



Putting the
Power of Nature
to Work

BioAmmonia TM from Biomass
America's Strategic Fuel and Fertilizer



The Problem with Anhydrous Ammonia/Nitrogen

Expensive

Volatile Pricing

Frequent Supply Disruption

>50% is Imported

Made from Fossil Fuels



Ammonia Industry Consolidation

▶▶ 5 companies control 75% of

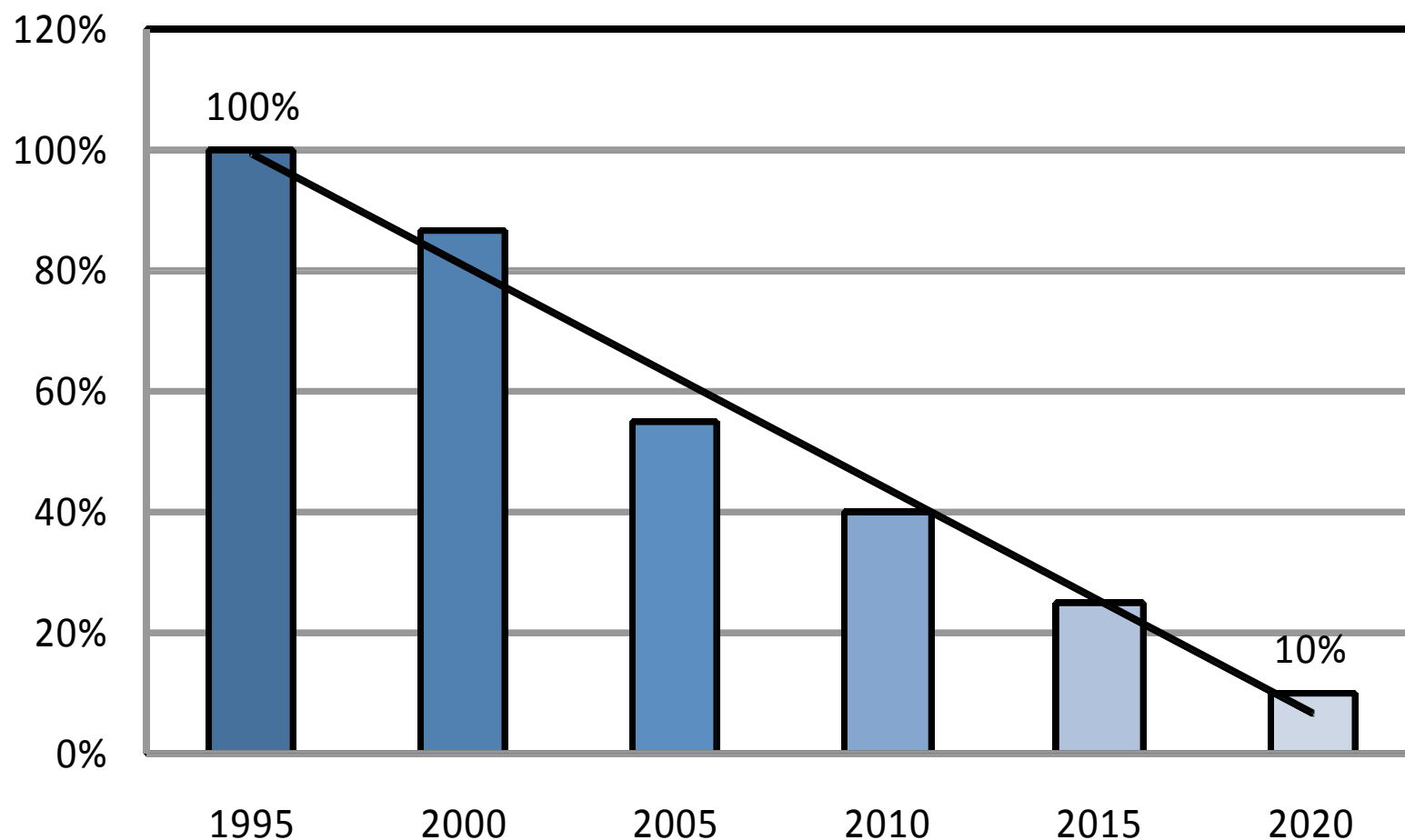
- Agrium Inc.
- Terra Industries Inc.
- CF Industries Inc.
- Koch Industries Company
- PotashCorp



