An overview of Cool Planet's strategy to produce engineered Biocarbon™ and renewable fuels

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Agenda

- Overview of Cool Planet Energy Systems
- What is CPES trying to do?
- General process and technology
- Barriers to commercialization
- Conclusions

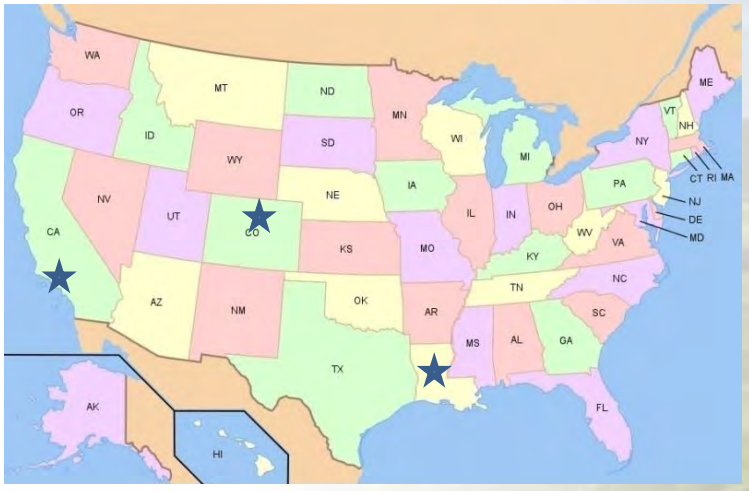
About Cool Planet Energy Systems (CPES)

Locations

Headquarters – Denver, CO

Operations – Camarillo, CA (2 locations)

Commercial Plant – Alexandria, LA



History

Started in 2009 in Camarillo, CA

2009 to 2011 – Focused on fundamental R&D and financial viability

- Primarily founder driven
- Changed name from Cool Planet Biofuels

2012 to 2014 – Developed pilot units and co-developed commercial process

- New management with traditional structure
- Expanded to Denver (corporate), Louisiana, and 2nd site in California

2015 forward

- Mid year pivot to focus on Cool Terra®
- Currently 35 employees
- Focused on development of Cool Terra® market and applications

Company Goal

Commercialize a technology to create green fuels and biocarbon

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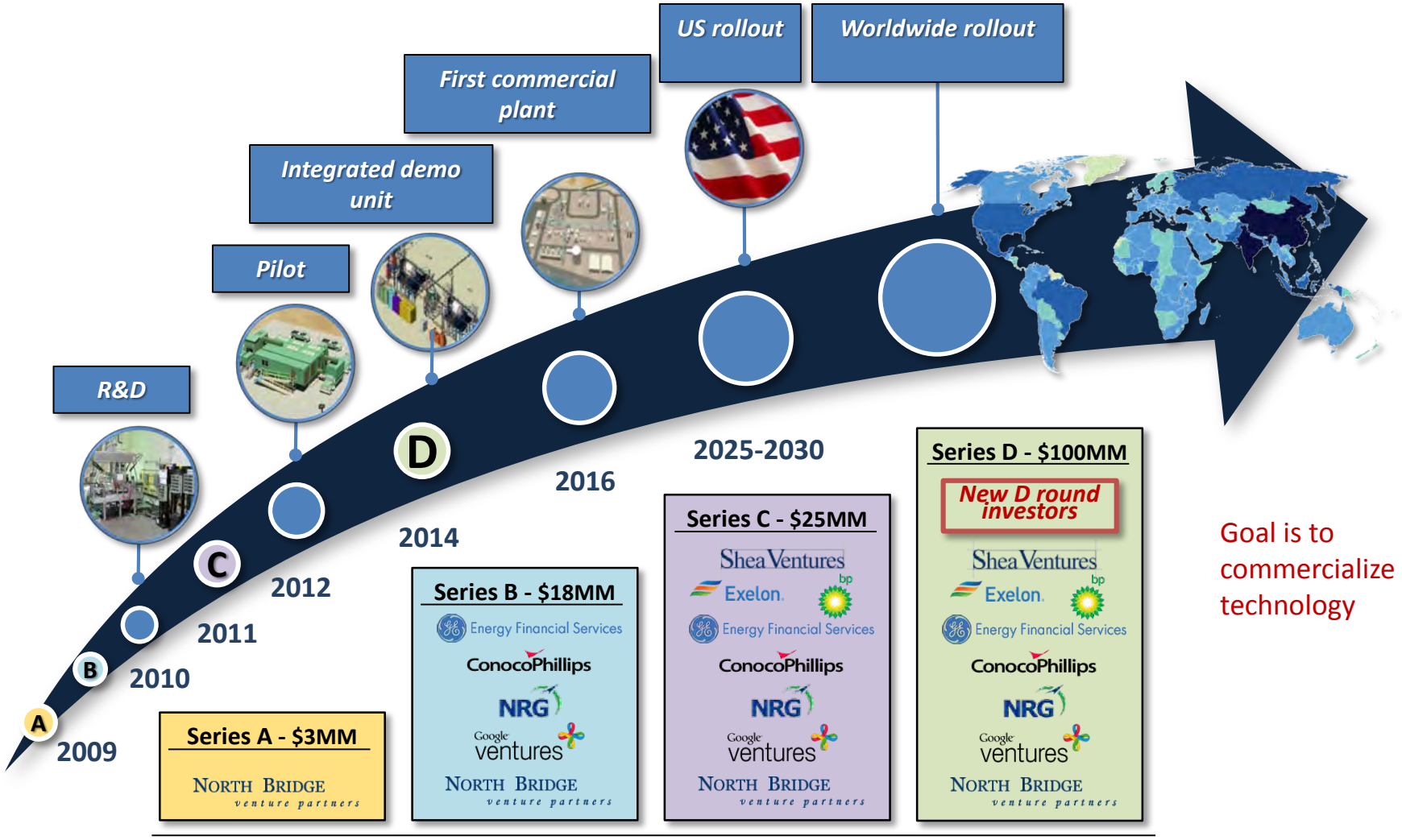
Path to commercialization

