

PRODUCTION

Growing Media: Tariffs, Trends, and Trajectories

One prominent North Carolina State University expert offers the most up-to-date information available on growing media.

By Dr. Brian E. Jackson

Growing media (substrates) are often described as having some functionally static (lacking in movement, action, or change) physical properties as well as some dynamic (having constant change, activity, or progress) chemical and biological properties. As I look across the industry landscape today, it seems fitting that “dynamic” is a good way to summarize the ongoing movements, trends, innovations, and uncertainties facing the growing media market.

Let’s begin by addressing the elephant in the room — the tariffs recently imposed on imports from Canada and Mexico. There are others, but for now let’s focus on our neighbors. The U.S imports 85%+ of the annual Canadian peat extracted, peat that is then used to grow horticultural crops, products, and services with an estimated annual half-a-trillion-dollar economic impact. So, this is concerning on both sides of the border.

AmericanHort and many other industry allies have advocated for Canadian peat moss (and all peat-based products) to be excluded from these tariffs or be granted “critical mineral status” to reduce the tariff rate to 10%.

Regarding Mexico, while not as significant, there are substrate products, namely coconut coir, that is imported and will also face any tariffs imposed. When this article is published the situation may likely be very different. Time will tell.

While on the topic of peat and coconut coir, here are a few non-tariff related updates.

As reported by the Canadian Sphagnum Peat Moss Association, the peat harvest in Canada during the 2024

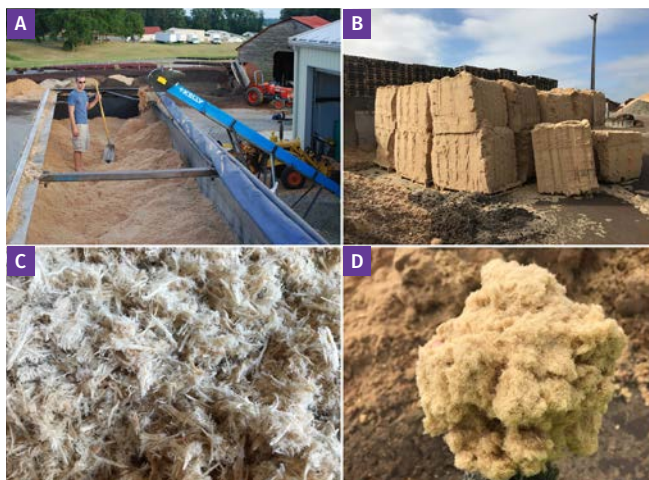


Figure 1. Wood substrate raw material offerings can include (A) bulk/loose material, or (B) compressed bales with most fiber products being (C) extruded or (D) disc-fined. Photos: Brian Jackson

extraction season was quite good, and much improved compared with 2023 due to more favorable weather conditions for harvesting.

This is excellent news, as peat remains the backbone of soil-less growing media and is critical to our industry. Coconut coir supply, availability, and cost has seemingly ebbed and flowed over the past year in many areas. While not all coir suppliers or buyers have been affected, many have.

Based on information I have received, the cost of coir in some locations has increased 60% to 70% compared to January 2024 prices. Some coir suppliers in India and Sri Lanka have reported a 30% to 40% reduction in production. The main reasons for the supply and cost shifts are due to several evolving factors, including: severe monsoons that affected the areas of coconut production in recent months; the significant demand of coir substrates by China, which may be at historical levels; and also due to the overall increased use/demand for coir globally as the most used organic substrate behind peat. Other critical substrates (e.g., perlite, vermiculite, stone wool, pumice, etc.) seem to be in good shape.

Trending Developments

Growing media manufacturers in the peat, coir, perlite, stone wool, floral foam, stabilized media/plugs, compost, biochar, etc. markets continue to innovate, offer new products, develop and implement sustainability practices, and work to meet the needs of their consumers. Many of these were on display at IPM Essen and Indoor Ag-Con earlier this year.

Some specific developments with wood fiber substrates also have been occurring. New



Figure 2. Steaming or heating during or after processing of some organic substrates is an important step in preconditioning materials before use.

