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For information, contact:
Stephen M. Jasinski, Phosphate Rock Commodity Specialist
National Minerals Information Center
Telephone: (703) 648-7711
Email: sjasinsk@usgs.gov

Joseph J. Kohler (Data)
Telephone: (703) 648-7954
Email: jkohler@usgs.gov
Internet: https://www.usgs.gov/centers/national-minerals-information-center

MARKETABLE PHOSPHATE ROCK AND POTASH—CROP YEAR 2022

Because the growth cycles for most agricultural commodities do not coincide with the calendar year, the fertilizer industry tracks fertilizer use by crop year (July 1 through June 30 of 2 consecutive years). Taking that into account, the U.S. Geological Survey compiles phosphate rock and potash data by calendar year and crop year.

Marketable Phosphate Rock

Phosphate rock data for this report were collected through semiannual canvasses of U.S. phosphate rock producers. Six of the seven companies that produced phosphate rock in the United States participated in the voluntary surveys in the first half of the crop year, representing more than 95% of the production, use, and value data shown in the tables. U.S. production of marketable phosphate rock was estimated to be 20.7 million metric tons (Mt) in crop year 2022, which ended June 30, 2022, compared with 22.4 Mt in crop year 2021 (tables 1, 2).

Marketable phosphate rock sold or used was estimated to be 21.3 Mt, compared with 21.9 Mt in crop year 2021 (tables 1, 3). The manufacturing of wet-process phosphoric acid for fertilizers and animal feed supplements was estimated to have accounted for more than 95% of phosphate rock consumption. The remainder was used to produce defluorinated phosphate rock, elemental phosphorus, and ground phosphate rock for organic farming.

Domestic apparent consumption was estimated to be 23.7 Mt, compared with 24.4 Mt in crop year 2021. Estimated producers' stocks decreased by 7% to 10.1 Mt in crop year 2022, from 10.9 Mt in crop year 2021 (table 1). Adverse weather conditions in some areas of the United States during the spring planting season and rail delays contributed to lower domestic sales and production of phosphate fertilizers in the first half of 2022 (Mosaic Co, The, 2022).

The average unit value of marketable phosphate rock used in the United States was estimated to be $89 per metric ton, compared with $81 per metric ton in crop year 2021. Imports of phosphate rock decreased by 5% to 2.42 Mt compared with 2.54 Mt in crop year 2021 (table 1). U.S. phosphate rock mining companies reported no exports of phosphate rock in crop year 2022.

Potash

Potash data for this report were collected through semi-annual canvasses of U.S. potash producers. All companies that produced potash in the United States participated in the voluntary surveys, representing 100% of the production, use, and value data shown in the tables.

In crop year 2022, world potash supply was affected by economic sanctions on Belarus and Russia, which resulted in supply shortages and higher prices.

U.S. production of potash was 450,000 metric tons (t) of K_2O equivalent in crop year 2022 compared with 490,000 t in crop year 2021. Sales of potash were 440,000 t in crop year 2022, which were 14% less than those in crop year 2021 (table 4).

Imports of potash decreased by 16% to 5.33 Mt of K_2O from 6.48 Mt in crop year 2021 The total customs value of potash imports was $4.06 billion, almost double the import value of $2.70 billion in crop year 2021 (tables 4, 7). Exports increased to 272,000 t of K_2O from 111,000 t in crop year 2021. The total value of exports increased to $289 million from $131 million in crop year 2021 (tables 4, 6).

The total value of potash sales increased by 38% to $650 million from $470 million in crop year 2021 (table 4). The average unit value for all forms of potash (K_2O equivalent) increased by 62% over that in crop year 2021. The average unit value for standard muriate of potash (MOP) increased by 75% over that in crop year 2021 and the average unit value for granular MOP, increased by 82% over that in crop year 2021 (table 5).

Apparent consumption of all forms of potash decreased by 20% to 5.5 Mt of K_2O from 6.9 Mt in crop year 2021 (table 4).

Reference Cited

Mosaic Company, The, 2022, The Mosaic Company reports second quarter 2022 results: Mosaic Company press release, October 1, 2022. (Accessed October 10, 2022, at https://s1.q4cdn.com/823038994/files/doc_financials/2022/q2/Final-Press-Release-Q2-2022_8.1.22_3PM.pdf.)

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TABLE 1
SALIENT U.S. PHOSPHATE ROCK STATISTICS[1]

(Thousand metric tons and thousand dollars)

	Crop year[2]	
	2021	2022
Mine production (crude ore)	95,600	87,900
Marketable phosphate rock production	22,400	20,700
P_2O_5 content	6,260	5,820
Value[e]	1,800,000	1,800,000
Average, dollars per metric ton[e, 3]	81.00	89.00
Sold or used by producers	21,900	21,300
P_2O_5 content	6,140	5,930
Value[e]	1,800,000	1,900,000
Average, dollars per metric ton[e, 3]	81.00	87.00
Imports for consumption:[4]	2,540	2,420
Cost, insurance, and freight value	192,000	242,000
Average, dollars per metric ton	75.70	99.87
Consumption[5]	24,400	23,700
Stocks, June 30, producers[e]	10,900	10,100

[e]Estimated.
[1]Data are rounded to no more than three significant digits, except prices.
[2]July 1-June 30.
[3]Average value is based on sold or used values.
[4]Source: U.S. Census Bureau.
[5]Expressed as sold or used plus imports.

