Mid-Atlantic Sustainable Biomass - Educating Future Producers and Users of Biochar in the Mid Atlantic

Amir Hass, Shawn Grushecky, Timothy Volk, Hannah Payne, Jamie Schuler, Chad Bolding, Daniel Ciolkosz, Jingxin Wang, Molly Ramsey

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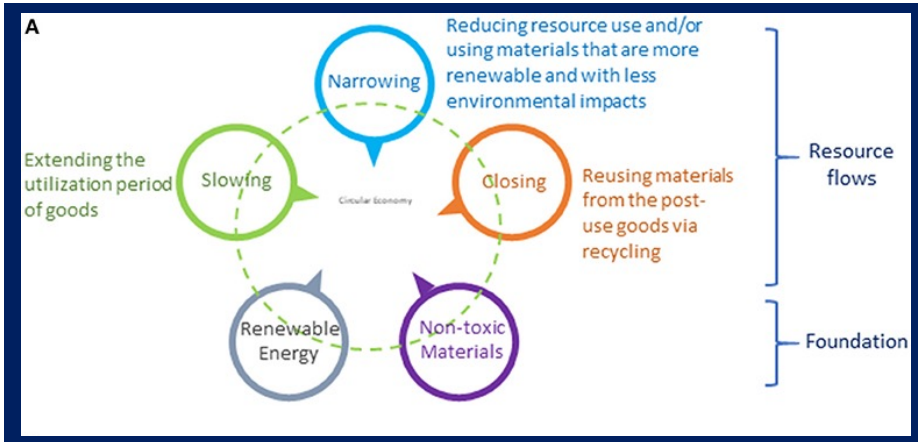
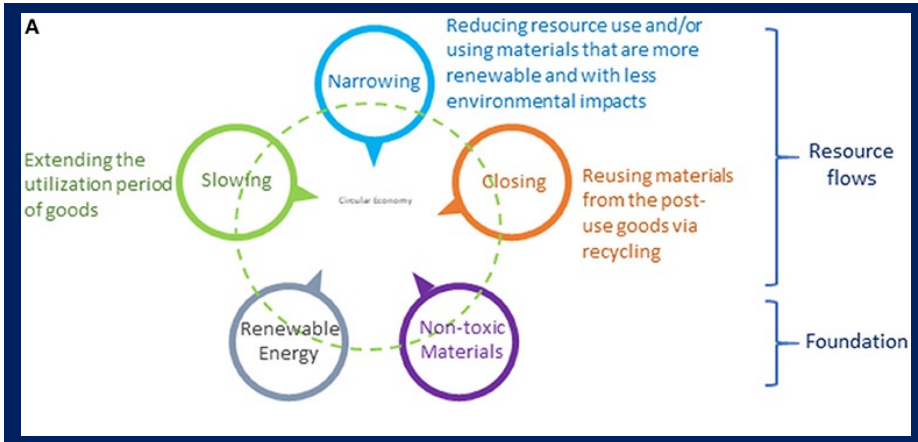


Circular economy: "… is principally to slow, narrow, and close the material resource loops, all built on the foundation of renewable energy and non-toxic materials, as well as through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling…"

Tan & Lamer, 2021. Front. Sustain. https://doi.org/10.3389/frsus.2021.701509



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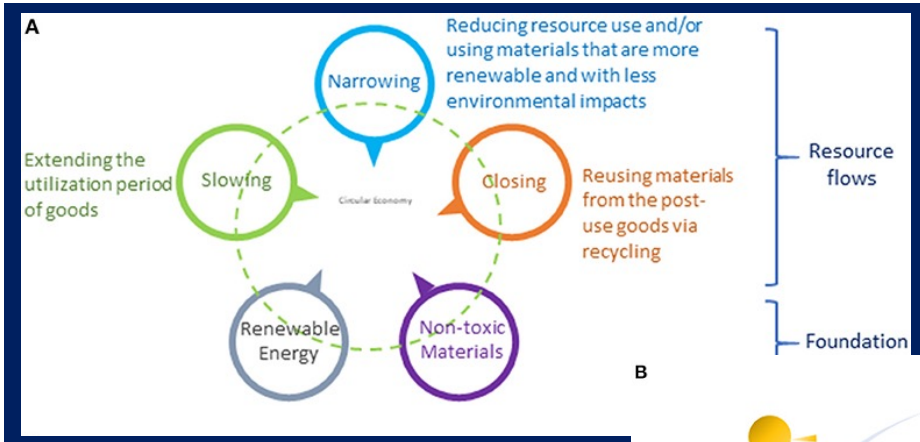

