Presentation from the USDA Agricultural Outlook Forum 2017

United States Department of Agriculture
93rd Annual Agricultural Outlook Forum
"A New Horizon: The Future of Agriculture"

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Arlington, Virginia

USDA 2017 Ag Outlook

Cool Planet and Cool Terra Engineered Biocarbon

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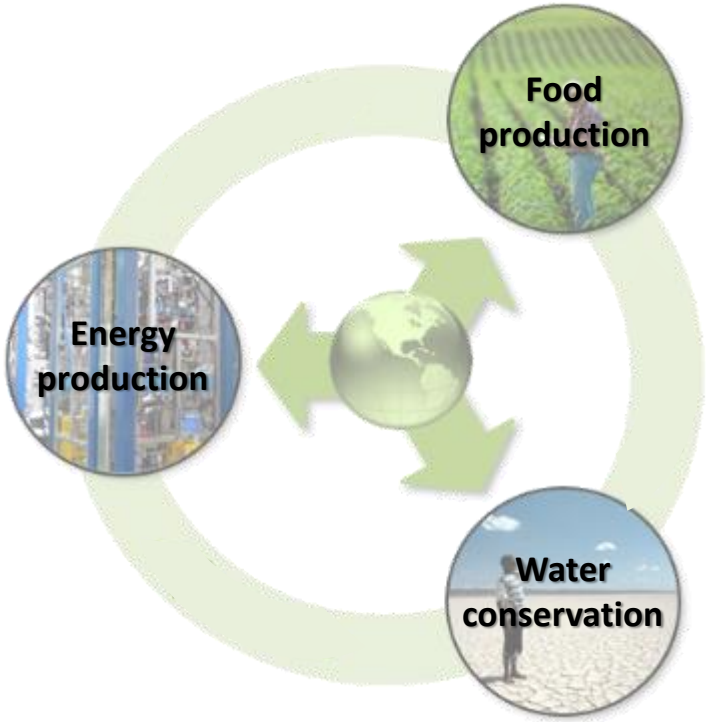
Addressing key markets globally, diverse product suite

Converting non-food biomass into hydrocarbons and engineered biocarbons

Addressing key markets globally…



Diverse product suite

Hydrocarbons

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Biocarbon

Fuels
High octane gasoline, jet fuel, diesel

Chemicals
PX/PET feedstocks, others

Specialties
Lubricants, others

Cool Terra® Engineered Biocarbon
TN&O, Production Agriculture

Animal Nutrition
Chicken, bovine, others

Purification
Water treatment, air purification, activated carbon

Society demands more food grown more sustainably

How can we feed a growing population?

A nearly 50% increase in food production is required worldwide…




…at a time when agriculture is under stress globally




Limited arable land | *Degraded soil* | *Water scarcity* | *Fertilizer runoff*

New technologies are critical to address this challenge

Source: Food and Agriculture Organization (FAO) of the United Nations, 2009; Context NA Retailer Study, April 2015. Projected increase in food through 2050

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Cool Planet sits at the confluence of three megatrends in agriculture

Food Security	Soil Health	Sustainability
		
Higher crop yield	Enhanced soil microbiome, microbial delivery system	Carbon sequestration, clean water, less fertilizer

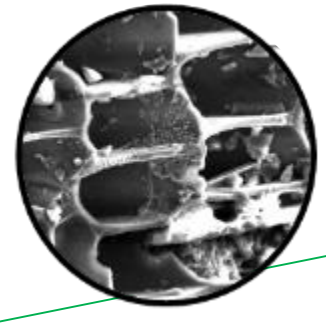
A healthy planet feeding more people with higher grower profitability

Production of Cool Terra® engineered biocarbon

Pyrolysis expertise and patented 'Demetra' process maximize consistency & effectiveness

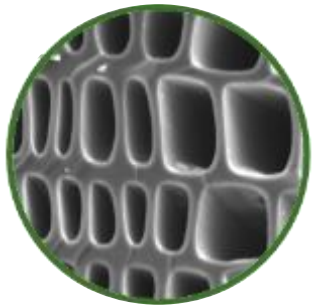
Biomass
(e.g., Pine)

