

2010 Minerals Yearbook

PEAT [ADVANCE RELEASE]

PEAT

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In 2010, peat produced in the conterminous United States was 628,000 metric tons (t); output from Alaska was estimated to be 59,800 cubic meters (Szumigala and others, 2011, p. 44). World peat production for 2010 was estimated to be 23.4 million metric tons (Mt). The leading peat producing countries were Finland, Ireland, 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 83% of domestic peat production, followed by sphagnum moss with 11%; hypnum moss with 4%; and humus with 2% (table 4). Florida, with 470,000 t, accounted for 75% 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 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 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 42 operations to which a survey request was sent, 28 responded. From the respondents, there were 26 active operations and 2 idle operations in 2010. Data for nonrespondents were estimated based on responses to the 2009 survey or other sources. Most peat operations are relatively small and sell their products regionally. Peat production in the conterminous United States in 2010 was 628,000 t, a 3% increase from that of 2009 (table 1). In 2010, 79% of domestic production came from just six operations (table 2). A slight increase in peat production was reported in the Eastern region, and an increase of 9% was reported for the Great Lakes region (table 3). Output from Alaska was estimated to be 59,800 cubic meters in 2010, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Szumigala and others, 2011, p. 44). 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 by 6% to 605,000 t in 2010 from 644,000 t in 2009. Packaged products composed 8% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption was estimated to be 8% higher than that of 2009. Potting soil and general soil improvement mixes were the two leading usage categories, accounting for 95% of domestic sales tonnage and 91% of the volume (table 5). Other significant uses, by quantity of sales, included golf course applications, earthworm culture, seed inoculants, and nursery applications. The United States imported 59% 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 decreased by 33% to 100,000 t in 2010 from 149,000 t in 2009 (table 1). Reed-sedge peat accounted for 91% of total stocks, followed by humus, sphagnum moss, and hypnum moss (table 4).

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was about \$15 million, according to the annual survey of domestic peat producers. The average unit value increased by 5% to \$24.39 per metric ton compared with \$23.24 per ton in 2009 (table 1). On an average unit-value basis, sphagnum moss was valued at \$45.95 per ton, f.o.b. plant; hypnum moss, \$31.32 per ton; humus, \$30.81 per ton; and reed-sedge, \$21.48 per ton (table 7).

Foreign Trade

U.S. companies exported 69,000 t of peat (table 1). Imports of peat increased by about 5% to 947,000 t from 906,000 t in 2009 (tables 1 and 8). The total customs import value was \$225 million or \$237.11 per ton. Imports of peat (sphagnum moss) from Canada increased to 921,000 t, which represented 97% of total U.S. imports and 73% of total Canadian production.

World Review

Finland, Ireland, Belarus, Sweden, Russia, Canada, and Latvia were the leading peat-producing countries, in decreasing order of tonnage (table 9). World peat production for 2010 was estimated to be 23.4 Mt, slightly higher than that of 2009. Other significant producing countries included Estonia, 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 peat (sphagnum moss) was estimated to have increased to 1.26 Mt in 2010 from 1.13 Mt in 2009. 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, 2011). Favorable climatic conditions in the summer of 2010 allowed increased peat production in Alberta, New Brunswick, and Quebec.

In 2010, Peat Resources Ltd. and BioEnergy Ltd. signed a letter of intent to collaborate on research and development to improve biomass processing technology. Peat Resources has peatland properties in Newfoundland and Ontario and has established a small-scale peat processing facility in Stephenville, Newfoundland (Peat Resources Ltd., 2010).

Indonesia.—Indonesia's president announced a 2-year moratorium on new concessions to convert virgin forests and peatlands into palm oil plantations, part of an internationally backed strategy to reduce greenhouse gas emissions from deforestation. Indonesia is one of the world's largest emitters of greenhouse gases because of its clearing and burning of the forests and peatlands for logging and conversion into palm oil plantations (CNN, 2010).

