USGS
science for a changing world

2008 Minerals Yearbook

PEAT [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

March 2010

PEAT

By Lori E. Apodaca

Domestic survey data and tables were prepared by Danielle L. Militello, statistical assistant, and the world production table was prepared by Linder Roberts, international data coordinator.

In 2008, peat produced in the conterminous United States was 615,000 metric tons (t); output from Alaska was estimated to be 64,100 cubic meters.

The United States is a significant producer and consumer of peat for horticultural and industrial purposes. 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.

Reed-sedge accounted for 81% of domestic peat production, followed by sphagnum moss, 9%; hypnum moss, 6%; and humus, 4% (table 4). Florida accounted for 78% of U.S. peat production with 482,000 t (table 3).

Peat is a renewable natural organic material of botanical origin and commercial significance. Peatlands are situated in wetland areas, primarily in the temperate and cold belt of the Northern Hemisphere, where large deposits developed from the gradual decomposition of plant matter under anaerobic conditions. The United States contains approximately 15% of the world's peatlands by area (Lappalainen, 1996, p. 55). There are more than 400 million hectares (Mha) of peatlands on Earth, of which 80% remains undisturbed. Of the 80 Mha that has been used by humans, 50% has been used for agriculture; 30% for forestry; 10% for miscellaneous uses; and 10% for peat extraction. Peat continues to accumulate on 60% of global peatlands; however, the volume of global peat resources has been decreasing at a rate of 0.05% per year owing to human activity (Joosten and Clarke, 2002, p. 32–33).

Production

Domestic production data for peat were developed by the U.S. Geological Survey from a voluntary canvass of operations in the conterminous United States. Of the 46 operations to which a survey request was sent, 39 responded (including 2 idle), representing about 80% of total production tonnage. For the respondents, there were 30 active operations and 9 idle operations in 2008. Data for nonrespondents were estimated based on responses to the 2007 survey or other sources. Most peat operations are relatively small and sell their products regionally. Peat production in the conterminous United States in 2008 was 615,000 t, a 3% decrease from that of 2007 (table 1). A decrease in peat production of 6% was reported in the Great Lakes region. Output from Alaska was estimated to be 64,100 cubic meters in 2008, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Harbo, L.A., Mineral Specialist, Alaska Office of Economic Development, oral commun., August 6, 2009; Szumigala and others, 2009, p. 12). Peat production in Alaska was reported by volume only. In 2008, 74% of domestic production came from just four operations (table 2).

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 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 water.

Sales of domestic peat decreased by about 7% to 648,000 t from 694,000 t in 2007. Packaged products composed 15% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption decreased by about 9% compared with that of 2007. Potting soil and general soil improvement mixes were the two leading usage categories, accounting for 90% of domestic sales tonnage and 88% of the volume (table 5). Other significant uses, by quantity of sales, included nursery applications, golf course applications, and seed inoculants. The United States imported 65% of total consumption requirements, primarily from Canada, where deposits of high-quality sphagnum moss are extensive. Canadian peat was sold in bulk for blending in custom soil mixes and was packaged for horticultural use; however, a detailed distribution of Canadian imports was not available. Many of the soil blending facilities in the Southern and Western United States are owned by subsidiaries of Canadian peat producers and import much of their peat requirements.

Stocks

U.S. yearend stocks of peat increased to 152,000 t from 98,000 t in 2007 (table 1). Reed-sedge peat accounted for 66% of total stocks, followed by humus, sphagnum moss, and hypnum (table 4).

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was $17 million, according to the annual survey of domestic peat producers. The average unit value increased slightly to $26.42 per metric ton compared with $25.59 per ton in 2007 (table 1). On an average unit-value basis, sphagnum moss was valued at $60.02 per ton, f.o.b. plant; hypnum moss, $29.12 per ton; humus, $27.31 per ton; and reed-sedge, $22.68 per ton (table 7).

Foreign Trade

Imports of peat decreased by about 4% to 936,000 t from 977,000 t in 2007 (table 8). The total customs import value was $228 million or $243.26 per ton. Imports of sphagnum moss from Canada decreased to 894,000 t, which represented 96% of total U.S. imports and 78% of total Canadian production. U.S. companies exported an estimated 56,000 t of peat (table 1).

