

Final North Coast Biochar
Year 1 Report
By Raymond Baltar/Project Manager

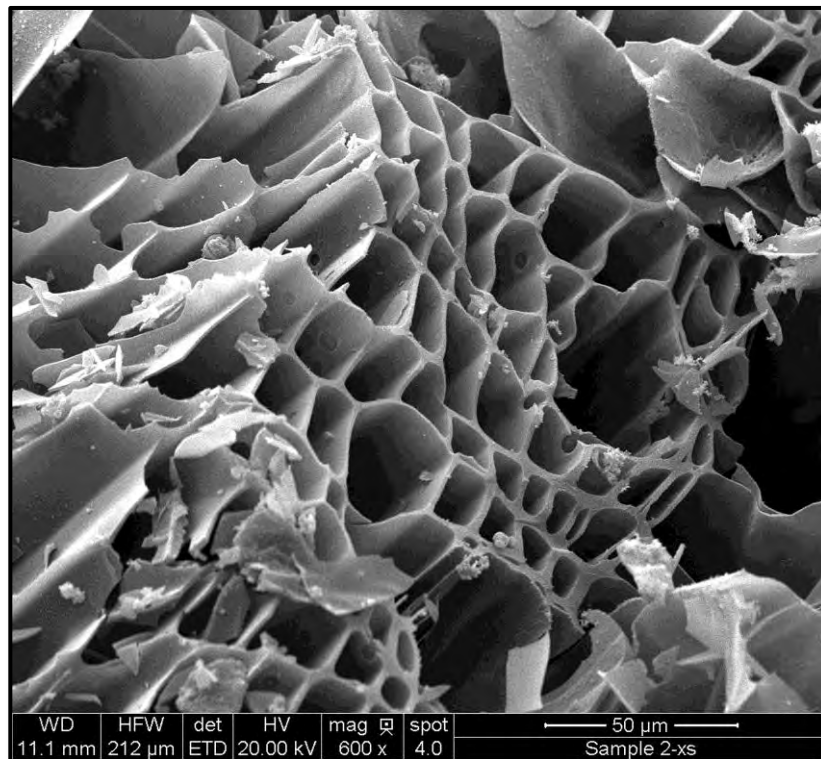
The North Coast Biochar Project is an effort by the Redwood Forest Foundation, Inc. (RFFI) to find more sustainable and ecologically beneficial ways to utilize the surplus resources produced in fuels reduction and forest management activities in the Usal Forest. Originally funded in 2014 by a Prop 84 California Water Bond and a USDA Conservation Innovation grant along with other forestry-related funding sources, the first phase of the project was a feasibility study to determine whether the surplus tanoak coming out of the forest could be economically converted to a value-added product called biochar, the sale of which could help offset the costs of RFFI's sustainable forestry practices while conserving a percentage of the carbon contained in the trees.

With assistance and system improvements made by researchers from the Schatz Energy Research Center at Humboldt State University it was determined that the process was cost effective using this machine if 1) the capital cost of the biochar conversion unit was paid for through a grant or another philanthropic source, not out of operating funds; and 2) the biochar could be sold for a minimum of \$1.50 per lb, or \$300 per cubic yard. Some concerns were noted by the system operator, Jack Carbaugh, regarding the ability of the unit to hold up under a rigorous production schedule, since some signs of wear and potential structural failure were already showing up on the flare after just 21 days of use. Difficult maintenance protocols were also noted, making required repairs more costly and time consuming than necessary if more attention had been given to ease of maintenance during the design process. The project, however, was deemed a success and worthy of further exploration.



In late 2016 RFFI received a \$35,000 grant from the Weyerhaeuser Family Foundation to scale the commercial operation of the conversion unit, and plans were made to move the operation to the old Andersonia Mill site in Piercy, about 30 miles north of Branscomb and start production in early Spring, 2018. This report chronicles the move and the first year of operations. Below are bullet points detailing the basic metrics of the project, followed by a narrative with photographs taken over the course of the project.

- 137 cubic yards of high quality biochar were produced from June through November during 38 partial or full days of runtime. 40.5 cubic yards (30%) have been sold, 75 cubic yards are stored in 50 - 1.5 cu yd supersacks at the Piercy site, approximately 4 cubic yards are still in barrels waiting to be loaded into supersacks at the Piercy site, 16.5 cubic yards are stored in 11 supersacks in Petaluma, and 1 cubic yard has been distributed over the last few months as samples to potential buyers and distributors, given away as samples at shows, sent as samples for testing, etc.
- Lab analyses from two labs (SERC's HSU lab and Control Labs in Watsonville) showed that the biochar we produced far exceeded the State of California's 60% carbon content threshold required for a material to be sold as biochar. The carbon content averaged 85% and the ash content averaged just 5% between the two analyses.



