2018 Minerals Yearbook

PEAT [ADVANCE RELEASE]

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Peat

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In 2018, the United States produced and consumed peat for horticultural and industrial purposes. Peat produced in the conterminous United States was 479,000 metric tons (t), a 4% decrease from that of 2017 (table 1). The United States imported 72% of its total consumption requirements, primarily from Canada (tables 1, 8). World peat production for 2018 was estimated to be 30.4 million metric tons (Mt). The leading peat-producing countries were Finland, Germany, Ireland, Belarus, Sweden, Latvia, and Canada, in decreasing order of tonnage, and those countries accounted for 82% of world production (table 9).

Reed-sedge accounted for 87% of domestic peat production, followed by sphagnum moss with 10% (table 4). Florida, with 321,000 t, accounted for 67% of U.S. peat production (table 3). The types of peat are classified according to the degree of decomposed component plant material, with sphagnum moss being the least decomposed, followed by hypnum moss, reed-sedge, and humus.

Peat is a natural organic material of botanical origin and commercial significance. Peatlands occur in wetland areas, primarily in the temperate and cold belt of the Northern Hemisphere, where large peat deposits developed from the gradual decomposition of plant matter under anaerobic conditions. Approximately 15% of the world's peatlands, by area, are in the United States, with most of the U.S. peatlands located in Alaska (Lappalainen, 1996, p. 55). Peatlands cover more than 400 million hectares (Mha) on the Earth, of which 86% remain undisturbed. Of the 56 Mha that have been used by humans, 51% has been used for agriculture; 26%, forestry; 22%, drained tropical peatlands; and 1%, energy and growing media (World Energy Council, 2013, p. 6.2). Peat continues to accumulate on 55% of global peatlands; however, the volume of global peat resources decreases at a rate of 0.05% per year owing to human activity (Joosten and Clarke, 2002, p. 32–33).

Production

The U.S. Geological Survey developed domestic production data for peat from a voluntary canvass of operations in the conterminous United States. Of the 29 operations to which a survey request was sent, 19 responded. Of the respondents, 18 were active operations, and 1 was closed in 2018. Data for nonrespondents were estimated based on responses to the 2017 survey or other sources. Most peat operations are relatively small (producing less than 5,000 metric tons per year) and sell their products regionally. Peat production in the conterminous United States in 2018 was 479,000 t, a 4% decrease from that of 2017 (table 1). In 2018, 74% of domestic production came from five operations (table 2). In the eastern United States, the region with the largest peat production, output decreased by 5% from that of 2017. Peat production for Alaska in 2018 was unavailable because the Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys, discontinued its survey of peat producers in Alaska.

Peatrex LTD, a peat mining company in Minnesota, was purchased by Premier Tech Ltd., a Canadian company, in 2018. Three companies in three States (Florida, Michigan, and Minnesota) were no longer operating in 2018. One peat facility was abandoned in 2018, after completing mining operations in 2017. Other mining operations reported permit issues that are causing disruptions in production. The permitting procedures for new peat operations have become increasingly time-consuming and expensive, causing some companies to abandon harvesting and reducing the number of new fens and bogs brought into production. In addition, extensive areas of peatlands are in protected wetlands, parks, or other natural areas that restrict commercial development.

Consumption

Peat is widely used as a plant-growth medium in a variety of agricultural and horticultural applications where its fibrous structure and porosity enable a unique combination of optimum water-retention and drainage characteristics. Commercial applications include lawn and garden soil amendments, potting soils, and turf maintenance on golf courses. In industry, peat is used primarily as a filtration medium to remove toxic materials from process-waste streams, pathogens from sewage effluents, and deleterious materials suspended in municipal storm-drain water. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and in water.

