
24th
Grower's
Appreciation Dinner
Berger

Improve Your Margins with NF Wood

By Brian Cantin, Senior Grower Advisor at Berger

Presentation Agenda

- NF Wood, an innovation of 2012;
- Wood fiber production process;
- Pros and cons of wood Fiber
- Berger's NF Wood products
- How NF Wood products can improve your margins;

Innovation and environment are priorities for Berger.

In 2012, Berger was the first substrate producer in North- America to introduce wood fibers into its line of professional growing media as a renewable aggregate.

Innovation and environment are priorities for Berger.

The NF Wood products, which utilize a renewable raw material, provide growers with the same quality and consistency as other Berger's products while bringing new opportunities to adjust and improve growing media characteristics.

Production Process of Wood Fiber

Improve your margins with NF Wood

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Wood Fiber

NF WOOD

Horticultural fibers made from paper mill quality woodchips.

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Double Auger and Disc Defibering Process

After debarking and the initial headrig cuts, the slabs of pine sapwood are chipped into papermill quality woodchips.

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Double Auger Process

Wood chips are washed and fed into the double auger system.

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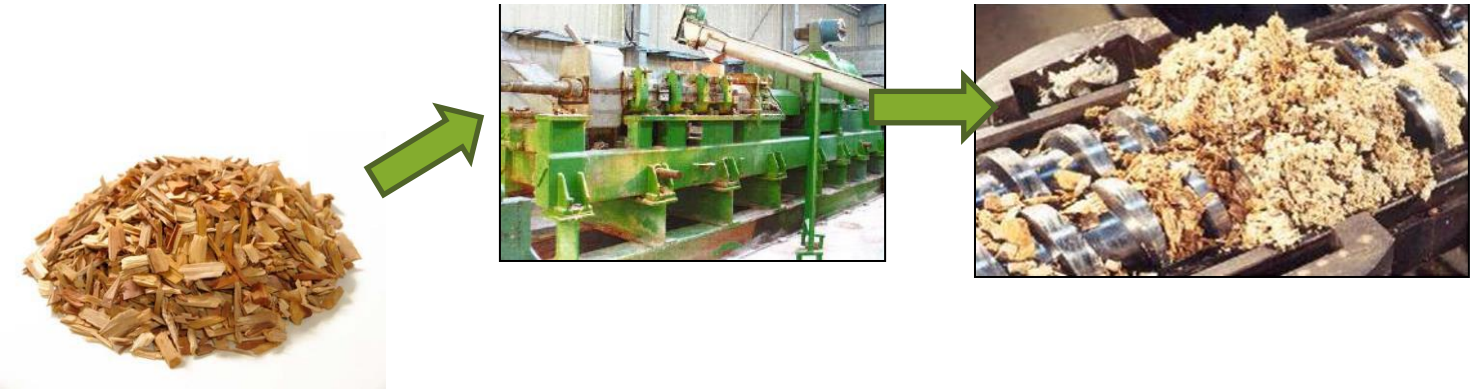
Double Auger Process

The chips are compressed though two augers, creating abundant heat which eliminates phytotoxic compounds and stabilizes the fibers. Final product is of consistent particle size.



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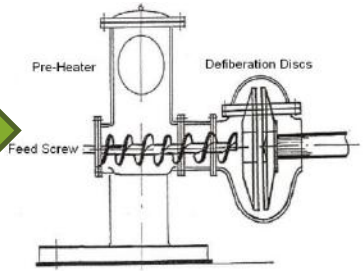
Disc Defibering Process

Wood chips are washed and fed into the disc defibering system.

