

Peat

By Richard H. Singleton¹

United States peat production, from 102 operations, increased 1% in 1977 to about 781,000 tons. Production in Florida increased while production in Indiana decreased. Michigan remained the top producing State with 34% of output. The top four producing States, Michigan, Florida, Illinois, and Indiana, accounted for 69% of production. Reed-sedge peat, the major type of peat mined, comprised 54% of production; the remainder was humus, 21%, and moss peat, 25%.

Sales by domestic producers was about 726,000 tons or 1.66 million cubic yards. About 55% of the domestic peat sold was packaged. Soil improvement and potting soils accounted for 72% and 18%, respec-

tively, of domestic peat sales. The average 1977 price for domestic bulk peat was \$12.22 per ton or \$6.07 per cubic yard. The average price for the three types of peat varied less on a volume basis than on a weight basis.

Peat imports, 98% premium-grade sphagnum moss peat from Canada, remained at about 330,000 tons. Apparent consumption of peat was 1.06 million tons with no significant change from 1976. Imports comprised 31% of apparent consumption on a tonnage basis and 71% on a value basis.

Estimated world production remained at approximately 224 million tons, about 94% of which was in the U.S.S.R. Other significant producers were Ireland and the Federal Republic of Germany.

Table 1.—Salient peat statistics

	1974	1975	1976 [†]	1977
United States:				
Number of operations -----	102	109	102	102
Production ----- thousand short tons	731	772	774	781
Sales by producers ----- do -----	706	746	731	726
Bulk ----- do -----	327	332	272	325
Packaged ----- do -----	379	414	459	401
Value of sales ----- thousands	\$10,989	\$12,294	\$12,079	\$12,520
Average per ton -----	\$15.56	\$16.49	\$16.52	\$17.25
Average per ton—bulk -----	\$10.78	\$12.00	\$14.00	\$12.22
Average per ton—packaged or bailed -----	\$19.69	\$20.09	\$18.02	\$21.32
Imports ----- thousand short tons	327	290	338	330
Apparent consumption [‡] ----- do -----	1,033	1,036	1,069	1,056
World: Production ----- do -----	220,509	[†] 223,987	222,745	223,577

[†]Revised.

[‡]Sales plus imports.

DOMESTIC PRODUCTION

Peat production increased 1% in 1977 to about 781,000 tons. The peat-type breakdown was reed-sedge peat, 54%; humus, 21%; and moss peat, 25%, with no significant change from 1976. Tonnage production in Florida, principally moss and humus peat, increased 76%.

Michigan remained the largest of the 22 producing States with 34% of the Nation's output. The next three largest producing States, in order of volume, were Florida, Illinois, and Indiana. Peat production on a small scale resumed in New Mexico after a 2-year stoppage.

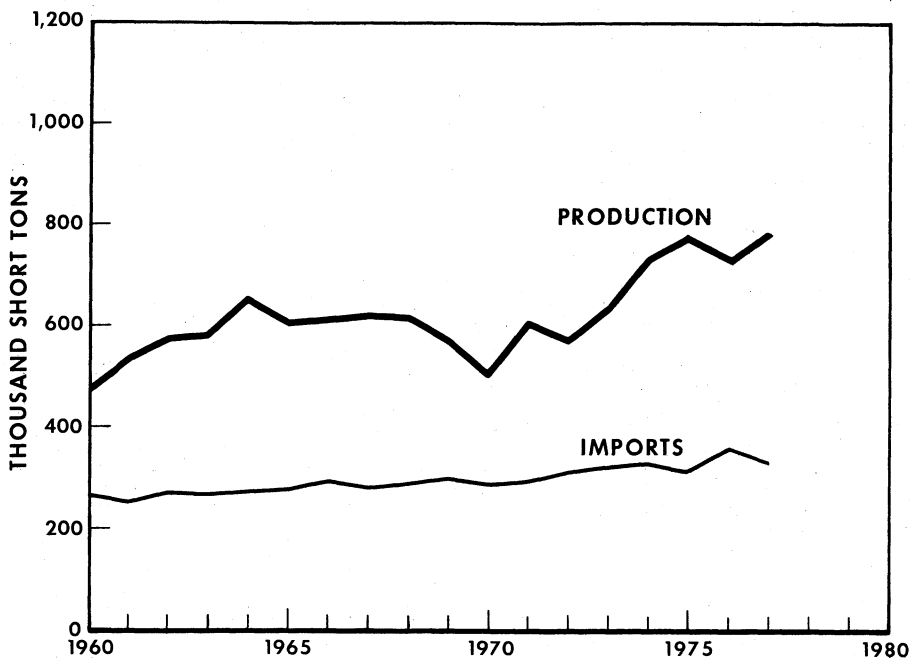


Figure 1.—Production and imports of peat in the United States.

