

2011 Minerals Yearbook

PEAT [ADVANCE RELEASE]

PEAT

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In 2011, peat produced in the conterminous United States was 568,000 metric tons (t); output from Alaska was estimated to be 61,500 cubic meters (L.A., Harbo, mineral specialist, Alaska Office of Economic Development, oral c ommun., September 5, 2012). World peat production for 2011 was estimated to be 26.3 million metric tons (Mt). The leading peat-producing countries were Finland, Ireland, Germany, Belarus, Sweden, Russia, Canada, and Latvia, in decreasing order of tonnage (table 9).

The United States was 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 85% of domestic peat production, followed by sphagnum moss with 10%; hypnum moss with 4%; and humus with 1% (table 4). Florida, with 449,000 t, accounted for 79% of U.S. peat production (table 3).

Peat is a 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 peat 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 have 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 55% 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 39 operations to which a survey request was sent, 33 responded. Of the respondents, 29 were active operations, 3 were idle, and 1 closed in 2011. Data for nonrespondents were estimated based on responses to the 2010 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 2011 was 568,000 t, about a 10% decrease from that of 2010 (table 1). In 2011, 74% of domestic production came from just five operations (table 2). In all regions of the United States, peat production was reported to have decreased (table 3). Output from Alaska was estimated to be 61,500 cubic meters in 2011, according to the Alaska Department

of Natural Resources, which conducted its own survey of mineral production in the State (L.A., Harbo, mineral specialist, Alaska Office of Economic Development, oral commun., September 5, 2012). Peat production in Alaska was reported by volume only.

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 water.

Sales of domestic peat decreased slightly to 595,000 t in 2011 from 605,000 t in 2010. Packaged products composed 11% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption was estimated to be 3% lower than that of 2010. Potting soil and general soil improvement mixes were the two leading usage categories, accounting for 72% of domestic sales tonnage and 70% of the volume (table 5). Other significant uses, by quantity of sales, included golf course applications, nursery applications, and seed inoculants. The United States imported 65% of its 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 by 33% to 133,000 t in 2011 from 100,000 t in 2010 (table 1). Reed-sedge peat accounted for 66% of total stocks, followed by sphagnum moss, hypnum moss, and humus (table 4).

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was about \$14 million, according to the annual survey of domestic peat producers. The average unit value decreased by 7% to \$22.73 per metric ton compared with \$24.39 per ton in 2010 (table 1). On an average unit-value

basis, sphagnum moss was valued at \$52.59 per ton, f.o.b. plant; hypnum moss, \$33.56 per ton; humus, \$21.04 per ton; and reed-sedge, \$19.92 per ton (table 7).

Foreign Trade

U.S. companies exported 49,000 t of peat (table 1). Imports of peat increased by about 4% to 982,000 t from 947,000 t in 2010 (tables 1 and 8). The total customs import value was \$228 million or \$231.82 per ton. Imports of peat (sphagnum moss) from Canada increased to 954,000 t, which represented 97% of total United States imports and 85% of total Canadian production.

World Review

Finland, Ireland, Germany, Belarus, Sweden, Russia, Canada, and Latvia were the leading peat-producing countries, in decreasing order of tonnage (table 9). World peat production for 2011 was estimated to be 26.3 Mt, slightly higher than that of 2010. Other significant producing countries included Estonia, Poland, 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 peat (sphagnum moss) was estimated to have decreased to 1.12 Mt in 2011 from 1.26 Mt in 2010. 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, Nova Scotia, Ontario, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2012). Heavy rainfall during the summer resulted in the decrease of peat harvesting in eastern Canada.

The Government of Canada granted the Québec Peat Moss Producers Association (APTHQ) about CAN\$250,000 to implement a project aimed at developing and testing rehabilitation and restoration techniques for peatlands at the end of production. APTHQ would spend 2 years collaborating with eight sphagnum peat moss producers to develop techniques for restoring and rehabilitating peatlands (Québec Peat Moss Producers Association, 2011).

Russia.—In July, the Russian and German Governments agreed to the Russian peatland restoration project (PeatRus). This project had financing through Germany's International Climate Initiative and the political backing of the Russian Government. The goal of the project was to reflood 35,000 hectares of dried-out peat bogs and reduce carbon dioxide emissions from them (Pearce, 2011).

Outlook

The domestic short-term peat situation will likely include steadily increasing Canadian imports and fluctuating domestic peat production. The number of domestic producers likely 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 restrictions on permitting new production sites likely will reduce or slow the growth of the domestic peat industry. Also, peatlands have been identified as carbon sinks, storing more carbon dioxide per unit hectare than any other ecosystem. Preservation of peatlands may become a high priority in the efforts to reduce greenhouse gas emissions.