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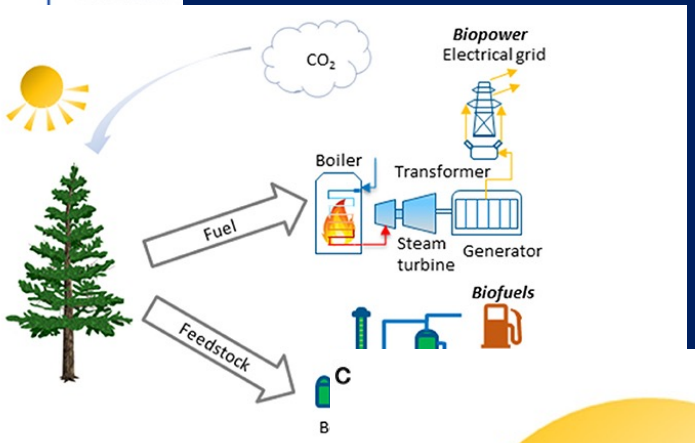
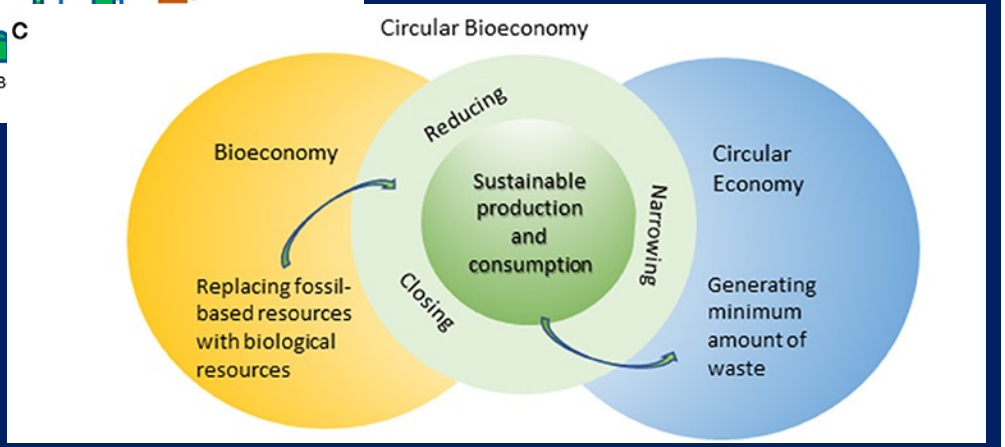
Bioeconomy: "…sustainably utilizing renewable aquatic and terrestrial biomass resources in energy, intermediate, and final products for economic, environmental, social, and national security'