Targeting plants worldwide



Goal is to commercialize technology

Ongoing support by key investors

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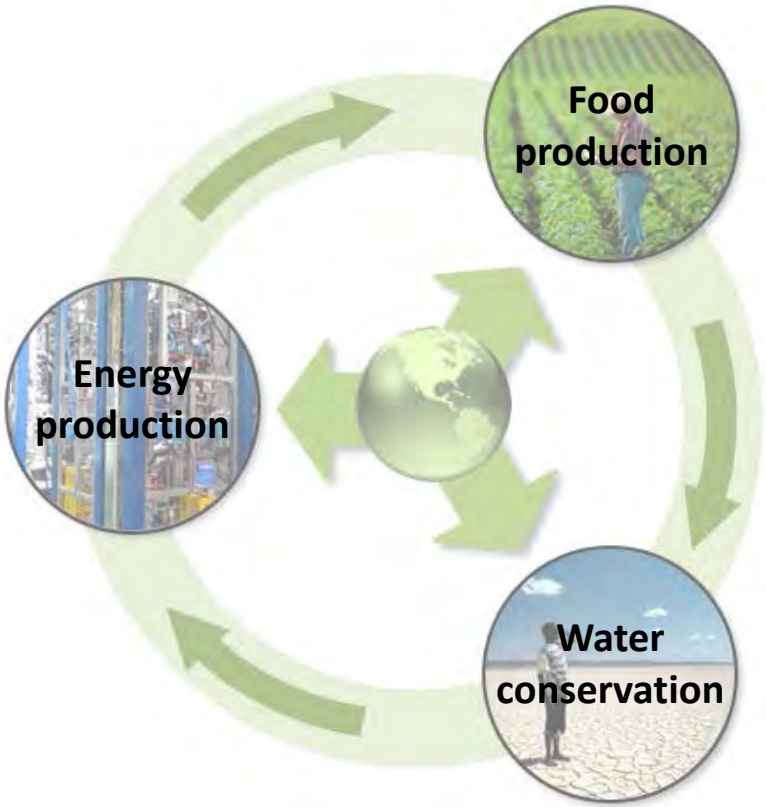
The Cool Planet technology

Addresses the world's major challenges

Biomass to Renewable Products

Hydrocarbons



Engineered Biocarbon

World population to reach almost 10 billion by 2050

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General Process

Biomass

Wood-based feedstock
Agricultural waste
Energy crops, etc.

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Hydrocarbons

Fuels
High octane gasoline, jet fuel, diesel

Chemicals
PX/PET feedstocks, others

Specialties
Lubricants, others

Engineered Biocarbon™

Soil enhancer coolterra®
Turf, horticulture, production ag, others

Animal feed coolfauna™
Poultry, cattle, others

Why Pine?