- Approximately \$15,702 was spent moving the unit from Branscomb to Piercy, including disassembly and reassembly; \$37,479 was spent on startup and infrastructure improvements, including grading and rocking the site, purchasing and erecting the metal shade structure, leasing the property,

renting the diesel generator, moving and setting up the SERC dryer, installing a water tank, installing electrical lines, installing water pipes, hoses and sprinklers close to the unit, grading the entire field for fire protection, renting the portable toilet, and purchasing recycled supersacks; \$62,537 was spent on log procurement, chipping, hoop house purchase and erection, backhoe rental, falling, skidding and staging, and transporting logs and chips to the site; and \$93,496 was spent on operational and management expenses including labor, project management, reporting, propane, diesel fuel, safety gloves, goggles and other supplies, bookkeeping, property and state sales taxes, etc., for a total expense outlay of \$207,259. Total project income included \$35,000 from the Weyerhaeuser grant, \$45,000 from the UFRF fund, \$27,719 from other RFFI funding sources, \$5,400 from several donations to the biochar project, and \$14,807 from sales, or \$127,926 total. This leaves a current operating deficit of \$79,333. If all of the remaining biochar is sold at \$225 per cu yd, that would generate an additional \$21,488 in revenue, bringing the total income to \$149,414 and a project deficit of \$57,846. If it is sold at \$175 per cu yd, that would generate \$16,713, for a total income of \$144,639 and a project deficit of \$62,621.

- Sales outreach has been ongoing and will continue until all the biochar is sold. An extensive sales tour was conducted in September by the Project Manager and Cuauhtemoc Villa, a cannabis grower consultant, where over 20 key composters and ag distributors in Sonoma, Humboldt, and Mendocino counties were personally introduced to the North Coast Biochar product and brand. While the presentations were well received, and several companies expressed an interest in carrying and/or experimenting with it in the Spring, by the time we produced enough inventory to offer it was unfortunately the wrong time of year for bulk sales in the ag and consumer gardening markets.

One key, influential soil product distributor, Biologic Crop Solutions in Santa Rosa, did purchase a supersack to experiment with, and may purchase more in early 2018 to add to their bagged blends depending on results. Another potential distributor, Sonoma Valley Worm Farm, took some samples and is currently running small-scale field experiments to see whether adding 5%, 10% and 20% biochar to their vermicompost yields significant results this spring. And while the production manager at Cold Creek Compost, the closest potential compost partner for RFFI, was very interested in experimenting with biochar in their composting process, the owner was hesitant to alter their workflow and was not willing to place an order.

The main challenges, or barriers, to selling North Coast Biochar that were brought up during the sales tour included:

Price. The biochar market has changed significantly in the last year and a half and there are a number of aggressive new players have entered the marketplace able to sell bulk biochar at between \$100 and \$175 per cubic yard wholesale, depending on quantity. While this biochar, which comes from Co-gen plants in the Sierras and from Oregon, has a lower carbon and a higher ash content than North Coast Biochar, it is too early in the biochar development cycle to be able to definitively quantify qualitative differences between biochars, and most consumers are not yet educated enough to seek

out one brand over another. This will change over the next 5 years as consumer sophistication and scientific verification of specific benefits offered by specific types of biochar grows. Despite the relatively high price point, however, we were able to sell 40.5 cubic yards at an average price of \$262 per cubic yard, mostly in small batches of 1 to 10 cubic yards.

Availability. Major ag product distributors to the cannabis community, such as Sparetime Supply in Willits, were hesitant to purchase from a company with such a short track record and no guarantee of continued product availability in the future. This was echoed by other major distributors such as Foxfarm Soil and Fertilizer Company in Samoa. Several companies had previously contracted with “fly by night” biochar companies that were not able to fulfill orders and they were hesitant to contract with a company in its first year of operation.

Regulations. Adding biochar to an existing bagged product requires CDFA labeling approval, and this takes time—up to a year or more in some cases. One Sonoma County company, Grab N Grow, expressed an interest in adding biochar to some of its bagged products but noted the extended CDFA approval process and said it would be a year or two before they would likely be purchasing any product. So many of these sales contacts may not bear fruit until late 2018 or early 2019.