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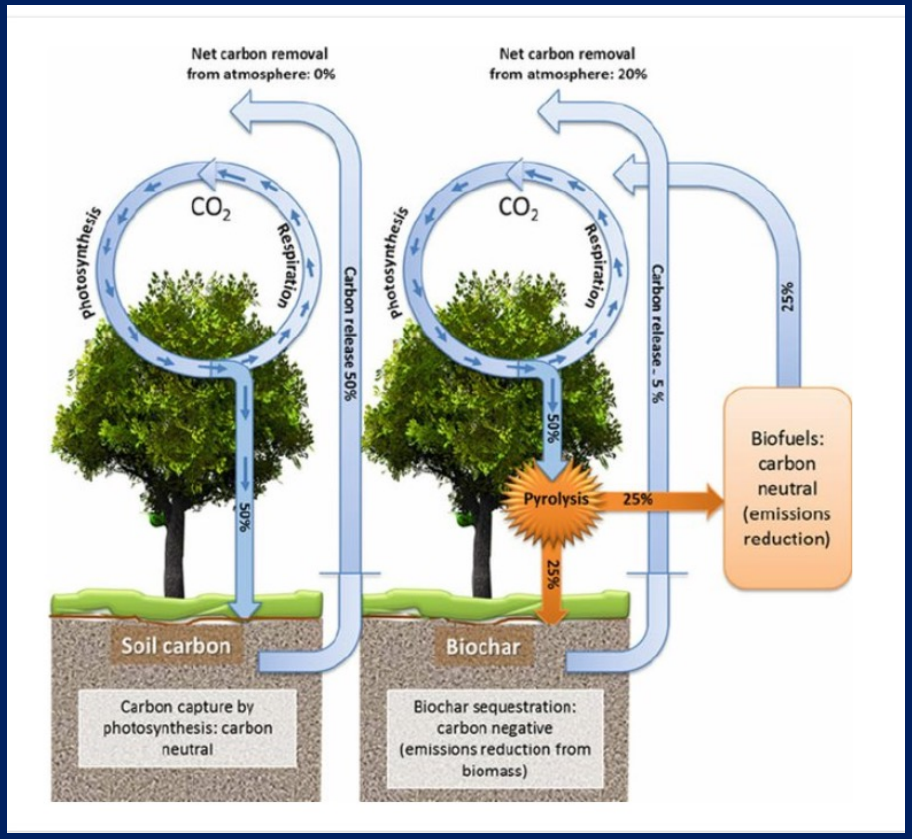
Biochar, Carbon Cycle and The Circular Bioeconomy



MASBio Task Groups

Feedstocks Production

Identify and demonstrate feasible and cost-effective approaches to soil amendment and feedstock production.

Harvest and Logistics

Demonstrate efficient and effective harvest and logistics strategies for an optimized supply chain.

Optimization

Develop and optimize bioproduct conversion processes through collaborations with industry partners.

Sustainability

Evaluate the sustainability and human dimensions of the developed system.

System and Scale-up

Conduct system and scale-up analyses using robust artificial intelligence (AI)-based data analytics.

Education

Engage the next generation of bioproducts leaders through education and internship programs.

Outreach

Outreach and engage with entrepreneurs, stakeholders and business developers to promote bioeconomic development through integrated outreach programs.

Task #6 Education

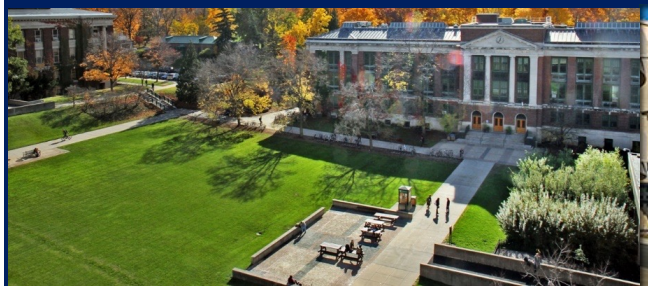
- 6.1 Undergraduate Scholars (undergraduate students)
- 6.2 Bioeconomy and Biorenewables Courses (under/graduate students)
- 6.3 Certificate Programs (undergraduate students)
- 6.4 Educator Training (grade school teachers)

Education Task Group Team

				
Scott Barrett Va Tech	***Chad Bolding,*** UGA	***Dan Ciolkosz,*** Penn State	***Shawn Grushecky,*** WVU	***Doug Daley*** SUNY ESF
				
Amir Hass, WVSU	***Hanna Payne*** WVSU	***Jamie Schuyler,*** WVU	***Tim Volk,*** SUNY ESF	***Jingxin Wang,*** WVU

