

Dear Participants of the July 24 Mineral Wells Listening Session,

Thank you for participating in the Biochar 2018 Listening Session. Because you represent key thought leaders in the community, your understanding and support of this initiative are critical to building a “biochar economy” in north Texas. This letter is a follow up to the session, and has two attachments: a “Mineral Wells Listening Session Summary (7.24.18)” and a “Request for Critical Information from Mineral Wells Thought Leaders v.10.4.18.pdf.”

We covered a lot of information that may have been entirely new to you. And due to the time constraints, we did not have the opportunity to discuss the specific information that we need from you. The slide set identified five topics of information desired:

1. **Evaluating the potential for a biochar initiative,**
2. **Evaluating the infrastructure,**
3. **Anticipated resultant goods and services,**
4. **Developing the market, and**
5. **Resources.**

Although we touched on these topics (see Listening Session Summary document attached), we are asking your help in “filling in the blanks” with your additional thoughts and suggestions that will aid us in the next steps of developing a biochar economy in the region.

Toward that goal, we have attached a second document that asks specific questions covering these topics; these questions were developed from the slide set and your comments on the topics. It is in Word format with the idea and hope that you would add your brief responses directly below the questions. We ask that you then “save as” by adding your initials to the front of the file name and email your document to rbrenner@atipfoundation.com so that Rick can compile them. This information will also be helpful in conducting other listening sessions in the region.

Thank you for your valuable time committed to the listening session and assisting us with these questions.

Sincerely,



Wes Jurey
President and CEO, ATIP Foundation



Ryan Roach
President, Mineral Wells Chamber of Commerce

Attachments:

Mineral Wells Listening Session Summary (7.24.18).pdf

Request for Critical Information from Thought Leaders in the Mineral Wells Community.docx

Mineral Wells Listening Session July 24 2018

Invitees and Attendees

Wes Jurey, President & CEO, ATIP Foundation wes.jurey@gmail.com
Ryan Roach, President, Mineral Wells Area Chamber of Commerce ryan@mineralwellstx.com
Jason Westbrook, Texas Agrilife Extension Service-Palo Pinto Co. Jason.westbrook@ag.tamu.edu
Myron Mertz, USDA NRCS-Palo Pinto Co. (did not attend) myron.mertz@tx.usda.gov
Don Crawford-CPA, Palo Pinto Co Ranch Owner donsan@suddenlink.net
David May, Editor-Mineral Wells Index editor@mineralwellsindex.com
Shane Long, County Judge Elect shaneclong@gmail.com
Lance Howerton, City Manager lhowerton@mineralwellstx.gov
Steve Butcher, ED Director sbutcher940@live.com
John Kuhn, MWISD Superintendent jkuhn@mwisd.net
Chris Perricone, Mayor (did not attend) cmperricone@mineralwellstx.com
J.C. Colton-Weatherford College jcolton@wc.edu
Harris Brooks, PPGH (did not attend) harris@ppgh.com
Cory Crenshaw, First Financial Bank ccrenshaw@ffin.com
Roger Smith, Chamber and Genesys Aerosystems roger.j.smith@genesys-aerosystems.com
Mark Rose, MXROS (business) (did not attend) texrose84@gmail.com
Kayla Hons, Vice President Lending, Community National Bank & Trust khons@mybanktx.com
Rick Brenner, Director, ATIP Foundation (via phone) rbrenner@atipfoundation.com
Todd Campbell, Consultant to ATIP Foundation (via phone) cew.todd@gmail.com

BIOCHAR INITIATIVE

JULY 24, 2018 LISTENING SESSION SUMMARY

Mineral Wells Chamber of Commerce

STRUCTURE

The following described the Listening session structure and role of the foundation and cohosts:

The Mineral Wells Biochar listening session was moderated by Wes Jurey, CEO of the ATIP Foundation. Rick Brenner, Foundation Director and Todd Campbell, Foundation Consultant, provided input and posed questions related to establishing the model for rural economic development, focused on Biochar.

The agenda (distributed) included welcoming comments by Ryan Roach, President, Mineral Wells Chamber of Commerce; a slide set presentation(distributed) by ATIP Foundation CEO Wes Jurey, followed by an open discussion, supported by Rick Brenner and Todd Campbell. In addition, a read ahead discussion document was provided to the participants in advance of the meeting (distributed). The remainder of the session consisted exclusively of stakeholder attendees participating in discussions on the questions posed to the attendees (contained in the slide set). Notes were taken of the discussion.

