

PEAT

By Stephen M. Jasinski

Domestic survey data and tables were prepared by Jeff Milanovich, statistical assistant, and the world production table was prepared by Regina R. Coleman, international data coordinator.

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 have developed from the gradual decomposition of plant matter under anaerobic conditions.

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 deleterious materials suspended in municipal storm-drain water, pathogens from sewage effluents, and toxic materials from process waste streams. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water.

The United States is a significant producer and consumer of peat for horticultural and industrial purposes. Peat was extracted and processed from 55 identified operations in 15 of the conterminous United States and by several companies in Alaska. The grades 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, which is the most decomposed.

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 59 operations to which a survey request was sent, 41 responded, representing 64% of total production and 71% of value. Peat production in 2002 was 642,000 metric tons (t), a 26% decrease from that of 2001 (table 2). The large drop was primarily from one company ceasing peat harvesting at several locations. Output from Alaska was estimated to be 26,800 cubic meters in 2002, according to the Alaska Department of Natural Resources, which conducted its own survey of mineral production in the State (Szumigala and Swainbank, 2003). Production was reported by volume only.

Reed-sedge composed 88.3% of domestic peat production, followed by hypnum moss, 4.3%; sphagnum moss, 4%; and humus, 3.5% (table 4). Florida, Michigan, and Minnesota accounted for 87% of U.S. production (table 3).

Consumption

Sales of domestic peat fell by about 7% to 933,000 t compared with those of 2001. Packaged products composed 45% of total domestic sales tonnage and commanded premium

prices for all grades of peat. Apparent consumption decreased by about 13% from that of 2001 because of lower production and imports. General soil improvement and potting soil mixes were the two largest usage categories, accounting for 88% of domestic sale tonnage. Other uses, in order of sales volume, included nursery applications, golf course application, mixed fertilizers, and seed inoculants. The United States imported 54% of its 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 packaged for horticultural use; however, a detailed distribution of uses was not available.

Stocks

U.S. yearend stocks of peat decreased by 20% to 207,000 t (table 4). Reed-sedge peat accounted for 87% of total stocks, followed by sphagnum moss and humus.

Prices

The total reported free on board (f.o.b.) value for domestic peat sold in the United States was \$24.9 million, according to the annual survey of domestic peat producers. The average unit value increased to \$26.70 per metric ton compared with \$24.82 per ton in 2001. On a unit-value basis, packaged sphagnum moss was valued at \$61.15 per ton, f.o.b. plant; hypnum moss, \$78.37 per ton; reed-sedge, \$28.27 per ton; and humus, \$14.34 per ton (table 7).

Foreign Trade

Imports of peat decreased by 2% to 763,000 t from 2001 (table 8). The total customs import value was \$149 million, or \$194.67 per ton. Imports of sphagnum moss from Canada decreased to 751,000 t, which represented 98% of total imports and 58% of total Canadian production (table 9). U.S. companies exported 32,000 t of peat.

World Review

World production declined to 24.2 million metric tons (Mt) in 2002 compared with 27 Mt in 2001. Peat harvesting in Ireland was limited by excessive rain in the spring and summer and accounted for most of the drop in world production (Peat News, 2002b). According to information available to the USGS, 24 countries were reported to have produced peat (table 9). Finland, Germany, Ireland, Belarus, Russia, and Canada, in order of production, were the top producing countries. Other significant producing countries included Ukraine, Sweden, Estonia, the United States, Moldova, and Latvia. Peat is an

important source of energy in Eastern Europe, Ireland, and Scandinavia. In 2002, at least 10.2 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.

Canada.—Production of sphagnum moss decreased slightly to 1.3 Mt (table 9). New Brunswick, Quebec, and Alberta were the major producing Provinces, in order of importance, accounting for 77% of production. British Columbia, Manitoba, Newfoundland, Nova Scotia, Prince Edward Island, and Saskatchewan also reported peat production (Natural Resources Canada, 2003§¹). Exports to the United States decreased to 751,000 t.