World Review

Finland, Ireland, Belarus, Russia, Sweden, Canada, and Latvia were the leading producer countries in decreasing order of tonnage (table 9). World peat production for 2008 was estimated to be 25.0 million metric tons (Mt) a 3% decrease from that of 2007. Other significant producing countries included Estonia, Moldova, Poland, Ukraine, and the United States. Peat is an important source of energy in Finland, Ireland, and Sweden and to a lesser extent in Eastern Europe.

Canada.—Production of sphagnum moss was estimated to have decreased to 1.15 Mt from 1.28 Mt in 2007. In 2008, abnormal and persistently wet conditions throughout Canada's peat harvest regions affected the ability of the industry to harvest expected volumes of peat. New Brunswick, Quebec, and Manitoba were the major producing provinces, in decreasing order of tonnage, accounting for 84% of production. Alberta, British Columbia, Newfoundland, Nova Scotia, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2009).

In October, Peat Resources Ltd., a company formed to develop, produce, and market peat fuel, completed the design and construction of its small-scale production facility for peat fuel pellets in Stephenville, Newfoundland. The facility will operate in order to produce peat fuel pellets for various combustion and marketing trials in 2009 (Peat Resources Ltd., 2009).

FPM Peat Moss Co. (a subsidiary of Conrad Fafard Inc.) built a peat processing and mix facility in Manitoba. The facility manufactures packaged peat moss and peat-based professional mixes and potting soils. FPM harvests its own peat moss from peatlands in southeastern Manitoba. The new plant would allow Fafard to better serve markets in the Central and Western United States (Conrad Fafard Inc., 2008).

Outlook

The domestic short-term peat situation will likely include steadily increasing Canadian imports and fluctuating domestic peat production. The number of domestic producers will continue to decline and remain dominated by large companies. Other factors, such as competition from organic soil amendments like coir (coconut fiber) and composted yard waste, Federal and State wetlands regulations, and restriction on permitting new production sites will likely have a negative influence on growth of the domestic peat industry.

References Cited

Conrad Fafard Inc., 2008, Fafard to build Manitoba plant: Conrad Fafard Inc. press release, May 14, 1 p.

Joosten, Hans, and Clarke, Donal, 2002, Wise use of mires and peatlands: Jyvaskyla, Finland, International Peat Society, 304 p.

Lappalainen, Eino, 1996, Global peat resources: Jyvaskyla, Finland, International Peat Society, 368 p.

Natural Resources Canada, 2009, Preliminary estimate of the mineral production of Canada, by Province, 2008: Natural Resources Canada, May, 6 p. (Accessed August 5, 2009, at http://mmsd.mms.nrcan.gc.ca/stat-stat/prod-prod/ann-ann-eng.aspx.)

Peat Resources Ltd., 2009, Peat resources update: Peat Resources Ltd. press release, February 3, 2 p.

Szumigala, D.J., Hughes, R.A., and Harbo, L.A., 2009, Alaska's mineral industry 2008—A summary: Alaska Department of Natural Resources Information Circular 58, 15 p.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Peat. Ch. in Mineral Commodity Summaries, annual.

Peat. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

Other

Peat. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.

Peat Industry Review 2008. New Brunswick Department of Natural Resources, Minerals & Petroleum Development Branch.

Peatlands International. International Peat Society, semiannual.

Peat News. International Peat Society, monthly.

TABLE 1
SALIENT PEAT STATISTICS[1]

(Thousand metric tons and thousand dollars unless otherwise specified)

	2004	2005	2006	2007	2008
United States:[2]					
Number of active producers	50	45	39	38	37
Production	696	685	551	635	615
Sales by producers:					
Quantity:					
Bulk	550	537	525	590	546
Packaged	191	214	209	104	102
Total	741	751	734	694	648
Value	21,200	20,800	20,100	17,700	17,100
Average value dollars per metric ton	28.64	27.76	27.34	25.59	26.42
Average value, bulk do.	22.88	23.08	23.00	24.69	24.73
Average value, packaged or baled do.	45.20	39.54	38.28	30.64	36.24
Exports	29	36	41	56	56 e
Imports for consumption	786	891	924	977	936
Consumption, apparent[3]	1,380	1,600	1,500	1,590	1,440
Stocks, December 31, producers'	251	195	128	98	152
World, production	25,600 r	26,000 r	25,800	25,700	25,000 e

eEstimated. rRevised. do. Ditto.

[1]Data are rounded to no more than three significant digits, except average values per metric ton.

[2]Excludes Alaska.