- The Andersonia site has some distinct advantages as a location for biochar production:
 - 1) It offers relatively close access to the Usal Forest
 - 2) It does not have close neighbors that might be affected by production noise, truck traffic, or occasional smoke pollution events
 - 3) Its close proximity to the soon-to-be-built Lost Coast Sawmill operation on the lower log deck could enable some cost sharing of heavy equipment needed for both operations as well as a source of chips that could be used for biochar production
 - 4) A relatively inexpensive lease was negotiated on the property

However, there were also a number of challenges to the location:

- 1) Though the bridge deck over the Eel River has recently been widened, for most of the biochar unit’s operations the narrower bridge footprint limited access and only certain truckers could navigate it. This added to transportation costs and limited the pool of potential truckers we could hire for various activities. According to Jack Carbaugh and Bob Kirk it will still be difficult to maneuver a typical flatbed truck onto the north footing at the end of the bridge and up the hill, meaning that regular truckers would not want to risk a pickup at this location even in good weather—requiring material to be ferried across the bridge to a more accessible location and increasing costs. There is also currently no RFFI-owned machine on site that could be used to load bags when sold. Bob Kirk has one available for \$50 an hour.

- 2) Dimmick Rd. is subject to flooding and is at times inaccessible or in poor condition, limiting access for pickups and deliveries. This, along with issues related to keeping the feedstock chips dry, limits production to about 6 months of the year, hampering the potential for increased production capacity and sales revenue.
 - 3) Ideally, operations would take place on a large, flat cement pad inside a large industrial building rather than on a combination of rock and dirt under partially covered conditions. Given that there was only a one-year lease on the property and continued operations beyond 2017 were not assured, a more temporary and less expensive solution of crushed rock was chosen as the operating base. This rock proved a difficult surface to work on for the employees (until sand was added to the high traffic areas) and more weekly maintenance on the unit was required when some of the rock inevitably got scooped up and ended up in the heating chamber. Also, having the chips housed indoors would make moisture control much easier.
 - 4) The field is prone to flooding during rainy weather and access to some of the bag storage area is limited.
- The addition of SERC's dryer, which uses captured heat from the exhaust flare during the unit's operation, proved invaluable over much of the production period and enabled much better control over the moisture content of the chips. Production efficiency was definitely enhanced through the use of the dryer, and it also enabled an extended production time period. However, in the future the dryer and its rental expense may not be needed if operations could be housed in an industrial warehouse setting.
 - Production stopped for the year on 11/29 when SERC concluded their testing on an improvement they made for automatically maintaining chip levels in the heating chamber. Before that, rain events hampered production for most of November as Jack and Andrew were trying to use up all of the remaining chips in the hoop house. There are still a few days worth of chips remaining in the hoop house.
 - SERC staff and Andrew "winterized" the unit after their tests by tarping all of the electronics and electrical boxes. SERC staff took back the dryer and conveyer on 11/30. The Port a Potty was picked up on Dec. 10th and I asked Andrew to tidy up the site, which he said he did last week (though I have not yet visited the site to verify).

Observations and Recommendations

- The expansion of the biochar operation in Piercy was a learning experience for all involved. There were many challenges and unanticipated expenses—particularly related to infrastructure requirements, site access and transportation, and longer than anticipated employee training time on the

conversion unit. Weather also played much more of a role than expected, delaying and hampering the move, and during the extended hot spells experienced that reduced production times related to increased fire danger as well as operational safety considerations for the staff. However, once all the infrastructure improvements were complete, the feedstock procurement and chipping operations were figured out, and the staff was trained, production went as smoothly as could be expected given the increasingly fragile state of the flare and other mechanical components, the occasional failure of the dryer, and constant maintenance issues.

- Jack and Andrew were pivotal to the success of the production and had to work in sometimes very adverse conditions, by themselves, in stifling heat putting out small fires near the unit while keeping things running, or in wet weather and working with chips that were not fully dried. I was very happy with their dedication, skill sets, and can-do attitudes. Others that were pivotal to the success of different parts of the project included Steve Pearson, Steve Smith, Linwood, Ipo (logger, trucker), Bob Kirk, Mitzi, Lin, Mark Welther, and the SERC team were all key to moving this project forward.
- Much more money was needed to get the project up and running than was anticipated, and log procurement and chipping was much more expensive than we planned on as well—especially at the beginning of the project until we were able to source the feedstock much closer to the production site and through community involvement we were able to chip onsite with no complaints. This was a bit of a learning curve for all involved, but in the end we were able to streamline the process and moving forward this part of the operation would run much smoother and cheaper if RFFI decides to continue the project in one form or another.
- One critical area of the production process that would need additional investment moving forward is a more automated way of filling the supersacks. Four to six hours per week were needed for both Jack and Andrew to empty the barrels and fill the supersacks using the tractor—a process that was costly, cumbersome and inefficient. However an additional \$5,000 to \$10,000 investment would have been needed to automate the system, money that was not available as the project developed. Also, much additional time was needed for maintenance simply because the operation was not located on a cement pad and rocks scraped up with the wood chips needed to be cleaned out of the heating chamber on a regular basis. Also, any future operation should include pouring a concrete pad around the entire staging area or relocating the operation to a new area with a concrete pad. Additionally all of the hoppers and the dryer should be covered, or the entire operation moved to a warehouse site where it could be run year-round indoors. The moisture content of the chips has a major, direct correlation to production efficiency and output.
- The Biochar Solutions unit does make excellent biochar (85% carbon, 5% ash), but not in commercial volumes that would enable RFFI to compete against other companies selling cogen-sourced biochar in the California market at this time. When we started the Weyerhaeuser grant proposal a