Feedstock availability

- Readily available in United States

Composition

- Low ash content

Louisiana Commercial Site

- Depleted paper industry with many stands of pine
- Near Red River with barge access

Existing wood handling infrastructure

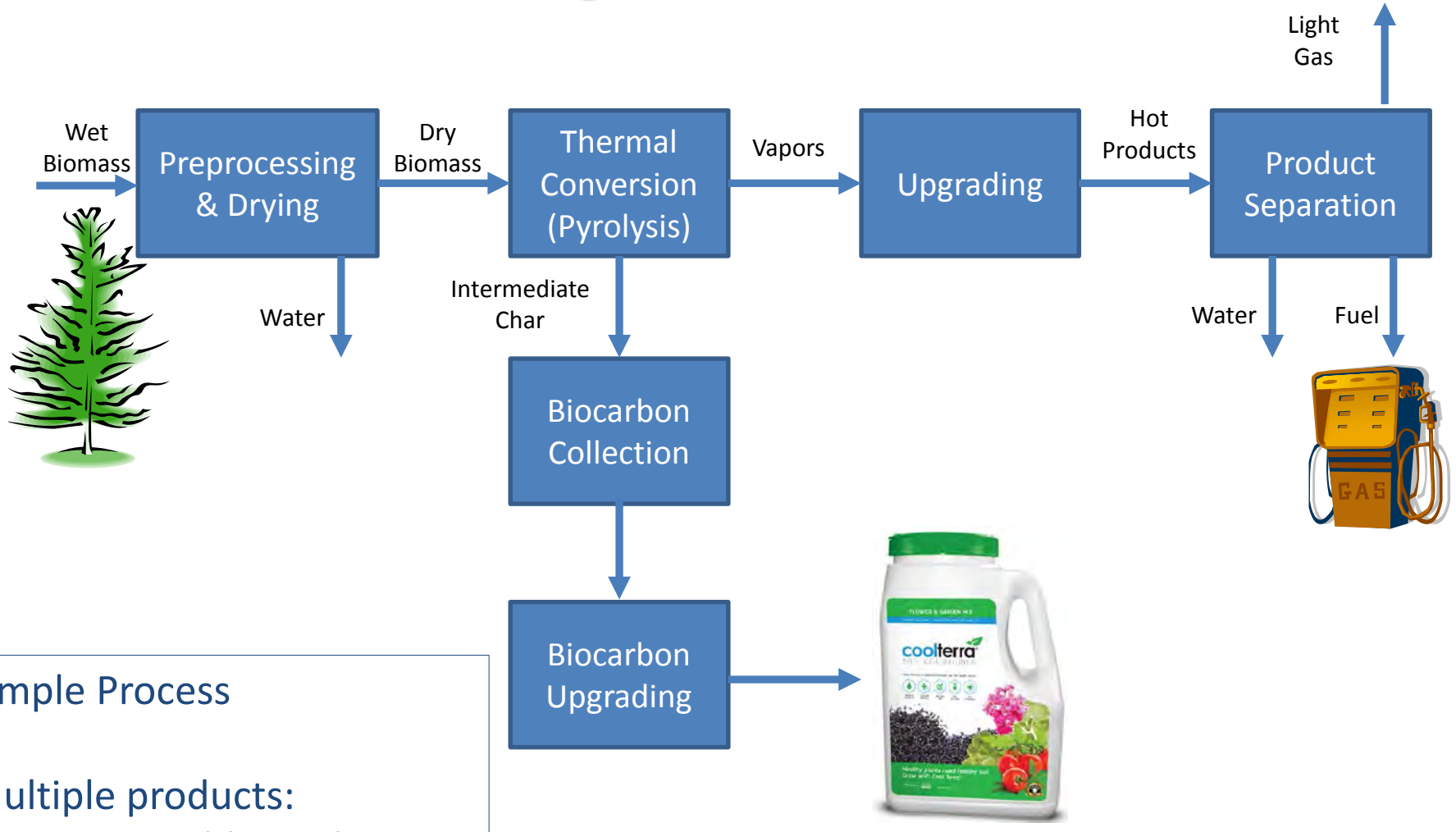
- Well developed and understood

Mountain Beetle Killed Pine – Northern Rockies

- Low value feedstock in other US locations
- Bioenergy Alliance Network of the Rockies (BANR) – Led by CSU

http://www.barkbeetles.org/mountain/fidl2.htm

General Process Diagram



Simple Process

Multiple products:

- Renewable Fuel
- Engineered Biocarbon

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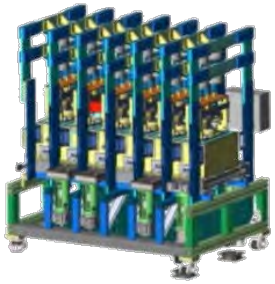
Multiple design generations

A key technology target – cutting edge pyrolysis hardware

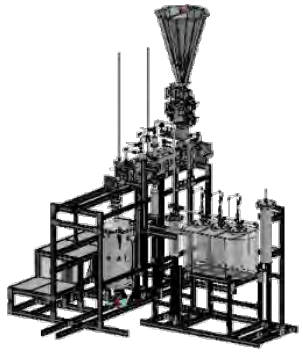


Original fractionator

- Race track – illustrated fractionation to char/fuel (vapors)
- Strawberry Field – demonstrated large scale production

Streamlined fractionator

- Simplified stationary lower platens
- Higher output heaters integrated with the platen plate – no re-heating required



Simple Continuous

- Continuous versus stop-start operation
- Mechanical simplicity
- Lower capital costs
- Higher reliability

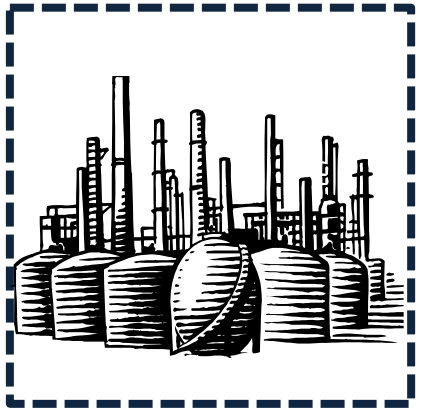
Integrated Continuous

- Higher uptime – more fuel production
- Higher reliability

Enhancing performance and minimizing capital cost of the commercial design

Multiple stages of R&D and testing capabilities

Bench scale → **Small Pilot** → **Integrated** → **Commercial**



Objective	Early-stage innovation	Refine design basis	Test at pilot scale	Commercial production
Functional focus	Chemistry	Engineering	Systems integration	Operations
Operations	Batch 200 g	Continuous 1.5 kg/hr	Continuous 10 kg/hr	Continuous 1 to 10 t/hr
Number of runs	2000+	180+	60+	N/A

Bringing confidence in design, commercial results, and economics

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Biofuel and Biocarbon from Beetle-Killed Pine

