



2006 Minerals Yearbook

PEAT

PEAT

By Stephen M. Jasinski

Domestic survey data and tables were prepared by Jacqueline Arbour, statistical assistant, and the world production table was prepared by Glenn J. Wallace, international data coordinator.

In 2006, peat produced in the conterminous United States was 551,000 metric tons (t); output from Alaska was 42,000 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 composition of component plant material with sphagnum moss being the least decomposed, followed by hypnum moss, reed-sedge, and humus.

Reed-sedge accounted for 84.8% of domestic peat production, followed by sphagnum moss, 6.4%, humus, 6.1%, and hypnum moss, 2.7% (table 4). Florida, Michigan, and Minnesota accounted for 86% of U.S. production (table 3). Florida was the leading producer with 410,000 t.

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 54 operations to which a survey request was sent, 40 responded, representing about 75% of total production tonnage. There were 39 active operations and 15 companies were idle in 2006. Data for nonrespondents were estimated based on responses to the 2005 survey or other sources. Most peat operations are relatively small and sell their products regionally. Peat production in the conterminous United States in 2006 was 551,000, a 20% decrease from that of 2005 (table 1). The largest production decrease was in the Great Lakes region, primarily in Michigan, because of wet conditions during the peak harvesting period in the summer. Output from Alaska was 42,000 cubic meters, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Szumigala and Hughes, 2007, p. 20). Production in Alaska was reported by volume only. In 2006, 72% of domestic production came from just four operations (table 2).

Consumption

Peat has widespread use as a plant-growth medium in a variety of agricultural and horticultural applications where its fibrous structure and porosity promote 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 2% to 734,000 t from 751,000 t in 2005. Packaged products composed 28% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption decreased by 6% compared with that of 2005 owing to higher imports of peat and lower production. Potting soil and general soil improvement mixes were the two leading usage categories, accounting for 87% of domestic sales tonnage and volume (table 5). Other significant uses, by quantity of sales, included earthworm culture medium, nursery applications, golf course applications, and seed inoculants. The United States imported 63% 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 that are located 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 decreased to 128,000 t from 195,000 t in 2005 (table 1). Reed-sedge peat accounted for 51% of total stocks, followed by sphagnum moss, humus, and hypnum (table 4).

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was \$20 million, according to the annual survey of domestic peat producers. The average unit value decreased to \$27.34 per metric ton compared with \$27.76 per ton in 2005 (table 1). On an average unit-value basis, sphagnum moss was valued at \$51.98 per ton, f.o.b. plant; hypnum moss, \$33.24 per ton; humus, \$30.08 per ton; and reed-sedge, \$23.85 per ton (table 7).

Foreign Trade

Imports of peat increased by 4% to 924,000 t from 891,000 t in 2005 (table 8). The total customs import value was \$223 million or \$241.46 per ton. Imports of sphagnum moss from Canada increased to 906,000 t, which represented 98% of total U.S. imports and 73% of total Canadian production. U.S. companies exported 41,000 t of peat (table 1).

World Review

Finland, Ireland, Belarus, Russia, Sweden, Canada, Denmark, and Ukraine were the leading producer countries in decreasing order of tonnage (table 9). Other significant producing countries included Estonia, Latvia, 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 decreased to 1.25 million metric tons (Mt) from 1.3 Mt in 2005. New Brunswick, Quebec, and Alberta were the major producing provinces, in decreasing order of tonnage, accounting for 80% of production. British Columbia, Manitoba, Newfoundland, Nova Scotia, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2007).

Outlook

The domestic short-term peat situation will likely include steadily increasing Canadian imports and decreasing 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 the domestic peat industry.

References Cited

- 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, 2007, Preliminary estimate of the mineral production of Canada, by province, 2006: Natural Resources Canada, March. (Accessed May 17, 2007, at <http://mmsd1.mms.nrcan.gc.ca/mmsd/production/2006/WEB06~3.xls>.)
Szumigala, D.J., and Hughes, R.A., 2007, Alaska's mineral industry 2006—A summary: Alaska Department of Natural Resources Information Circular 54, March, 25 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 2006. New Brunswick Department of Natural Resources and Energy, 2007.
Peatlands International. International Peat Society, semiannual.
Peat News. International Peat Society, monthly.

TABLE 1
SALIENT PEAT STATISTICS¹

(Thousand metric tons and thousand dollars unless otherwise specified)

	2002	2003	2004	2005	2006	
United States: ²						
Number of active producers	55	54	50	45	39	
Production	642	634	696	685	551	
Sales by producers:						
Quantity:						
Bulk	515	447	550	537	525	
Packaged	213	185	191	214	209	
Total	728	632	741	751	734	
Value	21,000	18,800	21,200	20,800	20,100	
Average value	dollars per metric ton	28.85	29.74	28.64	27.76	27.34
Average value, bulk	do.	22.74	22.60	22.88	23.08	23.00
Average value, packaged or baled	do.	43.61	46.98	45.20	39.54	38.28
Exports	32	29	29	36	41	
Imports for consumption	763	767	786	891	924	
Consumption, apparent ³	1,420	1,400	1,380	1,600	1,500	
Stocks, December 31, producers'	207	180	251	195	128	
World, production	26,300 ^r	24,000 ^r	26,100 ^r	25,700 ^r	25,800 ^e	

^eEstimated. ^rRevised

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

²Excludes Alaska.