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companies and products are now on the market, both domestically produced and imported from Canada and Europe (see Fig. 1 on page 10). In the past two years, three new wood substrate producers are now selling in certain areas of the U.S. As I have alluded to in the past, even more are coming in the near future. Other than the continually shown feasibility of growing crops in substrates containing wood (though there are still challenges for sure), one of the other driving forces behind the increase in wood fiber production has been in-part due to new players in the game.

As the forestry industry (pulp and paper) have witnessed a decline in operations nationwide, there are some forestry and wood product companies that are eyeing the horticulture sector as a possible entry point for new uses of currently underutilized or low-market-value forest materials. These companies are bringing their expertise in different wood processing technologies and their understanding of wood engineering, manipulation, chemistry, etc. to advance what we know about wood fiber and how we can better use it.

This surge in processing technology is also true for biochar production and other non-wood biomass materials. Other groups interested in entering the growing media market with new materials or existing materials (wood) have recently completed economic feasibility studies to assess the potential of also entering the market.

Growers across the U.S. also are continuing to trial many different substrate materials that are found locally in their production locations, with several of them aiming to begin sourcing and making their own substrate materials for in-house use.

Another area of interest for many growers (mainly food crops) who are using or considering the use of wood fiber is the cleanliness or sterile condition of the materials. Most commercial wood products on the market today are manufactured in machines that generate high heat (from friction), steam, and pressure (Fig. 2A-B on page 10). Those conditions do help to sterilize, at least temporarily, the wood fiber and remove some wood chemicals that would otherwise be harmful to plant growth. Most wood-refining machines reach temps above 100°C.

How — and to what extent exactly — these temperatures modify the wood is still being investigated, but we are aware that high heat can have beneficial effects on other organic materials like aged/composted bark (Fig. 2C). Some growers who have learned to successfully grow crops in substrates with higher (~50%) wood fiber inclusion have since backed off to lower percentages due to the observed decreased post-production shelf life (wilting) of plants once at retail.

Research Directions

Domestic and global research efforts have ramped up substantially over recent years, even more so now due to the many (continuing) challenges and industry shifts we are experiencing relating to growing media. It's fair to say that federally/publicly funded R&D in other countries (particularly Europe) far exceeded that here in the U.S. since the pandemic. That, however, has recently changed — with great justification and support — and the timing could not be better! Organizations



Figure 3. Investigating how to grow crops in 100% wood (or other non-peat material) continues to be a focus for many researchers and growers.

including the American Floral Endowment, HRI, the Gloeckner Foundation, and others have led the way in recognizing the critical need for supporting research in developing/improving substrates for the horticulture industry in the U.S.

Additionally, in the fall of 2024, a team of scientists were awarded a five-year USDA Specialty Crop Research Initiative grant solely focusing on substrate sourcing, engineering, development, and management in the U.S. The grant, known as Soilless Substrate Science, will support novel research, both applied and foundational, to help (with industry partners) better invent and secure the future of soilless growing media.

Among the current research initiatives being investigated that my lab has been focusing on primarily revolve around the continued development of forest-based (wood) substrate development and use. We have been resurrecting research from 2004 to 2010 that investigated the potential to grow crops in 100% wood substrates (Fig. 3).

It may seem crazy I know, but it is possible! Of the different types of wood fiber on the market, some can be formulated (100%) into compressed blocks and slabs with success in the greenhouse vegetable, strawberry, and cannabis markets. When used as loose-fill substrates, not all fiber types have the structure to be used at high percentages due to pot filling issues, slumpage, or compaction.

Our focus on growing in 100% wood is only with hammer-milled substrate products that have the structure allowing this to more easily be feasible. Other areas of research include a broader evaluation of conifer species across North America (eight in total) as well as renewed interest in how hardwood trees/materials can be manipulated and used successfully as substrates.

Preconditioning wood fiber to remove harmful chemistries, understanding the effect of harvest season on wood fiber quality, irrigation and improved post-production shelf life of plants grown in wood, pH, and nutrition projects round out some of the main areas of current work. **CG**



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