year and a half ago the average price for biochar was still around \$300 per cu yd retail, or between \$150 and \$200 per cu yd wholesale. Since then several companies have entered the market that are able to provide large volumes of biochar at reduced prices. Biochar now sells for between \$100 and \$300 per cu yd retail and \$50 to \$150 wholesale. As there is currently not enough awareness or scientific research regarding qualitative differences between biochars made in different processes and from different feedstocks, it has been difficult to state the case for RFFI's higher priced product vs. others in the marketplace. Much research is starting to be done in this regard, however, and within a few years there will likely be much more hard evidence about where certain biochars are the most effective in specific circumstances.

- One of the biggest barriers to sales we encountered from the most likely distributors during the sales tour was our inability to guarantee continued production for next year and beyond. These outlets want to purchase products that are consistently available from companies with a track record, two things that as representatives of RFFI's biochar project we could not guarantee.
- The poor design and build of this early version of the Biochar Solutions unit has not proven to be able to withstand even the somewhat limited time we have operated it (21 days in Branscomb and 38 days in Piercy, or a total of about 12 weeks of run time). At the time of purchase this was one of the few units available on the market and it certainly does make excellent char. However, the flare is now damaged beyond repair and needs to be replaced; the heat exchanger appears to be rotted on the inside and needs to be replaced; the volume it produces is not adequate to offset costs; and in general the design did not take into consideration ease of regular maintenance, making repairs much more time consuming and costly than necessary. Because of these limitations I would not recommend continuing this biochar project using the current Biochar Solutions unit. It could be sold to recoup some of the original investment, and new funding would need to be found to finance a machine capable of much higher production and easier maintenance.
- While RFFI could make much more income on this quantity of production through selling bags of a blended biochar product than selling it wholesale, getting a label through CDFA is a costly and time consuming process, and much money would need to be spent on infrastructure, bag design and marketing for this approach to be successful. Partnering with a company that already sells bagged soil products could allow RFFI to enter this part of the market with much less upfront investment, however there would still be a time delay in getting the label approved by CDFA.
- Lastly, there are several emerging markets for biochar that are promising and that might one-day eclipse or at least compete with the current agricultural market for biochar use as a soil amendment. These include biochar use as a filter material for agricultural field nutrient runoff, biochar

use in stormwater treatment biofilters, and biochar use in fire recovery or other disaster recovery situations to mitigate heavy metal releases into local streams. In each of these cases regulations already mandate, or will likely soon mandate, mitigation BMP's to minimize damage to local ecosystems, so while cost is always a consideration it may be less so for these more industrial uses than in a farmers' value proposition to add it to his or her fields.

Options Moving Forward

Here are the options as I see them for the Biochar Project moving forward. Continuing operations using existing equipment at the Andersonia location would require substantial additional investment (flare repair, heat exchanger repair, concrete pad construction, backhoe or loader purchase, rental of a biochar storage facility in the Piercy area to facilitate sales logistics, etc,) and would represent continued financial risk for RFFI. In the currently challenging biochar sales atmosphere, the production capacity of this conversion unit is not great enough offset production costs and the maintenance challenges would continue to hamper production efficiency.

1. Find a buyer for the existing conversion unit and related project assets to offset cost overruns for the 2017 Biochar Project. Close down the operation completely and sell the biochar conversion unit, the carport shade structure, the hoop house, and any additional supplies and move operations to a new location. RFFI could still offer a long-term feedstock supply contract to the purchaser if they were relatively local. This option would allow RFFI to recoup the majority of its investment in the project over the last year and continue the North Coast Biochar project's legacy, without the financial risk. Any sale would require a contract with RFFI for training if either of our operators were not retained, bringing in additional income.

It may be difficult to find a buyer or manager willing to take on operations given the financial and operational challenges outlined earlier. However if feedstock deliveries can be streamlined, if unit repairs can be made cheaply enough, there was a single owner/operator, and if a distributor and long-term contract can be found for the biochar produced, this option could be viable. Use of the second-year \$35,000 Weyerhaeuser grant funds to support the continuation of the project through sales development and/or policy advocacy could make this offer more attractive to a potential buyer.