United Kingdom.—In December, the Department for Environment, Food and Rural Affairs published a consultation on proposals to phase out the horticultural use of peat by amateur gardeners in England by 2020, which was estimated to account for 2 million cubic meters of the United Kingdom's annual peat consumption. Also included were the phase out of peat in the Government and wider public sector by 2015 and the phase out of peat by professional growers of fruit, plants, and vegetables by 2030. By 2030, all markets were to use more sustainable peat-free alternatives (Department for Environment Food and Rural Affairs, 2010). The Department's goal was to

preserve peatlands, which may be important for biodiversity, carbon storage, and flood management.

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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 $\label{eq:table 1} \textbf{TABLE 1} \\ \textbf{SALIENT PEAT STATISTICS}^1$

(Thousand metric tons and thousand dollars unless otherwise specified)

		2006	2007	2008	2009	2010
United States: ²						
Number of active producers		39	38	37	38	38
Production	_	551	635	615	609	628
Sales by producers:						
Quantity:						
Bulk		525	590	546	559	554
Packaged	_	209	104	102	85	51
Total		734	694	647 ^r	644	605
Value		20,100	17,700	17,100	15,000	14,800
Average value	dollars per metric ton	27.34	25.59	26.42	23.24	24.39
Average value, bulk	do.	23.00	24.69	24.73	22.06	24.28
Average value, packaged or baled	do.	38.28	30.64	36.24	31.01	26.48
Exports		41	56	57 ^e	77	69
Imports for consumption		924	977	936	906	947
Consumption, apparent ³		1,500	1,590	1,440	1,440	1,560
Stocks, December 31, producers'		128	98	152	149	100
World, production		27,600 r	28,100 ^r	25,100 ^r	22,900 ^r	23,400 ^e

^eEstimated. ^rRevised. do. Ditto.

TABLE 2
RELATIVE SIZE OF PEAT OPERATIONS IN THE UNITED STATES

			Production		
Size	Active oper	(thousand me	tric tons)		
(metric tons per year)	2009	2010	2009	2010	
23,000 and more	5	6	453	495	
9,000 to 22,999	7	6	97	85	
5,000 to 8,999	5	4	33	25	
1,000 to 4,999	11	7	22	17	
Less than 1,000	10	15	4	7	
Total	38	38	609	628	

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.

 ${\it TABLE~3}$ U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2010, BY ${\it STATE}^1$

				Sales	
		Production	Quantity		
	Active	(thousand	(thousand	Value ²	Percentage
Region and State	operations	metric tons)	metric tons)	(thousands)	packaged
East:					
Florida	7	470	480	\$9,710	3
Pennsylvania	4	2	2	58	39
Other ³	7	45	42	1,830	1
Total or average	18	517	524	11,600	3
Great Lakes:					
Minnesota	9	74	41	2,500	29
Other ⁴	8	34	36	494	64
Total or average	17	108	77	2,990	46
West ⁵	3	4	5	163	36
Grand total or average	38	628	605	14,800	9

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

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2010, BY TYPE

	Active	Production ²	Percentage of	Yearend stocks ²
Type	operations ¹	(metric tons)	production	(metric tons)
Sphagnum moss	9	66,900	11	1,790
Hypnum moss	5	26,100	4	691
Reed-sedge	17	525,000	83	91,000
Humus	8	10,300	2	6,980
Total	38	628,000	100	100,000

¹Some plants produce multiple types of peat; may not add to totals shown.

²Values for free on board producing plant.

³Includes Maine, New Jersey, and New York.

⁴Includes Illinois, Indiana, Michigan, and Ohio.

⁵Includes Iowa, Washington, and Wisconsin.

²Data are rounded to no more than three significant digits; may not add to totals shown.