Pyrolysis



Raw Biocarbon

Demetra Process *(Patented)*



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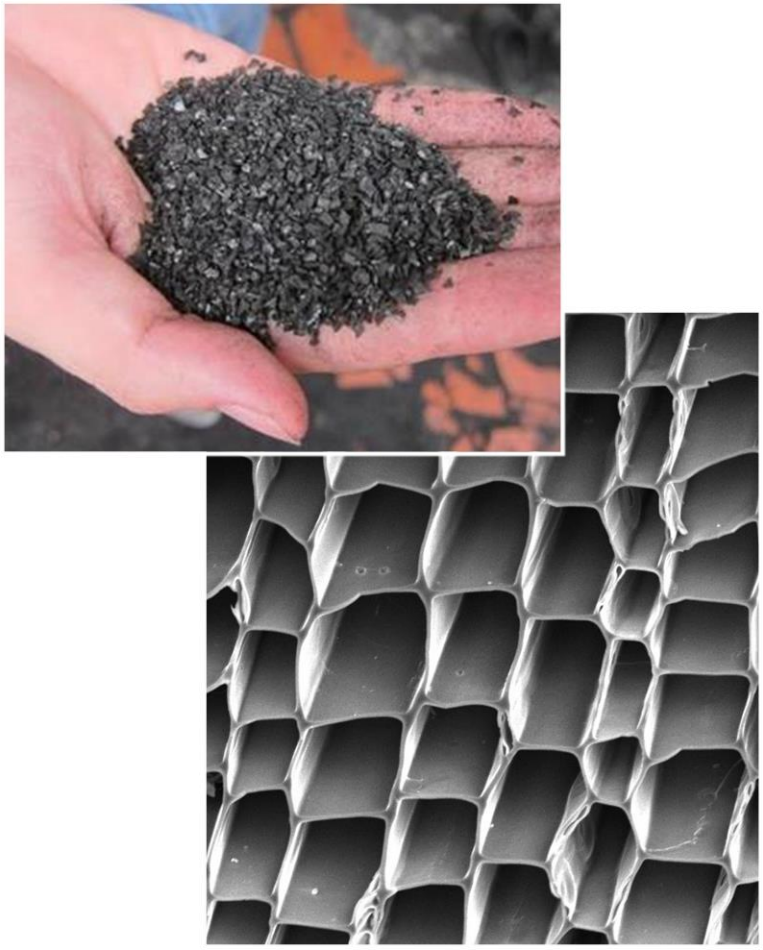
40,000 yd³ capacity in Camarillo, CA

- **Balance pH** – Optimizing pH to maximize germination and growth
- **Detoxify Raw Biocarbon** – Micropores cleaned to eliminate toxicity
- **Maximize Capacity –** Improves input holding capacity in pores
- **Size for soil** – Consistent particle sizes designed for consistent results

The Cool Terra® engineered biocarbon platform

Physical structure enables improvement in yield, microbial life, and sustainability



Cool Terra® structure under a scanning electron microscope

1. **Adsorptive / Desorptive**
   - Improves water holding
   - Retains nutrients
2. **Porous**
   - Anchors micro-roots
   - Promotes microbial growth
   - Delivery system
3. **Aerating**
   - Structure clears pathway for water and oxygen
4. **Sequesters Carbon**
   - Chemically stable

Different forms of soil carbon have varying properties

Similar end results shaped by different mechanisms

Different forms of Carbon in Soil

Labile ⟷ *Recalcitrant*

	Compost	Humic Substance*	Cool Terra®
Plant Nutrition	Yes, Macro (N) and Micro Nutrients	To a degree, some micro nutrients	To a degree, small levels
Microbial Nutrition	Yes, various stages of decay, readily digestible for rapid breakdown	Yes, humic acid portion particularly, humin portion more recalcitrant	No
Microbial Habitat	To a degree, has structure and food, but limited air space	No for humic acid. To a small degree for humin portion	Yes, pore and surface area optimal for water, air, microbial life
Soil Persistence	Low persistence through rapid biological de-composition	Low persistence through chemical and biological reactivity, soluble leaching in soil	Highly persistent. Some migration, but generally stable and consistent
Application Needs	High Dosage (multiple tons/acre) Re-application needed seasonally	Low Dosage (gallons/acre) Re-application needed seasonally	Medium Dosage (<1000 lbs/acre) Can be one-time application