Undergraduate Scholars Program

- Summer 2022 - SUNY ESF
  - Cohort of students
  - Research experiences with local faculty
- Future years will be at WVU, PSU, and VaTech

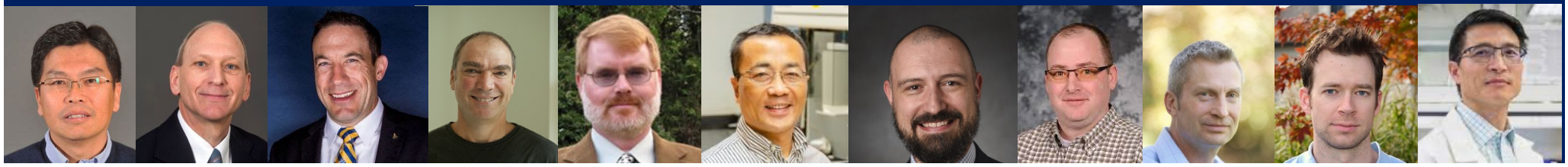


ESF

Graduate Seminar in Biorenewables

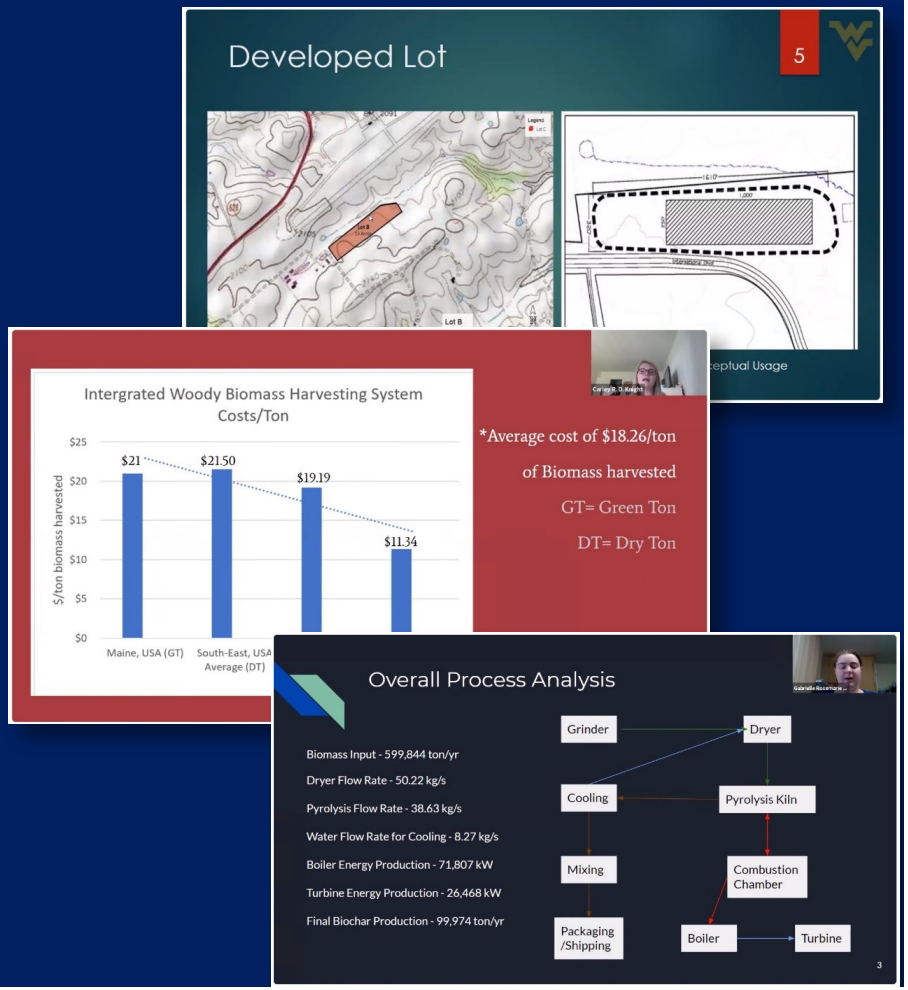
Date	***Topic***	***Speaker***
17 Jan	**The MASBio Vision**	Jingxin Wang, West Virginia Univ.
24 Jan	**Perennial Grasses**	Jeff Skousen, West Virginia University
31 Jan	**Marginal Land**	Shawn Grushecky, West Virginia Univ.
07 Feb	**Shrub Willow**	Mike Jacobson, Penn State
14 Feb	**Forest Residue**	Austin Garren, Virginia Tech
28 Feb	**Supply Chains**	Damon Hartley, Idaho National Lab
07 Mar	**Supply Chains**	Tim Volk, SUNY ESF
21 Mar	**Biomass Conversion**	John Hu, West Virginia University
28 Mar	**Biomass Conversion**	Bingyun Li, West Virginia University
04 Apr	**Biomass Conversion**	Steve Chmely, Penn State
11 Apr	**TEA Evaluation**	Tristan Brown, SUNY ESF
18 Apr	**LCA Evaluation**	Richard Bergman, USDA FPL

