

PEAT

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Peat is a renewable natural organic material of botanical origin and commercial significance. Peatlands are situated predominately in shallow wetland areas of the Northern Hemisphere, where large deposits developed from the gradual decomposition of plant matter under anaerobic conditions.

Peat has widespread use as a plant-growth medium in a variety of horticultural and agricultural applications, where its fibrous structure and porosity promote a unique combination of water-retention and drainage characteristics. Commercial applications include potting soils, lawn and garden soil amendments, 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.

The United States remained a significant producer and consumer of peat for horticultural, agricultural, and industrial purposes. A variety of peat types were extracted and processed from 57 identified operations in 16 of the conterminous United States and by several companies in Alaska. The grades of peat, in order of importance, included reed-sedge, sphagnum moss, hypnum moss, and humus. Florida, Michigan, and Minnesota accounted for 80% of U.S. production. The United States imported slightly less than one-half its total domestic requirements, principally from Canada, where deposits of high-quality sphagnum moss are extensive.

U.S. production and sales of peat increased for the sixth consecutive year (table 1).

Production

Domestic production data for peat were developed from a voluntary survey of operations in the conterminous United States by the U.S. Geological Survey (USGS). Of the 76 operations to which a survey request was sent, 60 responded, representing 81% of total production. Peat production in 2001 was 870,000 metric tons (t), a 10% increase from that of 2000 (table 2). Production in Alaska was estimated to be 27,500 cubic meters in 2001, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Swainbank and Szumigala, 2002). Production was reported by volume only.

Geographically, domestic production was dominated by operations in Florida, Michigan, and Minnesota (table 3). Reed-sedge peat accounted for 78.5% of production by weight, followed by sphagnum moss, 9.9%; hypnum moss, 6.8%; and humus, 4.8% (table 4).

Consumption

Sales of domestic peat increased by 18% to 998,000 t, compared with those of 2000. Packaged products composed 50% of total domestic sales tonnage and commanded premium

prices for all grades except humus. Apparent consumption increased by 7% from that of 2000. General soil improvement and potting soil mixes were the two largest usage categories, accounting for 87% of domestic sales. Other significant uses included mixed fertilizers, nursery applications, golf course application, and seed inoculants. Imports of sphagnum moss from Canada accounted for 47% of U.S. consumption. Canadian peat was sold in bulk for blending in soil mixes and packaged for horticultural use.

Stocks

U.S. yearend stocks of peat decreased by 8% to 257,000 t (table 4). Reed-sedge peat accounted for 63% of total stocks, followed by sphagnum moss, humus, and hypnum moss.

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was \$24.8 million, according to the annual survey of domestic peat producers. The average unit value decreased to \$24.82 per metric ton compared with \$26.85 per ton in 2000. Packaged peat sold for a higher value for all grades except humus. On a unit-value basis, packaged sphagnum moss was valued at \$59.87 per ton, f.o.b. plant; hypnum moss, \$52.47 per ton; reed-sedge, \$22.99 per ton; and humus, \$13.47 per ton (table 7).

Foreign Trade

Imports of peat decreased by 1% to 776,000 t in 2001 (table 8). The total customs import value was \$158 million, or \$204.08 per ton. Imports of sphagnum moss from Canada decreased to 768,000 t, which represented 65% of total Canadian production (table 9). U.S. companies exported 31,000 t of peat.

World Review

World production remained unchanged at 27.9 million metric tons (Mt) in 2001 compared with 27.8 Mt in 2000. According to information available to the USGS, 24 countries reported to have produced peat (table 9). Production was dominated by Finland, Ireland, Germany, Belarus, Russia, and Canada, in order of importance. Other significant producing countries included Sweden, Estonia, the United States, Moldova, and Latvia. Peat is an important source of energy in Ireland, Scandinavia, and the former Soviet Union. In 2001, at least 14.4 Mt of reported world production was for fuel use. Most of the unspecified uses were believed to have been for horticultural use; however, information was not available to make an accurate estimate.