GROUP DISCUSSION

The following represents a summary of comments made during the discussion:

- There were questions asked to clarify participants' understanding of Biochar, and the opportunities represented by Biochar
- There were questions asked relative to suitable feedstock, including wood pallets, municipal waste and sludge, poultry litter, cedar, prickly pear, and waste from meatpacking companies.
- There were questions asked about where else in the United States biochar was being created by converting waste. The response included Albany, California; Atlanta, Georgia; Maryland, along the Chesapeake Bay watershed. The research being conducted at Tarleton State was also pointed out.
- There were questions asked relative to freight issues and shipping, and the supply chain, or lack thereof; and related questions relative to how the supply chain would/could be developed.
- There were questions asked relative to the business model, in terms of how successful businesses could be established to take advantage of the opportunity, where the funding would come from, who are the customers, and where are the markets for Biochar.
- At the conclusion of the discussion, participants, in general, expressed (1) interest in receiving additional information; (2) learning more about bio char and its potential for the region; and (3) willingness to continue being engaged with the initiative.

Feasibility of Developing and Implementing a Biochar Initiative to Benefit Citizens in North TX

This document is intended as a “read-ahead” for a series of public listening sessions within this region to hear thoughts from community leaders, agricultural and environmental operations, banking and investment community, workforce development, elected local and regional officials, and business leaders as to the priority needs of the community, and the merits of this “biochar” initiative. Four listening session locations are being considered: Mineral Wells, Stephenville, Weatherford, and Dallas/Fort Worth.

For the past several decades, seven federal agencies, led by the US Departments of Agriculture and Energy, have conducted extensive research on how to utilize everything produced by agriculture, including products, by-products, and waste. The focus has been to discover ways to utilize all materials as the basis for new products and/or alternative uses, whereby new industries can be developed that create jobs and enhance economic sustainability in rural America.

In 2016 the Mineral Wells Chamber of Commerce and the City of Mineral Wells partnered with the Agriculture Technology Innovation Partnership (ATIP) Foundation, affiliated with USDA, to invite thought leaders in the 14 county area of North Texas inclusive of Mineral Wells, Stephenville and Weatherford, to come together for a day to be briefed by USDA on the scope of research, and to provide their input, relative to the validity of the research as a basis for economic development within the 14-county region.

Utilizing that information, thought leaders in the 14-county area of North Texas have now organized a committee to evaluate the merits of developing and implementing a “Biochar Initiative.” This is envisioned to benefit communities, entrepreneurs, consumers, farmers (both crop production, animal bedding, and animal feed operations), and other community interests by utilizing agricultural and municipal wastes (or purpose-grown crops) to create innovative and cost-effective products that enhance soils and improve water quality by capturing pollutants and nutrients (farm, municipal). Materials from this initiative are expected to increase durability of consumer products and provide other beneficial uses.

“Biochar” is a solid material derived from thermochemical conversion of organic matter or “biomass” in an oxygen-limited environment. “Biomass” can be defined as anything living or that has lived, including all material resulting from wastes of agricultural and domestic activities (e.g. crop residues and processing waste (pecan, other orchards), separated solid effluent from large-scale, concentrated animal feeding operations (CAFO), poultry litter accumulations, municipal wastes from communities, downed trees and disaster debris, etc.). The International Biochar Initiative (<http://www.biochar-international.org>) has highlighted the many and broad benefits of producing and using biochar, including enhancement of soil fertility for crop and agroforestry productivity; enhancing degraded or marginal soils; helping remediate global climate change by safely and effectively drawing down greenhouse gas (GHG) emissions in stable soil sinks and alleviating emissions from decomposing urban

and rural wastes; maintaining agriculture production with fewer fertilizer inputs while also recycling wastes and remediating soils; and enhancing water quality by reducing leaching. Others have demonstrated biochar as an enhanced filler or extender, which when blended with polymers, can cause composites and plastics to be stronger, lighter, and heat and water-resistant. This allows vehicles and planes to be more fuel efficient, and other products to be more durable. In addition, there is evidence that certain types of biochar may be able to displace some or all of the carbon black, which typically makes up 30% of the composition of tires.

Regarding water quality, a major beneficiary of this project would be the North Bosque River Watershed and dairies in this region. Erath County once boasted the highest dairy production in the state of Texas, with 27 percent of the state's total milk production, according to one 2006 study. The industry's impact in Erath County was \$543 million, representing 36% of the county's economy, accounting for 5912 jobs or 31% of all employment in the county. This sector is threatened because of nutrient loading issues in the North Bosque River Watershed, which feeds into Lake Waco, a drinking water supply for the City of Waco. The number of dairies in the watershed has dropped in half since that time.

A 2003 implementation plan, approved by the Texas Commission on Environmental Quality and the Texas State Soil and Water Conservation Board, recommended removal of about half the dairy-generated manure from the watershed. While there have been some positive trends since that time, phosphorus remains a problem. Incentives for manure transportation and treatment can be costly for the producers and municipalities. However, both the utilization of biochar and the strategic growing of certain bio-crops that subsequently can be converted into biochar can help to overcome these challenges cost-effectively.

The current technology partners associated with this project, and others that this effort is anticipated to attract to the region, can create an opportunity for a revenue-positive value proposition for the dairy industry and waste water treatment facilities. This can result in protecting the 5,000 dairy related jobs in the county while providing better conservation outcomes for nutrient management in the North Bosque River Watershed.