TABLE 2
PRODUCTION OF PHOSPHATE ROCK IN THE UNITED STATES[1]

(Thousand metric tons and thousand dollars)

	Mine production, crude ore		Marketable production, beneficated			
Period	Rock	P_2O_5 content	Rock	P_2O_5 content	Value[2]	Stocks, End of period rock
Crop Year 2021:	95,600	8,400	22,400	6,260	1,800,000 e	10,900
Crop Year 2022:						
July–December 2021	44,100	3,920	10,600	2,970	880,000	10,700
January–June 2022[e]	43,800	3,810	10,000	2,850	960,000	10,100
Total[e]	87,900	7,730	20,700	5,820	1,800,000	10,100

[e]Estimated.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Based on the per ton sold or used values.

TABLE 3
PHOSPHATE ROCK SOLD OR USED BY PRODUCERS
IN THE UNITED STATES[1]

(Thousand metric tons and thousand dollars)

Period	Rock	P_2O_5 content	Value[2]
Crop Year 2021:	21,900	6,140	1,770,000 [e]
Crop Year 2022:			
July–December 2021	10,800	3,020	890,000
January–June 2022[e]	10,500	2,910	960,000
Total[e]	21,300	5,930	1,900,000

[e]Estimated.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Free on board mine.

TABLE 4
SALIENT POTASH STATISTICS[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

		Year ending June 30	
		2021	2022
United States:			
Production:[3]			
Gross weight		1,300	1,300
K_2O equivalent		490	450
Sales by producers:			
Quantity:[3]			
Gross weight		1,300	1,200
K_2O equivalent		510	440
Value[3, 4]		470,000	650,000
Average value:[5]			
Gross weight	dollars per metric ton	350	535
K_2O equivalent	do.	925	1,500
Exports:			
Gross weight		412	628
K_2O equivalent		111	272
Value		131,000	289,000
Imports for consumption:[6, 7]			
Quantity:			
Gross weight		10,700	9,010
K_2O equivalent		6,480	5,330
Value, customs		2,700,000	4,060,000
Consumption, apparent:[3, 8]			
Gross weight		12,000	10,000
K_2O equivalent		6,900	5,500

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[1]Includes muriate of potash, sulfate of potash, potassium magnesium sulfate, and some parent salts. Excludes other chemical compounds that contain potassium.

[2]Data are rounded to no more than three significant digits unless otherwise specified.

[3]Data are rounded to no more than two significant digits.

[4]Free on board mine.

[5]Rounded to the nearest $5 to avoid disclosing proprietary data.

[6]Excludes potassium chemicals and mixed fertilizers.

[7]Includes nitrate of potash.

[8]Calculated from sales plus imports minus exports.

TABLE 5
PRICES OF U.S. POTASH, BY TYPE AND GRADE[1, 2]

(Dollars per metric ton of K_2O equivalent)

Type and grade	Crop Year 2021			Crop Year 2022		
	July–December 2020	January–June 2021	Average value	July–December 2021	January–June 2022	Average value
Muriate, 60% K_2O minimum:						
Standard	500	545	530	800	1,100	925
Granular	435	520	490	900	890	890

[1]Average prices, free on board mine, based on sales.
[2]Data rounded to nearest $5.

TABLE 6
U.S. EXPORTS OF POTASH[1]

(Metric tons, unless otherwise specified)

Type	Approximate average K_2O content (percent)	July–December 2021			January–June 2022			Year ending June 30, 2022		
		Product	K_2O equivalent	Value (thousands)	Product	K_2O equivalent	Value (thousands)	Product	K_2O equivalent	Value (thousands)
Potassium chloride, all grades	61	17,700	10,800	$10,000	132,000	80,600	$44,600	150,000	91,400	$54,600
Potassium nitrate	45	3,390	1,520	3,420	3,200	1,440	3,700	6,580	2,960	7,120
Potassium sulfate[2]	29	201,000	57,400	76,300	271,000	120,000	151,000	472,000	178,000	227,000
Total	XX	222,000	69,700	89,700	406,000	202,000	199,000	628,000	272,000	289,000

XX Not applicable.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes potassium magnesium sulfate.

Source: U.S. Census Bureau; adjusted by the U.S. Geological Survey.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF POTASH[1]

(Metric tons, unless otherwise specified)

Type	Approximate average K_2O content (percent)	July–December 2021			January–June 2022			Year ending June 30, 2022		
		Product	K_2O equivalent	Customs value (thousands)	Product	K_2O equivalent	Customs value (thousands)	Product	K_2O equivalent	Customs value (thousands)
Potassium chloride	61	4,340,000	2,650,000	$1,500,000	4,100,000	2,500,000	2,170,000	8,440,000	5,150,000	$3,680,000
Potassium sulfate	51	81,600	41,600	42,700	76,400	39,000	47,800	158,000	80,600	90,500
Potassium nitrate	45	47,200	24,100	31,400	66,500	29,900	62,900	114,000	54,000	94,300
Potassium sodium nitrate mixtures	14	61,000	8,530	30,700	237,000	33,100	165,000	297,000	41,600	196,000
Total	XX	4,530,000	2,720,000	1,610,000	4,480,000	2,600,000	2,450,000	9,010,000	5,330,000	4,060,000

XX Not applicable.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau; adjusted by the U.S. Geological Survey.