 $\label{eq:table 5} \text{U.S. PEAT SALES BY PRODUCERS IN 2010 BY TYPE AND USE}^1$

	Sphagnum moss				Hypnum moss			Reed-sedge		
	Qua	Quantity		Quantity		1		Quantity		
	Weight	Volume ²		Weight	Volume		Weight	Volume		
	(metric	(cubic	Value	(metric	(cubic	Value	(metric	(cubic	Value	
Use	tons)	meters)	(thousands)	tons)	meters)	(thousands)	tons)	meters)	(thousands)	
Earthworm culture medium	186	410	2	2,180	4,000	\$52	2,290	5,050	\$51	
General soil improvement	52,500	328,000	2,200	1,910	3,500	58	53,900	113,000	835	
Golf courses	9,590	65,000	580				6,950	30,000	670	
Ingredient for potting soils	2,910	15,000	216	898	2,130	34	453,000	916,000	9,210	
Mixed fertilizers				272	500	13				
Nurseries	408	2,000	16	272	750	13	2,310	10,300	151	
Packing flowers, plants, shrubs, etc.										
Seed inoculant							3,410	11,200	280	
Vegetable growing	8	23					1,400	2,580	33	
Other				2,100	4,620	69				
Total	65,600	410,000	3,010	7,620	15,500	239	523,000	1,090,000	11,200	
		Humus			Total					

		Hamas			10111	
	Qua	ıntity		Qua	ntity	
	Weight	Volume		Weight	Volume	
	(metric	(cubic	Value	(metric	(cubic	Value
	tons)	meters)	(thousands)	tons)	meters)	(thousands)
Earthworm culture medium	308	504	\$8	4,960	9,960	\$114
General soil improvement	2,670	4,910	32	111,000	449,000	3,120
Golf courses	218	400	2	16,800	95,400	1,250
Ingredient for potting soils	4,690	8,620	206	461,000	941,000	9,670
Mixed fertilizers				272	500	13
Nurseries	650	1,210	27	3,650	14,300	207
Packing flowers, plants, shrubs, etc.	272	500	3	272	500	3
Seed inoculant	272	500	3	3,680	11,700	283
Vegetable growing				1,410	2,600	33
Other				2,100	4,620	69
Total	9,080	16,600	281	605,000	1,530,000	14,800

⁻⁻ Zero.

 ${\bf TABLE~6}$ AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2010

(Kilograms per cubic meter)¹

	Sphagnum	Hypnum	Reed-	
	moss	moss	sedge	Humus
Bulk	218	664	634	719
Packaged	168	593	571	678
Bulk and packaged	209	643	629	713

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

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

 $^{^2\}mbox{Volume}$ of nearly all sphagnum moss was measured after compaction and packaging.

$\label{eq:table 7} \text{PRICES FOR PEAT IN } 2010^1$

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	43.35	30.66	21.78	31.20	24.28
Per cubic meter	9.45	20.36	13.81	22.30	12.87
Packaged or baled:					
Per metric ton	61.79	33.07	17.62	29.33	26.48
Per cubic meter	10.36	19.62	10.06	19.87	10.58
Average:					
Per metric ton	45.95	31.32	21.48	30.81	24.39
Per cubic meter	9.61	20.14	13.50	21.98	12.62
Imported, total, per metric ton ²	XX	XX	XX	XX	237.11

XX Not applicable.

 $\label{eq:table 8} \textbf{U.S. IMPORTS FOR CONSUMPTION OF PEAT, BY COUNTRY}^1$

	20	009	20	10
	Quantity	Value ²	Quantity	Value ²
Country	(metric tons)	(thousands)	(metric tons)	(thousands)
Belgium	749	\$95	911	\$228
Bulgaria	148	16		
Chile			142	117
Canada	871,000	218,000	921,000	232,000
Estonia	1,580	361	1,570	598
Finland	781	317	469	208
France	155	52		
Germany	315	69	439	157
Ireland	1,690	514	1,900	902
Latvia	21,200	6,300	16,800	7,490
Lithuania	175	36	158	75
Netherlands	585	174	1,380	523
New Zealand	201	118	138	59
Norway	6,690	3,350	361	1,700
Sweden	1,190	298	1,220	634
United Kingdom			190	108
Other	230 ^r	171 ^r	196	148
Total	906,000	230,000	947,000	225,000

^rRevised. -- Zero.