Production of sphagnum moss decreased by 7% to 1.19 Mt (table 9). New Brunswick, Quebec, and Alberta were the major producing provinces, in order of importance (Natural Resources

Canada, 2002§¹). Exports to the United States decreased to 768,000 t.

Outlook

Because peat is the primary constituent of growing media, the demand for peat generally follows that of horticultural applications. Over the past decade, golf course construction and maintenance, residential and commercial landscaping, and rising interest in home gardening, have all contributed to increased peat usage. Although demand for peat in the United States will likely continue to grow, the amount obtained from domestic producers may be supplanted by imports from Canada. Several other important factors, including Federal and State wetlands protection regulations, restrictions on permitting new bogs, and competition from composted yard waste and other organic materials also will have an influence the domestic peat industry.

Reference Cited

Swainbank, R.C., and Szumigala, D.J., 2002, Alaska's mineral industry 2001—

¹A reference that includes a section twist (§) is found in the Internet Reference Cited section.

A summary: Alaska Department of Natural Resources Information Circular 48, 15 p.

Internet Reference Cited

Natural Resources Canada, 2002, Preliminary estimate of the mineral production of Canada, by province—2001, accessed June 5, 2002, at URL <http://www.nrcan.gc.ca/mms/efab/mmsd/production/2001.pdf>.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Peat. Ch. in Mineral Commodities Summaries, annual.
Peat. Ch. in Minerals Yearbook, annual.
Peat. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

Other

Global Peat Resources, International Peat Society, 1996.
Peat. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Peat Industry Review 2001, New Brunswick Department of Natural Resources and Energy, 2002.

TABLE 1
SALIENT PEAT STATISTICS 1/

(Thousand metric tons, unless otherwise specified)

	1997	1998	1999	2000	2001
United States: 2/					
Number of active producers	56	60	58	61	57
Production	661	685	731	792 r/	870
Sales by producers	753	791	834	847	998
Bulk	432	399	444	483	500
Package	320	392	390	364	498
Value of sales thousands	\$17,500	\$19,200	\$22,100	\$22,700	\$24,800
Average per metric ton	\$23.23	\$24.26	\$26.48	\$26.85	\$24.82
Average per metric ton, bulk	\$21.65	\$24.98	\$25.83	\$23.45	\$22.91
Average per metric ton, packaged or baled	\$25.34	\$23.52	\$27.23	\$31.36	\$26.72
Exports	22	30	40	37	31
Imports for consumption	754	761	752	786	776
Consumption, apparent 3/	1,310	1,430	1,580	1,530 r/	1,640
Stocks, producers', December 31	421	408	272	279	257
World, production	32,200 r/	19,800 r/	31,000 r/	27,800 r/	27,900 e/

e/ Estimated. r/ Revised.

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

2/ Exclusive of 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 (metric tons per year)	Active operations		Production (thousand metric tons)	
	2000	2001	2000	2001
23,000 and over	9	11	559	662
9,000 to 22,999	7 r/	8	105 r/	122
5,000 to 8,999	10	8	72	53
1,000 to 4,999	17	8	51	24
Under 1,000	18 r/	22	6	9
Total	61	57	792 r/	870

r/ Revised.

TABLE 3
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2001, BY STATE 1/

Region and State	Active operations	Production, (thousand metric tons)	Sales		
			Quantity (thousand metric tons)	Value 2/ (thousands)	Percentage packaged
East:					
Florida	8	481	544	\$11,300	26
Pennsylvania	4	14	9	206	27
Other 3/	7	72	42	1,010	49
Total or average	19	568	595	12,600	27
Great Lakes:					
Michigan	9	156	208	4,750	88
Minnesota	13	59	83	4,430	65
Other 4/	11	80	107	2,910	87
Total or average	33	295	399	12,100	83
West 5/	5	7	4	109	13
Grand total or average	57	870	998	24,800	50

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, New York, North Carolina, and West Virginia.

