Table 3. (continued).

Scientific Name Common Name	Seeds	Cuttings	Air Layers	Grafting
Myrciaria cauliflora				
Jaboticaba	1			
M. glomerata				
Yellow jaboticaba	1			
Passiflora edulis				
Passion vine	1	1		
Persea americana				
Avocado	2			
Pouteria campechiana				
Egg fruit	1			
P. sapota				
Mamay	2			1
Psidium lottorale var *longipes*				
Strawberry guava	1	1		
Rubus niveus				
Mysore raspberry		1		
Spondias mombin				
Yellow mombin		1		
Synsepalum dulcificum				
Miracel fruit	1	2		
Syzygium cumini				
Jambolan plum	1			
S. jambos				
Rose apple	1			
Tamarindus indica				
Tamarind	1			
Vitis rotundifolia				
Muscadine grape		1		
Ziziphus mauritiana				
Indian jujube	1			

a. 1 = a common method; 2 = an alternate method; 3 = a rarely used method

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GEORGIA PEAT: 100,000,000 YD^3 OF MEDIUM

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Abstract. The formation of peat bogs in southern Georgia and northern Florida is unique in many respects when compared to peat bogs elsewhere in this country. The bogs are characterized by steep drainage slopes, deep peat deposits, and rapid past development. Analysis of peats from such bogs

shows a high micronutrient content, low pH, moderate cation exchange capacity, good water holding capabilities, low soluble salts, and adequate pore space to be considered a horticulturial peat. In organic matter content these peats rank among the highest in the world.

GEOLOGIC FORMATIONS

At least four geologic formations were involved in producing the conditions necessary for the development of the Georgia/Florida peat bogs. Two of these formations are underlying limestone layers, the Chattahoochee and Suwannee limestones. The remaining two overlying layers consist mostly of sands with a few thin interbedded lenses and laminae of sandy clay. These sandy layers are the Miccosuckee and Hawthorne formations.

The steep-sided depressions which formed the peat bogs are called sinkholes. These closed depressions were produced by the dissolving of the underlying Chattahoochee and Suwannee limestones creating solution cavities. When these cavities grew so large that the ceiling became too weak to support the overlying materials, the ceiling collapsed creating depressions in the overlying sands and clays of the Miccosuckee and Hawthorne formations. Most of the depressions are sealed from the cavities below by Hawthorne clays. The water level of the depression areas seem to be maintained by springs which come to the surface where clay lenses of the Miccosuckee and Hawthorne formations out-crop on the slopes of the sinkholes. Often there is a perched water table above these clay lenses and layers, which furnish the water for the springs.

The peat bogs are approximately 8000 years old based on Palynological studies done by Watt (3,4) and the studies of the lakes of North Central Florida done by Pirkle and Brooks (2). Prior to that time the water table was depressed during the Wisconsin glacial eustatic sea level depression but was raised during the post-glacial rise in the eustatic sea level and the possible post-glacial climate change (2,4).

Peats from these Karst bogs are characterized by unusually high organic matter contents. This fact indicates a very rapid accumulation of organic material and near optimum anaerobic conditions preventing its decomposition. The peats formed in deep water with little fluctuation in water level. Bottom temperatures were cool and constant while oxygen content of bottom sediment was low.

Steep slopes around the bogs added to the input of organic debris from surrounding areas and speeded organic accumulation. Inorganic nutrients from these steep slope drainage fields probably fueled the ecosystem almost as though the plant life were being fertilized. Increased inorganic nutrient input produced accelerated eutrophication with abundant aquatic plant growth. The subsequent death and partial decay of these plants gave rise to the peats we find today.

The bottom layers of peat consist mostly of *Sphagnum* and other bryophytes mixed with limnetic aquatic plants. Layers nearer the surface contain increasingly larger components of reed-sedge peat while surface peat is almost entirely ericoid (heath) or wood peat.

The bogs rarely if ever go dry. Few such bogs drain to branch runs or creeks. This lack of a flushing action, as would typically occur if drainage were consistent, has caused the bogs to act as traps for both organic residue and inorganic nutrients.

CHEMICAL AND PHYSICAL PROPERTIES OF GEORGIA PEAT

Peats from South Georgia bogs are strongly acidic and have moderate cation exchange capacities. Their percent water holding capacity by volume is not as great as sphagnum-like peats, but their salts level is low (Table 1).

