

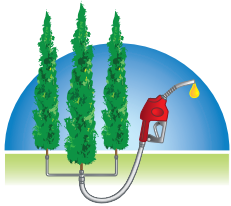
Extension 'Cord

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Connecting People, Resources, & Knowledge

"Welcome to the Extension 'Cord, a monthly briefing paper from WSU Snohomish County Extension. Even though we have existed for over 100 years, we have realized that too many people are unaware of the diversity and impact of our programs. Each issue will highlight the purpose, activities and results of one particular program. The 'Cord will showcase the work of our 1,000 volunteers and 25 staff. Please do not hesitate to contact any of our staff for more information."

Curt Moulton, Extension Director



Sustainable Hardwood Biofuels Northwest

WSU Snohomish County Extension has a central role in a major new biofuel initiative. \$80 million has been awarded by the USDA to WSU and UW to research and develop advanced woody biofuel systems for the Pacific Northwest. The WSU-led team will be working on creating biofuel from softwood sources, including logging slash and small diameter timber. The UW-led team is working on a system to convert hybrid poplar into biofuel. WSU Extension is part of the outreach effort for each team, and Snohomish County Extension is specifically involved with the UW team to develop a hybrid poplar system.

The goal of the hybrid poplar biofuel project is to generate liquid biofuels, including gasoline, diesel, and jet fuel, that are fully compatible with existing infrastructure. These fuels will be direct replacements for existing fossil fuels and will be certified to run in existing car, truck, aircraft, and other types of engines. The target is to produce 400 million gallons of biofuel per year from 400,000 acres of hybrid poplar plantations around the Pacific Northwest. The Pacific Northwest is an ideal location to develop this system because of the availability of suitable land for growing poplar and the existing collaborations between universities and industry partners in the region. The region is also isolated from other U.S. fuel pipelines, making it imperative to develop a regional source of renewable

energy. The biofuel production from this project will meet 75% of the region's target for the 2022 renewable fuel standard (RFS2).

Hybrid poplar is a crop that is particularly well-suited for biofuel production. It is relatively easy to convert hybrid poplar biomass to liquid fuels because of the way the trees release their sugars during the conversion process, it is fast growing and highly adaptable to a wide range of sites. Marginal lands, those lands that are currently unproductive or underproductive for other types of crops, will present particularly good opportunities for hybrid poplar production.

Contrary to many perceptions of hybrid poplar, the cultivars being developed are not genetically engineered. They are bred through traditional cross-pollination methods that have been used for thousands of years. The poplar cropping system being developed is very different from the other types of hybrid poplar systems that have been in use for pulp and paper production over the past several decades. Those systems, many of which were economic failures for landowners, were grown on 12- to 15-year rotations and were harvested using logging methods. Residual stumps made it difficult and expensive to revert the land back to other crop uses. In contrast, the poplars being developed

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for biofuel production will be grown on very short (2-year) coppicing rotations. Harvesting is done similar to other agricultural row crops, with a combine-like machine that cuts and grinds the saplings as it moves down the crop rows, feeding the chips into a truck that moves alongside. Residual stumps can be easily tilled for other agricultural crops without requiring expensive stump removal.

This project is organized into five teams:

1. Conversion and Distribution: Colorado-based ZeaChem, Inc is developing the chemical conversion process and is building a new biorefinery in Boardman, OR for this project.
2. Feedstock: GreenWood Resources, which manages 25,000 acres of FSC-certified poplar in Boardman that will be able to supply the prototype biorefinery that ZeaChem is building. GreenWood is developing the breeding, growing, and harvesting technology.
3. Sustainability: University of Washington will be doing a comprehensive life cycle assessment (LCA) of the entire process of growing, harvesting, conversion, and distribution. This team will assess the impacts of growing poplar on wildlife, water quality and availability, land productivity, and other environmental factors to ensure the process is environmentally sustainable. Economic assessments will ensure that the system is economically viable for landowners.
4. Education: Oregon State University and the Agricultural Center of Excellence, which is a regional network of community colleges headquartered in Walla Walla will be developing university and community college curriculum to ensure that there will be a skilled workforce ready to build and operate the next generation of biorefineries.
5. Extension: WSU Extension will be developing the education and outreach materials necessary to build capacity within the region's land grant universities to ensure that farmers and forest owners have access to necessary technical assistance to grow hybrid poplar for biofuel production. This Extension capacity is essential to the success of growers, who are the supply link that is essential for successful biorefineries.

The Extension team will be led by the WSU forestry and agriculture faculty in Snohomish County. Three new WSU Extension faculty positions are also being created under this project. These new faculty, along with a program assistant, will be dedicated full time to hybrid poplar biofuel production. The new positions will be housed in Everett and will serve the entire Pacific Northwest region.

This project is scheduled to last for five years. Because this is in the beginning stages there are not opportunities for local landowners to begin growing hybrid poplar for biofuel production. The goal is to be ready for commercialization at the end of the five-year process, and then opportunities will begin for landowners around the region. Much more information will become available as this project progresses.

WSU Extension Mission Statement

Washington State University Extension engages people, organizations, and communities to advance economic wellbeing and quality of life by connecting them to the knowledge base of the university and by fostering inquiry, learning, and the application of research.

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