A total of 106 peat operations were known to be active in the United States in 1977, however, four of these operations did not report and their data are not included in this report. Three of the 102 reporting operations did not mine peat during 1977

but sold from stocks. Twenty-four operations were reported to be idle during 1977.

Approximately 54% of U.S. production was from eight large plants with annual capacities greater than 25,000 tons.

Table 2.—U.S. peat production, by kind and State, in 1977

(Thousand short tons)

State	Active plants	Moss	Reed-sedge	Humus	Total
Colorado	8	26	W	W	36
Florida	8	79	26	40	145
Illinois	6	18	W	W	80
Indiana	11	W	W	--	47
Iowa	3	W	W	--	16
Maine	3	W	--	W	5
Maryland	1	--	2	1	3
Massachusetts	1	--	2	--	2
Michigan	16	9	233	25	1268
Minnesota	4	W	W	--	28
New Jersey	4	--	5	24	29
New Mexico	1	--	--	2	2
New York	5	--	W	W	35
North Dakota	1	--	(?)	--	(?)
Ohio	7	W	--	W	13
Pennsylvania	8	1	9	6	16
South Carolina	1	--	--	16	16
Washington	5	4	3	5	12
Wisconsin	4	W	--	W	14
Other States ³	5	55	141	48	14
Total	102	1193	421	167	781

W Withheld to avoid disclosing individual company confidential data; included with "Other States."

¹Data do not add to total shown due to independent rounding.

²Less than 1/2 unit.

³Includes California, Georgia, Montana, and production indicated by symbol W.

Table 3.—Relative size of peat operations in the United States

Size in tons per year	Number of active plants		Production (thousand tons)	
	1976	1977	1976	1977
Over 25,000	r6	8	r365	447
15,000 to 24,999	r9	5	r172	89
10,000 to 14,999	5	7	64	85
5,000 to 9,999	11	12	72	92
2,000 to 4,999	r23	18	r73	60
1,000 to 1,999	10	16	13	20
Under 1,000	38	33	15	11
Capacity unknown	--	3	--	--
Total	102	102	r774	781

rRevised.

CONSUMPTION AND USES

Domestic sales in 1977 by domestic producers was 726,000 tons or 1.66 million cubic yards. The breakdown by peat type on a tonnage basis was moss peat, 24%; reed-sedge peat, 52%; and humus, the balance. Michigan, with 31%, of U.S. sales, was the leading State followed by Florida, Illinois, and Indiana in order of tonnage sales. About 55% of domestically produced peat was sold in packaged form. The portion of each type packaged was moss peat, 28%; reed-sedge peat, 69%; and humus, 53%.

Soil improvement and potting soil remained the largest uses for peat sold by domestic producers accounting for 72% and 18% of total sales, respectively. About 62% of the peat for soil improvement and 48% of the peat for potting soil was packaged. Peat was supplied, mainly in bulk form, for flower packing in Florida, primarily humus,

and in Indiana, mainly moss peat. Peat use in mushroom beds and seed inoculants increased. Mushroom bed use was mainly reed-sedge peat in Michigan; moss peat in Minnesota; and humus in New Jersey. Seed inoculant use was mainly in Wisconsin and in Ohio; humus was used almost exclusively. Moss peat continued to be used in Florida in growing earthworms.

Apparent consumption of peat was about 1.06 million tons with no significant change from 1976; of this, about 31%, on a tonnage basis, was imported. The end use breakdown of imported material, mostly sphagnum moss peat from Canada, was unknown. Imported peat was generally of better quality than domestic peat. Small quantities of similar high-quality moss peat were produced in Minnesota, Maine, and California.