USDA's Natural Resources and Conservation Service (NRCS) may also play an important role in this regional initiative. NRCS provides technical and financial assistance to landowners to address resource concerns. Through the Environmental Quality Incentives Program (EQIP) conservation practices are implemented to help conserve natural resources. Utilizing Nutrient Management, biochar can be effectively and efficiently applied to the land. Other practices such as Waste Treatment can indirectly impact biochar production and use. Another option within NRCS is the Conservation Innovation Grants (CIG) program. Through this effort tools, strategies and technologies are demonstrated to help address resource challenges.

Of immediate interest are the perceptions and evaluations of stakeholders in your community as to how this initiative can benefit your local/regional economy development:

Evaluating the need for a biochar initiative. What does your region have in agricultural residues (plant and animal) that are current liabilities and require disposal at landfills (e.g., beef/dairy/hog manure, poultry litter, hay waste, sawdust, municipal waste (sludge); waste paper; plastic; meat packing wastes, forestry residues)? Are there water quality interests near ag production lands, watershed or conservation program that overlap? Are there degraded or low-yielding soils where increased agriculture and economic activities would be attractive? Who could help define the volumes: cooperative extension?; Cattleman’s association?; Poultry Association?; Municipal waste commission?; State agencies?

Evaluating the infrastructure. What are the costs of feedstock collection? What are the conditions and assets of the “supply chain” to collect these feedstocks? Are there biodigesters available in the region? What biodigester companies operating elsewhere in the U.S. might partner to promote their products and help in a marketing campaign? Who in the hauling and transportation industries, others with supply chain logistic have expertise that is pertinent to this initiative?

Resultant goods and services. What marketable products or environmental services might result from the pyrolysis and biochar production process? (i.e., Biochar for garden fertilizer, “Miracle soil” types of product including biochar and other additives which have higher value than a simple biochar product; biochar as filtering media for water treatment at municipal wastewater treatment plants; biochar as odor-reducing agents; fillers which make better composite and plastic products).

Who has retailer need to offer products to remediate soils and water quality? (Note: if biochar will be effectively developed to “activated biochar,” its function will be same as activated carbon which is much more expensive. Current activated carbon vendors such as Calgon Carbon may be interested in biochar as a feedstock). Who would retail or wholesale these products? Who would be the likely consumer audience for different applications?

Developing the market. Who are the stakeholders in developing the market (e.g., local municipal water commissions, ag producers, fertilizer companies, retailers such as Walmart, garden centers)? Where are there synergies between stakeholders who have associated costs from waste and who could influence first opportunities for product utilization?

Resources. What Federal or state resources might assist to help fund a biochar economy (e.g., USDA Rural Development, USDA Cooperative Extension, USDA NRCS, EPA, Texas Commission on Environmental Quality)? What public and private investment services might be available to assist in establishing a biochar initiative (e.g., USDA Rural Development, USDA NRCS, U.S. Department of Commerce Small Business Administration, local / regional banks, others)? What could be done on the front end to help new businesses get established and commit to long term agreements for current waste streams, i.e. stream lining permitting, resource assessments, workforces development, cooperative extension?

Biochar Development and Utilization in North Texas:
*Building a Sustainable, Replicable, Scalable
Partnership Model for Wealth Generation in Rural
Communities*

**A Briefing of Key Thought Leaders in 3
Regional Listening Sessions (by
invitation only)**

The fundamental premise of our model is to demonstrate how the informed integration of six stakeholder sectors can serve as a catalyst for a strategic approach that will translate federal and academic research outcomes into rural wealth creation, thereby fostering the bioeconomy.

Thus, the ATIP Foundation will work with USDA and other federal agencies to establish and work with a regional project steering committee consisting of the various stakeholder sectors represented in North Texas. Their role, facilitated by the ATIP Foundation, will be to develop paths forward to develop a biochar industry in the region.

Background



Agricultural Technology Innovation Partnership

ATIP Foundation 2016 Regional Bioeconomy Forums:
“Addressing the Challenges & Opportunities of Advancing the Billion Ton Bioeconomy”

Venues and Regional Co-hosts

Southeast: September 16, Atlanta, GA (Georgia Institute of Technology)
Southwest: September 29, Mineral Wells, TX (Chamber of Commerce)
Northwest: October 3, Seattle-Tacoma, Washington (Washington State University)
Northeast: October 18, Orono, ME (University of Maine)
Midwest: November 15, Columbus, OH (The Ohio State University)

National Sponsors



Background



Agricultural Technology Innovation Partnership

ATIP Foundation Biojet Fuel 2017 Regional Forum Series:
“Accelerated Commercial Development of Hydrotreated Renewable Jet Fuel (HRJ) from Redesigned Oilseed Feedstocks Supply Chains”

Venues and Regional Co-hosts

June 5-6, Richland, WA
 (Washington State University)