Source: U.S. Census Bureau.

¹Prices are free on board plant.

²Average customs value.

 $^{^{1}\}mathrm{Data}$ are rounded to no more than three significant digits; may not add to totals shown.

²Customs value.

$\label{eq:table 9} \textbf{PEAT: WORLD PRODUCTION, BY COUNTRY}^{1,2}$

(Thousand metric tons)

Country ³	2006	2007	2008	2009	2010 ^e
Argentina, horticultural use	15	14	10	7 ^r	7
Australia ^e	7	7	7	7	7
Belarus:					
Horticultural use ^e	100	100	100	272 ^{r, 4}	242 4
Fuel use	2,125	2,507	2,500	2,216 ^r	2,352 4
Total	2,225	2,607	2,600	2,488 ^r	2,593 4
Burundi, fuel use	10	7	10	11 ^r	12
Canada, horticultural use	1,245	1,282	1,151	1,131	1,262 ^{p, 2}
Denmark, horticultural use ^e	262 ^r	213 ^{r, 4}	128 ^r	128 ^r	128
Estonia:					
Horticultural use	1,207	964	705	110 ^r	361 ⁴
Fuel use	507	475	213	419 ^r	604 4
Total	1,714	1,439	919	529 ^r	965 ⁴
Finland:					
Horticultural use	6,919 ^r	8,671 ^r	6,933 ^r	5,576 ^r	5,580
Fuel use	896 ^r	1,145 ^r	1,552 ^r	876 ^r	880
Total	7,815 ^r	9,816 ^r	8,485 °	6,452 ^r	6,460
France, horticultural use ^e	200	200	200	200	200
Germany, horticultural use	218 ^r	85 ^r	119 ^r	119 ^r	119
Hungary, horticultural use ^e	77 4	90	90	90	107^{-4}
Ireland: ⁵					
Horticultural use ^e	500	500	500	500	500
Fuel use	3,800	2,700 °	3,000 ^r	2,800 °	2,800
Total	4,300	3,200 ^r	3,500 ^r	3,300 ^r	3,300
Latvia, horticultural and fuel uses	931	1,000 e	1,000	1,164 ^r	$1,119^{-4}$
Lithuania, horticultural and fuel uses	471 ^r	307 ^r	521 ^r	543 ^r	327 4
Moldova, fuel use ^e	475	475	475	475	475
New Zealand, horticultural use ^e	27	27	27	26	26
Norway, horticultural use	69 ^r	140 ^r	438 ^r	440 r, e	440
Poland, horticultural and fuel uses	577 ^e	641	632 ^r	594 ^r	672 4
Russia, horticultural and fuel uses	1,400	1,300	1,300	1,300 e	1,300
Spain ^e	60	60	60	60	60
Sweden: ^e					
Horticultural use	1,511 ^{r, 4}	1,500 ^r	1,130 °	1,230 ^r	1,230
Fuel use	2,995 ^{r, 4}	2,640 ^r	1,320 °	1,320 °	1,320
Total	4,506 ^{r, 4}	4,140 ^r	2,450 °	2,550 ^r	2,550
Ukraine, horticultural and fuel uses	462	395	358	691 ^r	597 ⁴
United Kingdom		1	1	1	1
United States, horticultural use	551	635	615	609	628 4
Grand total	27,600 ^r	28,100 ^r	25,100 °	22,900 ^r	23,400
Of which:		-,	-,	,	-,
Horticultural use	12,900 ^r	14,400 ^r	12,100 ^r	10,400 ^r	10,800
Fuel use	10,800 ^r	9,950 ^r	9,070 °	8,120 °	8,440
Unspecified	3,910 ^r	3,710 ^r	3,880 °	4,360 ^r	4,080
en de la	3,710	3,710	2,000	7,500	7,000

^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.

 $^{^2\!\}text{Table}$ includes data available through July 8, 2011. 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.