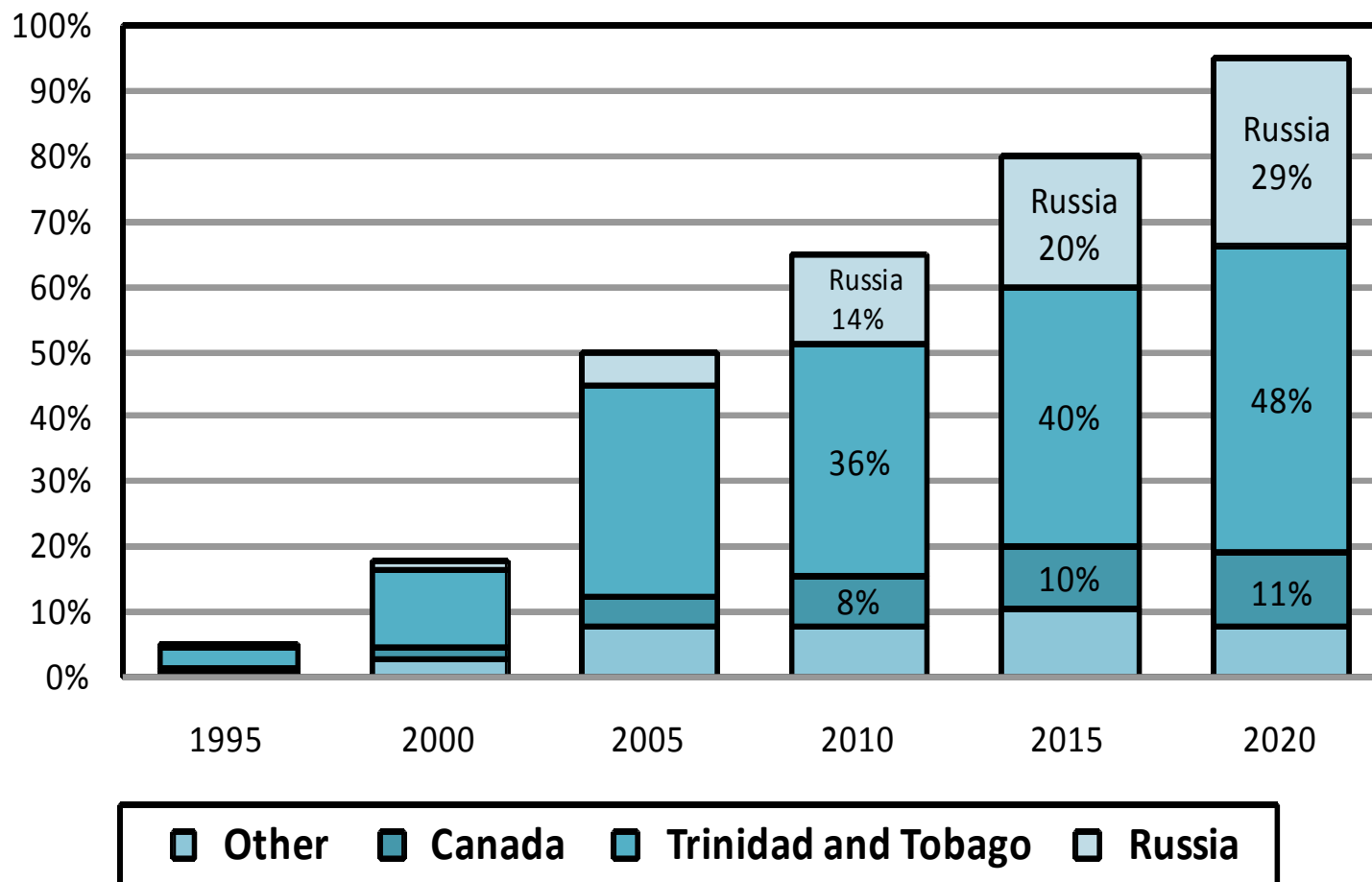
▶▶ Oligopolies Are Bad for Farmers



U.S. Ammonia Production Capacity



U.S. Ammonia Imports



Made from Unused Crop Residue

Stable Pricing

Guaranteed Supply

Replaces Imports

Investment / Jobs / Farm Income





Job Creation / New Farm Income

▶▶ Construction Phase

- 500 construction workers at site
- Budget of about \$105 million

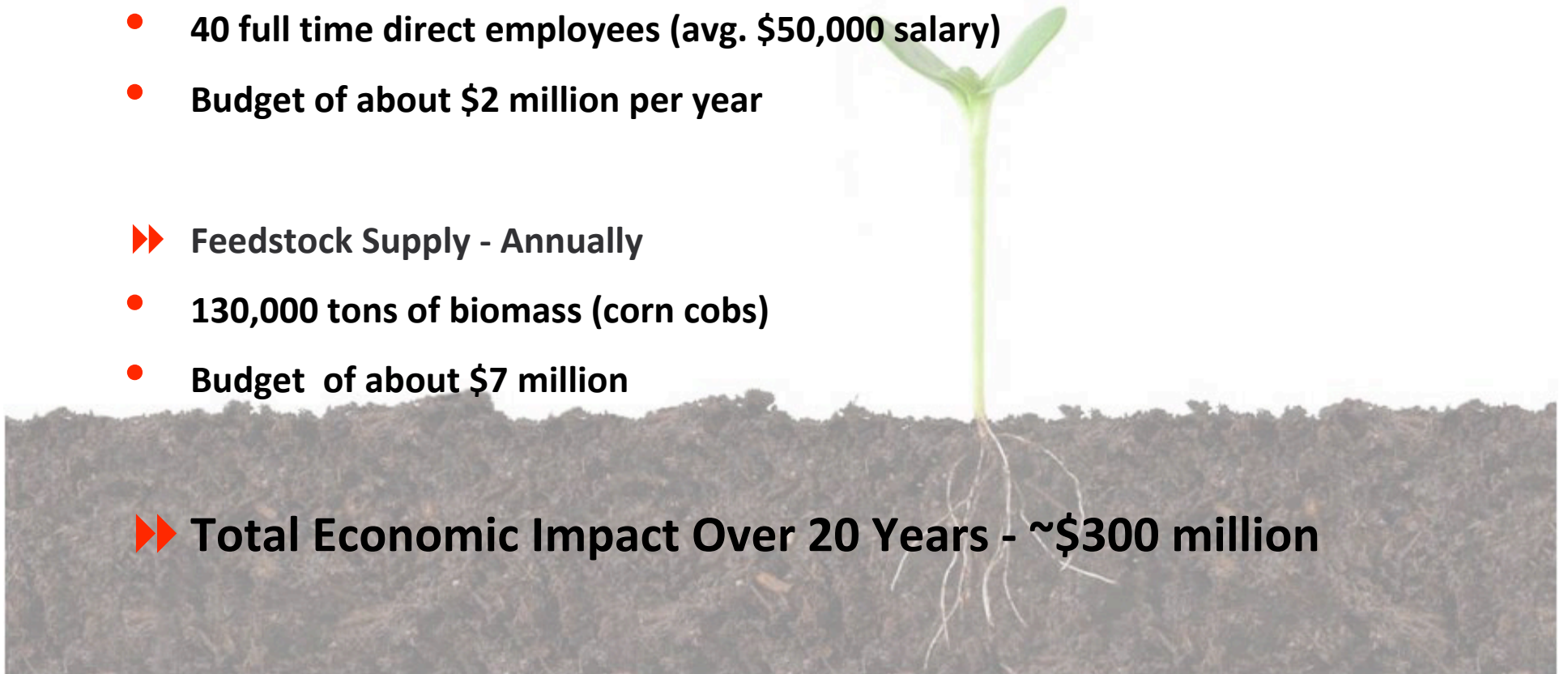
▶▶ Operations Phase

- 40 full time direct employees (avg. \$50,000 salary)
- Budget of about \$2 million per year