Table 4.—U.S. peat sales by producers in 1977, by use

Use	In bulk		In packages		Total	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
Soil improvement	195,871	\$2,425	324,263	\$6,559	520,134	\$8,984
Seed inoculant	826	6	3,859	107	4,685	113
Packing flowers, shrubs, etc	27,186	229	4,648	114	31,834	343
Ingredient for potting soil	68,109	1,025	62,541	1,358	130,650	2,383
Mushroom beds	5,909	99	2,649	223	8,558	322
Earthworm culture						
medium	5,142	57	21	1	5,163	58
Mixed fertilizers	14,717	94			14,717	94
Other	6,985	33	3,086	190	10,071	223
Total	324,745	3,968	401,067	8,552	725,812	12,520

Table 5.—U.S. peat sales¹ by producers, in 1977, by kind and State

Producing State	Moss			Reed-sedge			Humus			Total		
	Quantity (short tons)	Value (thou. sands)	Percent packaged	Quantity (short tons)	Value (thou. sands)	Percent packaged	Quantity (short tons)	Value (thou. sands)	Percent packaged	Quantity (short tons)	Value (thou. sands)	Percent packaged
Colorado	26,057	\$161	1	W	W	W	W	W	W	32,221	\$195	17
Florida	61,248	828	1	W	W	W	W	W	W	125,260	1,896	1
Illinois	17,789	463	85	W	W	W	W	W	W	82,356	1,478	90
Indiana	17,200	206	22	W	W	W	W	W	W	50,594	759	38
Iowa	W	W	W	W	W	W	W	W	W	15,685	266	W
Maine	W	W	W	W	W	W	W	W	W	4,543	80	83
Maryland	W	W	W	W	W	W	W	W	W	2,550	W	11
Massachusetts	W	W	W	W	W	W	W	W	W	2,000	W	25
Michigan	8,877	197	26	W	\$3,546	W	W	\$174	W	225,533	3,917	80
Minnesota	W	W	W	W	W	W	W	W	W	27,916	1,280	89
New Jersey	W	W	W	W	W	W	W	W	W	30,168	769	43
New Mexico	W	W	W	W	W	W	W	W	W	2,181	55	W
New York	W	W	W	W	W	W	W	W	W	39,347	569	89
North Dakota	W	W	W	W	W	W	W	W	W	150	W	67
Ohio	W	W	W	W	W	W	W	W	W	14,650	W	78
Pennsylvania	1,157	W	78	W	W	W	W	W	W	5,611	115	83
South Carolina	W	W	W	W	W	W	W	W	W	16,035	W	83
South Carolina	4,162	73	W	W	16	W	W	28	W	12,240	117	117
Washington	W	W	W	W	W	W	W	W	W	13,854	196	W
Wisconsin	W	W	W	W	W	W	W	W	W	12,726	983	50
Other States ²	36,186	1,548	69	W	2,802	W	W	1,539	W	87	W	87
Total	172,676	3,476	28	378,984	6,464	69	174,152	2,580	53	725,812	12,520	55

W Withheld to avoid disclosing individual company confidential data, included with "Other States."

¹f.o.b. producing plant.

²Includes California, Georgia, and Montana; and quantities, values, and percent packaged indicated by symbol W.

Table 6.—U.S. peat sales by producers in 1977, by use and kind

Use	Moss			Reed-sedge			Humus			Total		
	Quantity		Value	Quantity		Value	Quantity		Value	Quantity		Value
	Weight (short tons)	Volume (cubic yards)	(thou- sands)	Weight (short tons)	Volume (cubic yards)	(thou- sands)	Weight (short tons)	Volume (cubic yards)	(thou- sands)	Weight (short tons)	Volume (cubic yards)	(thou- sands)
Soil improvement	100,487	309,328	\$2,240	293,742	661,871	\$4,708	125,905	233,476	\$2,041	520,134	1,204,675	\$8,984
Seed inoculant	60	200	1				4,825	6,208	112	4,885	6,408	113
Packing flowers, shrubs, etc.	15,981	32,270	226	823	1,729	11	15,020	19,900	106	31,834	53,899	343
Ingredient for potting soils	38,452	82,439	488	78,805	192,655	1,661	13,393	20,708	234	130,850	295,802	2,383
Mushroom beds	2,649	19,622	223	4,902	11,804	79	1,007	1,677	20	8,558	33,103	322
Earthworm culture medium	3,570	7,544	42	712	1,543	10	881	1,063	6	5,163	10,150	58
Mixed fertilizers	7,700	14,000	42	--	--	--	7,017	8,310	52	14,717	22,310	94
Other	3,787	19,092	214	--	--	--	6,304	12,509	9	10,071	31,601	223
Total	172,676	484,495	3,476	378,984	869,602	6,464	174,152	303,851	2,580	725,812	1,657,948	12,520

PRICES AND SPECIFICATIONS

The average 1977 price for bulk peat decreased 13% to \$12.22 per ton or \$6.07 per cubic yard. Less price variation by peat type occurred on a volume basis than on a weight basis. The packaged or bailed moss peat consisted mainly of low-density, premium-grade sphagnum moss peat. The high density and low price of bulk moss peat

suggests that it was primarily hypnum moss peat. The high density and low price of bulk humus, compared with packaged humus, suggests that it had a lower organic content than packaged humus. The price of imported peat, mostly low-density, premium-grade sphagnum moss from Canada, increased 7% to \$93.62 per ton.