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

TABLE 2
RELATIVE SIZE OF PEAT OPERATIONS IN THE UNITED STATES

Size	Active operations		Production (thousand metric tons)	
(metric tons per year)	2007	2008	2007	2008
23,000 and more	4	4	455	455
9,000 to 22,999	7	6	106	96
5,000 to 8,999	6	4	41	25
1,000 to 4,999	11	11	28	33
Less than 1,000	10	12	5	6
Total	38	37	635	615

TABLE 3
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2008, BY STATE[1]

			Sales		
Region and State	Active operations	Production (thousand metric tons)	Quantity (thousand metric tons)	Value[2] (thousands)	Percentage packaged
East:					
Florida	6	482	488	$9,760	5
Pennsylvania	4	2	2	62	59
Other[3]	7	47	68	2,110	43
Total or average	17	531	558	11,900	39
Great Lakes:					
Minnesota	9	46	48	4,540	39
Other[4]	8	36	38	494	38
Total or average	17	82	86	5,030	38
West[5]	3	3	4	151	26
Grand total or average	37	615	648	17,100	15

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

[2]Values for free on board producing plant.

[3]Includes Maine, New Jersey, and New York.

[4]Includes Illinois, Indiana, Michigan, and Ohio.

[5]Includes Iowa, Washington, and Wisconsin.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2008, BY TYPE

Type	Active operations[2]	Production[1] (metric tons)	Percentage of production	Yearend stocks[1] (metric tons)
Sphagnum moss	8	53,200	9	24,500
Hypnum moss	5	35,700	6	20,100
Reed-sedge	15	500,000	81	100,000
Humus	9	26,300	4	7,760
Total	37	615,000	100	152,000

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

[2]Some plants produce multiple types of peat; may not add to totals shown.

TABLE 5
U.S. PEAT SALES BY PRODUCERS IN 2008, BY TYPE AND USE[1]

	Sphagnum moss			Hypnum moss			Reed-sedge		
	Quantity			Quantity			Quantity		
Use	Weight (metric tons)	Volume[2] (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)
Earthworm culture medium	--	--	--	--	--	--	355	990	$6
General soil improvement	40,100	251,000	$2,570	667	1,300	$28	49,700	115,000	721
Golf courses	6,900	46,300	580	--	--	--	8,070	30,500	1,760
Ingredient for potting soils	5,710	24,500	84	794	1,650	30	445,000	938,000	8,730
Mixed fertilizers	--	--	--	--	--	--	--	--	--
Nurseries	386	2,000	1	25,700	51,700	727	5,180	27,200	376
Packing flowers, plants, shrubs, etc.	--	--	--	--	--	--	567	1,250	8
Seed inoculant	--	--	--	--	--	--	7,980	25,500	125
Vegetable growing	375	700	6	41	100	1	567	1,250	8
Other	544	300	6	1,750	3,850	58	--	--	--
Total	54,000	325,000	3,240	29,000	58,600	844	517,000	1,140,000	11,700

	Humus			Total		
	Quantity			Quantity		
	Weight (metric tons)	Volume (cubic meters)	Value (thousands)	Weight (metric tons)	Volume (cubic meters)	Value (thousands)
Earthworm culture medium	161	315	$2	516	1,310	$8
General soil improvement	4,690	7,980	77	95,200	376,000	3,390
Golf courses	283	520	6	15,200	77,300	2,340
Ingredient for potting soils	39,200	125,000	1,140	490,000	1,090,000	9,980
Mixed fertilizers	94	160	2	94	160	2
Nurseries	762	1,440	28	32,100	82,400	1,130
Packing flowers, plants, shrubs, etc.	272	500	3	839	1,750	11
Seed inoculant	272	500	3	8,260	26,000	128
Vegetable growing	--	--	--	982	2,050	15
Other	1,960	3,320	42	4,250	7,470	107
Total	47,700	140,000	1,300	648,000	1,660,000	17,100

-- Zero.

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

[2]Volume of nearly all sphagnum moss was measured after compaction and packaging.

TABLE 6
AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2008

(Kilograms per cubic meter)[1]

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus
Bulk	247	649	593	733
Packaged	178	645	593	970
Bulk and packaged	217	647	593	817

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

TABLE 7
PRICES FOR PEAT IN 2008[1]

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed-sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	39.89	28.08	23.44	26.58	24.73
Per cubic meter	9.84	18.22	13.90	12.28	13.36
Packaged or baled:					
Per metric ton	97.27	30.16	12.73	27.98	36.24
Per cubic meter	17.34	19.45	7.56	12.02	13.86
Average:					
Per metric ton	60.02	29.12	22.68	27.31	26.42
Per cubic meter	13.05	18.83	13.45	12.14	13.45
Imported, total, per metric ton[2]	XX	XX	XX	XX	243.26

XX Not applicable.