▶▶ Feedstock Supply - Annually

- 130,000 tons of biomass (corn cobs)
- Budget of about \$7 million

▶▶ Total Economic Impact Over 20 Years - ~\$300 million



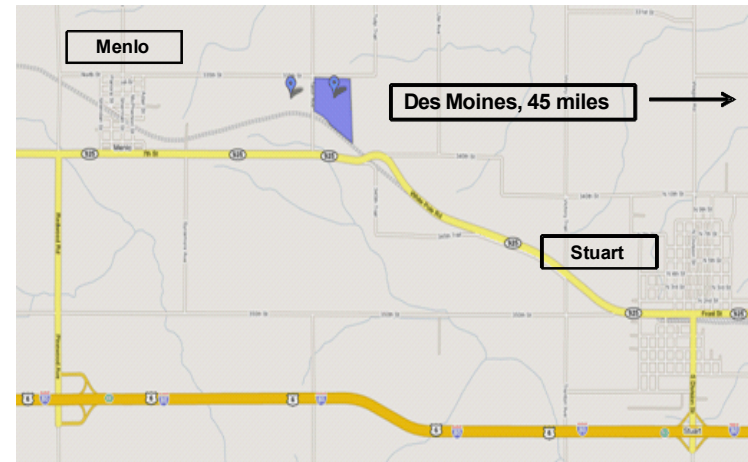


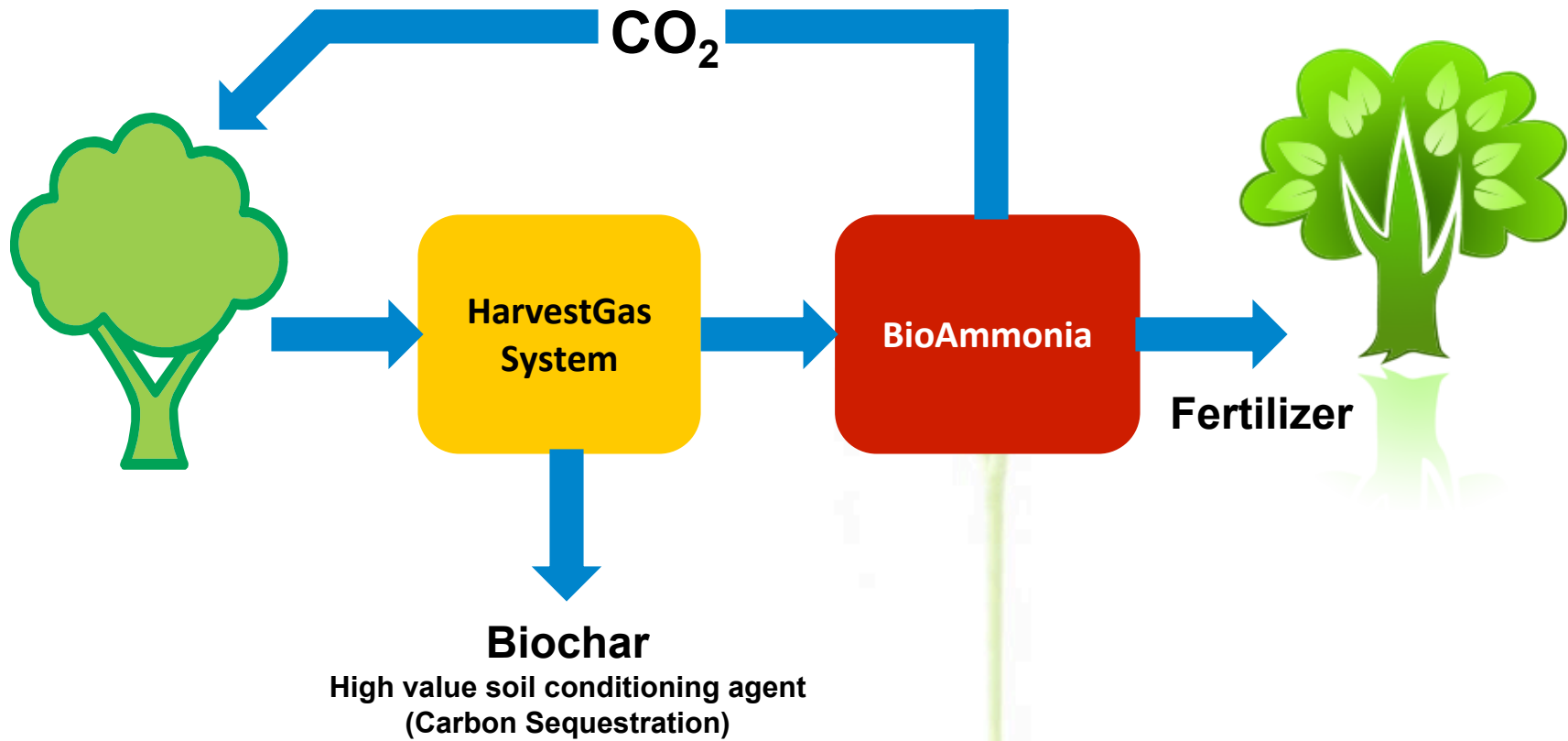
SynGest Menlo LLC/ Proposed First Site

- ▶▶ 3550 Talon Avenue, Menlo, IA 50164
- Option on 75 acres
 - Adjacent to operating ethanol plant
 - Near Interstate 80 (7 miles)
 - Rail access to the site
 - 45 miles from Des Moines



