



United States
Department of
Agriculture

National Institute
of Food and
Agriculture



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

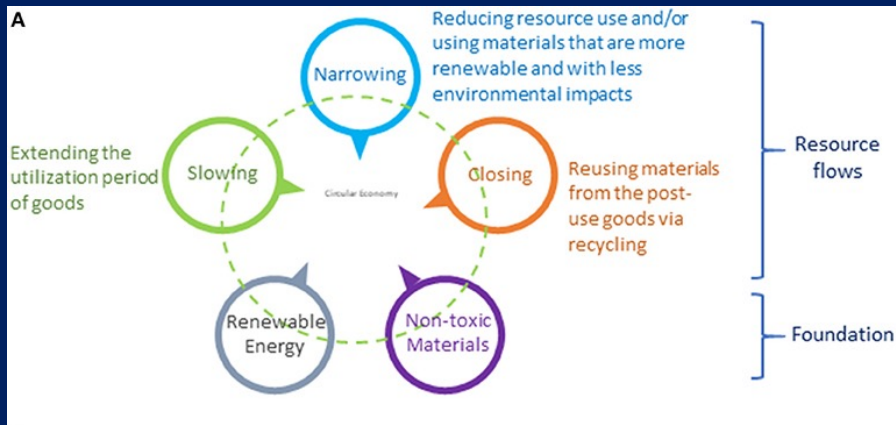


PennState



A photograph showing a white car partially submerged in floodwaters. The car is on the left side of the frame, with only its hood and front end visible above the water. In the background, a group of people is sitting on a boat, watching the scene. The water is dark and rippled, reflecting the light. The overall scene suggests a severe weather event or flooding.

IPCC Report: Climate change could soon outpace humanity's ability to adapt

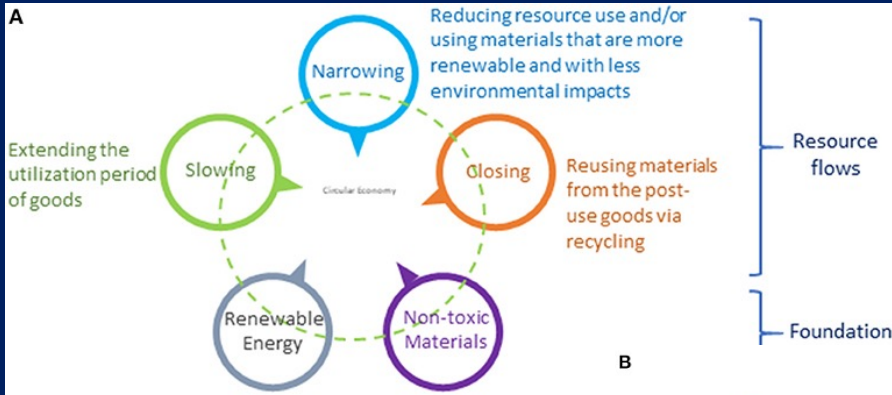


Circular economy: “... is principally to slow, narrow, and close the material resource loops, all built on the foundation of renewable energy and non-toxic materials, as well as through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling...”