2. Find a buyer for the existing conversion unit to offset cost overruns for the 2017 Biochar Project. In this case an individual or group would purchase or lease the unit and/or take over operations at the Piercy location. RFFI could assist the new owners/managers negotiate a lease agreement with Lost Coast Forestlands. This would allow the new management to take advantage of all of the infrastructure improvements at the Andersonia site and to keep the operation close to the Usal Forest feedstock supply. RFFI could still offer a long-term feedstock supply contract to the operation. This option would

require a contract with RFFI for training if either of our operators were not retained, bringing in additional income.

Again, this option would allow RFFI to recoup the majority of its investment in the project over time and continue the North Coast Biochar project's legacy, with reduced financial risk. Use of the second-year \$35,000 Weyerhaeuser grand funds to support the continuation of the project through sales development and/or policy advocacy could make this offer more attractive to a potential buyer.

As with Option 1, it may be difficult to find a buyer or manager willing to take on the project given the financial and operational challenges outlined earlier. However if feedstock deliveries can be streamlined, if unit repairs can be made cheaply enough, and if a distributor and long-term contract can be found for the biochar produced, this option could be viable.

3. Find a buyer for the existing conversion unit to offset cost overruns for the 2017 Biochar Project. RFFI could concurrently raise money, through grants, private donations or other philanthropy to purchase a larger conversion unit capable of producing much larger quantities of biochar more efficiently, and locate that unit at the current Andersonia site or, more likely, at a more suitable location somewhere in the general Piercy/Garberville area. This option would require a careful assessment of the true needs and ability of the UFRF to supply enough feedstock, long-term, to make the new operation viable. An assessment of other potential feedstock sources in the area should also be conducted. Additionally, long-term purchase agreements would be sought to guarantee operational cash flow and minimize risk.

Project Timeline and Visual History

Preliminary Meetings

This project started on February 24th when representatives of RFFI, New Island Capital/Lost Coast Forestlands, LLC, and Sonoma Ecology Center met at the Old Mill site in Piercy to check out the proposed location and to discuss existing site infrastructure and its feasibility for a biochar production facility.



There did appear to be some challenges associated with the site, including the unpaved access road and a seasonal bridge that was too narrow for some trucks to use and that was prone to flooding during heavy storms. However, the site's close proximity to the Usal Forest and the potential synergies with the mill operation planned for the lower deck area, were strong factors in favor of using the location.



To better understand what would be involved in moving the machine to Piercy from Branscomb, another meeting was scheduled with Jack Carbaugh at the old Harwood Mill site in Branscomb on March 14th to assess the condition of the unit after a prolonged production hiatus. Jack was the unit operator during the first biochar grant project and we had hopes of hiring him as operations manager, so the main objectives of the meeting were to determine his interest in joining the operational crew in Piercy as well as to better understand the details and challenges regarding the machine's operation and what would be needed to move it.



Biochar Conversion Unit in Branscomb

Later that same day another meeting was held with Tim Metz and Jack Carbaugh at the old mill site in Piercy to decide on a location for siting the machine and to discuss infrastructure improvements that would be necessary. This meeting also gave Jack a chance to view the new site and to assess the driving time and distance from his home in Branscomb. It was during this meeting that Tim Metz suggested that we contact the other key member of the operations team, Andrew Cardoza, who lives on the mountain up the road from the production site.



Jack Carbaugh and Tim Metz lay out the location for the biochar machine in Piercy

Site preparation on April 11th: Site prep, Lining, & Rocking

Once the site layout was chosen it was determined that a concrete or rock pad needed to be laid both for safety and drainage purposes, since the old log deck turned into a marshy swamp during rainy periods. Since this was a temporary operation, instead of pouring concrete Two Brothers Trucking was hired to lay a heavy duty plastic liner, a layer of 2" minus rock, plus a sand filler that would make the rock easier to walk and work on.



Plastic moisture liner and 2 inch minus rock base is laid for biochar unit.



The Move from Branscomb to Leggett on April 19th

Finding a trucker willing and able to move the machine and all its related assets was much more challenging than expected for several reasons:

1. It would take a number of trucks and/or heavy-duty trailers to move the unit and they all had to have a maximum width of 8' 1" to navigate the narrow bridge across the Eel River. Several of the trucking companies we contacted did not have equipment that could meet this specification.
2. The weather was still unpredictable and scheduling the move when the bridge was passable was therefore also unpredictable
3. There were two slides on local highways, one on Highway 101 between Leggett and Piercy, and one on Highway 1 south of Leggett, and Cal Trans had hired most of the local truckers to haul dirt and rocks away from the slides.