Sales of domestic peat increased by 6% to 545,000 t in 2018 from 515,000 t in 2017 (table 1). Packaged products accounted for 30% of total domestic-sales tonnage and commanded premium prices for all grades of peat (tables 3, 7). Apparent consumption increased by 9% from that of 2017 (table 1). Potting soil and general soil improvements were the two leading use categories, accounting for 90% of the domestic-sales tonnage and 82% of the volume (table 5). Other significant uses, by the quantity of sales, included nurseries, golf course applications, and earthworm culture medium. The United States imported 72% of its total consumption requirements, primarily from Canada, where deposits of high-quality sphagnum moss are extensive. Peat from Canada was sold in bulk for blending in custom soil mixes and was packaged for horticultural use; however, a detailed distribution of imports from Canada was not available. Subsidiaries of Canadian peat producers own many of the soil-blending facilities in the southern and western United States and import much of their peat requirements.

Stocks

U.S. yearend stocks of peat decreased by 12% to 196,000 t in 2018 from 222,000 t in 2017 (table 1). Reed-sedge peat accounted for 98% of total stocks (table 4).

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was about $14.1 million, according to the annual survey of domestic peat producers. The average unit value decreased by 6% to $25.88 per metric ton compared with $27.55 per ton in 2017 (table 1). On an average-unit-value basis f.o.b. plant, sphagnum moss was valued at $53.82 per ton; hypnum moss, $62.67 per ton; reed-sedge, $21.77 per ton; and humus, $17.04 per ton (table 7).

Foreign Trade

U.S. companies exported 37,000 t of peat (table 1). Canada was the leading destination, accounting for 55% of exports, followed by Mexico with 42% of exports. Imports of peat increased by 4% to 1.20 Mt from 1.15 Mt in 2017 (tables 1, 8). The total customs import value was $350 million, which averaged $292 per ton (tables 7, 8). Imports of peat (sphagnum moss) from Canada increased by 6% to 1.15 Mt, which represented 96% of total United States imports and 93% of Canada's total production (tables 8, 9).

World Review

World peat production for 2018 was estimated to be 30.4 Mt, a slight decrease from that of 2017 (table 9). Peat is a significant source of energy in Finland, Ireland, and Sweden, and, to a lesser extent, in the countries of Eastern Europe (table 9).

Belarus.—Peat production in Belarus increased by about 19% when compared with production in 2017, making it the estimated fourth-ranked peat producer in the world (Belarusian Telegraph Agency, 2018). Belarus continued peatland restoration efforts with a 5-year wetlands project launched in 2018. The project was funded by the Global Environment Facility and is to be executed by the Ministry of Natural Resources and Environmental Protection of Belarus and the United Nations Development Programme. The restoration program was designed to restore ineffectively drained peatlands, preventing carbon dioxide emissions of up to 5 million metric tons per year for 20 years (United Nations Development Programme, 2018).

Canada.—Production of peat (sphagnum moss) was estimated to have decreased by 15% to 1.24 Mt in 2018 from 1.46 Mt in 2017. New Brunswick, Quebec, Manitoba, and Alberta were the major producing Provinces, in decreasing order of tonnage, accounting for about 95% of production. British Columbia, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2018). The 2018 peat harvest season in Canada had favorable weather conditions, resulting in above-average peat harvests for some of Canada's producing regions. New Brunswick's northern and southern regions produced more peat than expected. The northern region production was about 10% above average. The southern region experienced a slight increase in production, making New Brunswick the leading producing region. Quebec's South Shore experienced increased peat production of 7%, owing to a mild spring and a warmer-than-average summer. Quebec's North Shore experienced an 8% decrease in production, owing to less than favorable weather conditions. Production in both Alberta and Manitoba was 3% lower than expected. Saskatchewan's peat production was 18% lower than expected. Alberta, Manitoba, and Saskatchewan all experienced a cooler spring and a summer with variable temperatures causing a below-average peat-harvesting season (Canadian Sphagnum Peat Moss Association, 2018).