United Kingdom.—The Scotts Company reached an agreement with English Nature, the statutory body for conservation in England, to cease harvesting peat at three locations totaling 1,500 hectares in South Yorkshire and Cumbria. English Nature paid Scotts £17 million for the three sites and began restoration of two of the sites to their original habitat. Scotts will be permitted to extract peat from one of the bogs, Hatfield Moor in South Yorkshire, for 3 years as it makes the transition to using peat imported from Ireland at the Hatfield facility where the peat is blended with other organic material to produce potting soil. This agreement will cut peat production capacity in the United Kingdom by one-half (Peat News, 2002a).

Outlook

Because peat is the primary constituent of growing media, the demand for peat generally follows that of horticultural applications. During the past decade, golf course construction and maintenance, residential and commercial landscaping, and rising interest in home gardening have contributed to increased peat usage. According to recent studies, four out of five U.S. households undertook some form of lawn and garden activity in 2002, and the average family spent \$466 per year on their yards, the highest level in 5 years. Overall, gardening is a \$40 billion per year industry in the United States (Kelly, 2002). Although demand for peat in the United States will

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

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 on the domestic peat industry.

References Cited

- Kelly, Susan, 2003, Garden sales bright spot in weak U.S. economy: Chicago, IL, Reuters, May 9, 2 p.
Peat News, 2002a, Major developments in the UK peat market: Peat News, no. 2a, March 6, 2 p.
Peat News, 2002b, Peat harvesting summer 2002: Peat News, no. 8, August 22, 2 p.
Szumigala, D.J., and Swainbank, R.C., 2003, Alaska's mineral industry 2002—A summary: Alaska Department of Natural Resources Information Circular 49, 17 p.

Internet Reference Cited

- Natural Resources Canada, 2003, Preliminary estimate of the mineral production of Canada, by province—2002, accessed April 8, at URL <http://mmsd1.mms.nrcan.gc.ca/mmsd/production/2002/02pprod.pdf>.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

- Peat. Ch. in Mineral Commodities Summaries, 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 2002. New Brunswick Department of Natural Resources and Energy, 2003.
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)

| | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------------------------|--------|--------|---------------------|---------------------|---------------------|
| United States: ² | | | | | |
| Number of active producers | 60 | 58 | 61 | 57 | 55 |
| Production | 685 | 731 | 792 | 870 | 642 |
| Sales by producers: | | | | | |
| Quantity: | | | | | |
| Bulk | 399 | 444 | 483 | 500 | 515 |
| Package | 392 | 390 | 364 | 498 | 418 |
| Total | 791 | 834 | 847 | 998 | 933 |
| Value | 19,200 | 22,100 | 22,700 | 24,800 | 24,900 |
| Average dollars per metric ton | 24.26 | 26.48 | 26.85 | 24.82 | 26.70 |
| Average, bulk do. | 24.98 | 25.83 | 23.45 | 22.91 | 22.74 |
| Average, packaged or baled do. | 23.52 | 27.23 | 31.36 | 26.72 | 31.58 |
| Exports | 30 | 40 | 37 | 31 | 32 |
| Imports for consumption | 761 | 752 | 786 | 776 | 763 |
| Consumption, apparent ³ | 1,430 | 1,580 | 1,530 | 1,640 | 1,420 |
| Stocks, December 31, producers' | 408 | 272 | 279 | 257 | 207 |
| World, production | 19,800 | 31,000 | 26,200 ^r | 27,000 ^r | 24,200 ^e |

^eEstimated. ^rRevised.