Working down the list of trucking company referrals we got from Tim Metz, we finally came upon Two Brothers Trucking, owned by Leggett logger, trucker, and contractor Ipo Savoie, who was not only able to supply us with trucking services but who also did the grading and gravel pad work that we needed to do prior to the move. Ipo also provided storage in his yard in Leggett for various items that could not be delivered directly to the Piercy site, backhoe rental, chipper rental, logging, skidding and staging services.



The biochar conversion unit is loaded onto a truck in Branscomb

Because of extended winter rains and the rise and fall of the Feather River, we could not schedule the move until April 19th. While the disassembly and loading of the machine and related equipment went smoothly, a huge slide on Highway 101 prevented us from delivering the unit to Piercy and Ipo agreed to store the load and

trailers at his yard until the road opened up, which was not until 5 day's later on April 24th.



Three trucks were needed to move the biochar conversion unit and related equipment to Piercy.

The Move from Leggett to Piercy on April 24th

Five days later we were able to move the machine through the cleared one-lane slide area during a short 12-hour period before the hillside slid yet again, closing Highway 101 for another extended time period.



Key challenges presented by the move: Late winter storms, slide on Highway 101, narrow bridge.



Setting Up and Optimizing the Machine for Commercial Production

Unloading and reassembling the machine took about two days. Some of the standard bolts holding the flare together needed to be cut off due to rust and

replaced with stainless steel bolts, and reconnecting the control unit, conveyor and other connections needed to be carefully done.



Unloading the unit and equipment took 7 people and specialized, heavy-duty equipment







Infrastructure Improvements

A number infrastructure improvements and equipment rentals were required to support operations, including installation of a 5000 gallon water tank and heavy-duty hoses for fire suppression and biochar cooling, a portable toilet, a diesel generator (for the first 3 months until electricity could be installed near the unit), a carport shade structure, a hoop house to keep the chips dry, sprinklers, and a structure for filling supersacks with the biochar.



The 20' X 40' Hoop House was expected to take 3 or 4 days to construct, but because of difficulties in anchoring the poles it took almost two weeks to complete.





The carport shade structure was purchased through the Peg House in Leggett.



2 - 5000 gallon storage tanks were installed on the hill above the biochar production site in coordination with Lost Coast Forestlands. 2" hoses along with sprinklers were then installed to provide fire protection during the summer months.

Installation of the Chip Dryer by SERC on May 10

One critical factor in producing biochar with this conversion unit involves the moisture content of the chips entering the system. The ideal chip moisture content of the feedstock is between 5% and 15%—the dryer the chips the more efficiently they are converted through the pyrolysis process into biochar. SERC provided and installed a dryer system that could reduce chip moisture by about 15%. After

adaptation, the heat for the dryer was transferred to the conversion unit via ducting that provided an efficient and more sustainable source than natural gas.



SERC staff unloads the chip dryer on the south side of the river because the trailer was too wide to carry it across the seasonal bridge leading to the production site.











Sourcing Chips (Chipping in the forest vs chipping on production site)

In an effort to assimilate into the Piercy community as a responsible and aware industrial neighbor, an early decision was made not to create excessive noise by chipping onsite, so during the first part of the project chipping was done in the forest where logs had been decked. After a few weeks, however, it became apparent that the expense of moving the chipper and chipping crew into the woods and trucking the chips to the biochar production site would prove prohibitively expensive. A meeting was held with community representatives to obtain

permission to hold a trial period of moving logs to the Andersonia site and chipping there. After this trial proved that local noise pollution was not an issue, all logs were decked onsite and chipping was done during a few days.



Tanoak logs decked in the Usal Forest near Andersonia



Jack Carbaugh saws logs to fit on dump trucks needed to ferry them across the narrow bridge. Regular logging truck cannot navigate the bridge.





A heel boom loads tanoak logs into a dump truck in the Usal Forest.



Jack Carbaugh guides a log-filled dump truck across the narrow bridge



A dump truck delivers its load to Andersonia.

General Operations

Jack Carbaugh and Andrew Cardoza were key players in the project—Jack, because of his deep understanding of and experience operating the finicky machine, the use of his loader for production, along with his broad technical skill set in construction that proved critical in building the hoop house and installing the electrical system; and Andrew, because of his connections in the local community, his ability to monitor the operation from a fire safety standpoint as a wildland firefighter, and his ability and willingness to learn how to run the machine in often adverse conditions.



Jack trains Andrew on unit operations early in the project.



Different views of the biochar operation



Bagging Operations & Challenges





Ice On Fire Film Crew







Sales Tour notes (8/28 and 8/29)

Sonoma Worm Farm

(Contact: Jack and Amy)

1280 Sperring Rd.

Sonoma, CA 95476

800 447-6996

707 996-8561

We spent about 45 minutes with Jack, the owner of the Worm Farm and his daughter Amy (who I went to Grad school with) discussing biochar and how it might fit into their operations. They said they had been looking for some “pixie dust” to help their product stick out from the crowded vermicompost market, and I think we convinced them that biochar was just the answer. Jack asked a lot of questions and asked for a price for 10 cu yds., which I quoted at \$250 cu. yd. I have sent a followup letter and hope to hear back by the meeting.

