USING BIOCHAR IN STORMWATER MANAGEMENT

The work upon which this project is based was funded in whole or in part through a grant awarded by USDA Forest Service Wood Innovations (20-DG-11083150-011). USDA is an equal opportunity provider, employer, and lender.

LINK TO WEBINAR

https://youtu.be/gGCL8_QzXTM?feature=shared

A SPECIAL THANKS TO OUR SPEAKERS...

KATHLEEN DRAPER
FINGER LAKES BIOCHAR (NY), CO-AUTHOR OF BURN-USING FIRE TO COOL THE EARTH, IBI CHAIR, USBI BOARD MEMBER
CHUCK HEGBERG
ECOTONE LLC, AN ECOLOGICAL RESTORATION DESIGN/BUILD B-CORP, USBI BOARD MEMBER

LINK TO DOVETAIL PARTNERS INC. REPORT

https://dovetailinc.org/portfoliodetail.php?id=61e9dd17b1c45

SUMMARY OF BIOCHAR BENEFITS

Soil Functions	Water Quality	Biomass Upcycling	Potential Longevity
Increases Infiltration/Retention	Intercept/Absorb/Assimilate	Biomass Waste (Manures)	Short Term Soil Organic Carbon (1-5 years)
Increases CEC/AEC (up to 50%)	Nutrients/Heavy Metals/Hydrocarbon	Cropped Biomass Flexibility	Long Term Soil Organic Carbon (100's of Years)
Increases Microbial Activity	Enormous Surface Area	Cost Effective Adsorbent	
Balances pH			
Decreases Bulk Density			

PROJECT OVERVIEW

The project explored the potential for using biochar in three applications:

Viticulture, Livestock and Poultry, and Stormwater Management.

The process used was to:

Interview experienced users
Review relevant published scientific research
Analyze needs of users and other market data
Provide educational outreach (Webinars & Reports)

REPORT HIGHLIGHTS

There is a large body of research supporting biochar's characteristics which are beneficial in Stormwater Management

Adsorption of heavy metals
Large surface area for housing microbiota
High carbon content which is stable for centuries to millennia

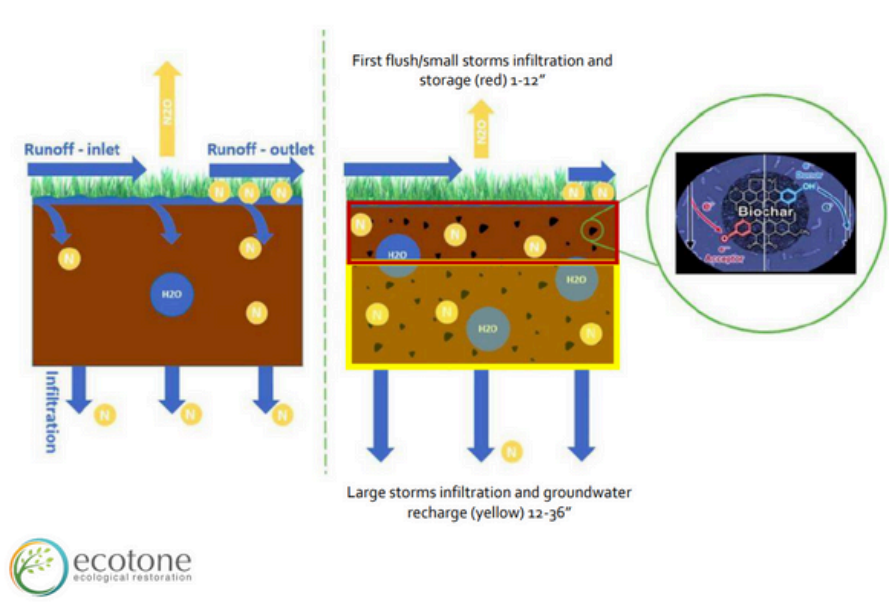
There are many suppliers of biochar in US

Biochar's specific characteristics are important and analysis is critical

Using the City of Chicago as an example—with an impervious surface area of about 105,000 acres — in 2020, bids were requested for over $250M of stormwater treatment projects. A 10% biochar inclusion rate on those projects is estimated to require roughly 100,000 cubic yards of biochar. Chicago represents about 4% in area of the 10 largest US cities by population which cover 3900 sq. miles or 2.5 M acres.

10+ Years
of successful integration of biochar into Stormwater Management projects.

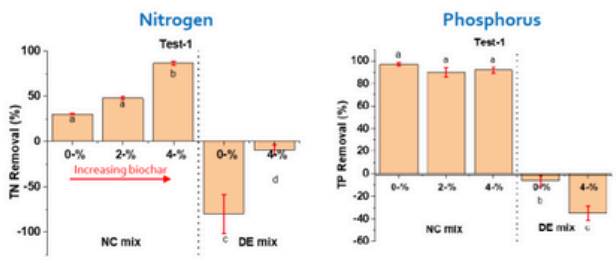
Biochar in Stormwater Management
Urban Soil Treatment Options (Passive versus Active)



ecotone ecological restoration

Biochar in Stormwater Management
Biochar Enhanced Bioretention Media (BEBM) Conclusions

- Retained 11-27% more stormwater and more plant available water.
- Water retention time for higher redox
- Increased infiltration rates by 4 times
- After 1.5 yr, biochar increased infiltration rate by 50% (less clogging)
- Increased Nitrogen removal from 6% to 55% above control (all storms)
- Increased Nitrate removal 60-370% (Seasonality)
- Biochar increased Phosphorous release when **compost** in mix
- Improved plant health in typical bioretention mix



INFORMATION PRODUCED WITH INPUT FROM THESE AUTHORS:
Kathleen Draper, Chair, International Biochar Initiative
Harry Groot, Dovetail Partners
Ashley McFarland, Dovetail Partners
Tom Miles, Chair, US Biochar Initiative

Webinar Recorded: February 9th, 2022

International Biochar Initiative
ecotone ecological restoration
DOVETAIL PARTNERS