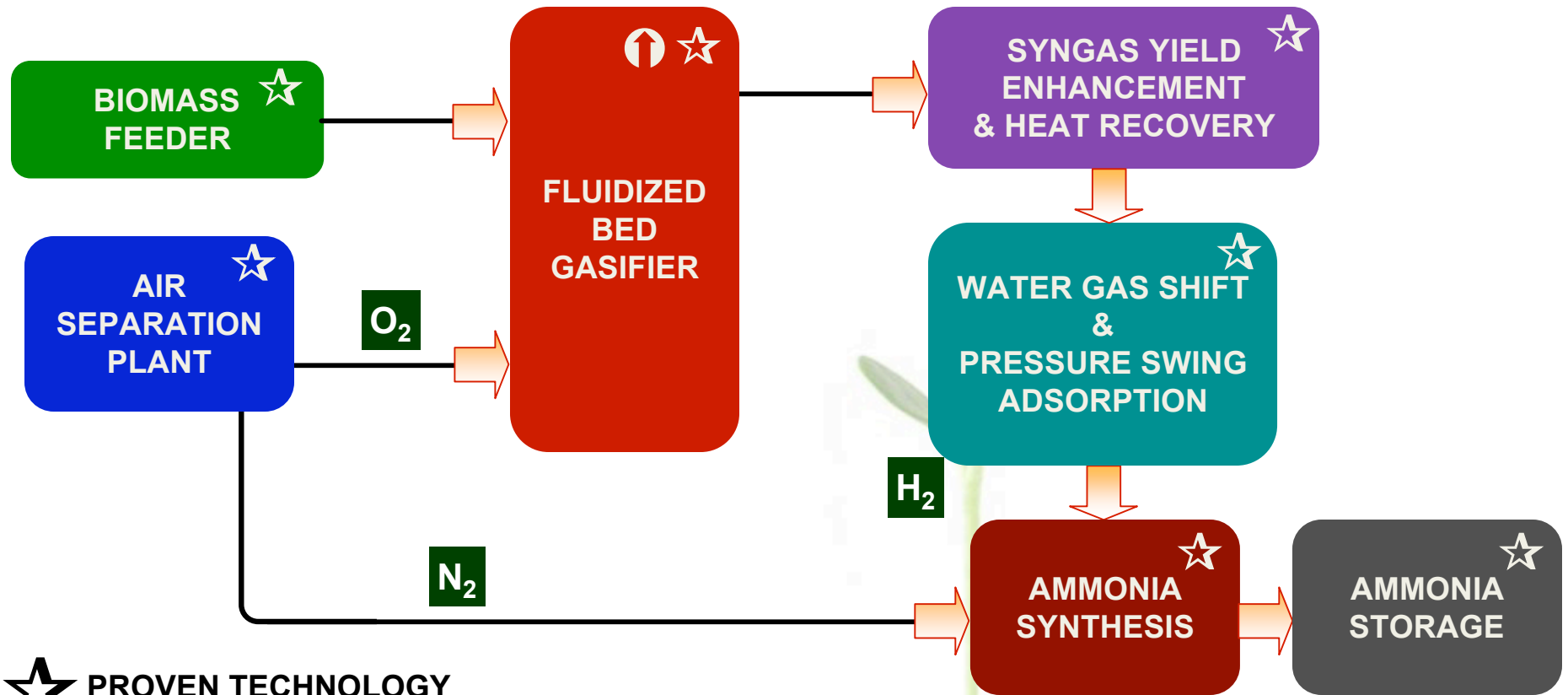
Proposed Site – Menlo, IA





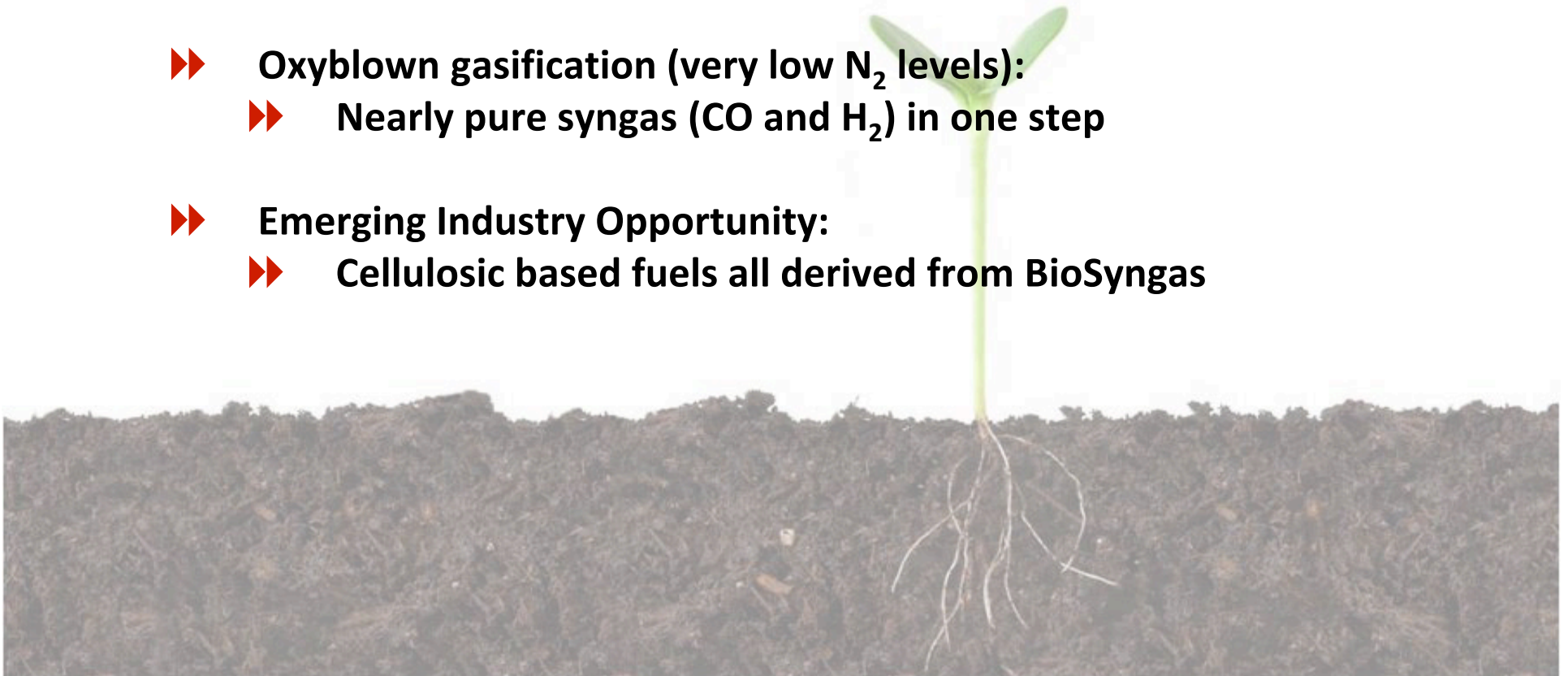


SynGest BioAmmonia™ Process

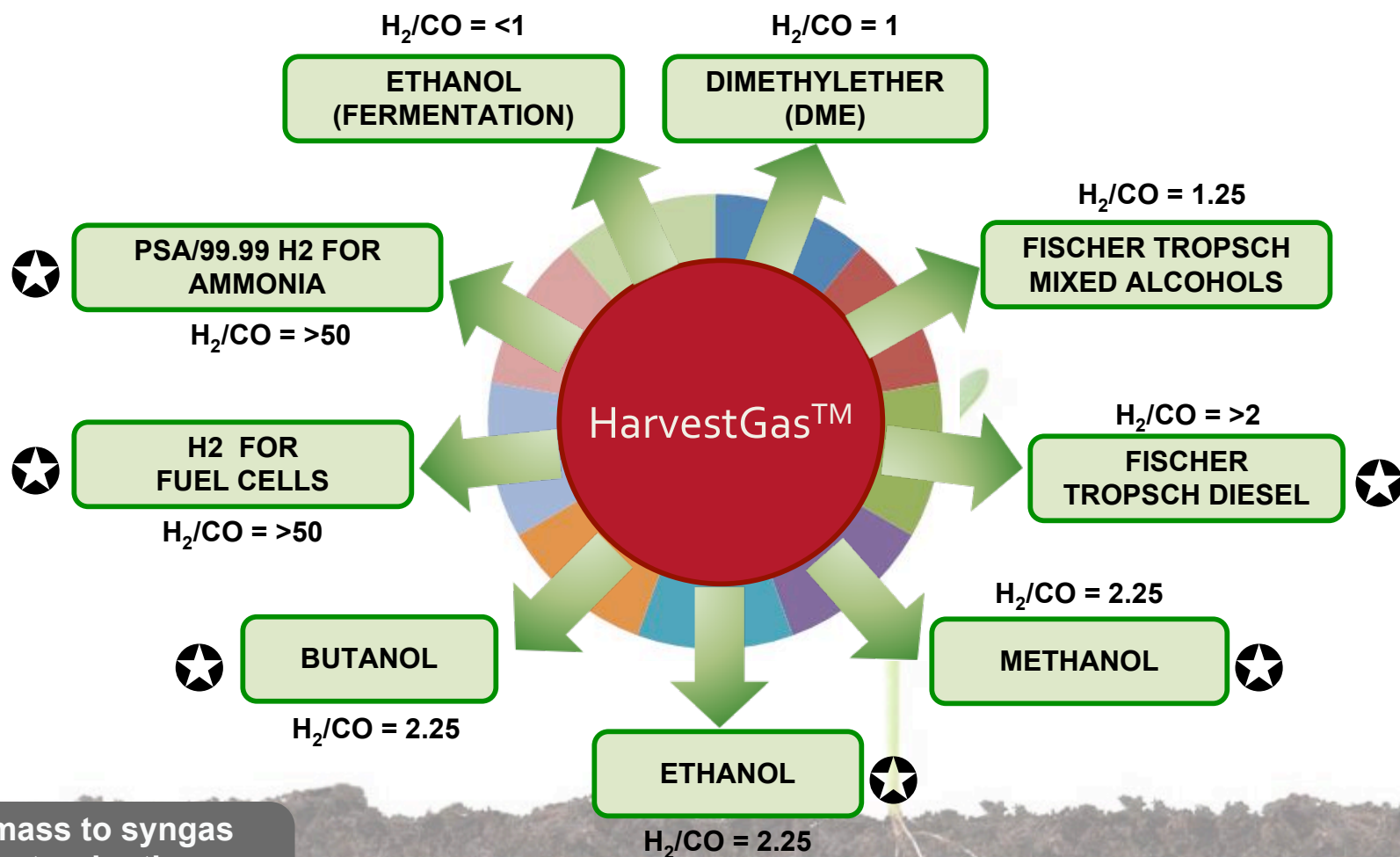


★ PROVEN TECHNOLOGY

- ▶▶ **Current biomass gasification:**
 - ▶▶ **High BTU gas for fuel value (i.e. high methane content)**
- ▶▶ **Low methane syngas: a hub for new biofuels**
- ▶▶ **Oxyblown gasification (very low N₂ levels):**
 - ▶▶ **Nearly pure syngas (CO and H₂) in one step**
- ▶▶ **Emerging Industry Opportunity:**
 - ▶▶ **Cellulosic based fuels all derived from BioSyngas**



