

# UTAH BIOMASS RESOURCES GROUP





**UtahState**University COOPERATIVE EXTENSION





UBRG

Founded 2010

**Partners** 

**Amaron Energy** 



Reduce hazardous fuels

Improve firefighter safety

Create a product

Develop the bioeconomy



Pile burning: business as usual

Air quality issues

Damage to soil

Season extremely limited

Location limited



Benefits:

Balancing mechanism

Fuels reduction

Water retention

Durable

Direct carbon sequestration



2010: UBRG started with mobile gasification



2014: UBRG introduced mobile pyrolysis

Amaron Energy

Rotary kiln

Cost: \$500,000+



2017:

Simple kilns

Oregon kilns

Flame-cap kilns

Kelpie-kilns

Cost: \$600 ish



Metal box

5 feet x 5 feet

2 feet high

Handles

Stackable

Transportable



### Culinary features



Contracted with Kelpie Wilson for first workshop

Purchased four kilns

USU Extension Grant

Diverse audience



Partners:

Utah Division of Forestry, Fire, and State Lands

**USU** Extension

US Forest Service Landscape Scale Restoration Grant



Load kiln

Up to 8 inch diameter material

Dry material most productive

Make a rick

All can participate



Top light kiln

Small fuels on top

Windscreens optional



#### Tending/ stirring



Keep adding material until kiln is ¾ full of coals

Can consume 5 time its volume



Fuels cut-tolength

Presorted

All of these piles will fit into one kiln



Flames get tall

Beware of overhead fuels



Flames still visible: cooking



Almost done

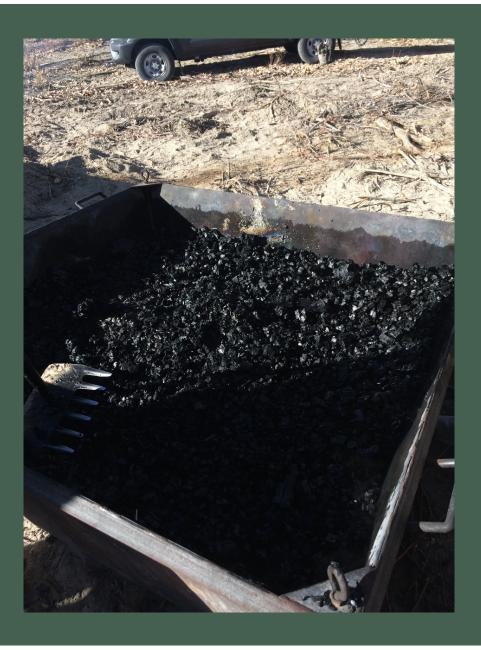
Nearly ready to quench



Quenching 100 gallons



## Stirring and wetting



# Finished product



#### Tipping



Spread out coals in non-flammable area for cooling

Brittle: can reduce piece size by crushing



Biochar on the forest floor

Restoration value

Cold trailing

Deer consume char



Biochar spreading devices



Proximity to heavy fuels



## Urban applications



DIY kilns

Proximity to home, garden



# Application in SMZ's



Next steps: Big box burning



Applications:

Industrial application

Lime spreader



High carbon compost



Application Rates

10 tons/acre

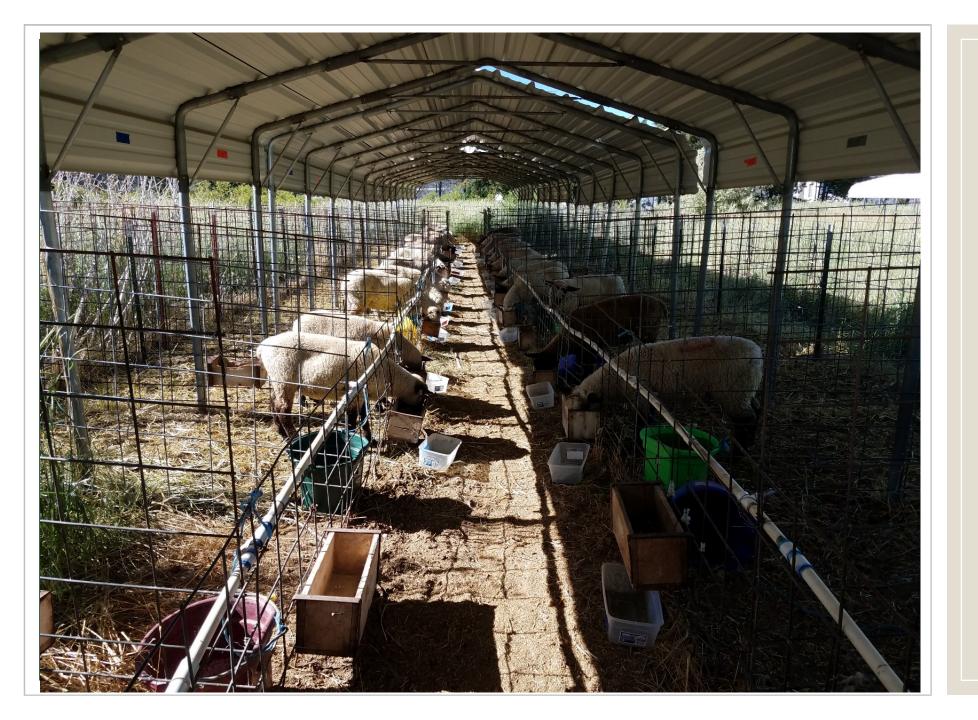
WSARE Grant: biochar for tomato and melon production



Biochar from Russian-olive for butterfly habitat



Water
Initiative
Grant:
biochar under irrigation pivots for water retention



Use of biochar by sheep: Impacts on nutrition and diet selection



Economic model:

Reduce fuels

Absorb nutrients

Increase productivity

Sequester carbon



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