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TABLE 1 SALIENT PEAT STATISTICS¹

(Thousand metric tons and thousand dollars unless otherwise specified)

	2007	2008	2009	2010	2011
United States: ²					
Number of active producers	38	37	38	37 ^r	36
Production	635	615	609	628	568
Sales by producers:					
Quantity:					
Bulk	590	546	559	554	535
Packaged	104	102	85	51	60
Total	694	647	644	605	595
Value	17,700	17,100	15,000	14,800	13,500
Average value dollars per metric ton	25.59	26.42	23.24	24.39	22.73
Average value, bulk do.	24.69	24.73	22.06	24.28	22.12
Average value, packaged or baled do.	30.64	36.24	31.01	26.48	28.14
Exports	56	57 ³	77	69	49
Imports for consumption	977	936	906	947	982
Consumption, apparent ⁴	1,590	1,440	1,440	1,560	1,500
Stocks, December 31, producers'	98	152	149	100	133
World, production	31,500 ^r	28,200 ^r	25,900 ^r	25,700 ^r	26,300 ^e

^eEstimated. ^rRevised. do. Ditto.

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

²Excludes Alaska.

³Source: U.S. Census Bureau; data adjusted by the U.S. Geological Survey.

⁴Apparent consumption equals U.S. production plus imports minus exports plus adjustments for industry stock changes.

			Production		
Size	Active operation	ations	(thousand metric ton		
(metric tons per year)	2010	2011	11 2010 2		
23,000 and more	6	5	495	420	
9,000 to 22,999	6	6	85	93	
5,000 to 8,999	4	5	25	35	
1,000 to 4,999	7	6	17	15	
Less than 1,000	14 ^r	14	7	4	
Total	37 ^r	36	628	568	

 TABLE 2

 RELATIVE SIZE OF PEAT OPERATIONS IN THE UNITED STATES¹

^rRevised.

¹Data 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 2011, BY STATE¹

				Sales		
	Active	Production	Quantity	Value ²	Percentage	
Region and State	operations	(metric tons)	(metric tons)	(thousands)	packaged	
East:						
Florida	7	449,000	494,000	\$9,370	3	
Other ³	9	24,900	20,600	1,130	39	
Total or average	16	474,000	515,000	10,500	3	
Great Lakes:						
Minnesota	9	59,000	44,200	2,490	47	
Other ⁴	8	33,200	34,500	479	72	
Total or average	17	92,100	78,700	2,970	58	
West ⁵	3	1,130	1,500	58		
Grand total or average	36	568,000	595,000	13,500	11	

-- Zero.

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 Pennsylania.

⁴Includes Illinois, Indiana, Michigan, and Ohio.

⁵Includes Iowa, Washington, and Wisconsin.

TABLE 4 U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS IN 2011, BY TYPE

				Yearend
	Active	Production ²	Percentage of	stocks ²
Туре	operations ¹	(metric tons)	production	(metric tons)
Sphagnum moss	9	54,400	10	23,300
Hypnum moss	4	21,200	4	16,300
Reed-sedge	17	484,000	85	87,900
Humus	6	8,120	1	5,760
Total ³	36	568,000	100	133,000

¹Some plants produce multiple types of peat.

²Data are rounded to no more than three significant digits.

³May not add to totals shown.

TABLE 5 U.S. PEAT SALES BY PRODUCERS IN 2011 BY TYPE AND USE $^{\rm 1}$

		Sphagnum me	OSS		Hypnum mos	S
	Quantity			Qua	ntity	
	Weight (metric	Volume ² (cubic	Value	Weight (metric	Volume (cubic	Value
Use	tons)	meters)	(thousands)	tons)	meters)	(thousands)
Earthworm culture medium				W	W	W
General soil improvement	27,800	204,000	\$1,270	2,190	4,400	\$76
Golf courses	W	W	W			
Ingredient for potting soils	4,170	17,000	307	W	W	W
Mixed fertilizers				W	W	W
Nurseries	W	W	W	32	100	2
Packing flowers, plants, shrubs, etc.						
Seed inoculant						
Vegetable growing						
Other	W	W	W			
Total	48,800	332,000	2,560	5,130	10,000	172
	_	Reed-sedge	2		Total ³	
	Qua	Quantity Quantity		ntity		
	Weight	Volume		Weight	Volume	
	(metric	(cubic	Value	(metric	(cubic	Value
	tons)	meters)	(thousands)	tons)	meters)	(thousands)
Earthworm culture medium	W	W	W	W	W	W
General soil improvement	55,800	126,000	\$763	85,800	334,000	\$2,110
Golf courses	6,070	28,100	585	6,070	28,100	585
Ingredient for potting soils	335,000	749,000	6,230	342,000	772,000	6,670
Mixed fertilizers	W	W	W	W	W	W
Nurseries	3,680	17,400	W	3,710	17,500	W
Packing flowers, plants, shrubs, etc.				W	W	W
Seed inoculant	W	W	W	2,680	W	55
Vegetable growing	W	W	W	W	W	W
Other				W	W	W
Total	534,000	1,220,000	10,400	595,000	1,570,000	13,500

W Withheld to avoid disclosing company proprietary data; included in "Total." -- 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.

³Total includes humus; individual data withheld to avoid disclosing company proprietary data.

