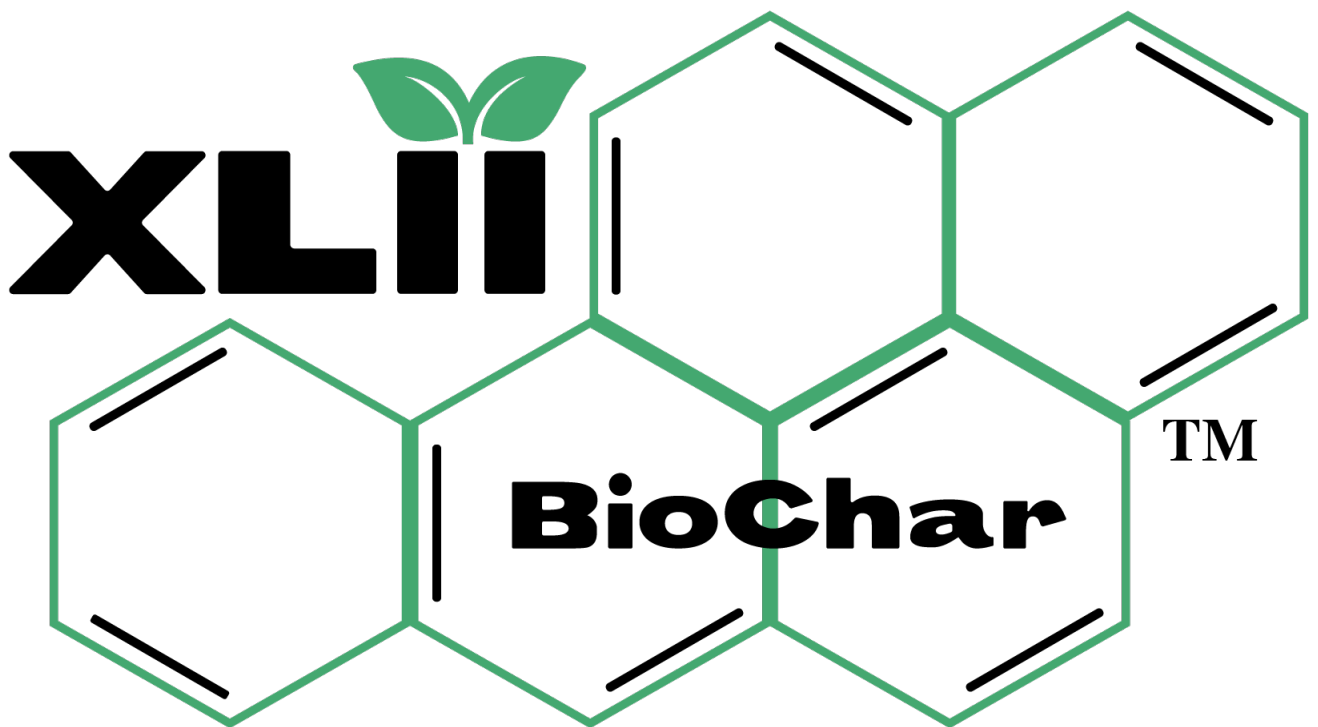


# BIOCHAR IN THE 21ST CENTURY

*Innovations at a Historical Crossroads*



November 2022



42 Biochar products are proudly made in the USA  
CUSTOMIZED MICROBIAL ECOLOGY. CARBON FINANCE.  
STRAIGHT TALK.

#### Lot Level Lab Testing

No matter the state of your soil, we put microbiology before chemistry, and work with Mother-Nature to rebuild your bio-remediation profile.

#### Carbon-Offsets

Biochar is already one of the highest integrity offsets on the market - We're just making it better.

Visit us at [42biochar.com](http://42biochar.com)





# Biochar in the 21st Century

## Innovations at a Historical Crossroads

STEVE GRUHN

Board Member

BOB DANIELL

Board Member

XLII BioChar Incorporated is a majority owned subsidiary of American Hemp Corporation LLC and a proud member of the International Biochar Initiative.