4/ Includes Illinois, Indiana, Ohio, and Wisconsin.

5/ Includes Iowa, Montana, and Washington.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS IN 2001, BY TYPE

Type	Active operations	Production 1/ (metric tons)	Percentage of production	Yearend stocks 1/ (metric tons)
Sphagnum moss	8	85,900	9.9	64,500
Hypnum moss	8	59,200	6.8	2,190
Reed-sedge	29	683,000	78.5	163,000
Humus	14	41,500	4.8	28,100
Total	57 2/	870,000	100.0	257,000

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 2001, BY TYPE AND USE 1/

Use	Sphagnum moss			Hypnum moss			Reed-sedge		
	Quantity			Quantity			Quantity		
	Weight (metric tons)	Volume 2/ (cubic meters)	Value (thou- sands)	Weight (metric tons)	Volume (cubic meters)	Value (thou- sands)	Weight (metric tons)	Volume (cubic meters)	Value (thou- sands)
Earthworm culture medium	--	--	--	--	--	--	220	465	\$5
General soil improvement	51,600	451,000	\$2,950	11,900	25,500	\$644	467,000	1,060,000	9,520
Golf courses	7,490	46,600	627	1,230	3,000	30	10,400	38,800	793
Ingredient for potting soils	685	3,700	40	49,700	104,000	1,510	267,000	590,000	5,140
Mixed fertilizers	--	--	--	--	--	--	22,700	50,000	475
Nurseries	1,600	8,700	93	4,880	11,700	119	36,500	80,300	796
Packing flowers, plants, shrubs, etc.	--	--	--	454	1,000	11	21	50	1
Seed inoculant	--	--	--	--	--	--	4,420	9,790	1,070
Vegetable growing	137	740	4	1,230	3,000	30	2,310	5,100	50
Other	12,900	71,000	94	--	--	--	--	--	--
Total	74,400	582,000	3,810	69,400	148,000	2,350	810,000	1,830,000	17,800
	Humus			Total					
	Quantity			Quantity					
	Weight (metric tons)	Volume (cubic meters)	Value (thou- sands)	Weight (metric tons)	Volume (cubic meters)	Value (thou- sands)			
Earthworm culture medium	296	552	\$3	515	1,020	\$8			
General soil improvement	10,500	20,600	172	541,000	1,550,000	13,300			
Golf courses	363	700	5	19,500	89,000	1,460			
Ingredient for potting soils	15,400	18,700	210	333,000	717,000	6,910			
Mixed fertilizers	864	1,360	21	23,500	51,400	496			
Nurseries	1,250	2,140	29	44,200	103,000	1,040			
Packing flowers, plants, shrubs, etc.	1,180	2,500	23	1,650	3,550	35			
Seed inoculant	--	--	--	4,420	9,790	1,070			
Vegetable growing	1,060	1,850	18	4,730	10,700	102			
Other	13,300	23,300	284	26,200	94,300	377			
Total	44,200	71,700	765	998,000	2,630,000	24,800			

-- 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 2001

(Kilograms per cubic meter) 1/

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus
Bulk	236	612	586	686
Package	147	617	572	893
Bulk and package	167	613	579	806

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

TABLE 7
PRICES FOR PEAT IN 2001 1/

(Dollars per unit)

	Sphagnum moss	Hypnum moss	Reed- sedge	Humus	Average
Domestic:					
Bulk:					
Per metric ton	33.08	30.89	21.05	24.22	22.91
Per cubic meter	7.79	18.91	12.34	16.62	12.64
Packaged or baled:					
Per metric ton	59.87	52.47	22.99	13.47	26.72
Per cubic meter	8.79	32.37	13.15	12.02	12.03
Average:					
Per metric ton	51.18	33.83	22.03	17.31	24.82
Per cubic meter	8.56	20.73	12.75	13.95	12.31
Imported, total, per metric ton 2/	XX	XX	XX	XX	204.08

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/

Country	2000		2001	
	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)
Canada	783,000	\$156,000	768,000	\$157,000
Denmark	1,710	512	946	163
Finland	153	41	183	62
Germany	95	36	125	40
Ireland	651	109	4,480	391
Latvia	518	127	2,070	420
Netherlands	81	26	50	21
New Zealand	6	38	365	95
Other 3/	22 r/	57 r/	104	106
Total	786,000	157,000	776,000	158,000

r/ Revised.

