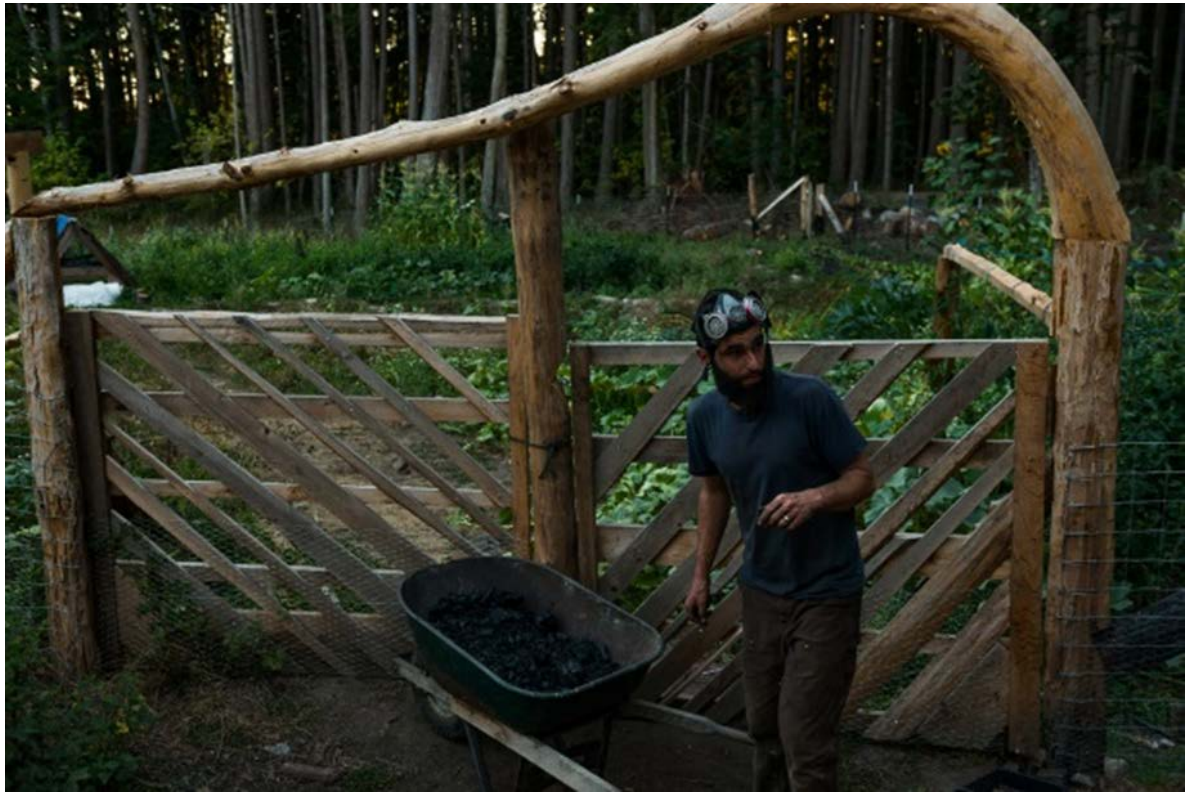
Promoting Biochar

Nexus for Soil and Forest Health

Increasing Soil Health and Incentivizing Forest Health Management

Project funded through the Washington State Soil Health Committee



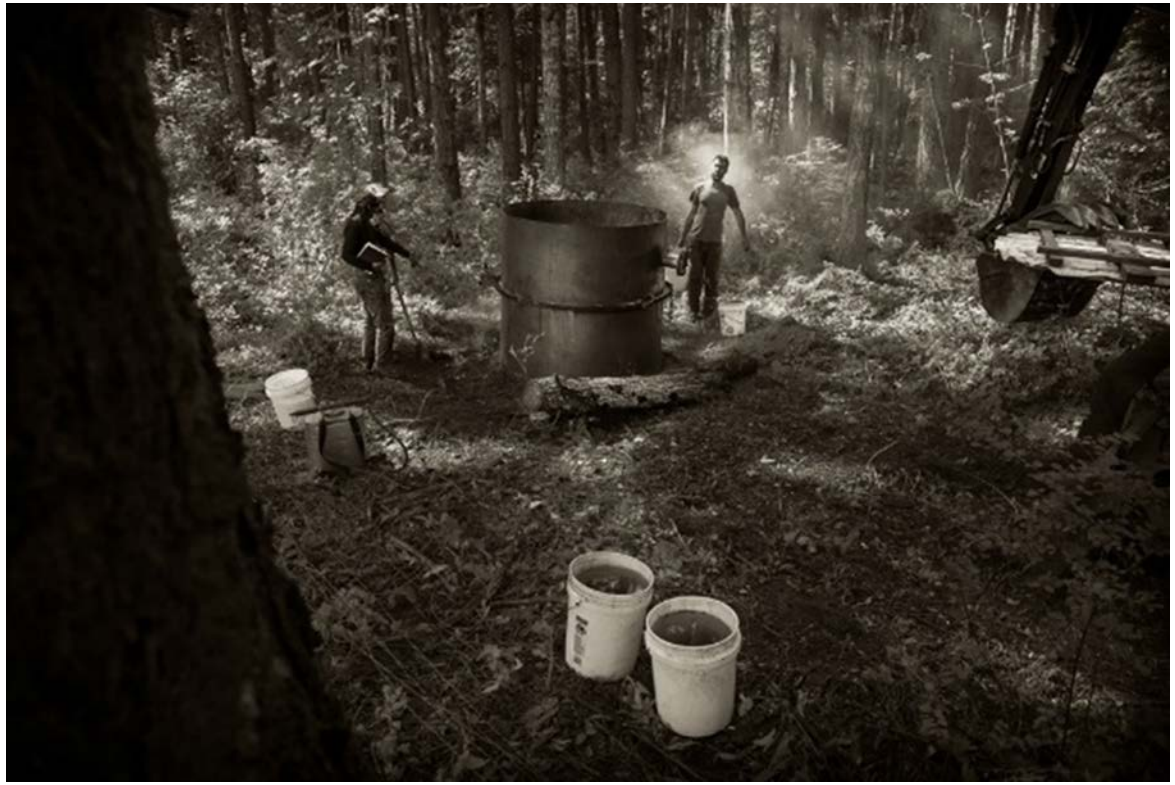
Purpose of project:

1. Conduct research to illustrate outcomes of biochar application.
2. Develop a strategy to promote the production and use of biochar.

Promoting Biochar

Why biochar?

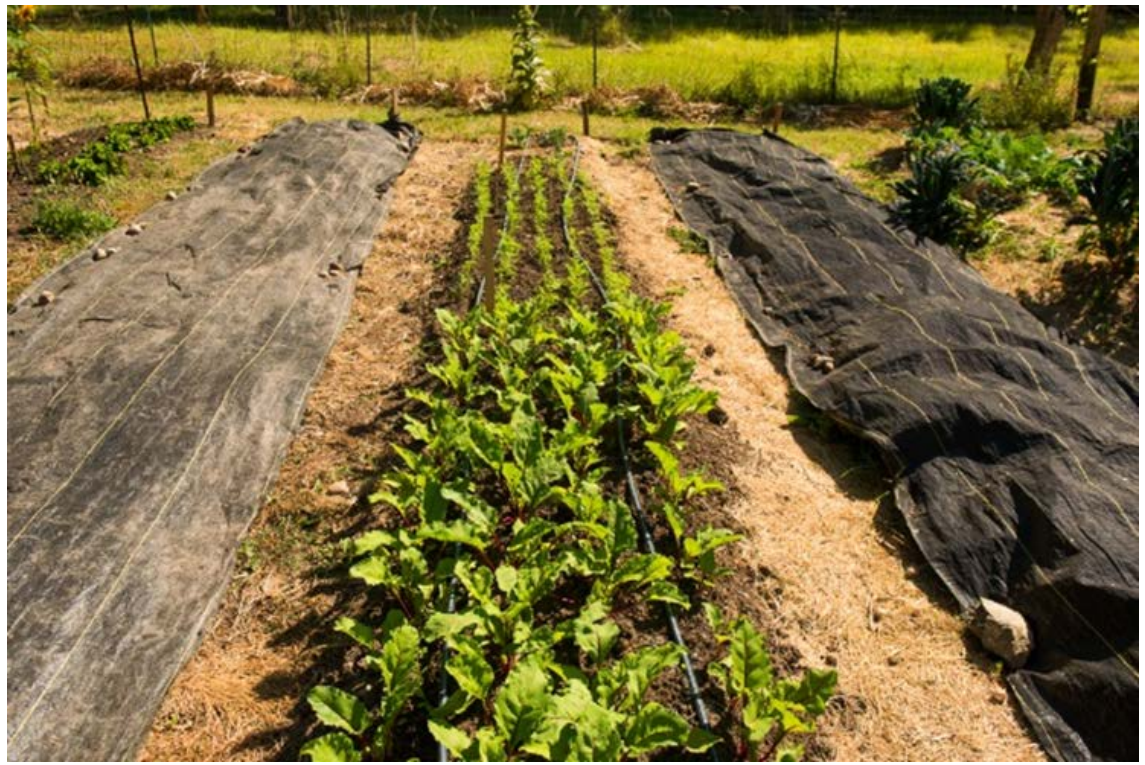
- Creates a low emission, value added product from forest residuals while offering an innovative approach to improving soil fertility and crop productivity.
- Addresses multiple resource concerns:
  - **Forest Health**
  - **Soil Health**
  - **Climate**



Goals, Objectives, and Strategies

Primary Goals and Objectives

- Promote forest health and reduce fire risk
  - Increased productivity, diversity, and habitat value
  - Reduced fire risk by removing surface and ladder fuels
- Improve soil health
  - Increased nutrient availability for plants
  - Increased moisture retention and drought resiliency
- Climate
  - Carbon sequestration



Strategies

- Encourage forest management such as selective forest thinning
- Utilize the biomass from the forest debris to produce biochar
- Apply biochar to agricultural soils to enhance soil moisture retention and increase nutrient availability for plants.