Biologic Crop Solutions

(Contact: Alex)

4020 Santa Rosa Ave.,

Santa Rosa, CA 95407

707-800-7486.

We talked with Alex for about a half hour and he was quite skeptical at first—he uses another material he thinks is as effective as biochar but is much, much cheaper. However by the end of the meeting he asked how much 10 cu yds would be and he said ours was the best looking biochar of the 10 samples he had seen from others like us showcasing their product. Cuauhtemoc’s presence was instrumental in keeping us in the game and he is following up with him today, and he has sent him a follow up email and given him a call as well. I hope to hear back by the meeting.

Wheeler Zamaroni Building Materials

(Contact: Ian)

3500 Petaluma Hill Rd.

Santa Rosa, CA 95404

(707) 543-8400

We spent about 15 minutes educating Ian, their buyer, about the benefits of biochar. He was not aware of it but understood how it could enhance their compost products, and he took a sample and our handouts. These guys sell a lot of compost locally and could take a lot off our hands. I have sent him a followup email and hope to hear from him by the meeting.

Grab'NGrow, Santa Rosa
Soiland Co Inc dba Grab'NGrow
Tom Shearer, Operations Manager
tom@soilandrocks.com
707-694-3504
7171 Stony Point Rd
Cotati, CA 94931
<http://grabngrowsoil.com/>

We spent about 45 minutes with Tom and he was very interested in biochar, which they do not sell at this time but he said he has started experimenting with it. His main concerns were the cost and whether we could continue to supply the product in the future, both valid concerns, but he sounded interested and spent a lot of time with us asking questions. He also asked whether biochar could be effective in filtration wattles, in which of course it would be very effective. He took a sample and the info to study, and this contact is one of the most promising in my view. They do sell a lot of compost to vineyards so we may be able to get a sale this Fall. I have sent a followup letter and hope to hear from him by the meeting.

Martin Mileck, Founder/Owner

Call: **Sean O'Rourke**, Project Manager
spourke@hotmail.com
707-671-6843
6000 Potter Valley Road
Ukiah, CA 95482
www.coldcreekcompost.com

We spent about an hour with Sean O'Rourke, and met briefly with Martin Mileck, the owner. Sean gave us a tour of the facility and we discussed many ways biochar might enhance their product. Sean was familiar with RFFI and loved what we were doing, but he had to convince Martin to experiment with some of our biochar. I sent a followup letter and got this reply back:

Raymond -

Great to meet you guys on Monday and thanks for the follow up. I would love to be able to partner with you all and sell your bio-char.

As you know, we are just starting the vineyard season. I have noted to our office staff that we can offer biochar to our vineyard customers. In order to support that endeavor, do you have an electronic version of the handout you provided me, so we can forward to customers?

I did pitch the idea to Martin, and I believe our best approach at this time is to sell

to interested vineyards and blend the biochar with the compost onsite prior to delivery.

Hopefully, we can move some biochar for you. Additionally, if you know of any vineyards in the Sonoma area interested in the biochar/compost blend, please send our way as we regularly deliver to Sonoma and Napa.

Thanks for the outreach.

Sean

The Soil King Supply
Contact: Pat King
Cloverdale.

Surprisingly, Pat King was not interested in meeting with us. I had already stopped by several times, leaving a sample and flyer on one occasion, and he does use biochar in his high-end blend. However, at this time anyway he is just not interested in

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820 Levitin Way,
Napa, CA 94558

I discussed our product with Tim on the phone for about a half hour and he was already very familiar with biochar. In fact, this company has plans to build two 1 MW Phoenix Energy gasifiers that would also product a LOT of biochar, however these plants would take at least 2 years to build and become operational. I sent him our information packet but they are not carrying biochar at this time and only sell one type of compost, so the likelihood of them wanting to blend in biochar is unlikely at this time. Here is the response I got back from him today:

Raymond,

Good talking to you too, and thanks for the info. We'll take a look and let you know if we have any questions.

Thanks,

Tim Dewey-Mattia

Recycling and Public Education Manager

Waste Management
Erin Levine, LEED GA
WM EarthCare Specialist
elevine@wm.com
510-692-0613
8950 Redwood Highway
Novato, CA. 94948

They are only carrying Pacific Biochar at this time and are not interested in carrying another brand.