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

2/ Customs value.

3/ Includes Armenia (2001), Australia (2001), Austria (2001), Chile, China, France (2000), Lithuania (2001), Madagascar (2001), Mexico (2001), Russia (2001), and Taiwan.

Source: U.S. Census Bureau.

TABLE 9
WORLD PRODUCTION OF PEAT, BY COUNTRY 1/ 2/

(Thousand metric tons)

Country 3/	1997	1998	1999	2000	2001 e/
Argentina, horticultural use e/	3	3	3	3	3
Australia e/	15	15	15	3	5
Belarus:					
Horticultural use	253	99	100	100 e/	100
Fuel use	2,768	2,035	3,090 r/ e/	2,000 e/	2,000
Total	3,021	2,134	3,190 r/ e/	2,100 e/	2,100
Burundi	9 r/	11 r/	20 r/	12 r/ e/	12
Canada, horticultural use	1,054	1,125 r/	1,253 r/	1,277 r/	1,187 4/
Denmark, horticultural use e/	205	205	200	200	200
Estonia, horticultural and fuel use	1,002	365	1,299 r/	586 r/	800
Finland: e/					
Horticultural use	600	150	1,595 r/ 4/	400	500
Fuel use	9,500	1,700	4,140 r/	7,000	6,000
Total	10,100	1,850	5,735 r/ 4/	7,400	6,500
France, horticultural use e/	200	200	200	200	200
Germany: e/					
Horticultural use	3,100 r/	3,350 r/	3,350 r/	3,400 r/	3,550
Fuel use	600 r/	650 r/	650 r/	660 r/	700
Total	3,700 r/	4,000 r/	4,000 r/	4,060 r/	4,250
Hungary, horticultural use e/	45	45	45	45	45
Ireland: e/					
Horticultural use	400	400	350	400	500
Fuel use	3,851 4/	4,000	5,600 r/	5,100	5,000
Total	4,251 4/	4,400	5,950 r/	5,500	5,500
Latvia, horticultural and fuel use	555	172	956 r/	347 r/	400
Lithuania, horticultural and fuel use	295	202	390 r/	246 r/	280
Moldova e/ 5/	475	475	475	475	475
New Zealand, horticultural use e/	27	23	22	24	24
Norway, horticultural use e/	30	30	30	30	30
Poland, horticultural and fuel use	206	243 r/	310 r/	200 e/	300
Russia 5/	3,363 r/	1,767 r/	3,350 r/	2,100 r/	2,100
Spain e/	60	60	50	50	50
Sweden: e/					
Horticultural use	350	200	440	300 r/	400
Fuel use	1,000	120	800	400	700
Total	1,350	320	1,240	700 r/	1,100
Ukraine e/ 5/	1,000	1,000	1,000	1,000	1,000
United Kingdom e/	550	500	500	500	500
United States, horticultural use	661	685	731	792 r/	870 4/
Grand total	32,200 r/	19,800 r/	31,000 r/	27,800 r/	27,900
Of which:					
Horticultural use	6,930 r/	6,510 r/	8,320 r/	7,170 r/	7,610
Fuel use	17,700 r/	8,510 r/	14,300 r/	15,200 r/	14,400
Unspecified	7,530 r/	4,810 r/	8,370 r/	5,520 r/	5,920

e/ Estimated. 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 25, 2002.

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

4/ Reported figure.

5/ Production appears to be for fuel use.