- *All of the lectures were very helpful in clarifying what MASBio is, does, and my role in it.*
- *The finest part, in my opinion, was hearing from specialists working on various aspects of the biobased energy system, hearing about their challenges and concerns, current issues, and pushing (us) to work on a sustainable bioenergy system.*
- *I think that was fantastic, and I was wondering that someone who works in the industries or bio-refineries where biofuels are produced may share their actual experience …. to assist us gain a better knowledge of how it works in practice.*



Regional Design Course

- Y1: Design of Large Biochar Production Facility (Bolding, Ciolkosz, Grushecky)
- Y2: Design of Smaller, Mobile Biochar Production Facility (Ciolkosz, Daley, Grushecky)



Certificate Programs

- “Stream Habitat and Bio-Restoration” (3 cr), will be offered Fall 2022 at WVU
- "Land acquisition and management for restoration and mitigation". Initial offering planned for Spring 2023.

MASBio Educator Training

- Each summer at WVSU
- Teacher training workshop:

  Soil, Biomass and Energy in Sustainable Society

- *I will use the lesson plans and plan on using the presenters as resource contacts when I have questions.*
- *I will use the lessons and materials provided to teach these lessons to my students. I will also share the information and materials with my fellow 4th grade teacher.*
- *I will share with students and encourage them to engage in inquiry design for their own investigations.*
- *As part of unit lessons in science, ELA, and Math. Experiments will be highly beneficial and will also help with WV studies.*
- *I plan to implement discussion and research about the bioenergy crops.*

USDA United States Department of Agriculture | National Institute of Food and Agriculture