Research suggests Cool Terra® can be complementary with both compost and humic*

*Humic substance includes Humic Acid, Fulvic Acid, Humin

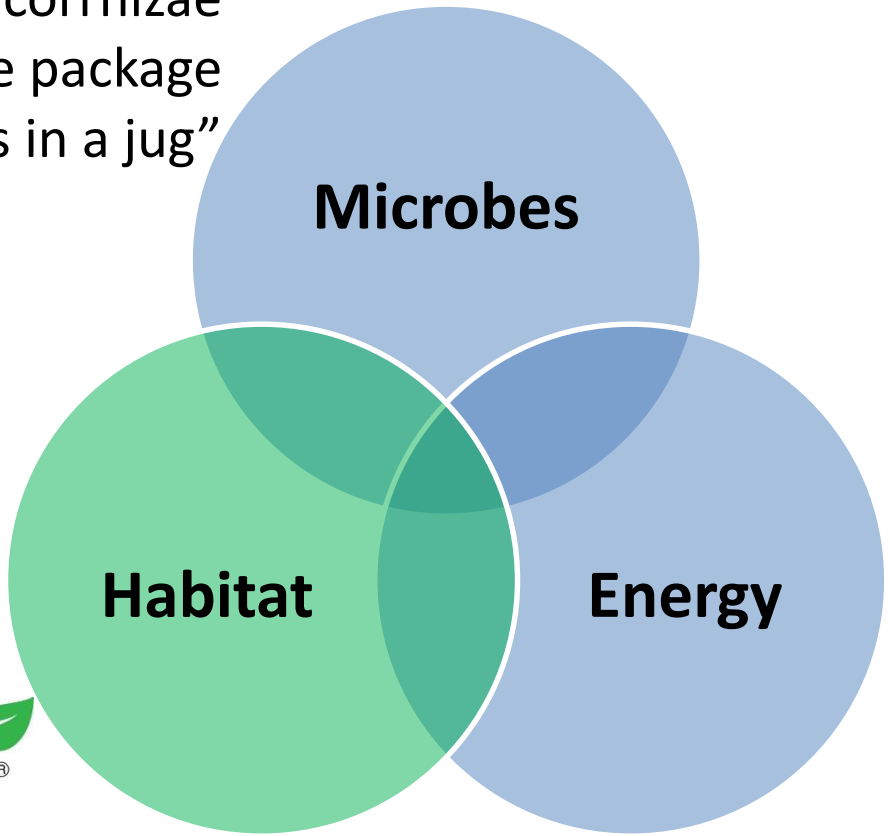
**Zhang, Sun, Tian, Gong, *Scientia Horticulturae*, Volume 176, 11 September 2014, Pages 70–78,

**Bakhry, Ibrahim, Eid, Badr, *Agricultural Sciences,* Volume 05 No.14(2014), Article ID:52357

Multi-dimensional ecosystem vital for thriving soil biome

Each part can have impact, but the full system can be very powerful for soil health

- Mycorrhizae
- Beneficial microbe package
- Proprietary “bugs in a jug”



