



# 2009 Minerals Yearbook

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PEAT [ADVANCE RELEASE]

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# 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 Glenn J. Wallace, international data coordinator.**

In 2009, peat produced in the conterminous United States was 609,000 metric tons (t); output from Alaska was estimated to be 182,000 cubic meters (Hughes and other, 2010, p.11).

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 8%; hypnum moss with 6%; and humus with 3% (table 4). Florida accounted for 78% of U.S. peat production with 476,000 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 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 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 50 operations to which a survey request was sent, 35 responded, representing 70% of total production tonnage. From the respondents, there were 32 active operations, 2 idle operations, and 1 closed operation in 2009. Data for nonrespondents were estimated based on responses to the 2008 survey or other sources. Most peat operations are relatively small and sell their products regionally. Peat production in the conterminous United States in 2009 was 609,000 t, a slight decrease from that of 2008 (table 1). A decrease in peat production of 5% was reported in the Eastern region, and an increase of 21% was reported for the Great Lakes region. In 2009, 74% of domestic production came from just five operations (table 2). Output from Alaska was estimated to be 182,000 cubic meters in 2009, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Hughes and others, 2010, p. 11). 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 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 644,000 t in 2009 from 648,000 t in 2008. Packaged products composed 13% of total domestic sales tonnage and commanded premium prices for all grades of peat. Apparent consumption was estimated to be the same as that of 2008. Potting soil and general soil improvement mixes were the two leading usage categories, accounting for 89% of domestic sales tonnage and 83% 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 61% 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 decreased slightly to 149,000 t in 2009 from 152,000 t in 2008 (table 1). Reed-sedge peat accounted for 77% of total stocks, followed by hypnum moss, sphagnum 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 \$15 million, according to the annual survey of domestic peat producers. The average unit value decreased to \$23.24 per metric ton compared with \$26.42 per ton in 2008 (table 1). On an average unit-value basis, sphagnum moss was valued at \$68.61 per ton, f.o.b. plant; humus, \$30.04 per ton; hypnum moss, \$29.61 per ton; and reed-sedge, \$19.74 per ton (table 7).

## Foreign Trade

U.S. companies exported 77,000 t of peat (tables 1 and 8). Imports of peat decreased by about 3% to 906,000 t from 936,000 t in 2008 (table 8). The total customs import value was \$230 million or \$254.15 per ton. Imports of peat (sphagnum moss) from Canada decreased to 871,000 t, which represented 96% of total U.S. imports and 77% of total Canadian production.

## World Review

Finland, Ireland, Belarus, Russia, Sweden, Canada, and Latvia were the leading peat producing countries in decreasing order of tonnage (table 9). World peat production for 2009 was estimated to be 25 million metric tons (Mt), a slight increase from that of 2008. Other significant producing countries included Estonia, Poland, the United States, and Lithuania. 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 1.13 Mt in 2009 from 1.15 Mt in 2008. 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, 2010).

In 2009, Peat Resources Ltd.'s small-scale production facility in Stephenville, Newfoundland, produced more than 200 t of high-quality peat fuel pellets for testing and marketing purposes (Peat Resources Ltd., 2009).

As part of the Canadian Government's economic action plan, the town of Carrot River, Saskatchewan, received C\$5 million to build a 22-kilometer public road to access a new peat moss deposit, providing Premiere Horticulture Ltd. with a 20-year supply of peat moss and the ability to continue mining peat in the province (Western Economic Diversification Canada, 2009).

**Ireland.**—Bord na Mona Energy Ltd. planned to phase out the use of peat bogs to fuel power stations during the next 20 years. The company did not plan to open any more new bogs, as the existing peat bogs have the capacity to fuel the power generation stations for approximately 20 years. Renewable energy sources were planned for fueling the power stations in the future (Business and Leadership Ltd., 2009).