MASBio

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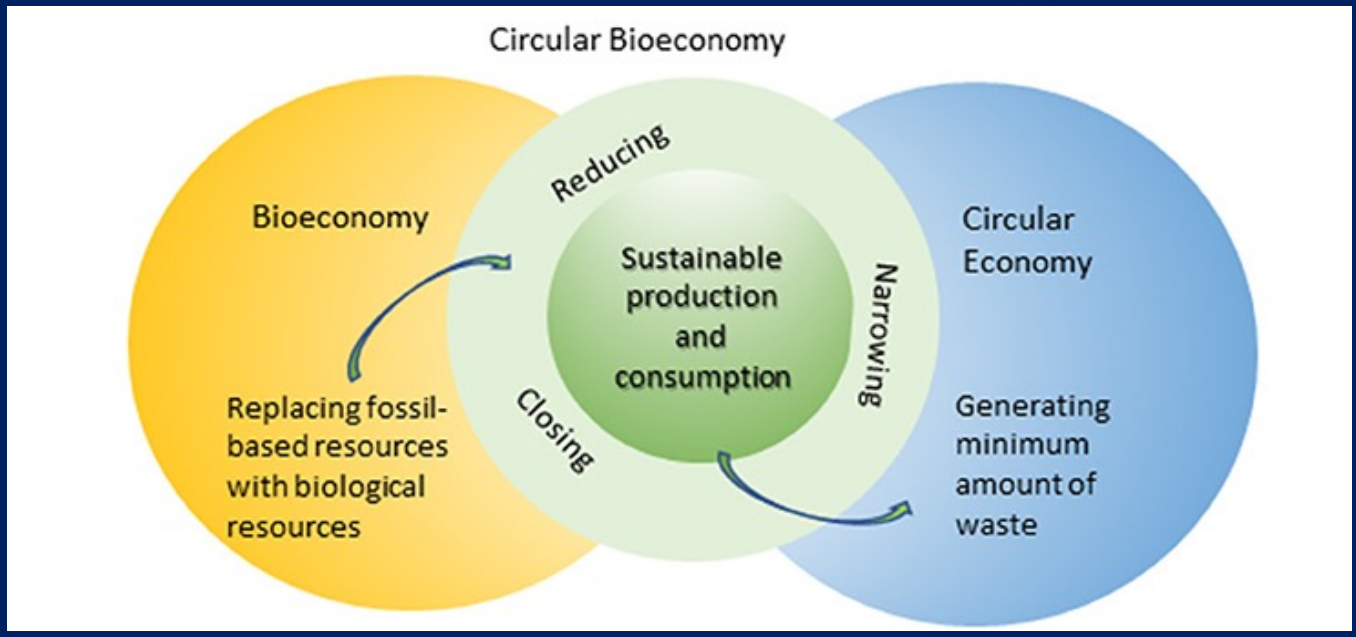
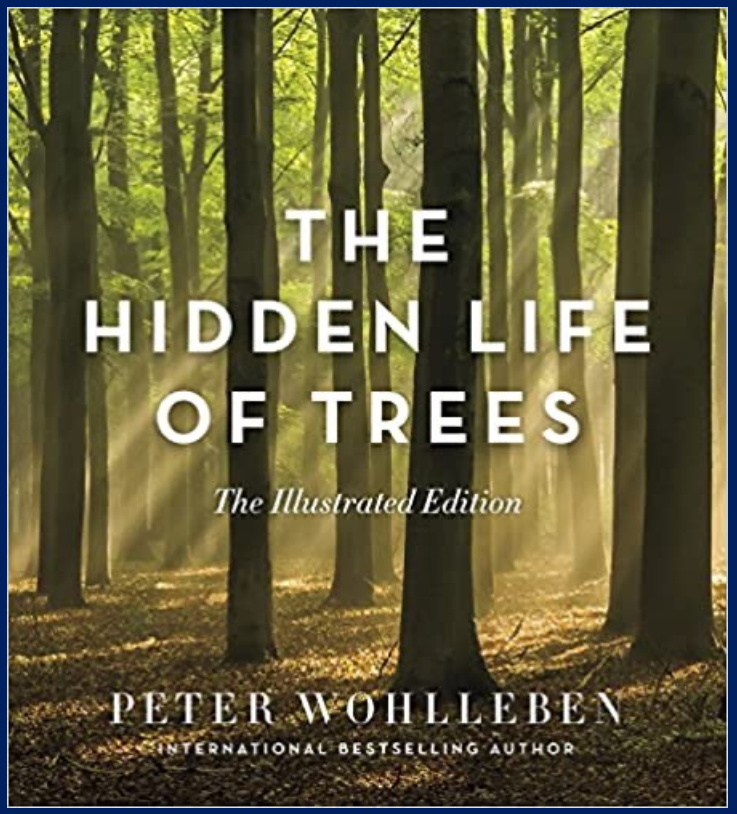


West Virginia University | ESF | INL Idaho National Laboratory | Oak Ridge National Laboratory | PennState | USDA Forest Service | Virginia Tech | West Virginia State University | Wisconsin University of Wisconsin-Madison


THE
HIDDEN LIFE
OF TREES
The Illustrated Edition
PETER WOHLLEBEN
INTERNATIONAL BESTSELLING AUTHOR