548	768	867	464R	375R	690
Nitrogen Solutions without Ammonia (N)	367	933	1,271	1,416	1,582	1,701	1,857R	2,398R	2,334
Amm. Nitrate-Liquor (100% AN)	4,633	6,218	7,464	7,003	7,464	7,325	7,452	8,324	8,676
Amm. Nitrate-Solid (Product)	2,276	3,253	3,633	3,485	3,344	3,051	3,171	3,175	3,401
Ammonium Sulfate (Product)*	1,170	1,996	1,984	2,240	2,039	1,912	2,501	2,278	2,297
Urea (Product)	1,289	2,911	3,645	3,822	3,956	5,020	6,019	7,079	7,720

*Synthetic and by-product, excludes coke oven.

SOURCE: U.S. Department of Agriculture, Fertilizer Outlook and Situation.

R - Revised.

Figure 4.

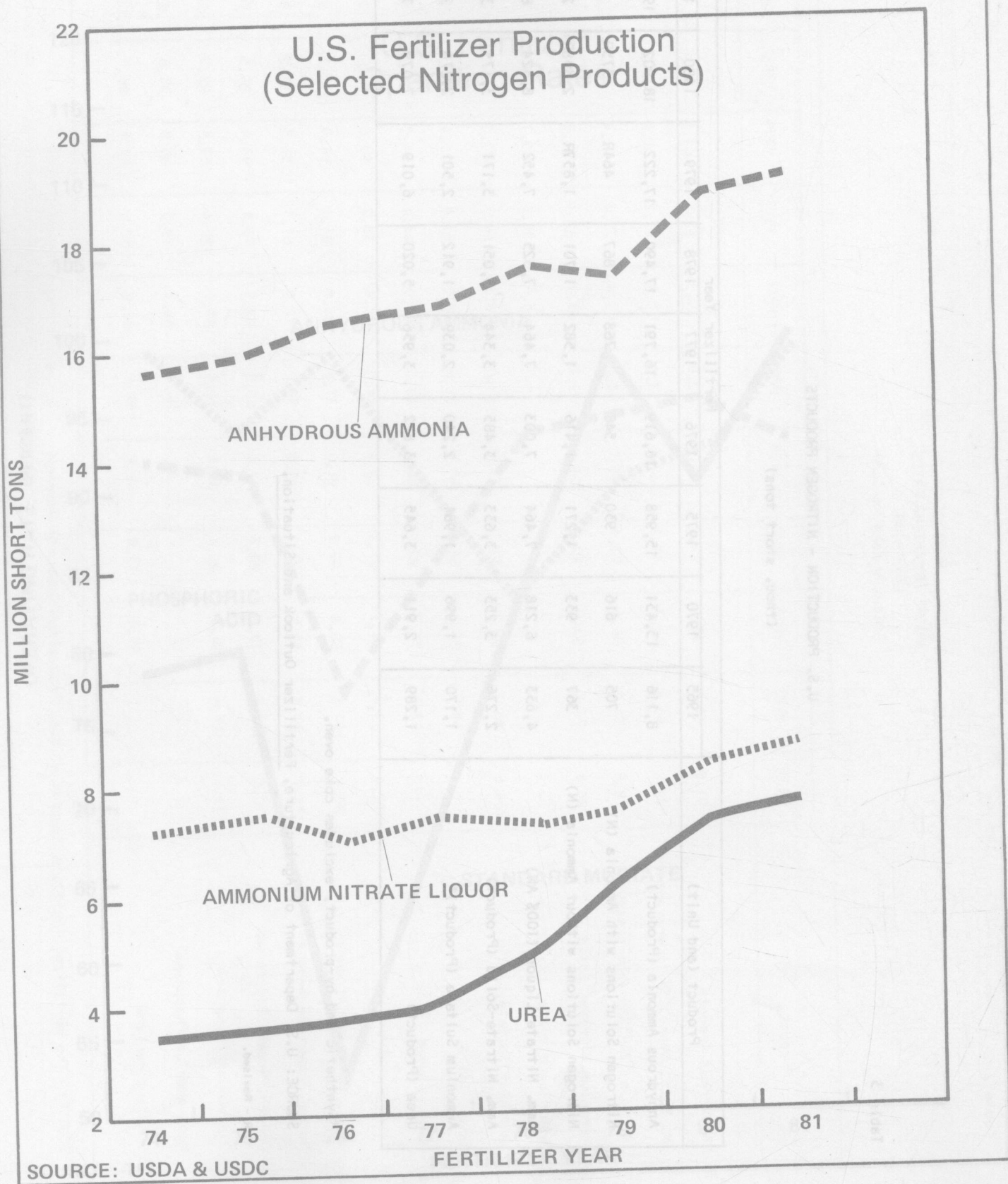


Table 4

U.S. PRODUCTION - PHOSPHATE PRODUCTS

(thou. short tons)

Product (and Unit)	Fertilizer Year									
	1965	1970	1975	1976	1977	1978	1979	1980	1981	
Phosphate Rock 1/	29,482	38,739	48,816	49,231	52,090	54,041	56,891	59,982	59,110	
Phosphoric Acid (P ₂ O ₅), wet process	2,522	4,431	6,675	6,888	7,881	8,175	9,192	9,894R	10,286	
Normal Superphosphate (P ₂ O ₅)	1,138	756	659	371	361	290	325	384	314	
Conc. Superphosphate (P ₂ O ₅)	1,305	1,383	1,732	1,537	1,746	1,778	1,879	1,768	1,709	
Diammonium Phosphate (P ₂ O ₅)	--	--	2,248	2,633	3,244	3,714	4,026	4,529	4,916	
Monoamm. & Other Phosphate (P ₂ O ₅)	--	--	492	621	824	893	985	1,069	1,122	

^{1/} Data for Calendar Year.