United Forest Products, Inc.
1051 Todd Rd.
Santa Rosa, CA 95407
707 585-6056

Could not get appointment on Monday but ALL of their products are under \$25 per cu yd so it is doubtful they would be interested.

Sparetime Supply
Contact: Paul
208 E San Francisco Ave,
Willits, CA 95490
[\(707\) 459-6791](tel:7074596791)

We spoke to Paul for about 15 minutes, left off information, and then I followed up today with a phone call quoting Paul a wholesale price of \$225 cu yd over 40 cu yds/ \$235 per cu yd under 40 cu, yds. They already carry two kinds of char, including a blended bagged product (1 cu ft) and a tote product (Pacific Biochar @ \$393.74 per 1.5 cu yd tote, or \$262.49 per cu yd, very competitive with us). If they are interested in our product they will have us in to make a presentation sometime in the next month or two. They require a 25% markup, so at the low end (\$225) we are a little more expensive but in the ballpark. It will likely depend on how they think the labs and quality stack up against Pacific Biochar, and if we can find a shipper cheap enough to seal the deal.

Hohstadt Garden Center
9850 Briceland Rd,
Whitethorn, CA 95589
[\(707\) 986-7676](tel:7079867676)

We stopped by and left a sample and info packet with the two workers that just opened up. They knew about biochar and liked the product, and said they'd pass along the info to the owner.

Dazey's Supply

3082 Redwood Dr,
Redway, CA 95560
[\(707\) 923-3002](tel:(707)923-3002)

We stopped in and left a sample and info packet with the woman in charge of "grower" materials. We talked with her for about 15 minutes about the RFFI story and its local origin and she said they did stock totes of char but was not sure where it was from. 1.5 cu yds for \$500. She liked the char sample and said she would pass the information up the chain and get back to us. I will stop in the next time I am in the area. They don't sell much and this would not be a great distributor for us, but they are local and it would be good to have our char there.

Mendocino Ag Products

17975 North Highway One
Ft. Bragg, CA 95437
707 964-4211
sales@mendoag.com

I could not get in touch by phone so I emailed them asking them to get in touch if interested. This business is related to Dirt Cheap Supply as the phone message states "Dirt Cheap Supply."

Beneficial Living Center

Contact: Seth

148 S G St,
Arcata, CA 95521
[\(707\) 633-6125](tel:(707)633-6125)

We stopped in and spoke with a young guy for about 15 minutes, giving our pitch and dropping off a sample and information packet. Seth, the owner, was unfortunately not there but I will follow up with him personally. He purchased a lot of wood vinegar from our Adam-Retort a few years ago and I think he will be receptive to the RFFI story and like the product.

**Bulk Soil
Eureka, CA**

We just happened to see this sign at a location on the way into Eureka and caught the owner by luck. We spent about a half hour discussing our product

and project and he loved the fact that we were “local” and single source. He asked if he could buy 3 or 4 cu yds for his wife’s garden so we may sell a few totes to him in the near future. He’s a trucker and would come get it himself. He grew up near Piercy and was familiar with the Andersonia Mill site. He is VERY interested in purchasing some in the early spring as he was just getting ready to close up for the year. His main business is cannabis growers and he sells most of his product from March to June. We have his contact info and will follow up with him.

Green Future Soil Products

4651 West End Rd,
Arcata, CA 95521
[\(707\) 825-1225](tel:(707)825-1225)

We stopped in and dropped off a sample and info. They seemed very uninterested and did not know what biochar was. I don’t expect much from this contact.

Soilscape Solutions

1680 Samoa Blvd,
Arcata, CA 95521

We stopped in and dropped off a sample and info. We spoke to a very knowledgeable guy who knew a lot about biochar and he told us the owners already have a deal with Pacific Biochar, but he really like our product and the whole RFFI story. He said he was not sure of the deal they had with Josiah but he would pass along the sample and info to the owners and recommend that they try us out. This is a very influential soil supply company and getting on their radar was a really good thing. Cuauhtemoc was going to follow up with them today.

Dirt Cheap Landscape and Garden Supply

17975 N Hwy 1
Ft. Bragg, CA 95437
[\(707\) 964-4211](tel:(707)964-4211)

I have called them on numerous occasions and dropped in to leave a sample and other info, but I have yet to get any response. I am assuming they are not interested at this time, but if someone else from RFFI wants to drop in again that may tell us why. They were a leading recommendation to partner with in 2014 but Judy ended up going with Willits Soil instead.

Other businesses that were contacted but that did not get back to us in time for this tour:

Foxfarm Soil and Fertilizer Company
2200 Bendixsen St, Samoa, CA 95564
[\(707\) 443-4369](tel:(707)443-4369)

Greengrow LLC
Windsor, CA 95492
[\(866\) 884-6803](tel:(866)884-6803)