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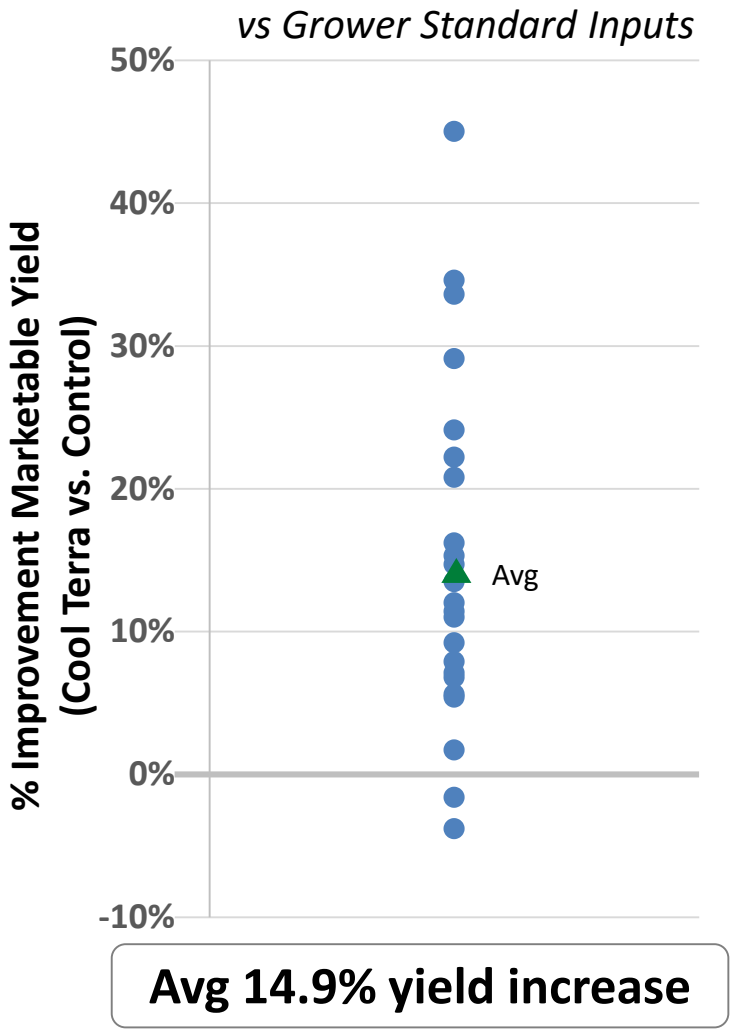
- Compost
- Humic
- Plant Symbiosis
- Other

Could you create a program for your customers that is unique and valuable?

Extensive biocarbon field trials delivered yield increases to dramatically improve grower ROI

Food Security



Selected Trial Results

	Grower Standard	
	Typical levels of water and fertilizer	
Crop, Location	**Yield**	**Grower ROI**
Tomato (FM), FL	9%	5.1x
Lettuce, CA	45%	5.8x
Potato, OR	35%	4.9x
Corn, KS	15%	8.2x

**Each plotted point represents the best performing Cool Terra block for that trial in the grower standard or reduced input program. Removed trials with execution issues that compromised accurate results*

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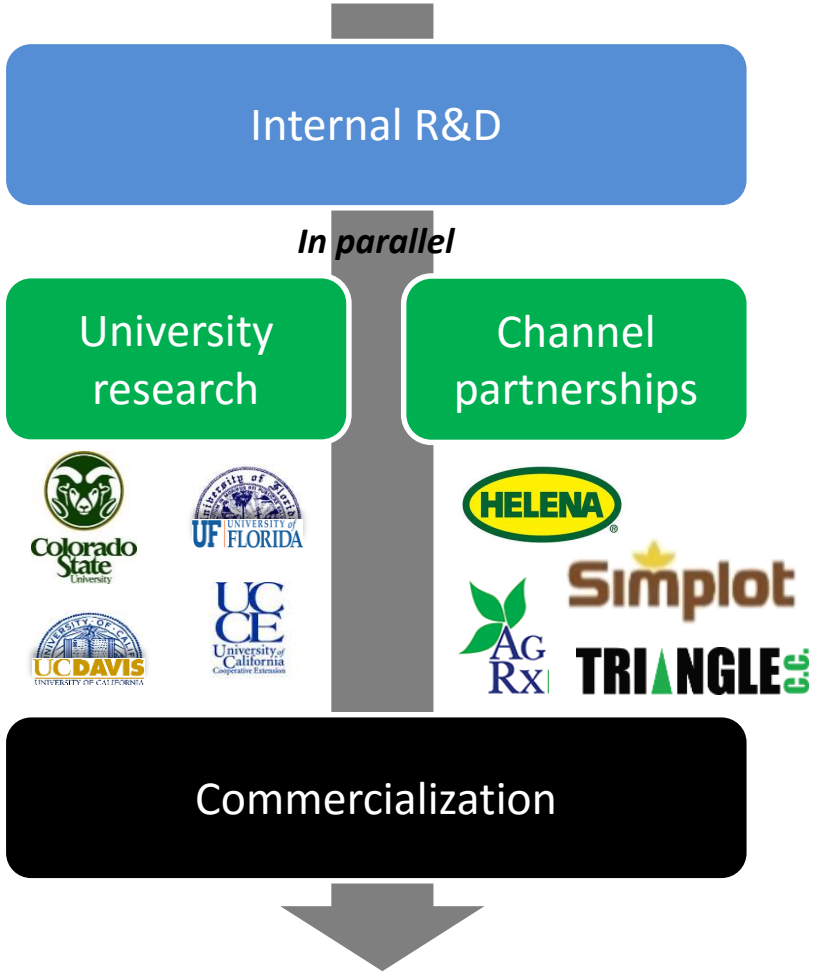
Distribution partners are mobilized; partner list is growing