Research Results

In 2015, University of Washington conducted research on 10 farms growing beans and found that:

- **Biochar increased soil carbon levels between 32-33%**
- **Biochar enhanced nutrient retention in the soil:** *NH_4 + 45-54%, organic N + 48-110%, inorganic P + 29%*
- **Biochar increased nutrient density of plants:** *Increase in P, Fe, Mg, and Zn*

In 2016, researchers established charcoal plots on six farm sites in San Juan County, which all grew Kuri winter squash.

- **Soil carbon increase in the non-fertilized biochar 31%**
- **Soil carbon increase with fertilized biochar 33%**
- **Water retention increased 10-25%**

"Locally produced wood biochar increases nutrient retention in agricultural soils of the San Juan Islands, WA, USA."

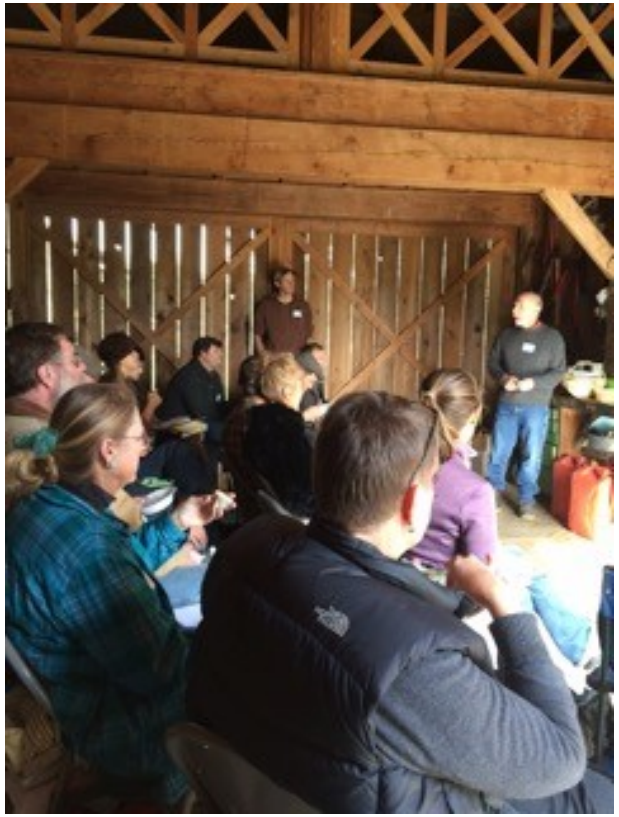
- Published in the scientific review journal Agriculture, Ecosystems, & Environment in 2017.
- UW PhD candidate Si Gao and the Director of the University of Washington School of Environmental and Forestry Sciences, Dr. Tom DeLuca.

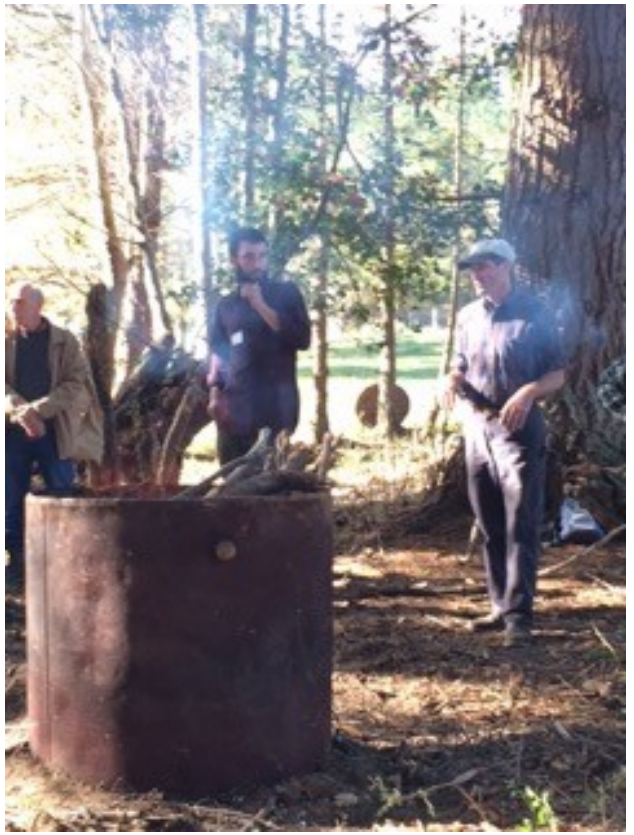
Strategies Identified to Promote Biochar