June 13, Fargo, ND
 (ND Department of Commerce / ND State University)



July 11, Wichita, KS
 (Wichita State University / Kansas State University)



Research Grant Participants & Partners

AeCAP
Agrisoma Biosciences
 ATIP Foundation
 Cornell University
 Kansas State Univ.
Keyaene

Michigan Technological Univ.
 North Central Regional Sun Grant Center
 South Dakota School of Mines and Technology

University of Idaho
 University of Maryland
 University of Tennessee
 UOP/Honeywell

USDA Agriculture Research Service
 USDA National Institute of Food and Agriculture
 USDA Natural Resource Conservation Service

Common Themes Across All Regions (2016 forum series)

- **Finance (Treasury)**
- **Education & Awareness**
- **Policy**
- **Supply Chain**
- **Workforce (Dept. of Labor, Dept. of Education)**
- **Federal Resources**

Common Themes Across All Regions (2016 forum series)

- **Finance (Treasury)**
 - **Public Funding**
 - Incentivize public private partnerships
 - Focus on scalability
 - Consider allocations among bio, fossil, nuclear
 - **Access to Capital**
 - Govt guarantee loans – Challenges
 - Private sector capital – Risk challenge

Common Themes Across All Regions (2016 forum series)

- **Education & Awareness**
 - **Articulation**
 - **Definitions of bioeconomy & sustainability**
 - **Public awareness**
 - **Value Proposition**
 - **Case for support**

Common Themes Across All Regions (2016 forum series)

- **Policy**
 - **Create a level playing field**
 - **Incentives – stability**
 - **Tax credits – competitive / comparative**
 - **Loan Guarantees – access / cost / awareness**
 - **Reduce risk --- purchasing agreements**
 - **Reduce costs – technology know how**
 - **Regulatory**
 - **EPA**

Common Themes Across All Regions (2016 forum series)

- **Supply Chain**
 - **Logistics**
 - **Slowest node**
 - **Integration**
 - **Plan for various feedstocks**
 - **Research**

Common Themes Across All Regions (2016 forum series)

- **Workforce (Dept. of Labor, Dept. of Education)**
 - **Skills Development**
 - lack of technical training related to bioeconomy
 - Needs to start in 8th grade
 - Build talent pipeline
 - **Rural Development**
 - Lack of available employees
 - Lack of training options / opportunities

Common Themes Across All Regions (2016 forum series)

- **Federal Resources**
 - **Lack of awareness / knowledge**
 - **Patent License Agreements (PLA)**
 - **Cooperative Research and Development Agreements (CRADA)**
 - **Research focus needs to address industry problems**
 - **Regional collaboration**
 - **Among agencies**
 - **Align with economic regions**
 - **Support for co-ops (e.g., biomass accumulators)**

Common Themes Across All Regions (2016 forum series)

- **General Comments**
 - **Waste – more focus on how to utilize**
 - **Balance**
 - **Fuel vs. bioproducts**
 - **Waste utilization vs. purposely grown**
 - **Annual Regional Conferences**
 - **Regional Projects**

SW Regional Forum (Mineral Wells, TX, 2016)

Sample of specific regional strengths / issues identified

- Oil industry can provide good cross-training for biofuels
 - Coastal areas also suitable for algae opportunities
- Region is a preferred bioenergy crop area (sun, warmth)
- Challenges in the SW
 - **Access to capital (top issue)**
 - Infrastructure / logistics
 - Need strong outreach / education on “bioeconomy” (start at 8th grade) **(i.e., increase demand for bioproducts)**
 - Workforce development: bring DOL and Dept. of Education into the mix **(pilot project suggested by participants)**
- **Need strong sustained policy & incentives to reduce investment risk.**

Steering Committee Members

Critical Sectors Represented

- Federal Agencies
- Academia
- Agricultural-related Enterprises
- State and Local Government
- Workforce & Economic Development Entities
- Investment Community