Key Channel Partners	Relationship Status
***Established* Partners in Production Ag / TNO**	
HELENA	#2 ag retailer in US (450 stores). Completed six trials w/ private R&D group (all strong), Agreement signed December 15, 2016
Simplot	#6 retailer in US (90 stores) heavy presence in Western Region. Deep engagement from executive level down to PCA. Core participants on SHAAC, leading several trials
TRIANGLE C.C.	Regional Southeast Distributor (24 locations, high service and focus in specialty crops). Deep engagement from executive level down to PCA. Core participants on SHAAC, leading several trials
AG RX AN EMPLOYEE OWNED COMPANY	Regional upstart (SoCal based), high service model. Extremely excited about Cool Terra®, pushing aggressively on trials

Partnerships are the proven path to commercialization

Leverages existing assets, credibility, funding, and expertise of leaders in Ag

Partnerships are the established path to new product adoption in Ag



Potential partnerships that could advance the technology in new areas

- R&D to create new product combinations, formulations, and value capture
- Incorporation of Cool Terra® into new, innovative products

Cool Planet can participate in the new wave of investment in soil health and crop biologicals


Soil Health

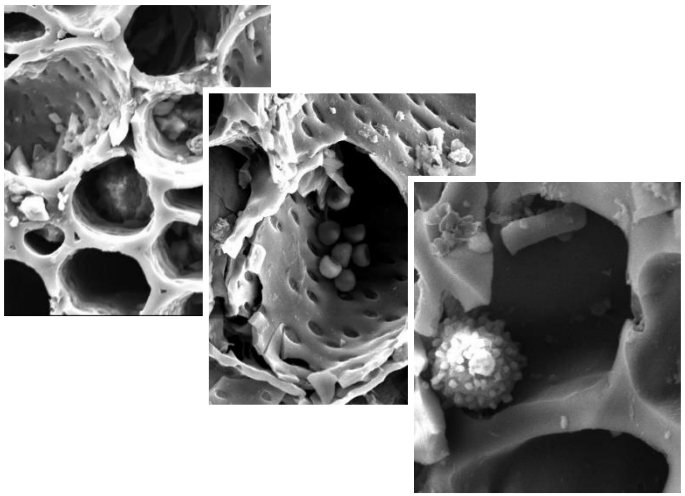
Consumers are demanding less chemical use in the production of their food. The challenge is to maintain grower yield while meeting consumer expectations

As a result, major agriculture companies are investing billions of dollars to develop biological products to achieve the same or improved results

The porosity and materials science of Cool Terra makes it an ideal substrate for biologicals

- Potential to serve as the delivery mechanism of the biological industry (what UPS/FedEx is for the online economy)

Cool Planet is working with leading AgTech companies to establish research partnerships that will advance our microbial delivery capabilities