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

²Exclusive of 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) | |
|--------------------------------|-------------------|------|--------------------------------------|------|
| | 2001 | 2002 | 2001 | 2002 |
| 23,000 and more | 11 | 7 | 662 | 494 |
| 9,000 to 22,999 | 8 | 5 | 122 | 63 |
| 5,000 to 8,999 | 8 | 8 | 53 | 53 |
| 1,000 to 4,999 | 8 | 9 | 24 | 24 |
| Less than 1,000 | 22 | 26 | 9 | 9 |
| Total | 57 | 55 | 870 | 642 |

TABLE 3
U.S. PEAT PRODUCTION AND SALES BY PRODUCERS IN 2002, BY STATE¹

| Region and State | Active operations | Production (thousand metric tons) | Sales | | |
|------------------------|-------------------|-----------------------------------|---------------------------------|--------------------------------|---------------------|
| | | | Quantity (thousand metric tons) | Value ² (thousands) | Percentage packaged |
| East: | | | | | |
| Florida | 8 | 378 | 559 | \$11,500 | 22 |
| Pennsylvania | 4 | 4 | 3 | 132 | 20 |
| Other ³ | 6 | 14 | 17 | 653 | 53 |
| Total or average | 18 | 396 | 579 | 12,300 | 23 |
| Great Lakes: | | | | | |
| Michigan | 9 | 131 | 188 | 4,670 | 88 |
| Minnesota | 12 | 47 | 64 | 5,320 | 72 |
| Other ⁴ | 12 | 60 | 95 | 2,510 | 79 |
| Total or average | 33 | 238 | 347 | 12,500 | 83 |
| West ⁵ | 4 | 7 | 7 | 110 | 8 |
| Grand total or average | 55 | 642 | 933 | 24,900 | 45 |

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, Ohio, and Wisconsin.

⁵Includes Iowa, Montana, and Washington.

TABLE 4
U.S. PEAT PRODUCTION AND PRODUCERS' YEAREND STOCKS
IN 2002, BY TYPE

| Type | Active operations | Production ¹ (metric tons) | Percentage of production | Yearend stocks ¹ (metric tons) |
|---------------|-------------------|---------------------------------------|--------------------------|---|
| Sphagnum moss | 8 | 25,500 | 4 | 7,090 |
| Hypnum moss | 6 | 27,500 | 4 | -- |
| Reed-sedge | 32 | 567,000 | 88 | 181,000 |
| Humus | 11 | 22,400 | 4 | 18,400 |
| Total | 55 ² | 642,000 | 100 | 207,000 |

-- Zero.

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 2002, 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 | -- | -- | -- | -- | -- | -- | 209 | 440 | \$5 |
| General soil improvement | 40,700 | 358,000 | \$2,340 | 15,600 | 37,500 | \$700 | 383,000 | 876,000 | 8,390 |
| Golf courses | 7,020 | 47,200 | 589 | -- | -- | -- | 17,200 | 60,500 | 2,570 |
| Ingredient for potting soils | 2,060 | 9,910 | 93 | 42,900 | 94,500 | 1,420 | 330,000 | 706,000 | 6,260 |
| Mixed fertilizers | -- | -- | -- | -- | -- | -- | 22,700 | 50,000 | 475 |
| Nurseries | 1,300 | 5,880 | 64 | 793 | 1,780 | 20 | 35,800 | 78,700 | 763 |
| Packing flowers, plants, shrubs, etc. | 119 | 580 | 5 | -- | -- | -- | 163 | 445 | 5 |
| Seed inoculant | -- | -- | -- | -- | -- | -- | 5,590 | 6,400 | 64 |
| Vegetable growing | -- | -- | -- | -- | -- | -- | 2,480 | 5,560 | 56 |
| Other | -- | -- | -- | -- | -- | -- | 1,360 | 2,500 | 750 |
| Total | 51,200 | 422,000 | 3,100 | 59,200 | 134,000 | 2,140 | 799,000 | 1,790,000 | 19,300 |