Name	Title	Company
Alvarez, Julian	Commissioner	Texas Workforce Commission
Baker, Brent	Interim President	Weatherford College
Biss, Bryan		Proton Power, Inc.
Brenner, Rick	Director	ATIP
Butcher, Steve	Economic Development Director	Area Growth Council
Campbell, Todd	Consultant	ATIP
Choi, Yong-Keun	Visiting Scholar	Tarleton State University
Cox, Henry	Director	Ventamatic
Dalton, Robin	Assistant	Parker County Economic Development Foundation
Dvorac, Steve	CEO	DVO
Glover, Gary	Pct. 1 Palo Pinto County Commissioner	Palo Pinto
Howerton, Lance	City Manager	City of Mineral Wells
James, Joseph	President	Agri-Tech Producers, LLC
Joblin, Robert	President, Cenergy USA, Inc.; Co-manager, Magic Dirt	Magic Dirt Horticultural Products, LLC
Johnson, JJ		Independent
Joiner, Matt	College/Career Readiness & Assessment Administrator Coach	Education Service Center, Region 11
Jurey, Wes	President/CEO	ATIP
Kan, Dr. Eunsung	Professor	Tarleton State University
Kennel, Tim Von	Executive Director	Parker County Economic Development Foundation
Kern, Adam	Business Development Liaison	Workforce Solutions North Central Texas
Klahn, Bobby	Business Development Liaison	Workforce Solutions North Central Texas
Lehmann, Johannes	Professor	Cornell University
Logan, Tony	Consultant	Former State Director (OH), USDA, Rural Development
Moss, Georgeann	District Executive Administrator of Sustainability	DCCCD
Nix, Andy & Misty		Nix Rental Homes
Roach, Ryan	President/CEO	Mineral Wells Area Chamber of Commerce & Visitors Bureau
Rose, Mark	Local business owner	MXROS INC
Smith, Roger	Chamber Board Chairman/President/CEO	Genesys Aerosystems, Inc.
Strong, Robert	Ex VP	Mutual of Omaha Bank
Thomas, Peter	Special Consultant	CoalTec Energy USA
Weaver, Sam	President	Proton Power, Inc.
Weldon, Kenny	Mayor	Stephenville

Biochar: a solid material derived from thermochemical conversion of biomass in an oxygen- limited environment.

Benefits:

- Conversion of animal waste to a nutrient-rich enhancement of soil fertility for crop and agroforestry productivity;
- enhancing degraded or marginal soils; improve H₂O in watershed
- helping remediate global climate change by safely and effectively drawing down greenhouse gas (GHG) emissions in stable soil sinks and alleviating emissions from decomposing urban and rural wastes;
- maintaining agriculture production with fewer fertilizer inputs while also recycling wastes and remediating soils;
- enhancing water quality by reducing leaching.

Project Themes

- 1. Finance**
 - **Public funding**
 - **general access to capital**
- 2. Public Education & Awareness**
 - **Clear definitions of “bioeconomy” and “sustainability”**
 - **Articulate value proposition & case for support**
- 3. Public Policy**
 - **Government incentives ; tax credits; regulatory issues**
- 4. Supply Chain**
 - **Logistics / capacity / capabilities (e.g., biomass depots?)**
- 5. Workforce**
 - **Need to engage U.S. Departments of Education, and Labor**
 - **Local education curriculum**
 - **Training opportunities**
- 6. Federal Resources**
 - **Request for federal support of regional collaboration**

Economic Development

- 1. Regulatory Structure**
 - **Municipal, county, state, & federal regulations all play a role**
 - **Support of local and state governments**
- 2. Infrastructure**
 - **Assessing region's infrastructure (people, product, information flow)**
- 3. Access to capital**
 - **Participation of the financial services sector**
- 4. Access to Technology**
 - **Logistics / capacity / capabilities (e.g., biomass depots?)**
- 5. Access to a Trained Workforce**
 - **Alignment of public education, higher education, publicly-funded workforce system**

Project Structure

- A. Regional Steering Committee**
 - Stakeholders representing 6 sectors
- B. International Leadership**
 - International Biochar Initiative (IBI; IBI science committee)
- C. Administrative Leadership**
 - City of Mineral Wells; Mineral Wells Chamber of Commerce
- D. City/County/Sector**
 - Outreach to Mayors and Chambers of Commerce in 16 county region
- E. Workforce & Education Sector Leadership**
 - North Central Texas Workforce Board
 - Texas Education Agencies Region 11 Educational Service Center
- F. Academic Sector Leadership**
 - Tarleton State University
- G. Financial Sector Leadership**
 - Mutual of Omaha Bank
- H. Supply Chain Sector Leadership**
 - Local USDA offices for Rural Development, Natural Resource Conservation Service
 - Agricultural Extension Service
- I. State Sector Leadership**
 - Texas Workforce Commission (Labor Commissioner, Governor's Office of Economic Development; USDA Rural Development (TX)

Goals & Objectives

1. To demonstrate a methodology that will bring stakeholders together from our six identified sectors into a formal partnership for the purpose of translating federal research outcomes to the marketplace in a manner that supports wealth creation through the establishment of sustainable industry sectors in the bioeconomy, thereby stimulating job creation and economic development in rural America.
2. To demonstrate the role USDA, and perhaps other federal agencies, can play in the development of the model, relative to existing research and technical assistance programs.

Special Objectives

To establish, in an identified 14 county rural region in Texas, the initial elements that will serve as the foundation for the emergence of an industry sector utilizing Biochar.