TABLE 6

AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2011

(Kilograms per cubic meter)¹

	Sphagnum	Hypnum	Reed-	
	moss	moss	sedge	Humus
Bulk	241	670	573	776
Packaged	146		583	736
Bulk and packaged	192	670	574	770

-- Zero.

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

TABLE 7PRICES FOR PEAT IN 20111

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	48.08	33.56	20.50	17.68	22.12
Per cubic meter	11.56	22.50	11.75	13.72	11.83
Packaged or baled:					
Per metric ton	59.63		12.76	39.35	28.14
Per cubic meter	8.69		7.43	28.98	8.43
Average:					
Per metric ton	52.59	33.56	19.92	21.04	22.73
Per cubic meter	10.09	22.50	11.44	16.19	11.26
Imported, total, per metric ton ²	XX	XX	XX	XX	231.82

XX Not applicable. -- Zero.

¹Prices are free on board plant.

²Average customs value.

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

	20	10	20	11
	Quantity	Value ²	Quantity	Value ²
Country	(metric tons)	(thousands)	(metric tons)	(thousands)
Belgium	911	\$208 ^r	120	\$10
Canada	921,000	215,000 ^r	954,000	219,000
Chile	142	103 ^r	22	70
Estonia	1,570	387 ^r	5,340	1,370
Finland	469	175 ^r	265	113
Germany	439	100 ^r	571	133
India	431	157	170	93
Ireland	1,900	565 ^r	1,330	440
Latvia	16,800	5,570 ^r	16,700	4,970
Lithuania	158	34 ^r	303	70
Netherlands	1,380	409 ^r	1,160	522
New Zealand	138	49 ^r	1,120	65
Norway	361	1,630 ^r		
Sweden	1,220	467 ^r	1,040	390
United Kingdom	190	76 ^r		
Other	196	149 ^r	176	100
Total	947,000	225,000	982,000	228,000

^rRevised. -- Zero.

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}

(Thousand metric tons)

Country ³	2007	2008	2009	2010	2011 ^e
Argentina, horticultural use	14	12 ^r	8 ^r	6 ^r	7
Australia ^e	7	7	7	7	7
Belarus:					
Horticultural use	318 ^{r, e}	395 ^{r, e}	272	242	230
Fuel use	2,502 ^r	2,361 ^r	2,216	2,352	2,500
Total	2,820 ^r	2,756 ^r	2,488	2,593	2,730
Burundi, fuel use	7	10	11	13 ^r	15
Canada, horticultural use	1,282	1,151	1,131	1,262	1,122 ^{p, 4}
Denmark, horticultural use ^e	213 4	128	128	128	128
Estonia:					
Horticultural use	964	705	110	361	360
Fuel use	475	213	419	604	600
Total	1,439	919	529	965	960
Finland:					
Horticultural use	8,671	6,933	5,576	5,580 °	5,580
Fuel use	1,145	1,552	876	880 ^e	880
Total	9,816	8,485	6,452	6,460 ^e	6,460
France, horticultural use ^e	200	200	200	200	200
Germany, horticultural use	3,064 ^r	2,826 ^r	3,085 ^r	2,868 ^r	2,934 4
Hungary, horticultural use ^e	90	90	90	107^{-4}	100
Ireland: ⁵					
Horticultural use ^e	500	500	500	500	500
Fuel use	2,700	3,000	2,800	2,800 e	2,800
Total	3,200	3,500	3,300	3,300 ^e	3,300
Latvia, horticultural and fuel uses	1,000 ^e	1,000	1,164	694 ^r	1,120
Lithuania, horticultural and fuel uses	307	521	543	327	326
Moldova, fuel use ^e	475	475	475	475	475
New Zealand, horticultural use ^e	27	27	26	26	26
Norway, horticultural use	140	438	440 ^e	440 ^e	425
Poland, horticultural and fuel uses	641	632	594	672	670
Russia, horticultural and fuel uses	1,300	1,300	1,300 e	1,300 e	1,650
Spain ^e	60	60	60	60	60
Sweden: ^e					
Horticultural use	1,500	1,130	1,230	1,230	1,230
Fuel use	2,640	1,320	1,320	1,320	1,320
Total	4,140	2,450	2,550	2,550	2,550
Ukraine, horticultural and fuel uses	595 ^r	558 ^r	691	597 ^e	454 ⁴
United Kingdom	1	1 ^r	1 ^r	1	1
United States, horticultural use	635	615	609	628	568 ⁴
Grand total	31,500 ^r	28,200 ^r	25,900 r	25,700 ^r	26,300
Of which:					
Horticultural use	17,600 ^r	15,100 ^r	13,400 ^r	13,600 ^r	13,400
Fuel use	9,940 ^r	8,930 ^r	8,120	8,440	8,590
Unspecified	3,910 ^r	4,080 ^r	4,360	3,660 ^r	4,290

^eEstimated. ^pPreliminary. ^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 July 8, 2012. One cubic meter equals 0.8806 metric ton.

³In addition to the countries listed, Austria, Chile, Iceland, Italy, and Romania produced negligible amounts of peat. ⁴Reported figure.

⁵Fiscal year data.