Microbes living in Cool Terra®

Cool Terra® makes agriculture more sustainable

Sustainability

Carbon Sequestration

Trees **ABSORB** carbon as they grow

Cool Terra production converts and **STABILIZES** carbon

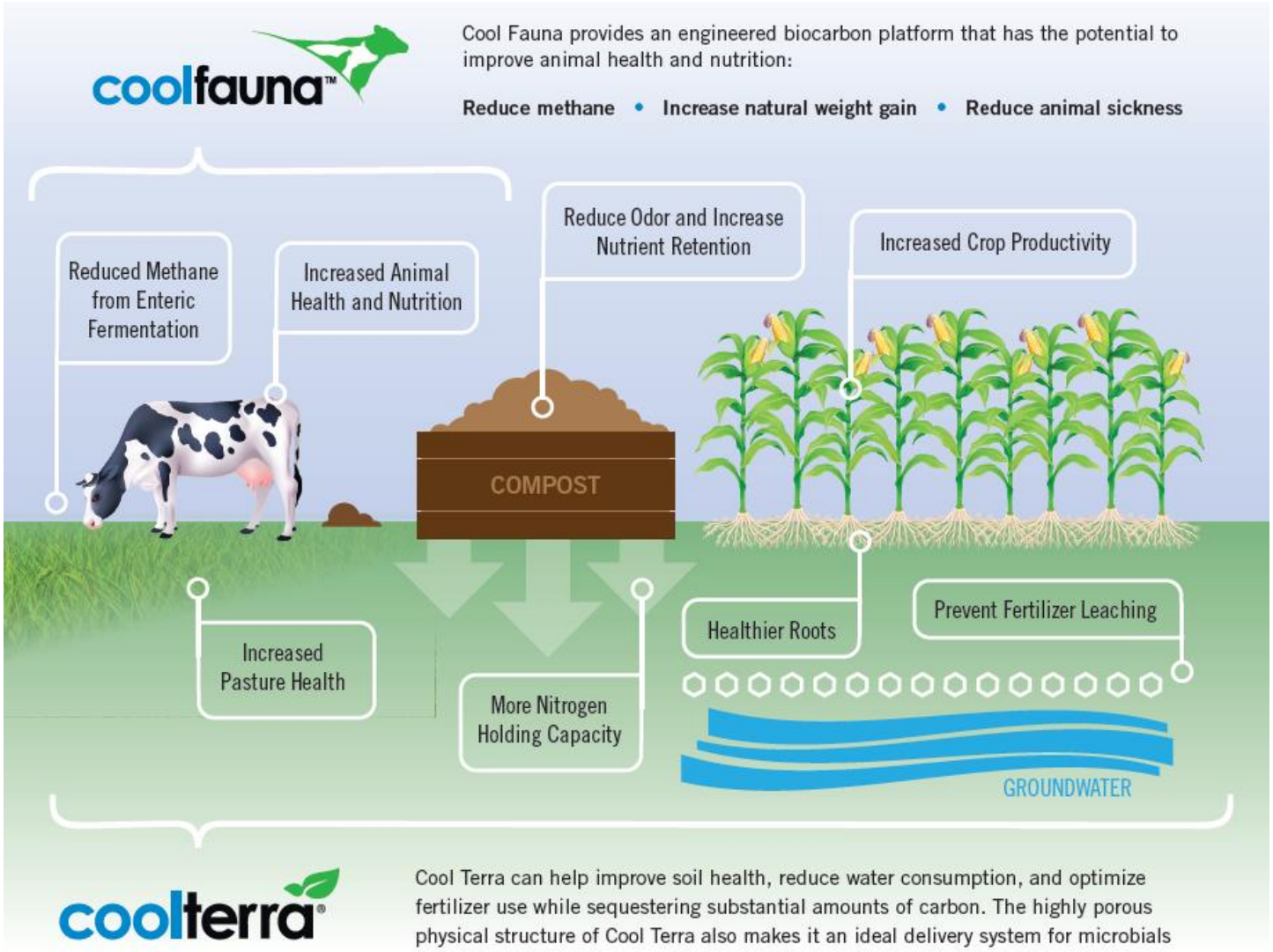
Cool Terra® use helps plants **THRIVE**

Application in crops **SEQUESTERS** carbon

Water and Fertilizer Efficiency

Cool Terra acts like a "**nano sponge**," holding water and nutrients in the root zone

Sustainability for the entire farm/ranch system



Full NEPA Certified site in Alexandria, LA: $10+MM worth of site work and infrastructure complete

Alexandria, Louisiana Capacity and Logistics

- 40,000 – 70,00 cubic yards/year capacity based on feedstock and pyrolysis unit(s) deployed. ($20-$35MM/yr. in revenue potential at $500/cu yd.)
- Ability to bring in “raw biochar” to upgrade via Demetra back-end process
- Ample supply of wood biomass/wood residues in 30-50 mile radius
- Operations center on-site to ensure quality of Cool Terra being shipped
- Significant logistics and transportation cost reduction for Cool Terra delivered to Midwest and Eastern U.S. Markets
- Distributed Model – Easily replicated close to biomass sources and treatable acres.