**Rwanda.**—Rwanda's sole cement manufacturer, CIMERWA, was set to benefit from peat mining. Peat, expected to replace the high-cost heavy fuel oil, was being mined at Gishoma in Rusizi district from a 144-hectare deposit by a newly created Rwanda Investment Group company called Peat Energy Company. Plans were to convert the energy source for the cement plant to 70% peat and 30% fuel technology (New Times, The, 2009).

## 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 likely 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. 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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## GENERAL SOURCES OF INFORMATION

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TABLE 1  
SALIENT PEAT STATISTICS<sup>1</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

	2005	2006	2007	2008	2009
United States: <sup>2</sup>					
Number of active producers	45	39	38	37	38
Production	685	551	635	615	609
Sales by producers:					
Quantity:					
Bulk	537	525	590	546	559
Packaged	214	209	104	102	85
Total	751	734	694	648	644
Value	20,800	20,100	17,700	17,100	15,000
Average value dollars per metric ton	27.76	27.34	25.59	26.42	23.24
Average value, bulk do.	23.08	23.00	24.69	24.73	22.06
Average value, packaged or baled do.	39.54	38.28	30.64	36.24	31.01
Exports	36	41	56	57 <sup>r,e</sup>	77
Imports for consumption	891	924	977	936	906
Consumption, apparent <sup>3</sup>	1,600	1,500	1,590	1,440	1,440
Stocks, December 31, producers <sup>7</sup>	195	128	98	152	149
World, production	26,000	25,700 <sup>r</sup>	25,600 <sup>r</sup>	24,900 <sup>r</sup>	25,000 <sup>e</sup>

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

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

<sup>2</sup>Excludes Alaska.

<sup>3</sup>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 (metric tons per year)	Active operations		Production (thousand metric tons)	
	2008	2009	2008	2009
23,000 and more	4	5	455	453
9,000 to 22,999	6	7	96	97
5,000 to 8,999	4	5	25	33
1,000 to 4,999	11	11	33	22
Less than 1,000	12	10	6	4
Total	37	38	615	609

TABLE 3  
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2009, BY STATE<sup>1</sup>

Region and State	Active operations	Production (thousand metric tons)	Sales		
			Quantity (thousand metric tons)	Value <sup>2</sup> (thousands)	Percentage packaged
East:					
Florida	7	476	527	\$10,100	5
Pennsylvania	4	3	3	90	65
Other <sup>3</sup>	7	28	27	1,310	60
Total or average	18	507	557	11,500	43
Great Lakes:					
Minnesota	9	63	44	2,850	54
Other <sup>4</sup>	8	36	38	471	38
Total or average	17	99	82	3,320	46
West <sup>5</sup>	3	4	5	140	26
Grand total or average	38	609	644	15,000	13

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

<sup>2</sup>Values for free on board producing plant.

<sup>3</sup>Includes Maine, New Jersey, and New York.

<sup>4</sup>Includes Illinois, Indiana, Michigan, and Ohio.

<sup>5</sup>Includes Iowa, Washington, and Wisconsin.

TABLE 4  
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS  
IN 2009, BY TYPE

Type	Active operations <sup>1</sup>	Production <sup>2</sup> (metric tons)	Percentage of production	Yearend stocks <sup>2</sup> (metric tons)
Sphagnum moss	9	48,100	8	9,370
Hypnum moss	5	35,600	6	18,600
Reed-sedge	16	510,000	83	114,000
Humus	8	15,900	3	6,430
Total	38	609,000	100	149,000