Ireland.—In 2018, Bord na Móna announced its decision to abandon plans to construct a U.S. biomass pellet plant in Georgia. This decision was made after completion of a biomass supply-chain assessment, resulting in a decision to focus on domestic supplies. Bord na Móna is transitioning to a hybrid peat-biomass model to help Ireland meet its national energy security needs and its 2020 renewable energy target (McCormack, 2018b). Bord na Móna harvested peat from only 1% of its peatlands throughout 2018; it projected that 70% of its profit will be non-peat-based by 2021 and is on target to stop using peat as an energy source by 2030 (McCormack, 2018a).

Rwanda.—The Gishoma Thermal Power Station peat-fired powerplant, which ceased operations in October 2017 after local flooding, started operations again midyear 2018 (Nkurunziza, 2018). The Gisagara Thermal Power Station peat-fired powerplant was under construction in 2018 and expected to be operational by 2020. This powerplant was expected to increase the national power capacity by 40%, getting Rwanda closer to its goal of energy independence (Ngabonziza, 2018).

Outlook

Preservation and restoration of peatlands may become a high priority in the efforts to reduce greenhouse gas emissions. Peatlands are identified as carbon sinks, storing more carbon dioxide per hectare than any other ecosystem. Research is ongoing on restoration measures for cut-away and post-harvest peatlands, as well as rehabilitation measures such as rewetting or afforestation. Rewetting, an effort to raise the water table, is done to begin the natural regeneration of peat. Afforestation (when trees are planted to establish a forest in treeless areas) in tropical areas may help retain the surface moisture in the peatlands.

In the short term, domestically, imports from Canada are likely to continue to increase, and domestic peat production is likely to fluctuate. The decline in the number of domestic producers is likely to continue, and the industry is likely to remain dominated by large companies. Other factors, such as competition from organic soil amendments [for example, coir (coconut fiber) and composted yard waste], Federal and State wetlands regulations, and restrictions on permitting new production sites, are likely to limit growth in the domestic peat industry.

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TABLE 1
SALIENT PEAT STATISTICS[1]

(Thousand metric tons and thousand dollars unless otherwise specified)

		2014	2015	2016	2017	2018
United States:[2]						
Number of active producers		31	29	31	31 r	28
Production		468	455	441	498 r	479
Sales by producers:						
Quantity:						
Bulk		426	419	372	413	413
Packaged		53	41	71	102	132
Total		479	460	443	515	545
Value		12,000	13,000	14,200	14,200	14,100
Average value	dollars per metric ton	24.97	28.39	31.97	27.55 r	25.88
Average value, bulk	do.	25.72	29.03	31.58	28.54	27.40
Average value, packaged or baled	do.	19.05	21.77	33.96	23.51	21.09
Exports		29	28	30	30	37
Imports for consumption		994	1,150	1,130	1,150	1,200
Consumption, apparent[3]		1,390	1,620	1,590	1,520	1,670
Stocks, December 31, producers'		222	179	125	222	196
World, production		30,200 r	29,200 r	30,800 r	31,100 r	30,400 e

[e]Estimated. [r]Revised. do. Ditto.

[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits, except average values; may not add to totals shown.

[2]Does not include Alaska.

[3]U.S. production plus imports minus exports plus adjustments for industry stock changes.

TABLE 2
PEAT PRODUCTION IN THE UNITED STATES,
BY SIZE OF OPERATION[1]

Size (metric tons per year)	Active operations 2017	Active operations 2018	Production (thousand metric tons) 2017	Production (thousand metric tons) 2018
23,000 or more	5	5	334	356
9,000 to 22,999	7	4	125	75
5,000 to 8,999	3	4	19	26
1,000 to 4,999	6	7	16	20
Less than 1,000	10	8	4	3
Total	31	28	498	479

[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 3
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2018, BY STATE[1]