## **Abstract**

Currently, an inflection point is emerging between biochar's historical legacy and its' future potential. This breakout is poised to position biochar as an agricultural staple rather than a niche product and we believe, through 2030, this change will be driven by unprecedented demand factors which are accelerating.

Widespread soil depletion due to over-farming, over-nitrating, as well as contamination, are primarily responsible for increased physical demand for biochar. Compounding this is increased need for alternatives to nitrate based synthetic fertilizers. Additionally, the significance of biochar as a carbon-mitigation biotechnology is now well established, further rounding out the foundation of biochar's future potential.

From supply-chain management, to carbon-accounting, to manufacturing and innovation - XLII BioChar™ Incorporated (aka 42 BioChar) brings the technologies of tomorrow to a convergence with the customer with unique capacity. Thank you in advance for your time as we briefly layout our vision for your consideration.



# Chapter 1

## Who We Are?

Founded in Montana in 2022, XVII BioChar Incorporated (“42 BioChar”) brings together a diverse group of professionals and experts, farmers, scientists and advisors in order to realize the 21st Century potential of biochar. We understand that effectiveness is doing the right things and that efficiency is doing the right things, well. Foremost, we understand that by responsibly taking care of our customers and the environment, of which we are stewards of, the rest of our company’s dynamics will naturally fall into place.

Our multi-industry approach is galvanized by a team of analytical veterans who deliver soil health solutions based on customized configurations to meet customer product, program or solution requirements for soil health regeneration and industrial reclamation.

We will enable those who seek to demonstrate practical innovative, sustainable and configurable solutions with bio-products and services that will improve soil health and offset or sequester carbon, in addition to being an innovation hub for Clean Development Mechanisms (CDMs) and Certified Emissions Reduction Credits (CERs).

We will accomplish this through a solutions approach driven by being fulfillment reliable, customer order responsive, process agile, operations cost-effective, asset efficient and profit-driven for our customers, our company, our employees and our investors.



## Chapter 2

# Products, Programs, & Solutions

At 42 BioChar we pride ourselves on being as innovative with our business as we are with our technology. Our products start at our operational headquarters near Kalispell, Montana, where we source 100% USDA ORGANIC woody fiber from sustainably pristine forested timber. Although many of our competitors end their manufacturing processes after creating biochar, 42BioChar considers this the starting point for a new generation of bio-products capable of meeting future soil amendment and reclamation challenges. Our products set themselves apart by being able to restore what has been lost faster, cleaner and simpler. Our programs are designed around the application of our customized products and the transparent monitoring of the bio-remediation process. Our solutions are bundles of products and services wrapped with expert project management designed to optimize Customer expectations. We are exploring the use of Artificial Intelligence to drive organic recipes centered around woody fiber and industrial hemp biomass.

This entire scheme, from the timber in Montana, throughout manufacturing and shipping, and into direct application is quantified within our transparent carbon accounting methodology designed for compatibility with the original climate agreement, the 1998 Kyoto Protocol.

Although the revenue stream from selling products directly is well understood, to lesser degrees are grasped the secondary economies of data and carbon - both of which are highly compatible with biochar and one of the reasons we believe in its potential.



## 2.1 Products

42 Biochar can help your soil tilth and management in numerous ways. We believe that microbiology precedes chemistry. 42 Biochar's biochar are moisture retentive and facilitates nutrient delivery capability which allows us to make to order / engineer to order the right product mix and configured to our Customer's soil and crop management needs.

Our products are designed by scientists who work alongside our manufacturing process as technical advisors ensuring that every batch ordered can be effective as possible. We offer biochar "cuts" that range from 42 Basic™ to our 42 Turbo©. Come mid 2023 our woody fiber offerings will be complemented with our Hempchar offerings.