| Use | Humus | | | Total | | |
|---------------------------------------|----------------------------|-----------------------------|----------------------|----------------------------|-----------------------------|----------------------|
| | Quantity | | Value (thousands) | Quantity | | Value (thousands) |
| | Weight (metric tons) | Volume (cubic meters) | | Weight (metric tons) | Volume (cubic meters) | |
| Earthworm culture medium | 76 | 128 | \$1 | 285 | 568 | \$6 |
| General soil improvement | 4,130 | 7,160 | 59 | 443,000 | 1,280,000 | 11,500 |
| Golf courses | 258 | 448 | 3 | 24,500 | 108,000 | 3,160 |
| Ingredient for potting soils | 1,980 | 3,260 | 37 | 377,000 | 814,000 | 7,810 |
| Mixed fertilizers | 860 | 1,350 | 21 | 23,500 | 51,400 | 496 |
| Nurseries | 2,050 | 3,560 | 41 | 39,900 | 89,900 | 888 |
| Packing flowers, plants, shrubs, etc. | 1,120 | 1,750 | 13 | 1,410 | 2,780 | 23 |
| Seed inoculant | -- | -- | -- | 5,590 | 6,400 | 64 |
| Vegetable growing | 887 | 1,290 | 11 | 3,370 | 6,850 | 67 |
| Other | 12,400 | 21,200 | 151 | 13,800 | 23,700 | 901 |
| Total | 23,800 | 40,200 | 337 | 933,000 | 2,380,000 | 24,900 |

-- 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.

TABLE 6
AVERAGE DENSITY OF DOMESTIC PEAT SOLD IN 2002

(Kilograms per cubic meter)¹

| | Sphagnum moss | Hypnum moss | Reed- sedge | Humus |
|------------------|------------------|----------------|----------------|-------|
| Bulk | 233 | 593 | 602 | 783 |
| Package | 146 | 475 | 565 | 768 |
| Bulk and package | 159 | 579 | 585 | 773 |

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

TABLE 7
PRICES FOR PEAT IN 2002¹

(Dollars per unit)

| | Sphagnum moss | Hypnum moss | Reed- sedge | Humus | Average |
|--|------------------|----------------|----------------|-------|---------|
| <u>Domestic:</u> | | | | | |
| <u>Bulk:</u> | | | | | |
| Per metric ton | 57.86 | 31.55 | 20.95 | 13.67 | 22.74 |
| Per cubic meter | 13.48 | 18.71 | 12.61 | 10.71 | 13.26 |
| <u>Packaged or baled:</u> | | | | | |
| Per metric ton | 61.15 | 78.37 | 28.27 | 14.34 | 31.58 |
| Per cubic meter | 8.93 | 37.19 | 15.96 | 11.02 | 14.07 |
| <u>Average:</u> | | | | | |
| Per metric ton | 60.44 | 36.14 | 24.21 | 14.12 | 26.70 |
| Per cubic meter | 9.61 | 20.92 | 14.16 | 10.92 | 13.68 |
| Imported, total, per metric ton ² | XX | XX | XX | XX | 194.67 |

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 | 2001 | | 2002 | |
|--------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|
| | Quantity (metric tons) | Value ² (thousands) | Quantity (metric tons) | Value ² (thousands) |
| Canada | 768,000 | \$157,000 | 751,000 | \$147,000 |
| Denmark | 946 | 163 | 1,300 | 315 |
| Finland | 183 | 62 | 285 | 56 |
| Germany | 125 | 40 | 107 | 33 |
| Ireland | 4,480 | 391 | 6,140 | 455 |
| Latvia | 2,070 | 420 | 2,680 | 634 |
| Netherlands | 50 | 21 | 140 | 36 |
| New Zealand | 365 | 95 | 1,910 | 364 |
| Other ³ | 104 | 106 | 137 | 98 |
| Total | 776,000 | 158,000 | 763,000 | 149,000 |

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

²Customs value.

³Includes Armenia (2001), Australia (2001), Austria (2001), Chile, China, Lithuania (2001), Madagascar (2001), Mexico (2001), Russia, Sri Lanka (2002), Taiwan (2001), United Kingdom (2002), and Vietnam (2002).

Source: U.S. Census Bureau.