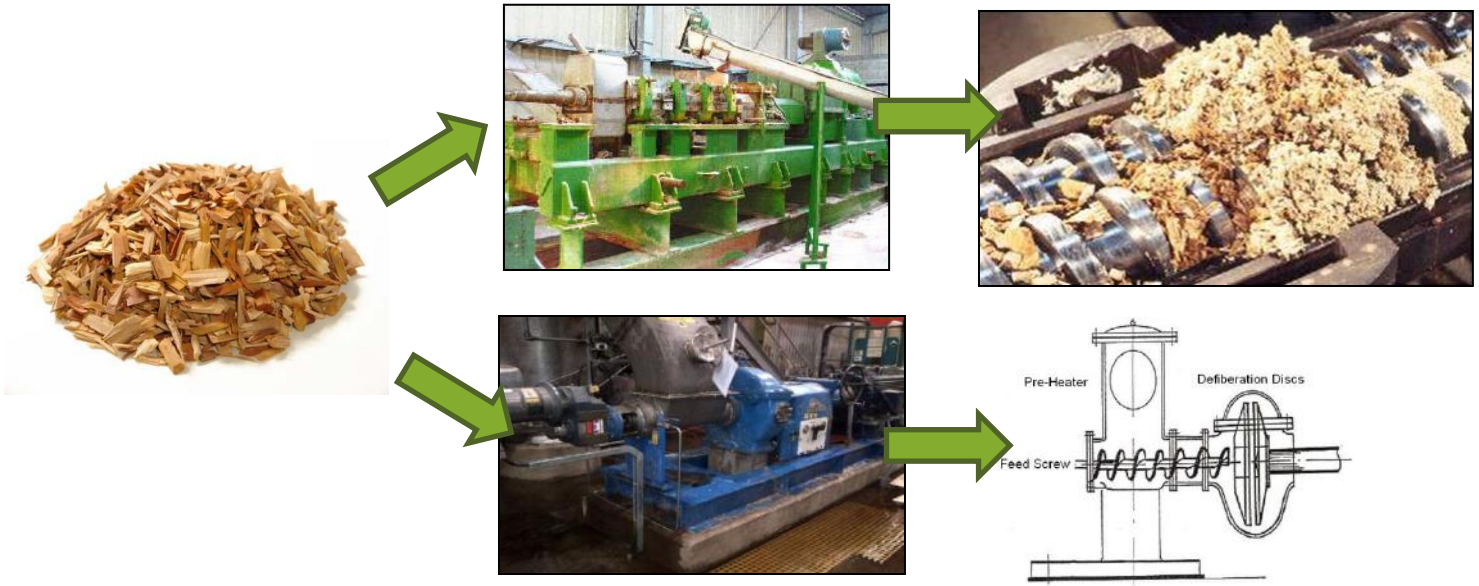
Disc Defibering Process

Chips are pre-heated (230-320°F) under pressure (8bar) with vapor. They are then forced through two rotating discs which grinds them down to a uniform size.



Double Auger and Disc Defibering Process

Both processes produce wood fibers that have similar physical and chemical characteristics.



Pros & Cons of Wood Fiber

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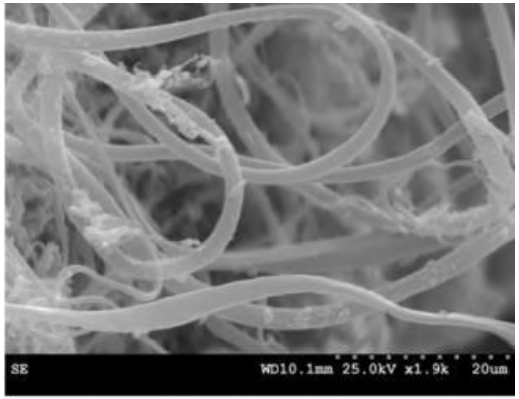
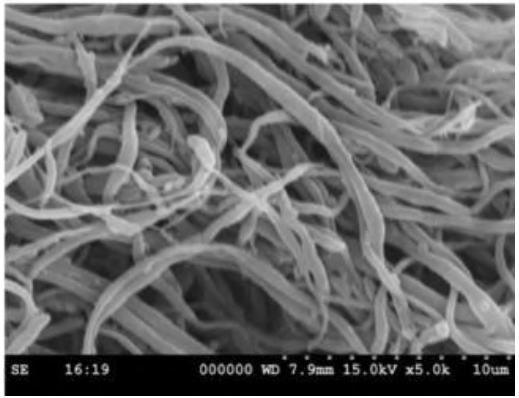
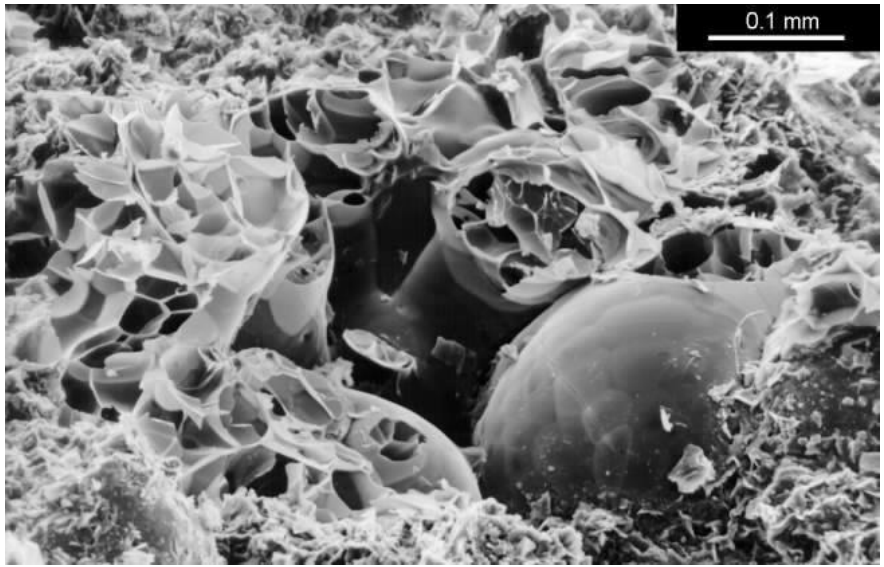
Physical Structure