BANR High Octane Fuel

Engineered Biocarbon

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Engineering Biocarbon

Qualify raw biocarbon feedstock

Adjust out of specification parameters

Demetra Process

Verify performance

Consistency is key to product success

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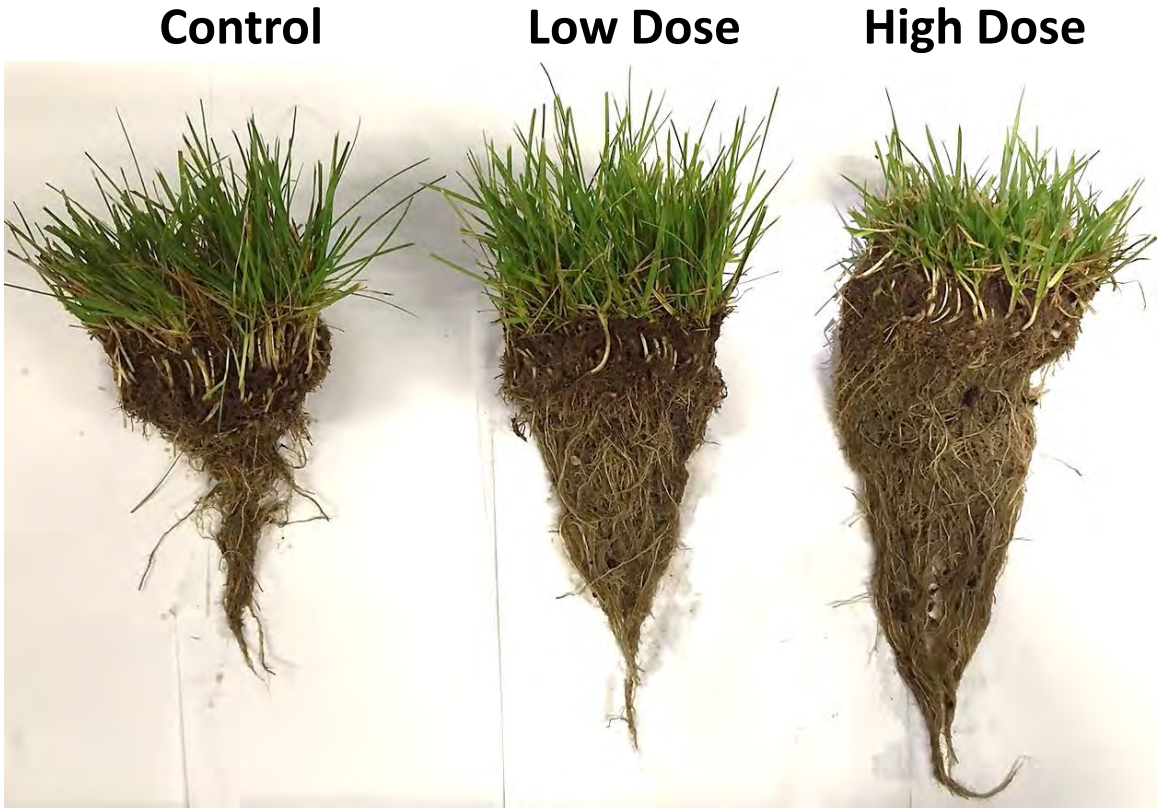
Field Trial - 19 weeks after application

Cool Terra Engineered Biocarbon applied to sod



Cool Terra significantly increases turf root development and biomass compared to controls

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Barriers to Commercialization

Consistent supply of feed

Moisture, particle size, chemical content

Dedicated supply at economically viable price

Longevity of supply in one location is key

Government regulation, Federal and State

Feed side – Access to lands with deteriorated woods

Product side – Regulation of labelling/packaging

Low Crude Oil Price

Discourages investment in biofuels

Overcoming the stigma of competitors' "biochar"

Inconsistent performance in marketplace

Current Strategy

Our focus is on:

Production of Engineered Biocarbon

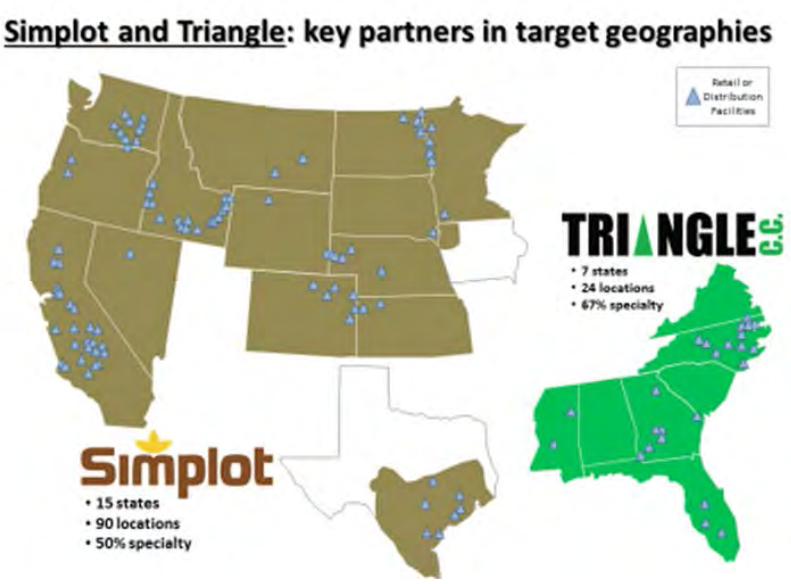
Obtain raw stock from foreign and domestic sources and upgrade

Field Trials of Cool Terra Engineered Biocarbon

Deployment of more than 40 commercial field trials

Commercialize biocarbon production

Distribution partnerships with Simplot and Triangle Chemical Company



Engineered biocarbon is the current focus with long term biofuels objectives in mind

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Conclusions

Cool Planet is adjusting to the market by concentrating on the biocarbon business:

Executing external field trials

Developing biocarbon relations and markets

Maintaining biofuels capability

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Thank you!

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