Syngas/BioSyngas Applications

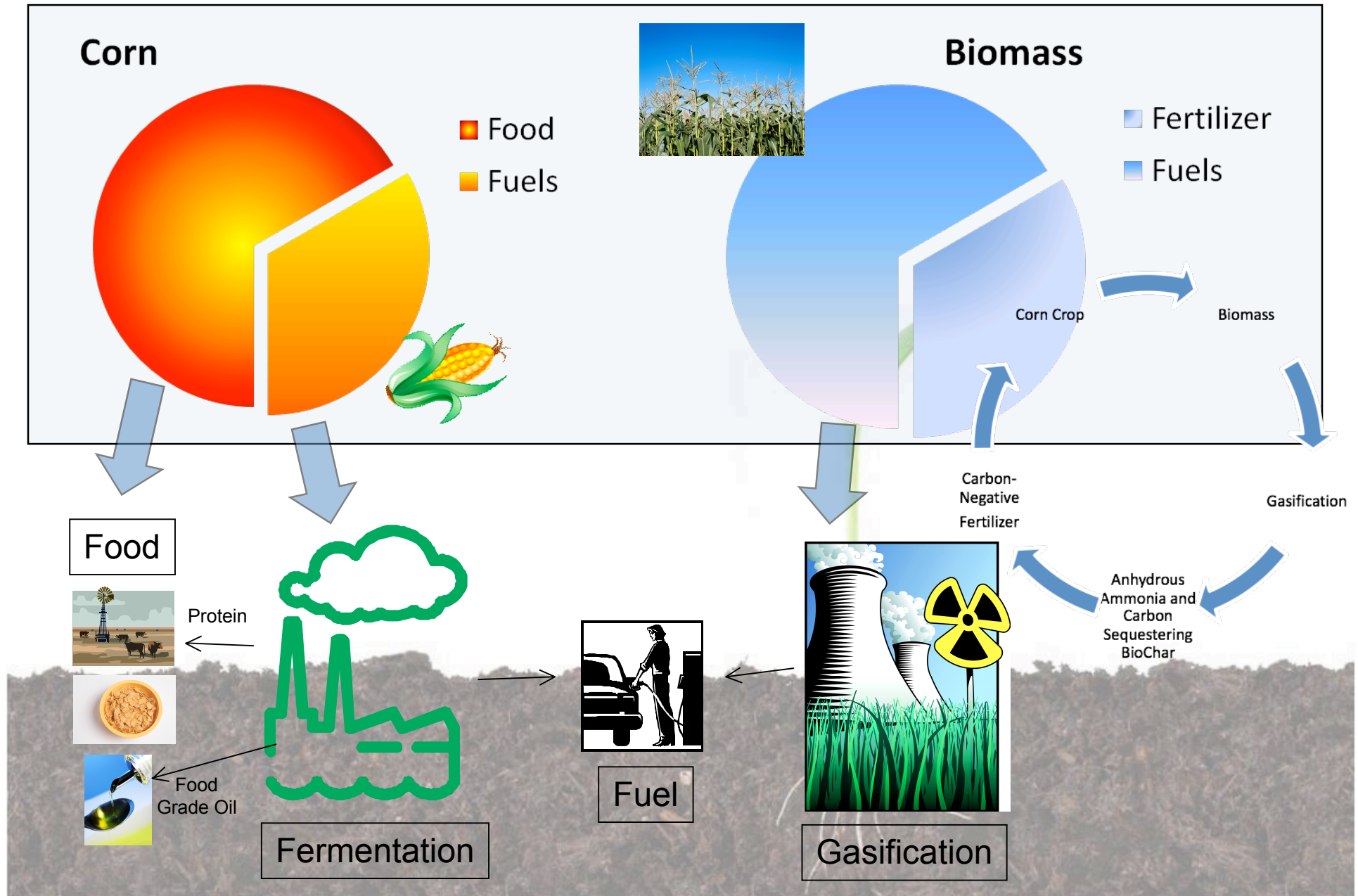


★ with water gas shift



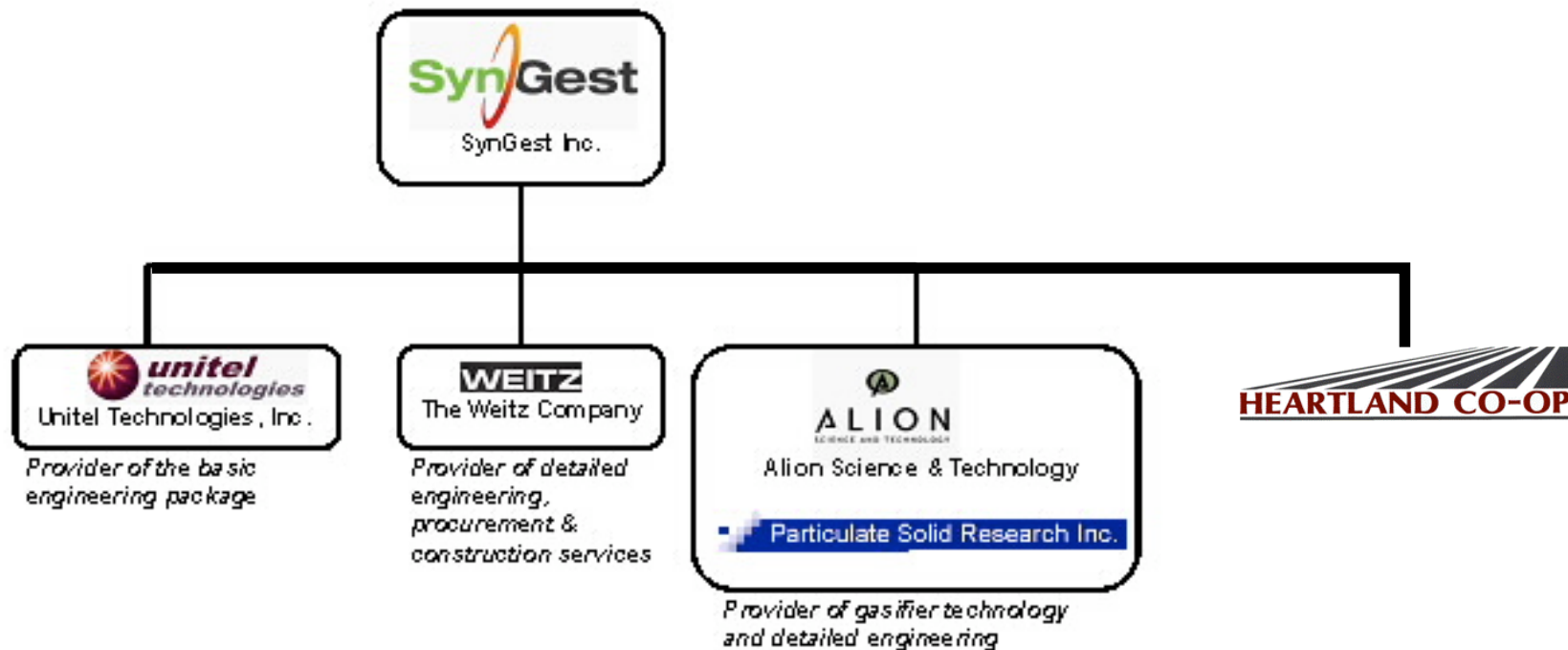
Mini BioRefinery Complex

Maximizing Food and Fuel Production from Every Acre





Core Team with an Accomplished Record





Unitel's Record of Success



United States Steel Chinese Petroleum Corporation (Taiwan) Indian Oil Corporation Al-Jubail Petrochemicals United States Army

AGIP Mobil Research ARCO Pfizer Nutrasweet Yukong

Abbott Air Products J.M. Huber Koch Research Occidental Research

Union Oil Chock-full-o'-Nuts DSM SWRI Sun Oil

Alcoa Korea Explosives W.R. Grace

Aristech Chevron Tennessee Eastman Petro-Peru

Texaco UNIDO (India)

Akzo CONOCO Sherex

Marathon Ashland Argonne National Laboratory Modar Polysar Rohm & Haas Petro-Canada