Table 7.—Prices for peat in 1977, by type
(Dollars per unit)

	Moss	Reed-sedge	Humus	Total
Domestic:				
Bulk:				
Per ton -----	\$10.68	\$15.29	\$10.16	\$12.22
Per cubic yard -----	5.11	6.86	6.43	6.07
Packaged or bailed:				
Per ton -----	44.99	17.85	18.94	21.32
Per cubic yard -----	9.60	7.68	10.02	8.51
Total:				
Per ton -----	20.13	17.05	14.81	17.25
Per cubic yard -----	7.18	7.43	8.49	7.55
Imported, total, per ton -----	93.62	XX	XX	93.62

XX Not applicable.

Table 8.—Average density of domestic peat sold in 1977

(Pounds per cubic yard)

	Moss	Reed-sedge	Humus
Bulk -----	960	900	1,260
Packaged -----	430	860	1,060
Bulk and packaged -----	710	870	1,150

FOREIGN TRADE

Peat imports, 98% from Canada, remained at about 330,000 tons. Approximately 55% of imports entered into the Northeastern United States through New York State and New England ports; 23% entered the Midwest mainly through Great Lakes ports; and 20% entered the Northwest through Seattle, Wash., and Great Falls, Mont. The Federal Republic of Germany remained the second largest source of peat imported by the United States. Imports from other

countries were insignificant.

Transportation of imported peat from port to local distributors remained a problem. The low density and high volume of bailed Canadian peat, coupled with its relatively low market value, required low freight rates such as those available by backhauling. Deliveries were up to 6 months behind schedule because of unavailability of low-cost transportation.

Table 9.—U.S. imports for consumption of peat moss, by grade and country

Country	Poultry- and stable-grade		Fertilizer-grade		Total	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
1976						
Canada	5,012	\$507	324,334	\$28,305	329,346	\$28,812
Chile	56	5	38	4	94	9
China, People's Republic of	17	1	—	—	17	1
Finland	—	—	35	5	35	5
Germany, Federal Republic of	530	39	7,868	576	8,398	615
Ireland	—	—	22	1	22	1
Netherlands	3	1	—	—	3	1
Norway	—	—	13	36	13	36
Sweden	—	—	76	7	76	7
Switzerland	—	—	1	1	1	1
U.S.S.R.	—	—	23	2	23	2
United Kingdom	—	—	23	2	23	2
Total	5,618	553	332,433	28,939	338,051	29,492
1977						
Canada	5,292	508	317,191	29,828	322,483	30,336
China, People's Republic of	37	1	—	—	37	1
Finland	—	—	114	10	114	10
Gaza	—	—	18	2	18	2
Germany, Federal Republic of	888	74	6,599	447	7,487	521
Honduras	—	—	26	1	26	1
Ireland	—	—	22	1	22	1
Netherlands	1	(¹)	—	—	1	(¹)
Norway	20	22	—	—	20	22
Sweden	14	7	31	16	45	23
U.S.S.R.	—	—	21	2	21	2
United Kingdom	—	—	23	2	23	2
Yemen, People's Democratic Republic of (Aden)	—	—	13	1	13	1
Total	6,252	612	324,058	30,310	330,310	30,922

¹Less than 1/2 unit.