SOURCE: U.S. Department of Agriculture, Fertilizer Outlook and Situation.
 U.S. Bureau of Mines, Phosphate Rock and Potash Minerals Yearbook.

R - Revised.

Figure 5.

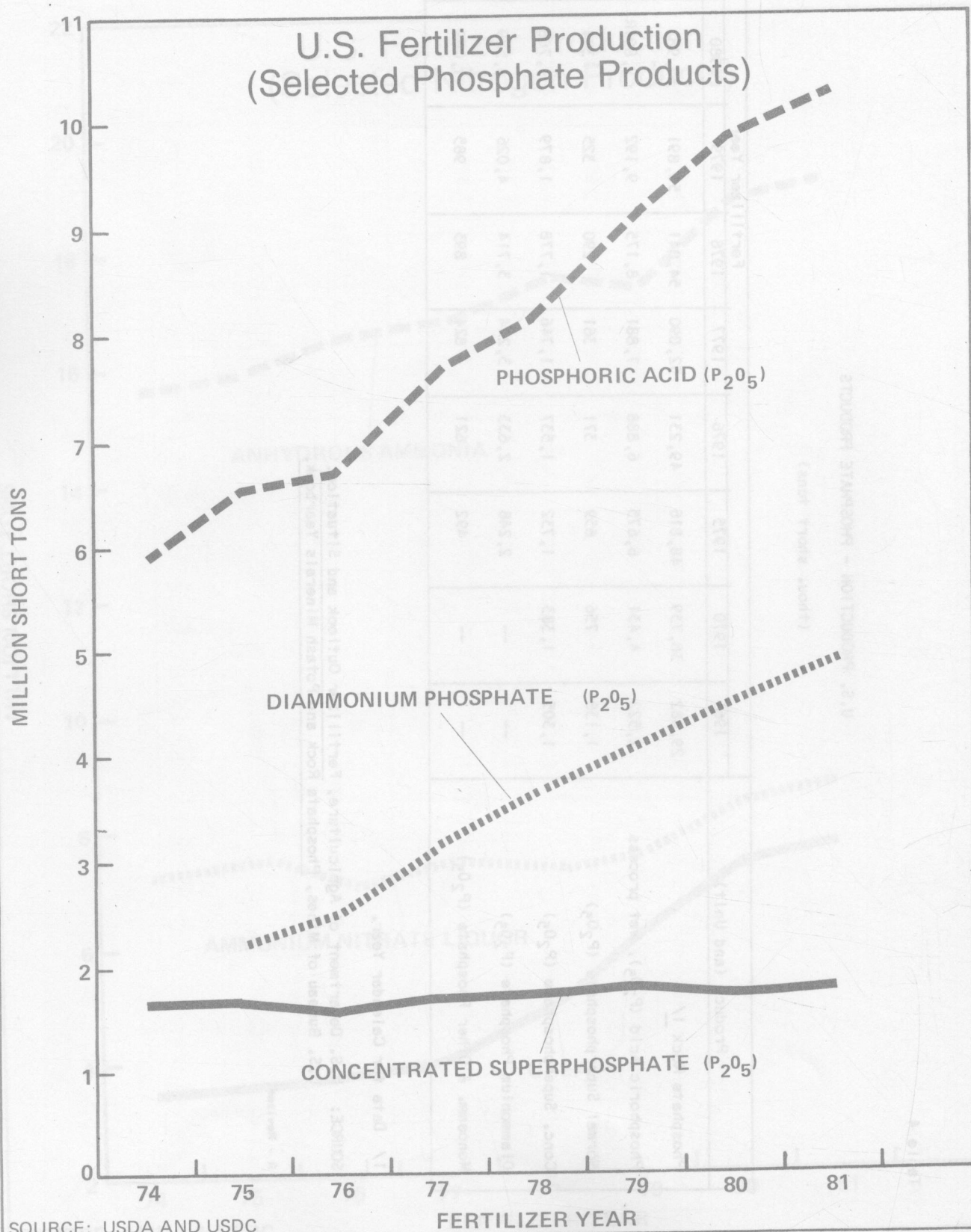


Table 5

U.S. PRODUCTION - POTASH PRODUCTS

(thou. short tons)

Calendar Year	Potash (K_2O)			
	Muriate 1/	Sulfate 2/	Other	Total
1981	2,068	243	310	2,621
1980	1,940	224	304	2,468
1979	1,929	226	298	2,453
1978	1,961	226	291	2,478
1977	1,907	244	306	2,457
1976	1,963	191	246	2,400
1975	2,006	240	255	2,501
1974	2,049	227	276	2,552
1973	2,085	233	285	2,603
1972	2,136	202	321	2,659
1971	2,038	222	327	2,587
1970	2,198	N/A	N/A	2,729
1965	2,770	N/A	N/A	3,140

N/A: Not available.

1/ This total includes standard, coarse, and granular production only.

2/ Does not include magnesium potassium sulfates.

SOURCE: U.S. Bureau of Mines, Phosphate Rock and Potash Minerals Yearbook.