## 2.2 Programs

42 Biochar's programs are integrated with our products. A program is for product and service development which we align to specific Customer expectations.

- **42 Fulfill©** 42 Basic product delivery within the next 30 - 90 days.
- **42 Prepare©** Configured solution delivery within the next 90-180 days.
- **42 Explore©** A soil health study to accommodate your soil health improvement ~~stis~~
- **42 Support©** You want to take advantage of the subject matter expertise and resources available at XLII BioChar Incorporated to help you achieve your goals and objectives. You may be a grant awardee, a cooperative extension or just somebody looking for a scalable, mobile, configurable resource.
- **42 Remediate©** This is where we have clarity of the problem but net to engineer to order a specific solution for that problem.

## 2.3 Solutions

Drawing upon the strengths of our products and programs, our solutions range in scope from large industrial level projects to farms and cooperatives of all sizes.

Our solutions are focused on amendments, reclamation, mining, and equipment lease. Our solutions are configurable, scalable and mobile.

## Chapter 3

# Emerging Markets Outlook & Investment Fund(s)

Biochar is one of the most promising agricultural commodities both for profit and circular impact leading up to 2030. According to experts who placed the market capitalization of biochar in 2020 around \$170.9M, the compound annual growth rate for biochar could surpass 13% in coming years driving the market capitalization by 2030 to nearly \$600M. [1]

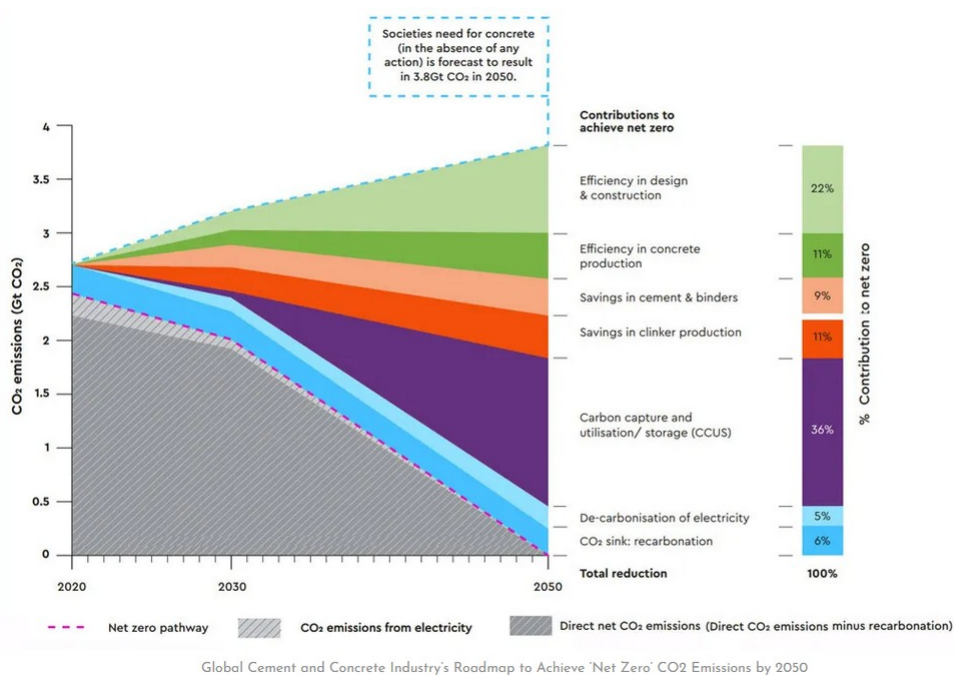
Demand for nitrate reduction and biological fertilizers, as well as new regulatory frameworks, are positioning biochar as both a high-impact agricultural commodity and a high integrity carbon finance superstar. Biochar's ability to both offset and sequester atmospheric carbon makes it a natural choice amongst its competitors. Biochar's future aptitude is enhanced even more as new environmental technologies are created. From bioreactors creating electricity at power plants, to distributed ledger technologies used to account for carbon in a supply-chain, biochar lends itself to the technologies of tomorrow making connecting the future to the present possible in ways previously not imagined.