Benchmarks

November 2017

- Confirm primary partners & Steering Committee members;
- Provide briefing documents

December 2017

- Initial Steering Committee meeting
- Confirm stakeholders recruited in 16 county region (all 6 sectors)

January 2018

- Organize into work groups for the purpose of conducting the initial assessments of the "supply chain" and the economic foundations.
- Develop the approach for the Educational Awareness Campaign.
- Provide briefing on federal and academic research on biochar

February 2018

- 2nd Steering Committee meeting
- Develop awareness, understanding, and knowledge of what must be accomplished during the year to lay the foundation for the eventual establishment of a biochar industry sector within the region
- Discuss the framework for a document to be used as a "read ahead" document for small gatherings in select communities with key stakeholder leaders

Benchmarks

March 2018

- “Read ahead” document drafted and reviewed with members of the steering committee
- Outreach to USDA Rural Development and State Dept of Agriculture

April 2018

- Conduct 3rd Steering Committee meeting (April 12)
- Finalize communities where listening sessions will be conducted, and agree on timeframes to disseminate information and solicit input

May 2018

- Schedule initial listening sessions in selected communities, anticipating 6-12 individuals in attendance

June 2018

- Conduct 4th Steering Committee Meeting
- Conduct outreach to economic development corporations in selected cities to begin economic assessments

July 2018

- Begin Listening Sessions
 - Draft report on all assessments
 - Define approach to resolve issues critical to each of the assessments
-

Benchmarks

August 2018

- Conduct 5th Steering Committee
- Complete Listening Sessions and develop reports on key issue

September 2018

- Prepare and Review draft report

October 2018

- Finalize first year report

Information Desired from Community Thought Leaders

- 1. Evaluating the potential for a biochar initiative.**
- 2. Evaluating the infrastructure.**
- 3. Anticipated resultant goods and services.**
- 4. Developing the market.**
- 5. Resources.**

Information Desired from Community Thought Leaders

1. Evaluating the potential for a biochar initiative.

- What does your region have in agricultural residues (plant and animal) that are current liabilities and require disposal at landfills ?
 - (e.g., beef/dairy/hog manure, poultry litter, hay waste, sawdust, municipal waste (sludge); waste paper; plastic; meat packing wastes, forestry residues)
- Are there water quality interests near ag production lands, watershed or conservation program that overlap?
- Are there degraded or low-yielding soils where increased agriculture and economic activities would be attractive?
- Who could help define the volumes: cooperative extension?; Cattleman's Association?; Poultry Association?; Municipal waste commission?; State agencies?

Information Desired from Community Thought Leaders

2. Evaluating the infrastructure.

- What are the costs of feedstock collection?
- What are the conditions and assets of the “supply chain” to collect these feedstocks?
- Are there biodigesters available in the region?
- What biodigester companies operating elsewhere in the U.S. might partner to promote their products and help in a marketing campaign?
- Who in the hauling and transportation industries, others with supply chain logistic have expertise that is pertinent to this initiative?

Information Desired from Community Thought Leaders

3. Anticipated resultant goods and services (1 of 2)

What marketable products or environmental services might result from the pyrolysis and biochar production process?

- i.e., Biochar for garden fertilizer, “Miracle soil” types of product including biochar and other additives which have higher value than a simple biochar product;
- biochar as filtering media for water treatment at municipal wastewater treatment plants;
- biochar as odor-reducing agents;
- fillers which make better composite and plastic products.

Information Desired from Community Thought Leaders

3. Anticipated resultant goods and services (2 of 2)

- **Who has retailer need to offer products to remediate soils and water quality?**
 - **Note: if biochar will be effectively developed into “activated biochar,” its function will be the same as the much more expensive activated carbon. Current activated carbon vendors such as Calgon Carbon may be interested in biochar as a feedstock.**
- **Who would retail or wholesale these products?**
- **Who would be the likely consumer audience for different applications?**

Information Desired from Community Thought Leaders

4. Developing the market.

- **Who are the stakeholders in developing the market (e.g., local municipal water commissions, ag producers, fertilizer companies, retailers such as Walmart, garden centers)?**
- **Where are there synergies between stakeholders who have associated costs from waste and who could influence first opportunities for product utilization?**

Information Desired from Community Thought Leaders

5. Resources.

- What Federal or state resources might assist to help fund a biochar economy
 - e.g., USDA Rural Development, USDA Cooperative Extension, USDA NRCS, EPA, Texas Commission on Environmental Quality?
- What public and private investment services might be available to assist in establishing a biochar initiative
 - e.g., USDA Rural Development, USDA NRCS, U.S. Department of Commerce Small Business Administration, local / regional banks, others?
- What could be done on the front end to help new businesses get established and commit to long term agreements for current waste streams
 - i.e. streamlined permitting, resource assessments, workforces development, cooperative extension?

Corporate Donors and Affiliates

Donors

- Magic Dirt
- DVO



Affiliates

- Agri-Tech Producers, LLC (ATP)



- ProtonPower



- Coaltec Energy USA, Inc

WASTE NOT: Biochar project studied, discussed for area¹

By DAVID MAY editor@mineralwellsindex.com



Wes Jurey, president of Agricultural Technology Innovation Partnership Foundation, leads a discussion Tuesday morning at the Mineral Wells Area Chamber of Commerce on a potential biochar project for the area. Jurey has also been helping lead the Envision Mineral Wells project.