³Apparent 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 (metric tons per year)	Active operations		Production (thousand metric tons)	
	2005	2006	2005	2006
23,000 and more	7	4	551	396
9,000 to 22,999	5	6	52	75
5,000 to 8,999	8	7	48	46
1,000 to 4,999	9	10	27	29
Less than 1,000	16	12	8	6
Total	45	39	685	551

TABLE 3
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2006, BY STATE¹

Region and State	Active operations	Production (thousand metric tons)	Sales		
			Quantity (thousand metric tons)	Value ² (thousands)	Percentage packaged
East:					
Florida	7	410	496	\$10,000	1
Pennsylvania	4	2	1	52	42
Other ³	8	33	82	2,800	50
Total or average	19	445	579	12,900	17
Great Lakes:					
Michigan	4	14	32	1,020	52
Minnesota	9	50	69	5,280	63
Other ⁴	4	37	48	622	93
Total or average	17	101	149	6,920	70
West ⁵	3	6	5	254	15
Grand total or average	39	551	734	20,100	28

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

²Values for free on board producing plant.

³Includes Maine, New Jersey, New York, and West Virginia.

⁴Includes Illinois, Indiana, and Ohio.

⁵Includes Iowa, Washington, and Wisconsin.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2006, BY TYPE

Type	Active operations	Production ¹ (metric tons)	Percentage of production	Yearend stocks ¹ (metric tons)
Sphagnum moss	9	35,200	6	44,400
Hypnum moss	3	14,900	3	449
Reed-sedge	16	467,000	85	65,000
Humus	11	33,900	6	18,500
Total	39	551,000	100	128,000

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

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

TABLE 5
U.S. PEAT SALES BY PRODUCERS IN 2006, BY TYPE AND USE¹

Use	Sphagnum moss			Hypnum moss			Reed-sedge		
	Quantity		Value (thousands)	Quantity		Value (thousands)	Quantity		Value (thousands)
	Weight (metric tons)	Volume ² (cubic meters)		Weight (metric tons)	Volume (cubic meters)		Weight (metric tons)	Volume (cubic meters)	
Earthworm culture medium	91	800	\$8	--	--	--	21	45	\$1
General soil improvement	61,500	449,000	2,930	--	--	--	141,000	313,000	2,860
Golf courses	7,050	43,900	591	--	--	--	13,800	49,300	2,320
Ingredient for potting soils	1,500	7,900	106	13,700	30,300	\$455	411,000	857,000	8,230
Mixed fertilizers	--	--	--	--	--	--	--	--	--
Nurseries	564	3,580	41	576	1,300	21	6,030	24,200	313
Packing flowers, plants, shrubs, etc.	249	2,200	22	121	295	5	--	--	--
Seed inoculant	--	--	--	--	--	--	7,000	21,000	105
Vegetable growing	5	13	(3)	--	--	--	--	--	--
Other	136	300	3	--	--	--	--	--	--
Total	71,100	507,000	3,700	14,400	31,900	481	580,000	1,270,000	13,800

Use	Humus			Total		
	Quantity		Value (thousands)	Quantity		Value (thousands)
	Weight (metric tons)	Volume (cubic meters)		Weight (metric tons)	Volume (cubic meters)	
Earthworm culture medium	155	302	\$2	32,000	293,000	\$1,550
General soil improvement	20,800	26,800	620	192,000	497,000	4,870
Golf courses	242	444	3	21,100	93,600	2,910
Ingredient for potting soils	17,900	21,900	588	445,000	917,000	9,380
Mixed fertilizers	263	446	6	263	446	6
Nurseries	22,500	30,300	698	29,700	59,400	1,070
Packing flowers, plants, shrubs, etc.	272	500	3	642	3,000	29
Seed inoculant	--	--	--	7,000	21,000	105
Vegetable growing	23	50	1	27	63	1
Other	6,170	10,500	136	6,310	10,800	139
Total	68,400	91,300	2,060	734,000	1,900,000	20,100

-- Zero.

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

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

³Less than 1/2 unit.

TABLE 6
AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2006

(Kilograms per cubic meter)¹

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus
Bulk	255	592	606	936
Packaged	149	XX	577	1,010
Bulk and packaged	183	592	599	980

XX Not applicable.