Table 10.—U.S. imports for consumption of peat moss in 1977, by grade and customs district

Customs district	Poultry- and stable-grade		Fertilizer-grade		Total	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
Baltimore, Md	16	\$2	211	\$18	227	\$20
Boston, Mass	—	—	116	7	116	7
Buffalo, N.Y.	70	5	31,646	4,338	31,716	4,343
Charleston, N.C.	17	3	198	12	215	15
Chicago, Ill.	—	—	63	15	63	15
Detroit, Mich.	2,255	170	32,869	2,919	35,124	3,089
Duluth, Minn.	7	1	9,481	1,154	9,488	1,155
Great Falls, Mont.	—	—	25,086	2,161	25,086	2,161
Houston, Tex.	152	32	224	24	376	56
Los Angeles, Calif.	7	4	587	59	594	63
Miami, Fla.	—	—	71	5	71	5
Milwaukee, Wis.	—	—	17	1	17	1
Mobile, Ala.	29	3	296	21	325	24
New Orleans, La.	—	—	1,325	86	1,325	86
New York, N.Y.	110	11	399	29	509	40
Norfolk, Va.	—	—	351	23	351	23
Ogdensburg, N.Y.	57	4	87,624	7,459	87,681	7,463
Pembina, N. Dak.	763	96	31,120	3,001	31,883	3,097
Philadelphia, Pa.	42	5	453	8	495	13
Portland, Maine	2,024	223	35,430	3,442	37,454	3,665
Portland, Oreg.	16	1	—	—	16	2
Providence, R.I.	—	—	26	2	26	2
St. Albans, Vt.	—	—	23,518	1,969	23,518	1,969

Table 10.—U.S. imports for consumption of peat moss in 1977, by grade and customs district—Continued

Customs district	Poultry- and stable-grade		Fertilizer-grade		Total	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
San Francisco, Calif	296	\$25	16	\$1	312	\$26
San Juan, P.R.	91	10	969	65	1,060	75
Savannah, Ga	17	1	—	—	17	1
Seattle, Wash	112	8	40,479	3,383	40,591	3,391
Tampa, Fla	—	—	1,483	108	1,483	108
Wilmington, N.C	171	8	—	—	171	8
Total	6,252	612	324,058	30,310	330,310	30,922

Table 11.—Peat moss imported for consumption from Canada and the Federal Republic of Germany in 1977, by grade and customs district

Customs district	Canada				Federal Republic of Germany			
	Poultry- and stable-grade		Fertilizer-grade		Poultry- and stable-grade		Fertilizer-grade	
	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)	Quantity (short tons)	Value (thousands)
Baltimore, Md	—	—	—	—	16	\$2	211	\$18
Boston, Mass	—	—	—	—	—	—	116	7
Buffalo, N.Y.	70	\$5	31,646	\$4,338	—	—	—	—
Charleston, N.C	—	—	—	—	17	3	198	12
Chicago, Ill	—	—	16	11	—	—	—	—
Detroit, Mich	2,255	170	32,822	2,915	—	—	—	—
Duluth, Minn	7	1	9,481	1,154	—	—	—	—
Great Falls, Mont	—	—	25,053	2,158	—	—	20	2
Houston, Tex	—	—	—	—	125	7	200	13
Los Angeles, Calif	—	—	20	1	—	—	567	58
Miami, Fla	—	—	—	—	—	—	45	4
Milwaukee, Wis	—	—	17	1	—	—	—	—
Mobile, Ala	—	—	—	—	29	3	296	21
New Orleans, La	—	—	—	—	—	—	1,325	86
New York, N.Y.	—	—	—	—	72	10	356	26
Norfolk, Va	—	—	—	—	—	—	351	23
Ogdensburg, N.Y.	57	4	87,583	7,455	—	—	—	—
Pembina, N. Dak	763	96	31,120	3,001	—	—	453	8
Philadelphia, Pa	—	—	—	—	42	5	—	—
Portland, Maine	2,024	223	35,430	3,442	—	—	—	—
Portland, Oreg	—	—	—	—	16	1	—	—
Providence, R.I.	—	—	26	2	—	—	—	—
St. Albans, Vt	—	—	23,498	1,967	—	—	—	—
San Francisco, Calif	21	2	—	—	275	23	16	1
San Juan, P.R.	—	—	—	—	91	10	969	65
Savannah, Ga	—	—	—	—	17	1	—	—
Seattle, Wash	95	7	40,479	3,383	17	1	—	—
Tampa, Fla	—	—	—	—	—	—	1,476	103
Wilmington, N.C	—	—	—	—	171	8	—	—
Total	5,292	508	317,191	29,828	888	74	6,599	447

WORLD REVIEW

Canada.—Peat production, mainly sphagnum moss, remained at about 433,000 tons, about the same as in 1976. Value of production increased 9% to Can\$26.7 million. Approximately two-thirds of production was in Quebec Province and one-fifth was in British Columbia and Alberta in western Canada. Three large producers were supplemented by many small cottage industries. About

74% of Canada's peat production was exported to the United States. Interest in the use of peat as a fuel was shown in the Provinces of Manitoba, New Brunswick, and Newfoundland.