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

(Thousand metric tons)

| Country ³ | 1998 | 1999 | 2000 | 2001 | 2002 ^c |
|---|--------------------|--------------------|---------------------|---------------------|--------------------|
| Argentina, horticultural use ^e | 3 | 3 | 3 | 3 | 3 |
| Australia ^e | 15 | 15 | 3 | 5 | 5 |
| Belarus: | | | | | |
| Horticultural use | 99 | 100 | 100 ^e | 100 ^e | 100 |
| Fuel use ^e | 2,035 ⁴ | 3,090 | 2,000 | 2,000 | 2,000 |
| Total ^e | 2,134 ⁴ | 3,190 | 2,100 | 2,100 | 2,100 |
| Burundi | 11 | 20 | 4 ^r | 5 ^r | 5 |
| Canada, horticultural use | 1,125 | 1,253 | 1,277 | 1,319 ^r | 1,301 ^p |
| Denmark, horticultural use ^e | 205 | 200 | 200 | 200 | 200 |
| Estonia, horticultural use and fuel use | 365 | 1,299 | 760 ^r | 844 ^r | 850 |
| Finland: | | | | | |
| Horticultural use | 150 ^e | 1,595 | 1,174 ^r | 1,200 ^r | 1,300 |
| Fuel use | 1,700 ^e | 4,140 ^e | 3,932 ^r | 4,000 ^r | 4,200 |
| Total | 1,850 ^e | 5,735 | 5,106 ^r | 5,200 ^r | 5,500 |
| France, horticultural use ^e | 200 | 200 | 200 | 200 | 200 |
| Germany: ^c | | | | | |
| Horticultural use | 3,350 | 3,350 | 3,400 | 3,550 | 3,400 |
| Fuel use | 650 | 650 | 660 | 700 | 700 |
| Total | 4,000 | 4,000 | 4,060 | 4,250 | 4,100 |
| Hungary, horticultural use ^e | 45 | 45 | 45 | 45 | 45 |
| Ireland: ^c | | | | | |
| Horticultural use | 400 | 350 | 400 | 500 | 250 |
| Fuel use | 4,000 | 5,600 | 5,100 | 5,000 | 2,500 |
| Total | 4,400 | 5,950 | 5,500 | 5,500 | 2,750 |
| Latvia, horticultural use and fuel use | 172 | 956 | 456 ^r | 555 ^r | 560 |
| Lithuania, horticultural use and fuel use | 202 | 390 | 246 | 263 ^r | 270 |
| Moldova ^{e,5} | 475 | 475 | 475 | 475 | 475 |
| New Zealand, horticultural use ^e | 23 | 22 | 24 | 24 | 24 |
| Norway, horticultural use ^e | 30 | 30 | 30 | 30 | 30 |
| Poland, horticultural use and fuel use | 243 | 310 | 380 ^r | 325 ^r | 300 |
| Russia ⁵ | 1,767 | 3,350 | 2,100 | 2,100 | 2,100 |
| Spain ^e | 60 | 50 | 50 | 50 | 50 |
| Sweden: ^c | | | | | |
| Horticultural use | 200 | 440 | 500 ^r | 400 | 400 |
| Fuel use | 120 | 800 | 400 | 700 | 750 |
| Total | 320 | 1,240 | 900 ^r | 1,100 | 1,150 |
| Ukraine ^{e,5} | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| United Kingdom ^e | 500 | 500 | 500 | 500 | 500 |
| United States, horticultural use | 685 | 731 | 792 | 870 | 642 ⁴ |
| Grand total | 19,800 | 31,000 | 26,200 ^r | 27,000 ^r | 24,200 |
| Of which: | | | | | |
| Horticultural use | 6,510 | 8,320 | 8,150 ^r | 8,440 ^r | 12,500 |
| Fuel use | 8,510 | 14,300 | 12,100 ^r | 12,400 ^r | 10,200 |
| Unspecified | 4,810 | 8,370 | 5,970 ^r | 6,120 ^r | 6,120 |

^cEstimated. ^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 June 25, 2003.

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

⁴Reported figure.

⁵Production appears to be for fuel use.