To aid in perspective, the characteristics of twelve horticultural peats analyzed by Conover and Poole (1) are included. (Tables 1 and 2).

Table 1. Cation exchange and water holding capacities, pH, and soluble salts levels of 12 peats.

Product no.	CEC (meq/100 cc)	% WHC by volume	pH	Soluble salts*
1	310	73.45	4.2	0
2	444	33.65	4.0	0
3	317	71.62	4.4	0
4	365	66.58	4.1	0
5	760	77.82	3.9	5
6	625	80.36	3.7	205
7	580	45.48	4.0	10
8	286	67.32	3.8	210
9	385	76.44	3.8	70
10	690	35.26	3.9	224
11	275	88.61	4.2	0
12	120	51.89	4.0	31

* Soluble salts levels as high as 1000 ppm would be considered acceptable — 500 ppm or below is suggested.

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Tables 3 and 4 give corresponding information for Georgia peat. The bulk density of Georgia peat is high, yet it has moderate aeration as expressed by its percent capillary and non-capillary pore space.

Table 2. Non-capillary, capillary and total pore space found in 12 peats.

Non-capillary pore space %	Capillary pore space %	Total pore space %	Product no.
20.80	58.12	78.92	12
18.23	53.60	71.83	10
13.90	69.88	83.79	8
12.65	72.52	85.17	11
12.40	66.10	78.50	3
10.82	80.58	91.40	9
9.28	70.16	79.44	5
7.97	63.13	71.10	2
5.70	84.41	90.11	6
5.30	70.72	76.02	1
4.00	49.80	53.80	4
1.95	54.69	56.64	7

* Reprinted from Florida Foliage Growers, Vol. 14: Number 7, July 1977

Table 3. Cation exchange and water holding capacities, pH, and soluble salts level of Georgia peat.

Product no.	CEC (meq/100 cc)	% WHC by volume	pH	Soluble salts
GA.	354	66.17	3.8	87

Table 4. Non-capillary, capillary and total pore space found in Georgia peat.

Product no.	Non-capillary pore space, %	Capillary pore space, %	Total pore space, %
GA Peat	14.20	71.22	85.42

One of the most surprising facts about these peats is the very high organic matter content and low ash. Organic matter ranges from a low of approximately 84 percent to a high of 98 percent.

The native micronutrient content of the peat is well balanced due, in part, from input by hundreds of species of plants over thousands of years and by drainage from surrounding slopes. The nutrient content is much higher than that of most shallow-bog peats.

Table 5. Inorganic nutrient content of peat from Georgia bogs[1]

Samples taken at 10 feet depths					
P	K	Ca	Mg	Fe	Mn
1323	217	4005	448	952	52
B	Cu	Zn	Mo	Na	Al
5	4	39	38	74	6473
Si	Co	Cr	Ni	Pb	Cd
290	4	7	1	18	1

[1] Means, in parts per million, calculated from 50 random samples

Tables 5 and 6 give nutrient content of bogs at two different depths.

Table 6. Inorganic nutrient content of peat from Georgia bogs.[1]

Samples taken at surface					
P	K	Ca	Mg	Fe	Mn
1708	222	9147	1064	1625	149
B	Cu	Zn	Mo	Na	Al
7	.4	20	.4	77	6838
Si	Co	Cr	Ni	Pb	Cd
566	7	5	1	26	4

[1] *Means, in parts per million, calculated from 50 random samples*

USE AS A HORTICULTURAL MEDIUM

Conover and Pool (1) summed-up an analysis of peats by saying that selection of a peat for use as a horticultural medium depends on personal preference, cultural practices, cost and availability. All peats are capable of growing plants, but cultural practices are less stringent for peats with the better physical characteristics.

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PINE BARK CONTAINER MEDIA — AN OVERVIEW

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Considerable research has been conducted to develop a standardized potting medium for growing flower, bedding and woody plants in containers. However, potting media in use by flower growers and nurserymen are varied. Imported peat moss has been an important source of organic matter used in potting media because it has been readily available at moderate cost. As costs continue to rise, growers will continue to seek less costly substitutes for peat moss which will impart the same desirable physical and chemical properties to their potting mixtures.

Tree bark, a by-product of the forestry industry, is an or-