Ausimont DuPont Exxon Chemical S.C. Johnson & Sons

Dow Chemical Engelhard Exxon Oil Huls AG Procter & Gamble

Tenneco Oil United States Air Force 3M Olin Quantum Union Carbide

Baxter Fina Syncrude Monsanto Neste Oy Quest International

BF Goodrich Unilever Dow Corning Rhone Polulenc


BP Lyondell Samsung Phillips

Canmet Henkel Corn Products Motorola

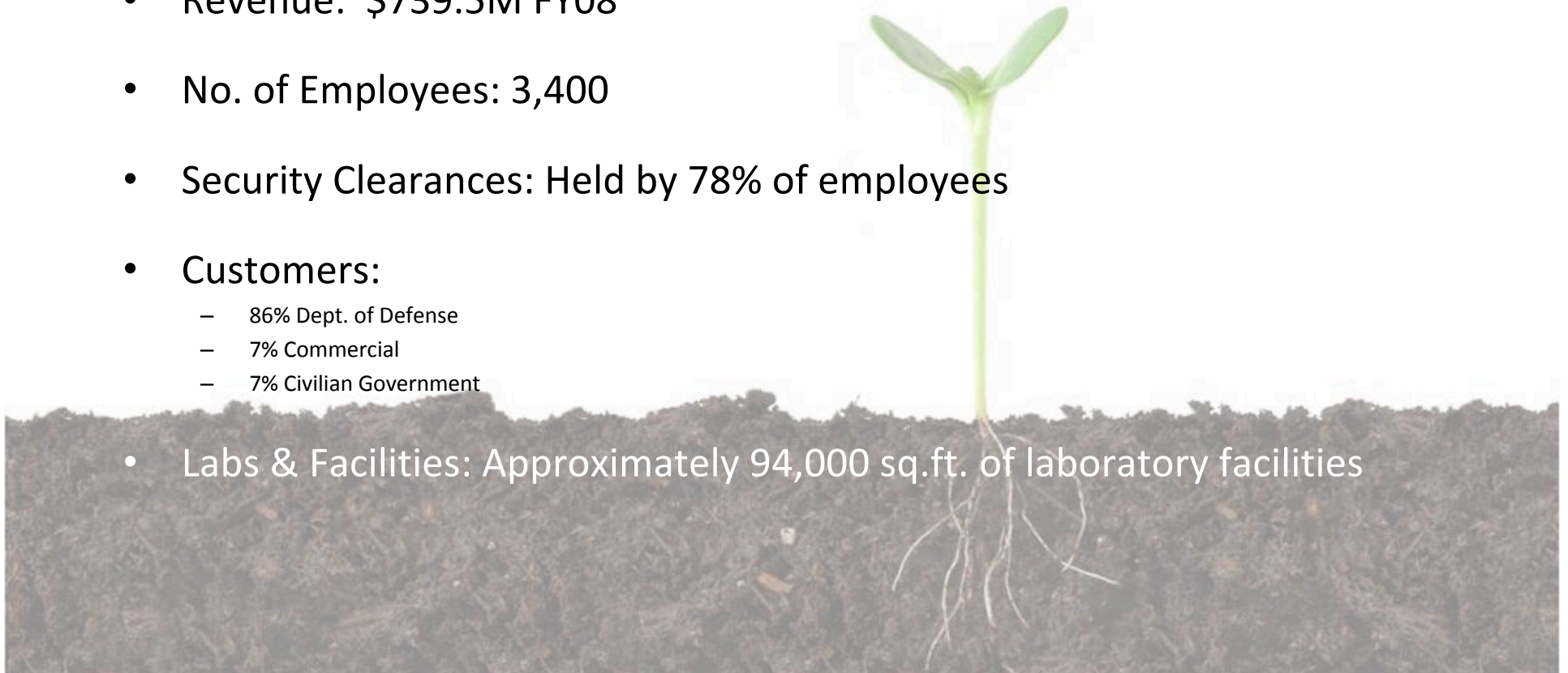
Celanese Melamine Chemicals Tonen

General Electric Plastics Hexcel USI National Bureau of Standards Shell Development

U.S.G. Corporation Nalco Chemical Hoechst University of Texas, Austin University of California, Berkeley



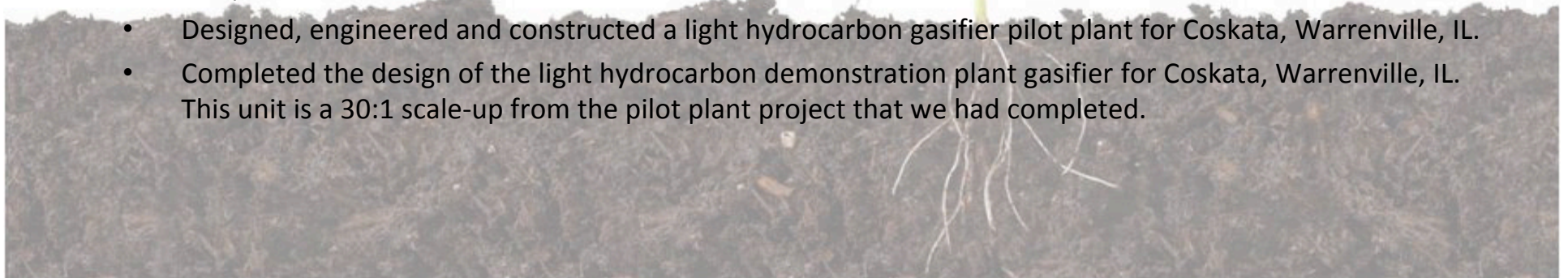
- Employee-owned technology solutions company
 - Delivering technical expertise and operational support to the Department of Defense, civilian government agencies and commercial customers.
- Formed in December 2002 with 1600 employees of the IIT Research Institute (IITRI) (founded in 1936)
- Revenue: \$739.5M FY08
- No. of Employees: 3,400
- Security Clearances: Held by 78% of employees
- Customers:
 - 86% Dept. of Defense
 - 7% Commercial
 - 7% Civilian Government
- Labs & Facilities: Approximately 94,000 sq.ft. of laboratory facilities





SynGest Engineering - Completed Gasifier Projects

- Design of a TRI type gasifier for Diesel Brewing in Oregon.
- Heavy residual oil gasification pilot plant capable of working up to 80 bar. Project for the Institute of Gas Technology, Des Plaines, IL USA.
- Rotary solids fuel gasification system for Next Energy, Detroit, Michigan under a US Dept. of Defense contract.
- Autothermal gasification plant for Engelhard/BASF, New Jersey. This plant was designed for autothermal reforming of light hydrocarbons with oxygen and enriched air. It was capable of operating up to 1,000 psig.
- Agglomerating bed gasifier demonstration plant for the Institute of Gas Technology, Des Plaines, IL USA.
- Hazardous waste gasification demonstration plant for Kyung-Ho Engineering, Seoul, Korea. Gasifier works with 90% oxygen.
- Electro kinetic gasifier for hazardous waste gasification (Skygas) for MPM Technologies, Inc., Spokane, WA USA.
- Electro kinetic gasifier for municipal solid waste gasification (Skygas) for Smogless SPA, Milan, Italy.
- Black liquor gasifier, Institute of Paper Chemistry, Appleton, WI USA.
- Simulation of HT-Gas and U-Gas gasifier units for the Institute of Gas Technology, Des Plaines, IL USA.
- Petroleum coke gasifier for Standard Oil of Indiana (Amoco Corporate Research Center, Naperville, IL USA).
- Designed, engineered and constructed a light hydrocarbon gasifier pilot plant for Coskata, Warrenville, IL.
- Completed the design of the light hydrocarbon demonstration plant gasifier for Coskata, Warrenville, IL. This unit is a 30:1 scale-up from the pilot plant project that we had completed.