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

TABLE 7
PRICES FOR PEAT IN 2006¹

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus	Average
<u>Domestic:</u>					
<u>Bulk:</u>					
Per metric ton	43.74	33.24	21.48	18.07	23.00
Per cubic meter	11.13	19.66	13.01	16.90	13.05
<u>Packaged or baled:</u>					
Per metric ton	58.83	XX	32.20	37.82	38.28
Per cubic meter	8.75	XX	18.59	38.23	15.23
<u>Average:</u>					
Per metric ton	51.98	33.24	23.85	30.08	27.34
Per cubic meter	9.53	19.66	14.29	29.48	13.84
Imported, total, per metric ton ²	XX	XX	XX	XX	241.46

XX Not applicable.

¹Prices are free on board plant.

²Average customs value.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF PEAT MOSS, BY COUNTRY¹

Country	2005		2006	
	Quantity (metric tons)	Value ² (thousands)	Quantity (metric tons)	Value ² (thousands)
Canada	876,000	\$191,000	906,000	\$216,000
Denmark	176	71	645	258
Finland	450	155	625	229
Germany	357	106	356	101
Ireland	4,260	306	4,500	1,390
Latvia	9,150	3,300	11,700	4,400
Netherlands	96	64	318	93
United Kingdom	37	30	23	16
Other	100	160	199	175
Total	891,000	195,000	924,000	223,000

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

²Customs value.

Source: U.S. Census Bureau.

TABLE 9
PEAT: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Metric tons)

Country ³	2002	2003	2004	2005	2006 ^c
Argentina, horticultural use	8,208	8,782	9,110 ^r	11,447 ^r	12,000
Australia ^c	5,000	5,000	6,000	6,000	6,500
Belarus:					
Horticultural use ^c	100,000	100,000	100,000	100,000	100,000
Fuel use	2,201,000	1,802,000	2,008,000 ^r	2,308,000 ^r	2,400,000
Total	2,301,000	1,902,000	2,108,000 ^r	2,408,000 ^r	2,500,000
Burundi, fuel use	6,977	4,580	4,643	4,871 ^r	4,900
Canada, horticultural use	1,385,000	1,180,000 ^r	1,347,000 ^r	1,304,000 ^r	1,245,000 ^p
Denmark, horticultural use ^c	290,000	295,000	296,000	298,000	300,000
Estonia, horticultural use and fuel use	1,508,000	1,012,000	764,000	1,074,000 ^r	1,100,000
Finland:					
Horticultural use	759,000	929,000	905,000	900,000 ^c	900,000
Fuel use	6,515,000	8,415,000	8,159,000	8,200,000 ^c	8,200,000
Total	7,274,000	9,344,000	9,064,000	9,100,000 ^c	9,100,000
France, horticultural use ^c	200,000	200,000	200,000	200,000	200,000
Germany, horticultural use	122,696	135,356	119,961	120,000 ^c	120,000
Hungary, horticultural use ^c	45,000	45,000	45,000	45,000	45,000
Ireland: ⁴					
Horticultural use ^c	350,000	451,000 ⁵	400,000	475,000 ^r	500,000
Fuel use	4,138,000	2,739,000	5,200,000	4,100,000 ^r	3,800,000
Total	4,488,000	3,190,000	5,600,000	4,575,000 ^r	4,300,000
Latvia, horticultural use and fuel use	1,484,970	1,076,142	823,938 ^r	676,000 ^r	650,000
Lithuania, horticultural use and fuel use	513,000	366,900	367,900	536,000 ^r	550,000
Moldova, fuel use ^c	475,000	475,000	475,000	475,000	475,000
New Zealand, horticultural use ^c	24,000	24,000	25,000	26,000	26,500
Norway, horticultural use ^c	30,000	30,000	30,000	30,000	30,000
Poland, horticultural use	316,000	431,000	400,000 ^c	400,000 ^c	400,000
Russia, horticultural use and fuel use	2,200,000 ^r	1,000,000 ^r	1,500,000 ^r	1,500,000 ^{r,c}	1,500,000
Spain ^c	50,000	50,000	57,229 ^{r,5}	60,000 ^r	60,000
Sweden: ^c					
Horticultural use	540,000	540,000	330,000	360,000	400,000
Fuel use	850,000	790,000	560,000	570,000	970,000
Total	1,390,000	1,330,000	890,000	930,000	1,370,000
Ukraine, horticultural use and fuel use ^c	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
United Kingdom ^c	500,000	250,000	250,000	250,000	250,000
United States, horticultural use	642,000	634,000	696,000	685,000	551,000 ⁵
Grand total	26,258,851 ^r	23,988,760 ^r	26,078,781 ^r	25,714,318 ^r	25,795,900
Of which:					
Horticultural use	4,811,904	5,003,138 ^r	4,903,071 ^r	4,954,447 ^r	4,829,500
Fuel use	14,185,977	14,225,580	16,406,643 ^r	15,657,871 ^r	15,849,900
Unspecified	7,260,970 ^r	4,760,042 ^r	4,769,067 ^r	5,102,000 ^r	5,116,500

^cEstimated. ^rRevised.

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

²Table includes data available through June 20, 2007.

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

⁴Fiscal year data.

⁵Reported figure.