[1]Prices are free on board plant.

[2]Average customs value.

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

	2007		2008	
Country	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Canada	949,000	$231,000	894,000	$215,000
Denmark	364	126	298	101
Estonia	934	268	1,810	303
Finland	603	222	662	223
France	--	--	1,060	367
Germany	793	258	379	113
Ireland	4,530	1,220	2,490	789
Latvia	20,000	7,080	29,800	8,970
Lithuania	--	--	1,140	252
Netherlands	122	48	183	96
New Zealand	6	48	198	101
Norway	--	--	3,090	497
Sweden	--	--	329	110
Other	149	186	325	240
Total	977,000	240,000	936,000	228,000

-- Zero.

[1]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[1, 2]

(Thousand metric tons)

Country[3]	2004	2005	2006	2007	2008[e]
Argentina, horticultural use	9	11	15	15 [e]	15
Australia[e]	6	6	7	7	7
Belarus:					
Horticultural use[e]	100	100	100	100	100
Fuel use	2,008	2,308	2,125 [r]	2,507 [r]	2,500
Total	2,108	2,408	2,225 [r]	2,607 [r]	2,600
Burundi, fuel use	5	5	10	7 [r]	8
Canada, horticultural use	1,347	1,304	1,245	1,282 [r]	1,151 [p, 4]
Denmark, horticultural use[e]	296	298	300	300	300
Estonia:					
Horticultural use	769	1,034	1,207	964 [r]	705 [4]
Fuel use	279	378	507	475 [r]	214 [4]
Total	1,048	1,412	1,714	1,439 [r]	920 [4]
Finland:[e]					
Horticultural use	905 [4]	900	900	900	900
Fuel use	8,159 [4]	8,200	8,200	8,200	8,200
Total	9,064 [4]	9,100	9,100	9,100	9,100
France, horticultural use[e]	200	200	200	200	200
Germany, horticultural use	120	122 [r]	155 [r]	161 [r]	142
Hungary, horticultural use[e]	75 [r]	75 [r]	77 [r, 4]	90 [r]	90
Ireland:[5]					
Horticultural use[e]	400	475	500	500	500
Fuel use	5,200	4,100	3,800 [e]	3,800 [e]	3,800
Total	5,600	4,575	4,300 [e]	4,300 [e]	4,300
Latvia, horticultural use and fuel use	595	791	931	1,000 [e]	1,000
Lithuania:					
Horticultural use	368	536	471	308	307 [4]
Fuel use	51	68	50	15	15
Total	419 [r]	604 [r]	521 [r]	323 [r]	322 [4]
Moldova, fuel use[e]	475	475	475	475	475
New Zealand, horticultural use[e]	25	26	27	27	27
Norway, horticultural use[e]	30	30	30	30	30
Poland, horticultural use[e]	509 [4]	639 [r]	577 [r]	641 [r]	640
Russia, horticultural use and fuel use	1,500	1,600	1,400	1,300	1,300 [4]
Spain[e]	57 [4]	60	60	60	60
Sweden:[e]					
Horticultural use	330	360	400	380	380
Fuel use	560	570	970	900	900
Total	890	930	1,370	1,280	1,280
Ukraine, horticultural use and fuel use	544	639	462	395	400
United Kingdom[e]	(6)	(6) [4]	(6)	(6) [4]	(6)
United States, horticultural use	696	685	551	635	615 [4]
Grand total	25,600 [r]	26,000 [r]	25,800	25,700	25,000
Of which:					
Horticultural use	6,180 [r]	6,800 [r]	6,750 [r]	6,530 [r]	6,100
Fuel use	16,700	16,100 [r]	16,100 [r]	16,400	16,100
Unspecified	2,700 [r]	3,100 [r]	2,860 [r]	2,760 [r]	2,770

[e]Estimated. [p]Preliminary. [r]Revised.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Table includes data available through June 24, 2009.

[3]In addition to the countries listed, Austria, Chile, Iceland, Italy, and Romania produced negligible amounts of peat.

[4]Reported figure.

[5]Fiscal year data.

[6]Less than ½ unit.