



Biochar for Biomass Management and Risk Reduction

Organizations Leading the Way

A growing network of municipal programs, regional associations, and national initiatives is advancing biochar research, adoption, and policy across the United States.

Minneapolis Carbon
Sequestration Program



Minnesota Biochar Initiative



US Biochar Initiative



What is Biochar?

Biochar is a charcoal-like product made from heating waste biomass in the absence of oxygen through a process called pyrolysis. It can be made from woody or agricultural waste or another biomass. Not all biochars are alike, but vary based on feedstock source, pyrolysis temperature, heating rate, and particle size.

Biochar Uses are Growing

- Biochar as a soil amendment, helps plants grow and sequesters carbon.
- It is also being used for stormwater management, remediation, construction materials, and for its climate benefits.
- Biochar can sequester carbon for hundreds to thousands of years.





Biochar Economic Drivers

A viable biochar program can generate value through multiple complementary revenue and cost-offset streams, making projects financially sustainable for municipalities and private operators alike.

1. Biochar Sales
2. Carbon Credits
3. Power/Heat Projects (Use of Waste Heat)
4. Waste Disposal Fees (Tipping Fees)

What Problem Are We Solving?

Successful biochar programs begin with a clearly defined problem. Three key drivers shape the opportunity:

Specific Application

Define the end use first — soil amendment, forestry, stormwater management, or construction materials — to guide feedstock and process choices.

Waste Management

Eastern U.S. forests face mounting pressure from declining timber markets, invasive diseases, severe storms, and shifting climate conditions — creating surplus biomass that needs a destination.

Fire Risk Reduction

Western U.S. landscapes face severe wildfire risk. Changes in federal and state forest management are generating large volumes of slash and debris — ideal feedstock for biochar production.



Common Slow Pyrolysis Methods

While fast pyrolysis, gasification, and torrefaction each have their role, **slow pyrolysis** is the most widely used method for producing high-quality biochar. Three proven approaches are in active use today:



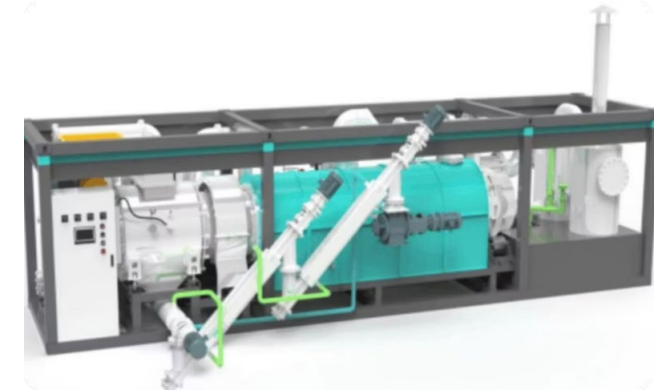
Flame Cap

A low-cost, field-deployable method ideal for on-site biomass conversion. Used by Great River Greening for restoration projects.



Air Curtain

A controlled combustion unit that uses a forced air curtain to combust biomass efficiently. Supported through USBI programs.



Rotary Kiln

A scalable, industrial-grade system well-suited for continuous municipal operations. Deployed by Blusky Carbon and the Minneapolis program.



Minneapolis Carbon Sequestration Program

- First municipally owned and operated biochar plant in North America
- Wood waste problem from Emerald Ash Borer (invasive insect/disease)
- Slow pyrolysis rotary kiln
- Urban biochar use cases: agriculture, forestry, stormwater, soil remediation erosion control, transportation corridors, and carbon sequestration goals.
- Opening April 2026

Minnesota Biochar Initiative

A regional association working to align stakeholders, advance research, and remove barriers to biochar adoption across Minnesota and the broader region.



Unified Stakeholders

Bringing together academia, government regulators, agencies, industry, nonprofits, and interested community members under one collaborative umbrella.



Outreach & Education

Building public awareness and technical literacy around biochar's benefits, applications, and proper use practices.



Research Support

Identifying critical knowledge gaps and supporting research initiatives that strengthen the evidence base for biochar programs.



Removing Barriers

Advocating for policies and standards that enable safe, effective biochar use and streamline regulatory pathways for new projects.





US Biochar Initiative

A North American organization focused on building the infrastructure — markets, standards, and workforce — needed to scale biochar into a mainstream climate and land management solution.

Market Development

Growing biochar as a recognized commercial product with consistent quality and demand across North American markets.

Standards Development

American National Standards Institute (ANSI) analytical standards for biochar were published in **November 2025** — a major milestone for the industry.

Training Programs

Sector-specific training is being developed to equip practitioners with the knowledge to apply biochar safely and effectively:

Agriculture

Soil amendment application rates, carbon accounting, and crop integration

Stormwater

Design specifications for biochar-amended filtration systems and green infrastructure

Horticulture

Best practices for urban landscaping, nursery production, and tree establishment



Lessons Learned

Building a successful biochar program requires strategic planning across multiple dimensions — from policy and logistics to markets and community buy -in.

1 Define Your Goals First

Identify the primary driver — biochar as a product, waste management, fire risk reduction, or climate targets. Your goal shapes every decision that follows.

2 Build Broad Support

Secure political backing early. Develop public awareness and demand, and identify key implementation partners across sectors.

3 Solve the Logistics

Address siting, zoning, feedstock supply agreements, and confirmed biochar demand before breaking ground.

4 Optimize Revenue Streams

Plan for waste heat utilization and engage with carbon markets early to maximize program financial sustainability.





Thank You!

Interested in learning more? Reach out to connect on biochar programs, carbon sequestration strategies, or urban biomass management partnerships.

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