### 3.1 Emerging Outlook

Most promising, as recently highlighted from COP27 [2], biochar mixed into a concrete slurry at a rate of 15%, can attain an equilibrium between the formation of a biochar carbon sink and the technical properties of concrete. When incorporated in concrete in this way, the trapped quantity of carbon is 3.10 tons of CO<sub>2</sub> equivalent per ton of biochar. Thus, if we can replace 15% of the world’s concrete consumption with biochar, we can achieve a 90% reduction in the carbon footprint of concrete.



The bedrock market for biochar will always be its enhanced impact to fertilizer however, biochar alone is not a fertilizer. Scientists at Michigan State University have stated that, "Soil health and fertility are tied directly with farm profitability". There are many practices that have been proven to increase soil health and fertility such as manure application, cover crops, and no-till. However, biochar shows great promise in improving soil health, microbial development, fertility and water optimization. According to researchers Glaser, Haumaier, Guggenberger, and Zech, biochar is gaining attention as a sustainable product that may help decrease the need for fertilizers and water while also helping to reduce carbon emissions."



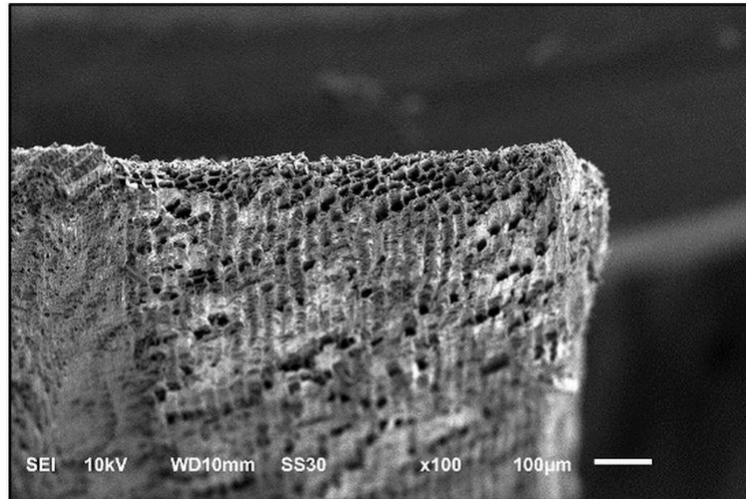


Figure 1. This scanning electron microscope image shows a piece of pine wood biochar at 100x magnification. The plant cell walls visible in the image contribute to biochar's porous structure and can improve soil properties (photo: Jake Nash)

42BioChar envisions closing many of the gaps in supply-chain carbon-accounting to create best in class total carbon cycle offsets. This has the technical potential to link **the** market applications for biochar into a single MACRO OFFSET and this is one of our strategic thrusts at 42 Biochar.

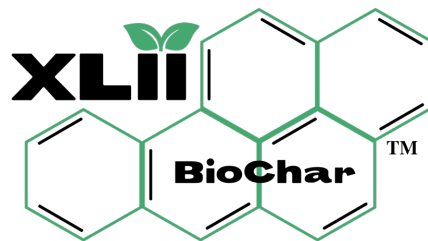
### 3.2 Investment Funds & ETFs

As a result of biochar's unique ability to impact numerous markets, both old and new it is our position that it is all the more suited for both private equity and as well exchange-traded-funds. We are excited to begin the process of connecting new nodes within the biochar ecosystem and invite you to be a part of our journey. 42 Biochar is a solution like no other. From the investor perspective - whether venture or private, institutional or impact - the development of new bio-products combined with supply-chain carbon integration provides the main justification for our bullishness on biochar.



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*Sustaining Our Quality of Life*