Jul 24, 2018- Bringing to the area industry that turns bio-waste into commodities is part of an ongoing effort by the Mineral Wells Area Chamber of Commerce and City of Mineral Wells, working with the Agriculture Technology Innovation Partnership Foundation.

Begun in 2016, a group of invited people met at the chamber offices Tuesday morning with ATIP Foundation Wes Jurey, known to many locally

as the former Arlington Chamber of Commerce director who is helping lead the Envision Mineral Wells project. Two U.S. Department of Agriculture officials participated in the session through via teleconference.

“We now have several companies talking to us about locating something in our region,” Jurey said. “Mineral Wells is the only city working in partnership with the USDA on a project.”

It is known as a local “biochar” project attempting to make steps forward to locate a facility, or facilities, in the county that will convert agricultural or other organic waste into products that are sold or used.

¹ Reprinted with permission of the Mineral Wells Index, Mineral Wells, TX

Essentially, biochar is a solid material that is derived from thermochemical (high heat) conversion of organic matter, or “biomass,” within an oxygen-limited environment. Biomass is defined as anything living, or that has lived, including animal waste, plants, crop processing waste, municipal waste, landfill materials or other organic materials.

Jurey outlined a number of benefits from biochar projects, including tax revenue generation and job creation within a region. Biochar is said to have a number of positive environmental impacts that can improve water and soil quality, improve the effects of greenhouse gases, enhance crop productivity, reduce landfill waste and create commercial products.

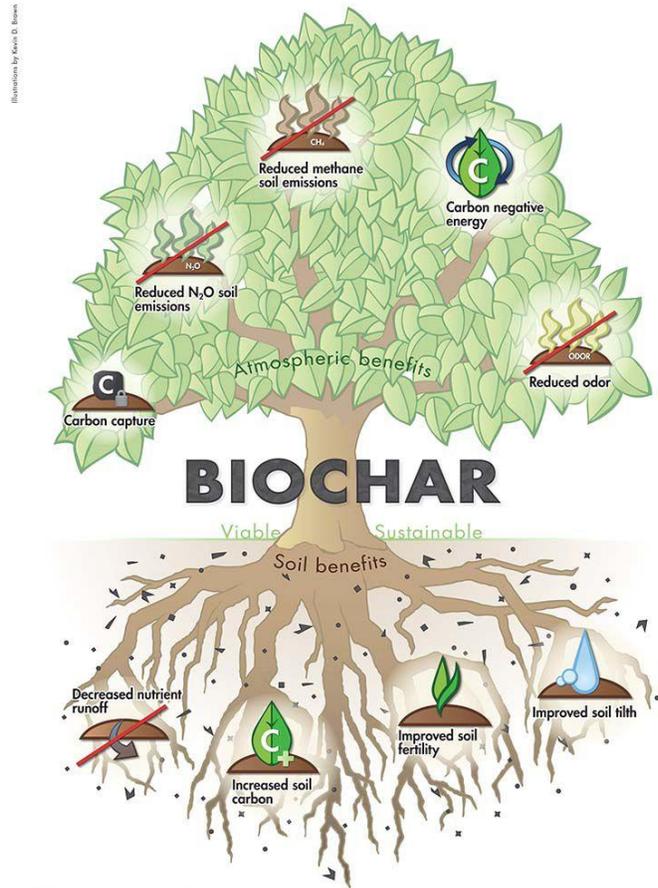
Among the current steps toward securing a biochar project for the region are evaluating the infrastructure, identifying marketable goods and services that could be made such as fertilizer or other soil enhancers, creating a biochar workforce, educating the public and identifying available resources.

“We are trying to plant some seeds for thought,” Jurey said.

An example of a biochar project is one in Maryland that is using poultry waste. The project is expected to have a major improvement of water quality in the Chesapeake Bay by reducing poultry waste in the runoff.

For more information on biochar, go to the International Biochar Initiative website at www.biochar-international.org. For more information about ATIP go to www.ATIPFoundation.com.

For more information on the local project, or to get involved, call the Mineral Wells Area Chamber of Commerce at 940-325-2557 or email chamber President Ryan Roach at ryan@mineralwellstx.com.



This graphic by the International Biochar Initiative shows benefits of biochar. A biochar project for the Mineral Wells area is being explored.

Request for Critical Information from Thought Leaders on the TX Biochar Initiative

Name of Mineral Wells Listening Session Participant: _____

“Biochar” is a solid material derived from thermochemical conversion of organic matter or “**biomass**” in a low heat, oxygen- limited environment. “**Biomass**” can be defined as anything living or that has lived, including all material resulting from wastes of agricultural and domestic activities (e.g. crop residues and processing waste (pecan, other orchards), effluent from large-scale, animal feeding operations), poultry litter accumulations, municipal wastes from communities, downed trees and disaster debris, etc.). Biochar production starts with any of dozens of readily available feedstocks from the area (see checklist below). The process of producing biochar also co-produces energy dense gas and oil.