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

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

TABLE 5  
U.S. PEAT SALES BY PRODUCERS IN 2009, BY TYPE AND USE<sup>1</sup>

Use	Sphagnum moss			Hypnum moss			Reed-sedge		
	Quantity		Value (thousands)	Quantity		Value (thousands)	Quantity		Value (thousands)
	Weight (metric tons)	Volume <sup>2</sup> (cubic meters)		Weight (metric tons)	Volume (cubic meters)		Weight (metric tons)	Volume (cubic meters)	
Earthworm culture medium	--	--	--	136	500	\$2	153	342	\$2
General soil improvement	14,200	96,800	\$594	4,670	15,800	102	48,800	107,000	705
Golf courses	9,680	60,500	819	381	1,400	6	8,370	36,500	745
Ingredient for potting soils	11,300	8,620	551	2,100	6,780	45	480,000	1,020,000	9,030
Mixed fertilizers	1,280	--	59	272	500	13	--	--	--
Nurseries	233	--	11	26,400	54,100	742	2,500	12,900	189
Packing flowers, plants, shrubs, etc.	5,810	47,500	617	--	--	--	--	--	--
Seed inoculant	--	--	--	--	--	--	8,470	23,800	178
Vegetable growing	7	22	1	41	100	2	227	500	3
Other	1,200	660	13	2,100	4,620	70	--	--	--
Total	43,600	214,000	2,660	36,000	83,800	982	549,000	1,200,000	10,900
	Humus			Total					
	Quantity		Value (thousands)	Quantity		Value (thousands)			
	Weight (metric tons)	Volume (cubic meters)		Weight (metric tons)	Volume (cubic meters)				
Earthworm culture medium	236	451	\$4	525	1,290	\$8			
General soil improvement	4,460	7,560	62	72,100	228,000	1,460			
Golf courses	3,510	6,450	132	21,900	105,000	1,700			
Ingredient for potting soils	6,100	11,200	235	500,000	1,040,000	9,860			
Mixed fertilizers	--	--	--	1,550	500	71			
Nurseries	660	1,230	27	29,800	68,200	968			
Packing flowers, plants, shrubs, etc.	272	500	3	6,090	48,000	620			
Seed inoculant	272	500	3	8,750	24,300	181			
Vegetable growing	--	--	--	275	622	6			
Other	--	--	--	3,290	5,280	82			
Total	15,500	27,900	466	644,000	1,530,000	15,000			

-- Zero.

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

<sup>2</sup>Volume of nearly all sphagnum moss was measured after compaction and packaging.

TABLE 6  
AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2009

(Kilograms per cubic meter)<sup>1</sup>

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus
Bulk	233	648	596	744
Packaged	160	644	570	704
Bulk and packaged	178	646	593	727

<sup>1</sup>To convert kilograms per cubic meter to pounds per cubic yard multiply by 1.685.

TABLE 7  
PRICES FOR PEAT IN 2009<sup>1</sup>

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	65.28	28.98	20.37	22.71	22.06
Per cubic meter	15.21	18.77	12.13	16.90	12.06
Packaged or baled:					
Per metric ton	70.25	30.23	12.47	40.53	31.01
Per cubic meter	11.22	19.45	7.11	28.55	11.34
Average:					
Per metric ton	68.61	29.61	19.74	30.04	23.24
Per cubic meter	12.22	19.11	11.71	21.84	12.36
Imported, total, per metric ton <sup>2</sup>	XX	XX	XX	XX	254.15

XX Not applicable.

<sup>1</sup>Prices are free on board plant.

<sup>2</sup>Average customs value.

TABLE 8  
U.S. IMPORTS FOR CONSUMPTION OF PEAT, BY COUNTRY<sup>1</sup>

Country	2008		2009	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)
Belgium	--	--	749	\$95
Bulgaria	--	--	148	16
Canada	894,000	\$215,000	871,000	218,000
Estonia	1,810	303	1,580	361
Finland	662	223	781	317
France	1,060	367	155	52
Germany	379	113	315	69
Ireland	2,490	789	1,690	514
Latvia	29,800	8,970	21,200	6,300
Lithuania	1,140	252	175	36
Netherlands	183	96	585	174
New Zealand	198	101	201	118
Norway	3,090	497	6,690	3,350
Sweden	329	110	1,190	298
Other	623 <sup>r</sup>	240	318	238
Total	936,000	228,000	906,000	230,000

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Customs value.

Source: U.S. Census Bureau.

