GROWERTALKS

Features

4/30/2026

# History of Growing Media in North America: 1975-2000

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Borrowing a phrase from one of the most prolific storytellers of this era, "The Golden Girls'" Sophia Petrillo: Picture it. Horticulture. 1975 to 2000. The Yellow Pages and corded rotary phones are used daily. Methyl bromide is on the outs (seemingly) and fire ants became public enemy No. 1. Some global conflicts ended while others began. The Space Shuttle Challenger disaster gave us pause, global warming and climate change guided polices, and the fledgling internet would soon give rise to the greatest innovative era in our history. Get ready—Y2K is coming!

Welcome to the last quarter of the 20th century! A period defined by the energy crisis, the quest for automation and mechanization, computers/robotics, environmentalism and resource conservation (Figure 1).

Figure 1. Polices and technologies shaped the end of the 20th century.

Growers navigated these changes while also adjusting to new governmental regulations and reforms, including the EPA, Clean Air and Water Acts, immigration reform, regulated plant quarantines, etc., all of which affected their operations. Let's take a look at some of the innovations across the growing media and plant production industry due to—or despite—new policies and regulations.

**1970s**

The latter half of the 1970s saw continued industry use of super-absorbent polymers (hydrogels) as additives to growing media (i.e. Viterra and Terra-Sorb), as well as broader use of improved surfactants (i.e. Aquatrols), both aimed at water use efficiency in plant production (Figure 3). Wood chip boilers and floor heating became common in greenhouses, capillary watering mats and sub-irrigation systems were becoming popular, and the entire industry (world) was adopting barcodes, which in case you were wondering, was first used to scan a pack of Wrigley's chewing gum in 1974.

A by-product from a process developed in France (Elf Aquitaine—a French oil company) to extract chemicals from pine trees as a petroleum substitute created the first wood fiber material in the early 1970s. In the U.S., wood

specifically processed as a substrate was investigated in 1980 by A.J. Laiche, Jr. and V.E. Nash, two scientists at Mississippi State University. Further research and development of wood components didn't gain traction until after 2000.

Strawdust was a novel growing media developed at Tuefel Nursery (OR) in 1979 made from wheat straw that was resin-impregnated and chemically treated in an extrusion process, which sterilized the straw and increased its biostability when used in growing media.


**1980s**

The 1980s ushered in the first major coconut coir (often called CocoPeat, which is a marketing misnomer) products. While first referenced in 1893 as a soil amendment, it was this decade that saw commercial production accelerate. Coir products, produced from the husks of coconuts, were primarily being sourced from Sri Lanka and India, and some early products included Lignocell and Cocomoss (Figure 2).

Figure 2. Growing media products.

The Horticultural Substrate Laboratory was created (circa 1983) when faculty in the Department of Horticultural Science at North Carolina State University banded together, integrating their strengths and programs into a single lab for substrate research. Drs. Bill Fonteno (floriculture), Ted Bilderback (nursery), Paul Nelson (plant nutrition) and Stu Warren (nursery/soils) and their team contributed numerous innovative products, procedures and diagnostic services to both growers and growing media companies for decades.

North American peat companies continued to expand (Heveco, Southland, Stearns, Reliable, Hyponex, etc.) offerings of sphagnum, hypnum and reed/sedge peats. Innovations also led to compressed peat bales, the first towers (skyscrapers), peat bale busters and the release of some popular mixes, including Metro-Mix (W.R. Grace), Fafard, Sunshine Mix and the Ball Mix among more than 50 others (Figure 2). Bark substrate research and broad industry use was at its pinnacle.

This decade also saw: the creation of the Virginia Tech Pour-Thru nutrient extraction method by Dr. Robert Wright; "Bayou Peat" (1982)—a sugarcane bagasse growing media in Louisiana; the "dibble" controlled-release fertilizer application method; the first use of tomography (x-ray imagery) to "look inside" growing media in containers (Brown and Fonteno, NCSU); and the "Pot in a Pot" nursery field-type container production system developed by Charlie Parkerson at Lancaster Farms in Suffolk, Virginia (Figure 3). The Canadian Sphagnum Peat Moss Association (CSPMA) was founded (1988) to promote the horticultural benefits of peat moss and advocate for responsible, sustainable management of Canadian peatlands.


**1990s**

The 1990s brought heightened publicity across the horticulture industry for promoting native plant production and use, avoidance of invasive plant species, a boom in the interior plant sector, an increased use of organic fertilizers (i.e. cotton seed meal, blood and bone meal, hoof and horn meal, etc.), and the advent of the TreeGator (Gator Bag) in 1991. In 1992, peatland restoration efforts in Canada accelerated with the formation of the Peatland Ecology Research Group at Université Laval, which published the Peatland Restoration Guide outlining the “Moss Layer Transfer Technique” in 1997.

Figure 3. Novel growing systems, mechanization and innovative products.

Stone wool products accelerated their usage among growers, either as loose nongranulated wool fibers blended with peat or as 100% slabs/blocks/cubes. In addition to Grodan’s Rockwool, other products—some domestically produced—were being used, including Delta Grow’s (Texas) “Pot Cookies” (wool discs inserted in the bottom of containers to prevent mix from washing out), Hortiwool and FBX Nutra-Fiber (Figure 2; Fibrex Inc., Illinois), Fiber-Gro (American Rockwool Inc., Texas), Capagro, Peatwool or Pargro (Partek North America Inc., Georgia), Thermafiber, and Growool.

Other materials evaluated and used as media components included peanut and rice hulls, activated carbon, paper mill biosolids, nut husks (macadamia), kenaf, miscanthus, waxed corrugated cardboard, diatomite (diatomaceous earth), corn stover and cobs, shredded pine cones, dredged river sediment, rubber tire chips, phenolic and urea formaldehyde foams, gelling materials, and composts derived from numerous materials, including spent mushroom casings, poultry and dairy manures, sewage sludge, cotton, and municipal wastes, to name a few.

Many of the innovations (tools and techniques) that catapulted the plant production industry started out as what many may describe as “Thingamabobs” (doohickey, thingamajig or whatchamacallit)—referring to inventions (gadgets), often conceived and created on farms and in garages. In addition to several previously mentioned, there were also advancements in soil/media mixing—trading early methods (concrete mixers or mixing in old bathtubs with a hoe) for modern machines, including ribbon blenders and continuous line operations (i.e. Bouldin & Lawson, Gleason, Javo, Mayer, Ellis, Davis, and Blackmore; Figure 3). Plant containers and growing systems also evolved with new approaches to air pruning pots, forest (tree seedlings) styroblocks and trays, Gro-Plugs, Gro-Gels, polystyrene foam trays (California rooting tray developed by Paul Ecke), and phenolic foam strips, floral foam and rootcubes from Smithers-Oasis.

Upon reflection of the many challenges and changes that this time period brought, what’s most revealing is how the industry responded—in resounding innovation! Through perseverance and creativity, we saw the “art” of growing plants evolve more to the “science” of growing plants. **GT**

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