Biochar has many valuable uses and co-products that may be derived from it. It may be added to soils to improve long-term soil functions, by increasing soil nutrient and water retention capability, reducing alkalinity acting as a liming agent, and improving water quality from the watershed. It can provide protection against Foliar and soil-borne diseases as well as increase beneficial microbial activity resulting in improved yield. It reduces emissions from biomass that would otherwise naturally degrade to greenhouse gases. It can be incorporated into polypropylene as fillers to produce torrefied biomass polymer composites, and biobased plastics with superior material properties. It is an extremely stable and unique material with high surface area that can be used as sorbent for gas pollutants and has been used additionally for oil and construction pollution control. It can be blended with plaster or concrete to create superior insulation and breathing properties.

Evaluating the potential for a biochar initiative

1. What does your region have in agricultural / municipal wastes (plant and animal) that are current liabilities (e.g., require disposal at landfills)? All of these could serve as **potential feedstocks** for biochar production. Check boxes as warranted.

- | | | |
|---|--|---|
| <input type="checkbox"/> Wooden pallets | <input type="checkbox"/> Beef manure | <input type="checkbox"/> Waste paper and cardboard |
| <input type="checkbox"/> Wheat straw | <input type="checkbox"/> Poultry litter | <input type="checkbox"/> Plastic |
| <input type="checkbox"/> Hay wastes | <input type="checkbox"/> Sawdust | <input type="checkbox"/> Forestry residues |
| <input type="checkbox"/> Pecan wastes | <input type="checkbox"/> Invasive cedar | <input type="checkbox"/> Downed trees (storm damage) |
| <input type="checkbox"/> Other orchard wastes | <input type="checkbox"/> Mesquite | <input type="checkbox"/> Other municipal wood, vegetative waste |
| <input type="checkbox"/> Corn stover | <input type="checkbox"/> Prickly pear | |
| <input type="checkbox"/> Dairy manure | <input type="checkbox"/> Municipal waste (sludge); | |
| <input type="checkbox"/> Hog manure | | |

Are there others?

Who could help define the volume of **potential feedstocks**? Can you refer us to specific contacts (or specialists) in Cooperative Extension offices; local members of Cattleman’s Association; local members of Poultry Association; local members of Municipal waste commission; and/or

representatives of other State agencies that you think could play an important part of a biochar initiative?

2. The Bosque River Basin was mentioned as an environmental concern. ***Are there other common water quality concerns in the region***, perhaps associated with ag production lands and watershed / conservation program areas? If so, what are these concerns? Organizations or point of contacts to work with?
3. Are there degraded or low-yielding soils in the region where increased agriculture and economic activities would be attractive? Organizations or point of contacts to work with?

Evaluating the infrastructure

4. Who could help determine the **costs** of collecting the various **potential feedstocks**? Specifically, who do you think we should contact locally in the hauling and transportation industries, or others having expertise in supply chain logistics who would be pertinent to this initiative?

Anticipated resultant goods and services that may be produced locally

5. Participants asked questions about business models to take advantage of this opportunity. What marketable products or environmental services might result from the pyrolysis and biochar production process, and be most appealing to the area?
 - Biochar for garden soil amendment
 - Biochar as filtering media for agriculture, construction, water treatment at municipal wastewater treatment plants, or other reclamation projects
 - Biochar as odor-reducing agents or sorbent in industrial air filtration
 - Biochar used as fillers (plastics and composites manufacturing)
 - “activated biochar” (this would function like activated carbon (e.g., Calgon Carbon), but at a lesser cost)
6. Are there local retailers that offer products to remediate soils and water quality in the Bosque River Basin and agricultural operations?
7. Who would retail or wholesale these products in the Mineral Wells area? Are there existing businesses, or might this create opportunity for new profitable businesses and job creation?
8. Who would be the likely consumer audience in the Mineral Wells area for different biochar products / applications? E.g., landscape companies, nurseries, water purification companies, plastics manufacturers.

Developing the market

9. Who are the stakeholders in the Mineral Wells community that we might engage in developing the market? E.g., local municipal water commissions, ag producers, fertilizer companies, retailers such as Walmart, garden centers.
10. Where are there synergies between stakeholders who have associated costs from waste and who could influence first opportunities for product utilization?

Resources

11. What Federal or state resources might assist to help fund a biochar economy? E.g., USDA Rural Development, USDA Cooperative Extension, USDA NRCS, EPA, Texas Commission on Environmental Quality.
12. What public and private investment services in the region might be available to assist in establishing a biochar initiative? (e.g., USDA Rural Development, USDA NRCS, U.S. Department of Commerce Small Business Administration, local / regional banks, others)
13. What could be done on the front end to help new businesses get established and commit to long term agreements for current waste streams? (e.g., tax credits, USDA Rural Development Business & Industry Loan Guarantees; streamlined permitting, resource assessments, workforce development, cooperative extension)