Region and State	Active operations	Production (metric tons)	Sales: Quantity (metric tons)	Sales: Value[2] (thousands)	Sales: Percent packaged
East:					
Florida	5	321,000	325,000	$6,290	--
Other[3]	7	23,900	34,400	2,010	--
Total or average	12	345,000	360,000	8,300	--
Great Lakes:					
Minnesota	7	90,900	60,200	4,180	55
Other[4]	7	37,000	122,000	1,330	81
Total or average	14	128,000	182,000	5,510	72
West[5]	2	6,240	3,520	303	--
Grand total or average	28	479,000	545,000	14,100	30

-- Zero.
[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Free on board producing plant.
[3]Includes Maine, New Jersey, New York, and Pennsylvania.
[4]Includes Illinois, Indiana, Michigan, and Ohio.
[5]Includes Iowa and Washington.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2018, BY TYPE[1]

Type	Active operations[2]	Production (metric tons)	Percent of production	Yearend stocks (metric tons)
Sphagnum moss	7	46,300	10	W
Hypnum moss	3	W	W	W
Reed-sedge	14	419,000	87	192,000
Humus	4	W	W	W
Total	28	479,000	100	196,000

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Some plants produce multiple types of peat.

TABLE 5

U.S. PEAT SALES BY PRODUCERS IN 2018 BY TYPE AND USE[1]

	Sphagnum moss[2]			Hypnum moss			Reed-sedge			Total[3]		
	Quantity			Quantity			Quantity			Quantity		
Use	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)
Earthworm culture medium	--	--	--	W	W	W	W	W	W	W	W	W
General soil improvement	14,400	114,000	887	1,520	3,000	W	W	249,000	$1,400	141,000	369,000	2,390
Golf courses	W	W	W	--	--	--	W	W	W	W	W	1,360
Ingredient for potting soils	W	W	W	W	W	W	316,000	662,000	6,120	348,000	796,000	7,810
Nurseries	W	W	W	W	W	W	W	W	W	W	W	W
Other[4]	570	1,430	W	--	--	--	--	--	--	570	1,430	W
Total	56,800	357,000	3,060	6,490	12,500	W	477,000	1,040,000	17,600	545,000	1,410,000	14,100

W Withheld to avoid disclosing company proprietary data; included in “Total.” -- Zero.

[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes humus.

[3]Includes mixed fertilizers; packing flowers, plants, shrubs, and so forth; seed inoculant; and vegetable growing.

[4]Nearly all measured after compaction and packaging.

TABLE 6

AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2018[1]

(Kilograms per cubic meter)[2]

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus
Bulk	228	679	608	765
Packaged	134	--	586	--
Bulk and packaged	208	679	602	765

-- Zero

[1]Table includes data available through September 9, 2019.

[2]To convert kilograms per cubic meter to pounds per cubic yard, multiply by 1.685.

TABLE 7

PRICES FOR PEAT IN 2018[1, 2]

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	54.29	62.67	23.16	17.04	27.40
Per cubic meter	12.40	42.53	14.07	13.03	13.96
Packaged or baled:					
Per metric ton	50.83	--	19.23	--	21.09
Per cubic meter	6.81	--	10.76	--	10.09
Average:					
Per metric ton	53.82	62.67	21.77	17.04	25.88
Per cubic meter	11.20	42.53	12.70	13.03	12.69
Imported, total, per metric ton[3]	XX	XX	XX	XX	291.64

XX Not applicable. -- Zero.

[1]Table includes data available through September 9, 2019.

[2]Free on board plant.

[3]Average customs value.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF PEAT, BY COUNTRY OR LOCALITY[1]

	2017		2018	
Country or locality	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Canada	1,090,000	$310,000	1,150,000	$329,000
Estonia	5,700	1,150	699	68
Finland	1,260	680	1,150	562
Germany	1,640	617	1,400	688
India	334	199	1,010	479
Ireland	615	111	1,190	232
Latvia	29,500	12,300	29,700	13,500
Lithuania	2,800	1,080	2,770	1,270
Netherlands	18,900	7,470	7,390	3,100
New Zealand	923	235	1,430	365
Other	1,090	484	548	735
Total	1,150,000	335,000	1,200,000	350,000

[1]Table includes data available through September 9, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Customs value.