Finland.—A 30,000-ton-per-year peat briquetting plant began operation in 1977 at Peraseinajoki in southwestern Finland. A 30,000-ton-per-year peat metallurgical coke plant had begun operation at the same site

in the fall of 1976. This plant required the mining of 175,000 tons of sod peat per year.

Ireland.—Ireland remained the world's second largest producer of peat. Eleven peat-fired electrical powerplants supplied about one-quarter of the Nation's electrical energy needs. Significant quantities were briquetted and used in domestic heating.

Sweden.—Three peat-fueled electric powerplants were under construction in Sweden. The plants were designed to use other fuels, such as wood waste, as well as

peat.

U.S.S.R.—Very large quantities of peat continued to be used in agriculture and as fuel in the U.S.S.R. About 4,000 megawatts of electrical energy was generated at 79 electric powerplants in 1975, some of which were in the 300-megawatt size. Several new peat-fueled powerplants, with a capacity of 600 megawatts each, were being constructed. Peat was also used in domestic heating.

Table 12.—Peat: World production, by country
(Thousand short tons)

Country ¹	1975	1976	1977 ^P
Argentina	10	11	14
Australia	^r 5	1	2
Canada, agricultural use	398	435	433
Denmark, agricultural use ²	39	43	44
Finland:			
Agricultural use ^e	132	159	255
Fuel	^r 220	238	397
France, agricultural use ^e	^r 200	^r 200	220
Germany, Federal Republic of:			
Agricultural use	2,419	2,406	^e 2,490
Fuel	250	263	^e 240
Hungary, agricultural use ^e	72	80	80
Ireland:			
Agricultural use	74	78	^e 80
Fuel	7,579	6,225	^e 6,720
Israel, agricultural use ^e	22	22	22
Japan ^e	80	72	65
Korea, Republic of, agricultural use ^e	4	4	—
Netherlands ^e	440	450	450
Norway:			
Agricultural use ^e	66	66	66
Fuel ^e	1	1	1
Poland:			
Agricultural use ^e	40	40	40
Fuel	5	5	5
Spain	38	^e 39	^e 39
Sweden:			
Agricultural use	84	98	^e 100
Fuel	37	35	^e 33
U.S.S.R.:			
Agricultural use ^e	145,000	145,000	145,000
Fuel ^e	66,000	66,000	66,000
United States, agricultural use	772	774	781
Total	^r 223,987	222,745	223,577
Fuel peat included in total	^r 74,092	72,767	73,396

^eEstimate. ^PPreliminary. ^rRevised.

¹In addition to the countries listed, Austria, Iceland and Italy produce negligible quantities of fuel peat, and the German Democratic Republic is a major producer, but output is not officially reported and available information is inadequate for formulation of estimates of output levels.

²Sales.

TECHNOLOGY

The Institute of Gas Technology continued an experimental program for development of peat gasification for the Minnesota Gas Co. under a contract with the U.S. Department of Energy. Tests confirmed peat's high reactivity compared with coal indicating that reactor volume, temperature, or pressure could be decreased or the

methane content of the gas product could be increased using the same conditions as that used for the gasification of coal. It was planned to continue bench-scale experimentation.

The Federal Bureau of Mines began a study on hydraulic mining and dewatering of peat.

First Colony Farms, Inc. continued development of its plant to mine peat on about 200 square miles of peatland in a 600-square-mile area within four counties of northeastern North Carolina. The primary intent was to supply fuel to four 150-megawatt electrical powerplants in that fuel-devoid State. Reserves were estimated to be approximately 0.4 billion tons. Experimental mining began in the fall to determine feasibility of mining the "woody" peat, indigenous to the area, and prepare it in an air-dried form suitable for burning. North Carolina Electrical Membership Corp., a conglomerate of 28 utility cooperatives, contracted for an engineering study to construct one of the four powerplants. The U.S.

Air Force held a lease on about 70 square miles of First Colony's peatland in Dare County, and had been using it for many years as a bombing range. The lease was due to expire at yearend 1977. The Air Force began condemnation proceedings with the intent of permanently acquiring the 70-square-mile area. First Colony reportedly stated that the remaining peatlands have sufficient reserves to supply the four powerplants for about half a century. First Colony intended to reclaim the mined land for farming. Further experimental mining during the 1978 warm season was planned.

¹Physical scientist, Division of Nonmetallic Minerals.