Natural Fiber



Perlite

"Green" Advantages

- Made with a natural by-product of the wood industry
- Local product
- Sustainable & Renewable
  - Carbon cycle
- Green Production Process
  - Compared to Rockwool, Perlite & Vermiculite
- Organic
  - Completely compostable

Disadvantages

- Not completely inert
  - But very stable due to heat treatment during the production process.
- Some Nitrogen Immobilization
  - At NF Wood concentrations over 35%.

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Available Products

Non-aggregate mixes

- BM4 NF Wood
  - Contains 12.5% NF Wood.

- BM4 NF Wood High Porosity
  - Contains 25% NF Wood.

How NF Wood Berger's products improve your margins

- Reducing transport costs
- Reducing chemical waste
- Reducing production time
- Reducing crop waste

NF Wood: Reducing Transport Costs

Improve your margins with NF Wood

Physical Characteristics

Bulk Density

Component	Bulk Density (g/L)
Sphagnum Peat Moss	120
Rockwool	85
Perlite	90
Wood Fibers	55
Whole Tree Substrate	160

NF Wood helps to decrease bulk density.

Available Products

Yield and Bulk Density

Products	Yield (cu.ft.)
BM4 Euro	220
BM6	220
BM6 HP	220
⇒ BM4 NF Wood	230
⇒ BM4 NF Wood HP	245

Up to

13%

Gain in Yield

NF Wood: Reducing Chemical Waste

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Physical Characteristics

pH, Electrical Conductivity and Cation Exchange Capacity

Component	pH	E.C. (mmhos/cm)	C.E.C. (meq/100g)
Sphagnum Peat Moss	3.5	0.05	120
Rockwool	8.5	0.01	1.8
Perlite	7.5	0.01	2.5
Wood Fibers	4.5	0.08	63
Whole Tree Substrate	4.9	1.30	10

pH and E.C. values are used to adjust the chemical characteristics when manufacturing the mixes.

C.E.C. of each component contributes to the C.E.C. of the final product, therefore NF wood contributes more than many other aggregates.

Physical Characteristics

Wettability & Water Distribution

- NF Wood is made from sapwood, and is therefore hydrophilic.
- Better distribution of fertilizer solution throughout the mix

Sapwood: living portion of the wood where the sap flows, just below the bark.