Outreach and Education

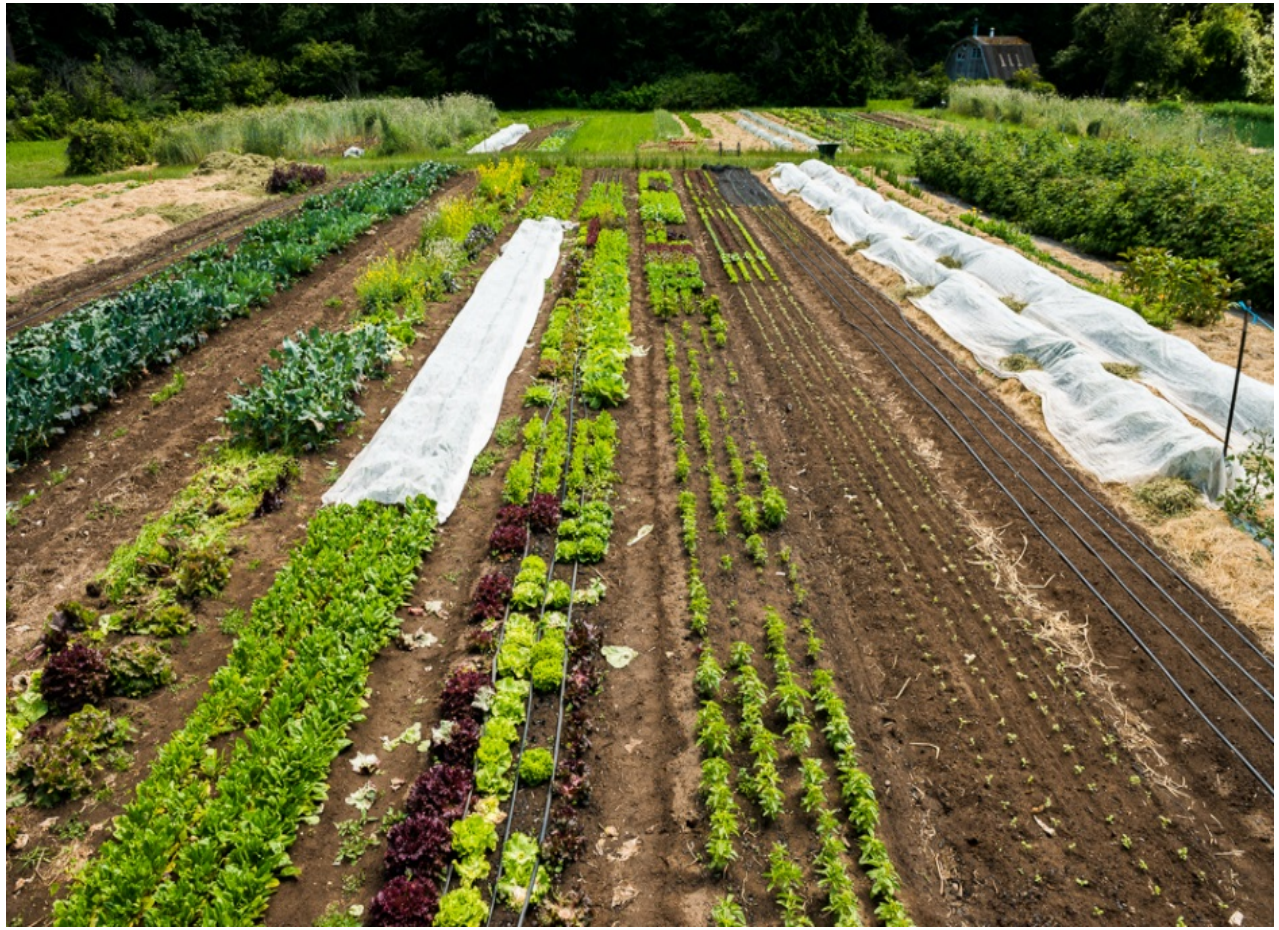
Workshops

- Research and Findings
- Make Your Own Biochar
- Neighborhood Cooperative Model





Neighborhood Cooperative Model



Why?

- Reduce cost to farmers
- Help forest owners

How?

- Farmers have neighbors with forests
- Forest landowners share biochar
- Farmer neighbors help with making biochar, and providing farm products in exchange

Incentivizing Forest Management

Firewise funding pilot program

- Cost-share funding for forest practices
- Portable kiln on each island

Farmers with forests

- Do it yourself biochar
- Implement forest management practices
- Use slash to make biochar and apply to agricultural soil

Questions?