TABLE 9  
PEAT: WORLD PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Thousand metric tons)

Country <sup>3</sup>	2005	2006	2007	2008 <sup>e</sup>	2009 <sup>e</sup>
Argentina, horticultural use	11	15	14 <sup>r</sup>	10 <sup>r,4</sup>	10
Australia <sup>e</sup>	6	7	7	7	7
Belarus:					
Horticultural use <sup>e</sup>	100	100	100	100	100
Fuel use	2,308	2,125	2,507	2,500	2,500
Total	2,408	2,225	2,607	2,600	2,600
Burundi, fuel use	5	10	7	10 <sup>r,4</sup>	10
Canada, horticultural use	1,304	1,245	1,282	1,151 <sup>4</sup>	1,131 <sup>4</sup>
Denmark, horticultural use <sup>e</sup>	298	300	300	300	300
Estonia:					
Horticultural use	1,034	1,207	964	705 <sup>4</sup>	500
Fuel use	378	507	475	213 <sup>r,4</sup>	328 <sup>4</sup>
Total	1,412	1,714	1,439	919 <sup>r,4</sup>	828
Finland: <sup>e</sup>					
Horticultural use	900	900	900	900	900
Fuel use	8,200	8,200	8,200	8,200	8,200
Total	9,100	9,100	9,100	9,100	9,100
France, horticultural use <sup>e</sup>	200	200	200	200	200
Germany, horticultural use	116 <sup>r</sup>	108 <sup>r</sup>	112 <sup>r</sup>	99 <sup>r,4</sup>	94
Hungary, horticultural use <sup>e</sup>	75	77 <sup>4</sup>	90	90	90
Ireland: <sup>e,5</sup>					
Horticultural use	475	500	500	500	500
Fuel use	4,100 <sup>4</sup>	3,800	3,800	3,800	3,800
Total	4,575 <sup>4</sup>	4,300	4,300	4,300	4,300
Latvia, horticultural and fuel uses	791	931	1,000 <sup>e</sup>	1,000	1,000
Lithuania:					
Horticultural use	536	471	308	307 <sup>4</sup>	521 <sup>4</sup>
Fuel use	68	50	15	15	15
Total	604	521	323	322 <sup>4</sup>	536
Moldova, fuel use <sup>e</sup>	475	475	475	475	475
New Zealand, horticultural use <sup>e</sup>	26	27	27	27	26
Norway, horticultural use <sup>e</sup>	30	30	30	30	30
Poland, horticultural use <sup>e</sup>	639	577	641	632 <sup>r</sup>	630
Russia, horticultural and fuel uses	1,600	1,400	1,300	1,300 <sup>4</sup>	1,300
Spain <sup>e</sup>	60	60	60	60	60
Sweden: <sup>e</sup>					
Horticultural use	360	400	380	380	380
Fuel use	570	970	900	900	900
Total	930	1,370	1,280	1,280	1,280
Ukraine, horticultural and fuel uses	639	462	395	358 <sup>r,4</sup>	360
United Kingdom <sup>e</sup>	(6) <sup>4</sup>	(6)	(6)	(6)	(6)
United States, horticultural use	685	551	635	615 <sup>4</sup>	609 <sup>4</sup>
Grand total	26,000	25,700 <sup>r</sup>	25,600 <sup>r</sup>	24,900 <sup>r</sup>	25,000
Of which:					
Horticultural use	6,790 <sup>r</sup>	6,710 <sup>r</sup>	6,480 <sup>r</sup>	6,050 <sup>r</sup>	6,020
Fuel use	16,100	16,100	16,400	16,100	16,200
Unspecified	3,100	2,860	2,760	2,730 <sup>r</sup>	2,730

<sup>e</sup>Estimated. <sup>r</sup>Revised.

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

<sup>2</sup>Table includes data available through June 24, 2010.

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

<sup>4</sup>Reported figure.

<sup>5</sup>Fiscal year data.

<sup>6</sup>Less than ½ unit.