Source: U.S. Census Bureau.

TABLE 9

PEAT: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Thousand metric tons)

Country or locality[2]	2014	2015	2016	2017	2018
Argentina, horticultural use	5	1	2	2	2 e
Belarus:					
Fuel use	1,433	1,000	1,457	2,045 r	2,430 e
Horticultural use	216	237	164	153 r	182 e
Total	1,649	1,237	1,621	2,198 r	2,620 e
Burundi, fuel use	11	4	10	14 r	14 e
Canada, horticultural use	1,178	1,297	1,452	1,459 r	1,240 e
Chile, horticultural use	2	2	4	8 r	7 e
Estonia:					
Fuel use	261	89	89	132 r	130 e
Horticultural use	594	720	783 r	929 r	900 e
Total	855	809	872 r	1,060 r	1,030 e
Finland:					
Fuel use	7,500	9,634 r	9,907 r	9,410 r, e	9,000 e
Horticultural use	800 e	1,013 r	1,046 r	970 e	970 e
Total	8,300	10,647 r	10,953 r	10,400 r, e	9,970 e
Germany, horticultural use	5,071 r	3,699 r	4,051 r	3,787 r	3,800 e
Hungary, horticultural use	79 r	97	90 r	57 r	60 e
Ireland, fuel use	3,546	3,138	2,779	3,590 r, e	3,000 e
Latvia, horticultural and fuel uses	1,689	1,805	1,770 e	2,000 r, e	1,900 e
Lithuania:					
Fuel use	101	74	17	24	30 e
Horticultural use	417	479	369	394	480 e
Total	518	553	386	418	510 e
Norway, horticultural use	99	100 e	100 e	100 e	100 e
Poland, horticultural and fuel uses	829	877	907	679 r	700 e
Russia, horticultural and fuel uses	1,149	900	960	741 r	800 e
Rwanda, unspecified e	13	13	13	100	100
Spain, horticultural use	83	79	113	100 e	100 e
Sweden:[3]					
Fuel use	1,934	992 r	1,240 r	957 r	1,000 e
Horticultural use	1,331	1,115	1,476 r	1,464 r	1,450 e
Total	3,265	2,107 r	2,716 r	2,421 r	2,450 e
Turkey, unspecified	151	135	134 r	228 r	200 e
Ukraine:					
Fuel use	463	491	539 r	518 r	500 e
Horticultural use	119	79	136 r	88 r	90 e
Total	582	570	675 r	606 r	590 e
United Kingdom, unspecified[4]	700	704	704 r, e	700 e	700 e
United States, horticultural use	468	455	441	498 r	479
Grand total	30,200 r	29,200 r	30,800 r	31,100 r	30,400 e
Of which:					
Fuel use	15,200	15,400 r	16,000 r	16,700 r	16,100
Horticultural use	10,500 r	9,370 r	10,200 r	10,000 r	9,860
Unspecified	4,530 r	4,430	4,490 r	4,450 r	4,400

e Estimated. r Revised.

[1] Table includes data available through June 18, 2019. All data are reported unless otherwise noted. Grand totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2] In addition to the countries and (or) localities listed, Australia, Austria, Chile, Iceland, Italy, New Zealand, and Romania may have produced peat, but available information was inadequate to make reliable estimates of output.

[3] Reported horticultural use, in thousand cubic meters: 2014—1,512; 2015—1,266; 2016—1,676; and 2017—1,662. Reported fuel use, in thousand cubic meters: 2014—2,196; 2015—1,127; 2016—1,408; and 2017—1,087. One cubic meter of peat equals 0.8806 metric ton.

[4] Unspecified use reported, in thousand cubic meters: 2014—795; 2015—800; 2016—800 (estimated); and 2017—795 (estimated). One cubic meter of peat equals 0.8806 metric ton.