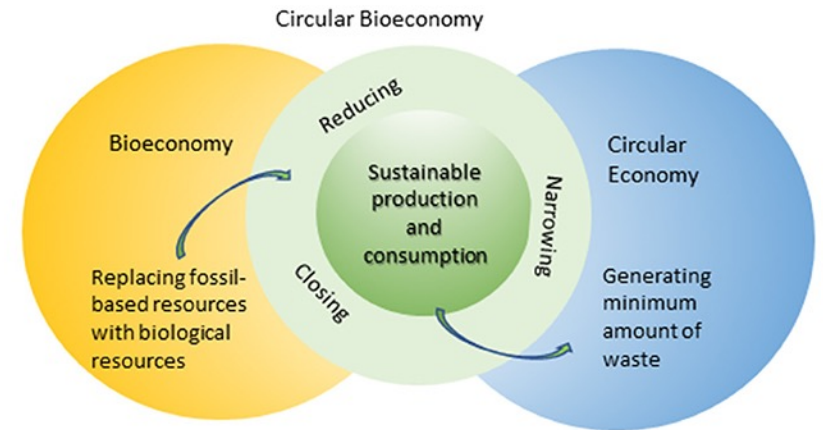
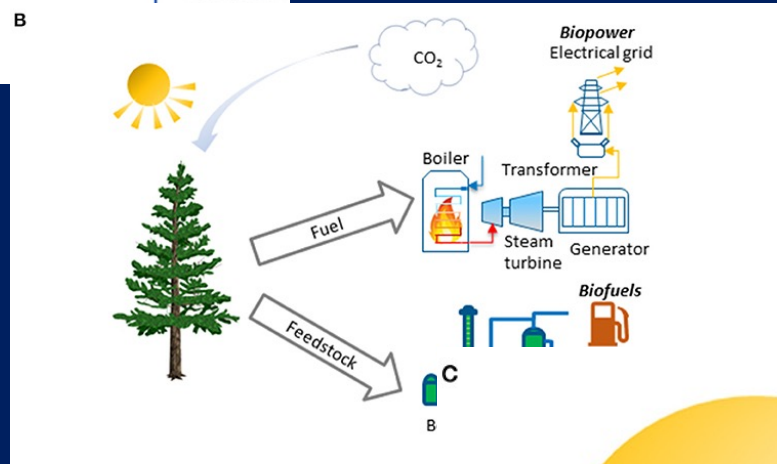
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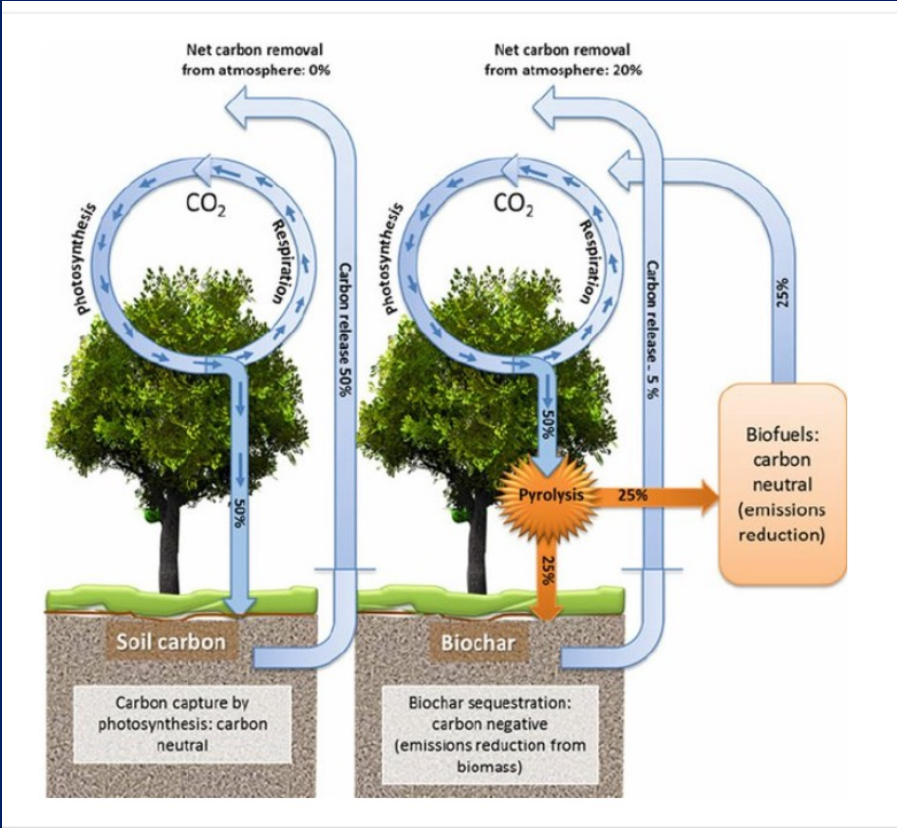


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Bioeconomy: "...sustainably utilizing renewable aquatic and terrestrial biomass resources in energy, intermediate, and final products for economic, environmental, social, and national security"