NF Wood: Reducing Production Time

Improve your margins with NF Wood

Physical Advantages

- Sterile (High T° Process)
  - No phytotoxic substances
- Optimized water retention and porosity
- Stimulates root development

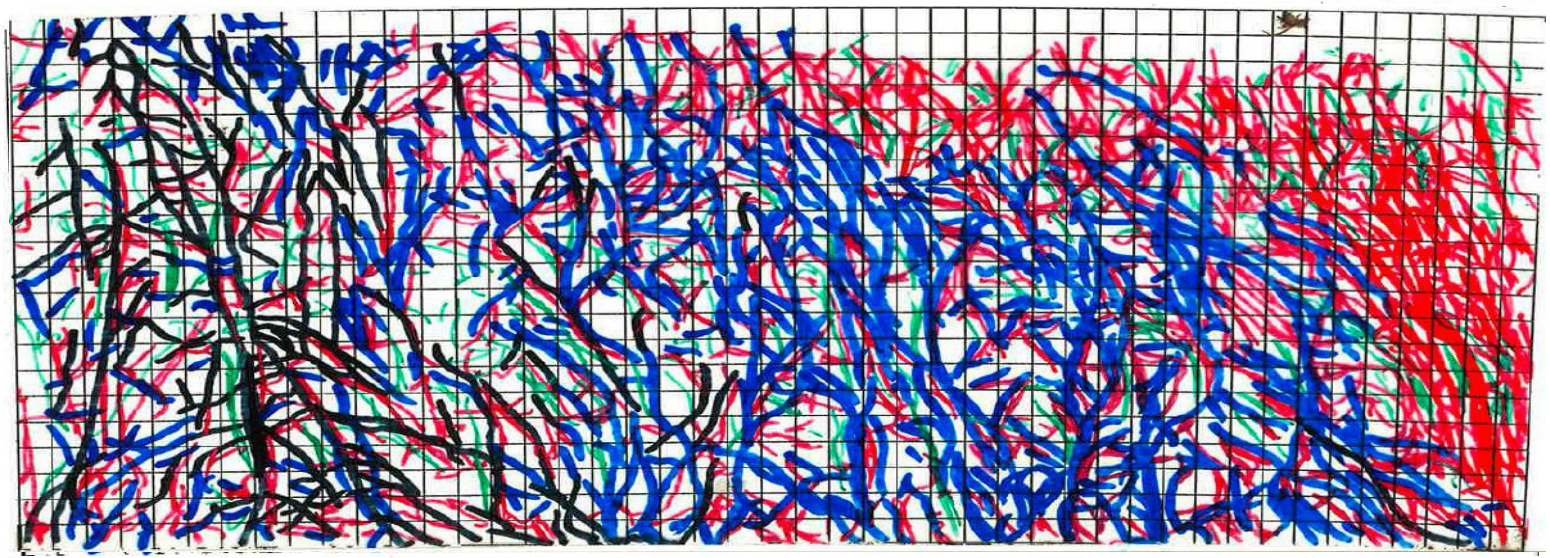
Save Up to

29%

On production time

Horhizotrons

Horhizotrons



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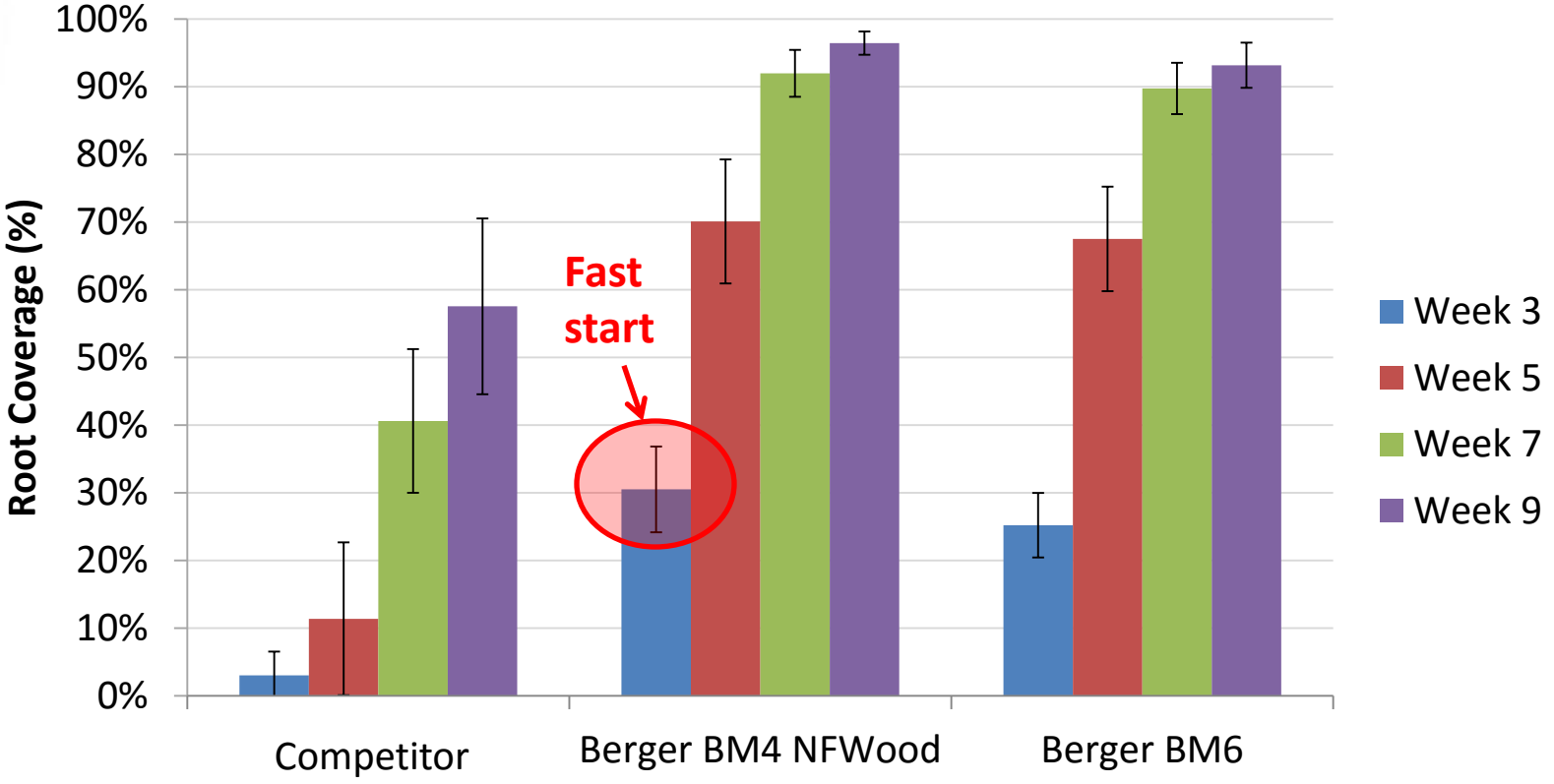
Horhizotrons



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Customer Testimonial

Nash Greenhouse

Find[illegible]/ood at https://www.berger.ca/en/grower-resources/testimonials/nash-greenhouses/

NF Wood: Reducing Crop Waste

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Quality Control

Before it is used to produce mixes, Berger performs several tests on its wood fiber to ensure that it meets the high-quality standards that we established.

Before each mix production, a sample of NF Wood is sent to our laboratory for testing. This helps Berger adjust the recipe and production to always get the same quality and consistency no matter when or where a growing media is produced.

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Technical Expert Team

Our team of grower advisors can help you determine if these products are a good match for your production system and help you adjust your practices as you transition to these new mixes.

With the support of our analytical and technical services, Berger can accompany you throughout your production cycle to ensure you achieve superior results.

NF Wood: Recommendations

Improve your margins with NF Wood

Recommendations – BM4 NF Wood

Water management

- The BM4 NF Wood (12.5%) can be used like the BM4 Euro since they have matching physical and chemical characteristics.
- Compared to BM6 though, it will slightly retain more water, therefore watering practices should be adjusted accordingly.

Recommendations – BM4 NF Wood HP

Water management

- Will be different compared to equivalent HP substrates. An adjustment of the watering practices will be required.
- We recommend a decrease in the volume added per irrigation with an increase in the frequency of irrigations.

Fertilization

- A minor nitrogen draw-down can occur with BM4 NF Wood, therefore we recommend an overall increase of 25 ppm of nitrogen.

Thank You!

For more information regarding this presentation, please contact :

Brian Cantin

@: techsupp@berger.ca

☎ : 1-800-463-5582


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