Biochar, Carbon Cycle and The Circular Bioeconomy



MASBio Task Groups



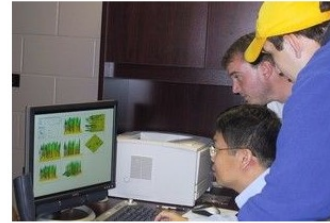
Feedstocks Production

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



BIOPRODUCTS RESEARCH SUMMER INTERN PROGRAM



**TODAY is the New World.
EXPLORE AND EXCEL.**

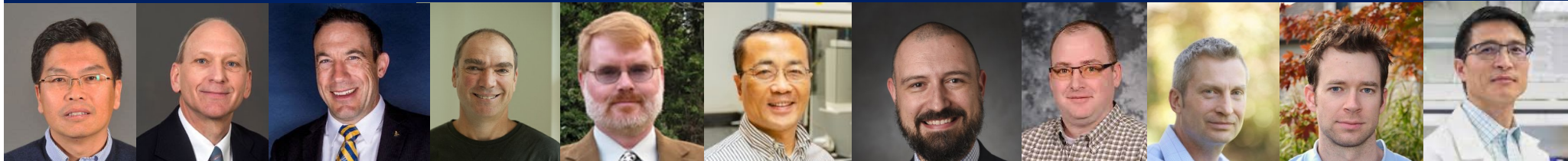
INVESTIGATE	INQUIRE	INVOLVE	ACHIEVE
			
<p>The MASBio Bioproducts Scholars program is a paid summer research experience opportunity for enthusiastic undergraduates who are interested in exploring bioenergy utilizing cutting-edge techniques. Check out the list of current research topics that are available at SUNY ESF in Syracuse, NY in the summer of 2022.</p>	<p>To apply, submit a resume, statement of interest, college transcripts and two reference letters for review. Please visit our web site for more program details and dates at https://masbio.syr.edu/ education. Students can come from any part of the country, but positions in 2022 will be at SUNY ESF in Syracuse, NY.</p>	<p>This program is a great opportunity to join the MASBio team of six different universities, The Department of Energy, US Forest Service and industry partners as part of the \$10 million Mid-Atlantic Sustainable Biomass (MASBio) consortium for value-added products. You have the opportunity to engage with faculty that are leaders in biomass and bioproducts space.</p>	<p>Some of the highlights of what you will gain from the program include:</p> <ul style="list-style-type: none">> Experience with cutting edge research on biomass and bioproducts> Opportunities to network with faculty, industry partners, graduate and undergraduate students, and;> A pathway for graduate studies or for better career opportunities.



Graduate Seminar in Biorenewables

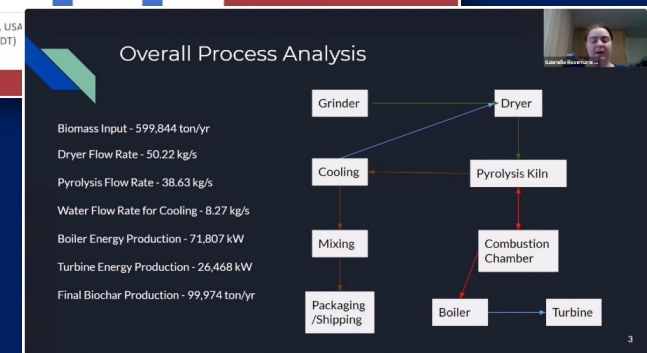
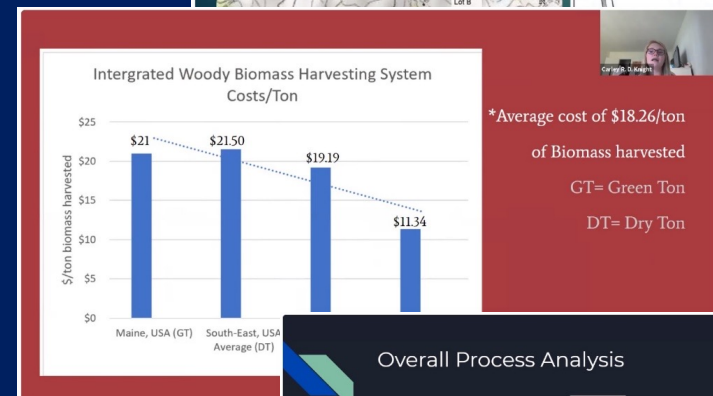
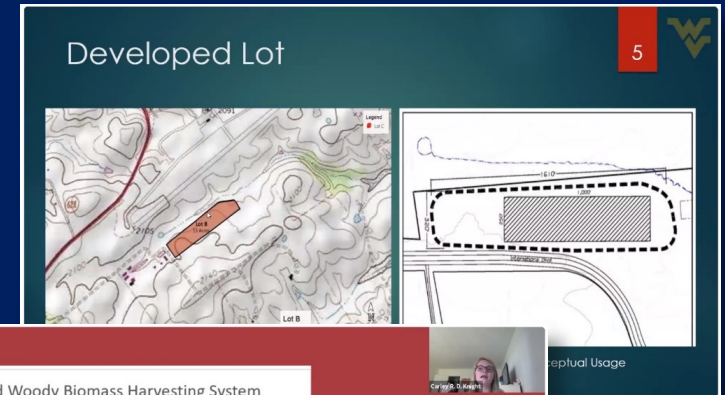
<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
17 Jan	The MASBio Vision	Jingxin Wang, West Virginia Univ.
24 Jan	Perennial Grasses	Jeff Skousen, West Virginia University
31 Jan	Marginal Land	Shawn Grushecky, West Virginia Univ.
07 Feb	Shrub Willow	Mike Jacobson, Penn State
14 Feb	Forest Residue	Austin Garren, 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.

UNDERGRADUATE CERTIFICATES

MASBio Educator Training

- Each summer at WVSVU
- 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.*



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