Next Hurdle: Feedstock (Corn Cob) Logistics

- Enlisted USDA/FSA Support via BCAP
- Major focus for SynGest –Engaging Multi-disciplinary Study Group
 - Study/Focus groups
 - Producers: Held session on 8/24/09
 - Confab: Scheduled 10/26/09
 - Farmer/Entrepreneurs/Logistics
 - Iowa Corn Growers Assn
 - Harvesting equipment manufacturers
 - POET
 - University researchers at Iowa State, U. of Minnesota and Penn State
- Currently running field trials - transport and storage
- Awaiting results of VAAST group study/report



- Natural Gas Expected Pricing: \$6-\$8/MMBTU
- Anhydrous Ammonia Expected Price \$500-\$800/ton
- Gasoline Equivalent Pricing
 - \$500/ton \$3.14/gal
 - \$557/ton \$3.50/gal
 - \$800/ton \$5.03/gal



Ammonia – America's Strategic Fuel and Fertilizer

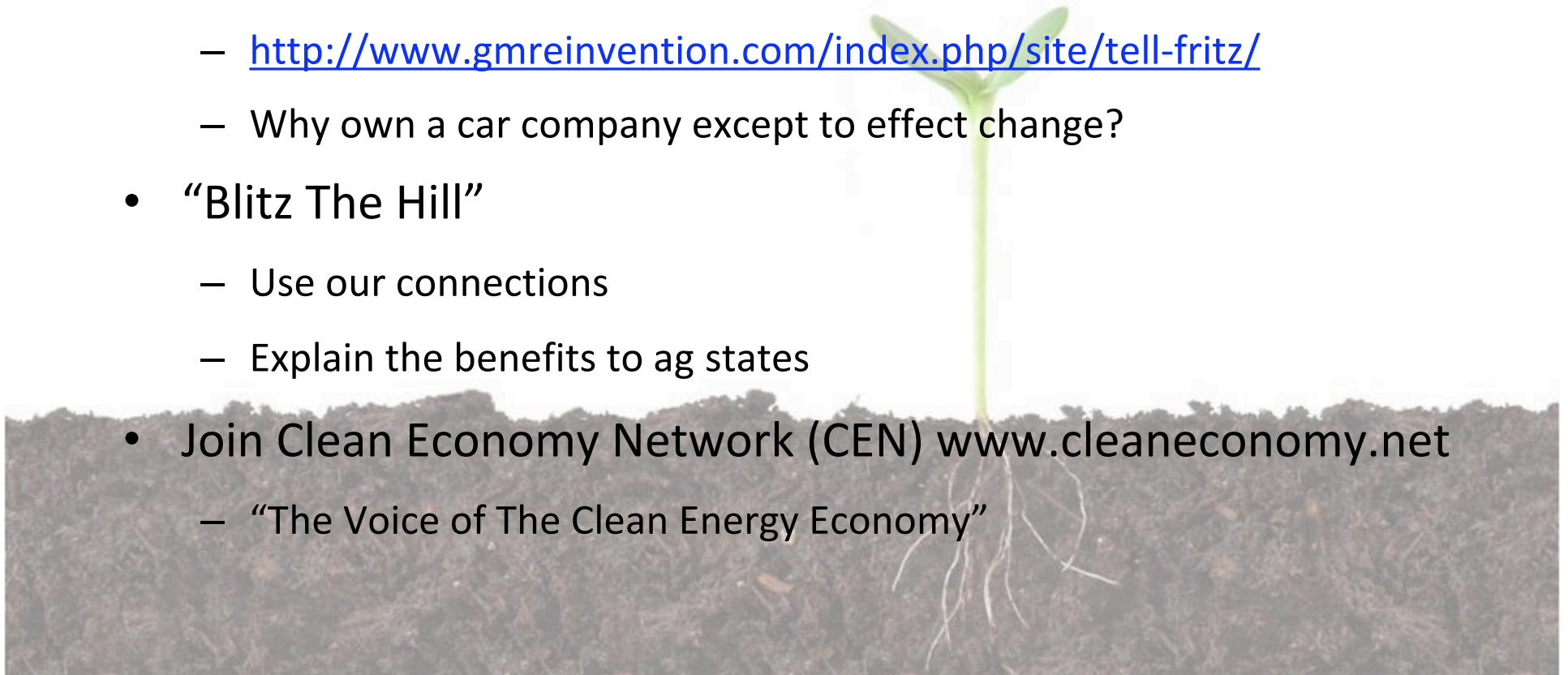
- Only need 33% of available crop residue to make 100% fertilizer
- The rest will be fuel – preferably ammonia
- Potential to make all of agriculture fossil fuel independent





Declaration of Energy Independence - Call To Action

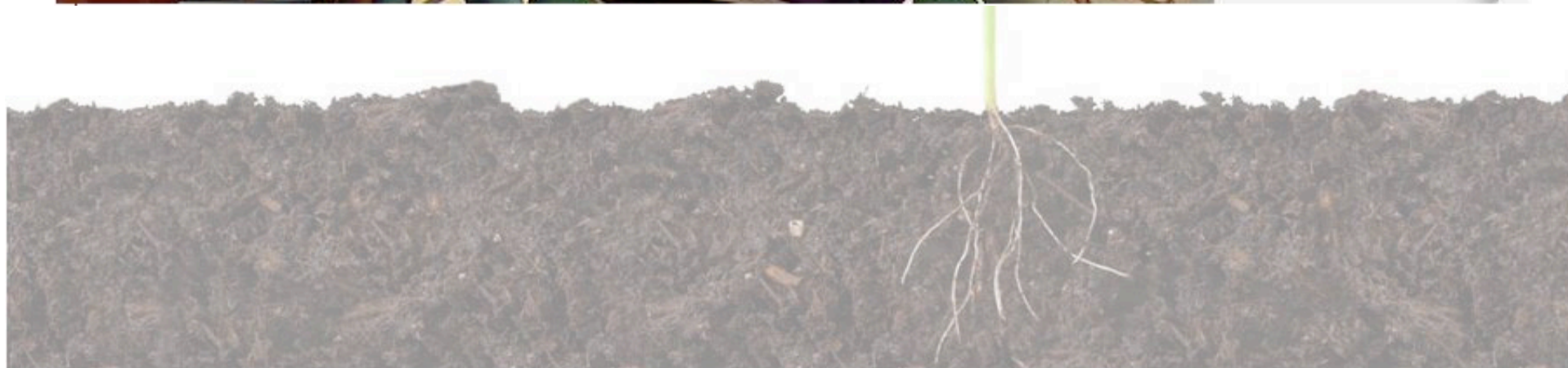
- USDA – Already recognizes ammonia as an Advanced Biofuel
- DOE – Keep the pressure on
- “Tell Fritz”:
 - <http://www.tellfritz.org/>
 - <http://www.gmreinvention.com/index.php/site/tell-fritz/>
 - Why own a car company except to effect change?
- “Blitz The Hill”
 - Use our connections
 - Explain the benefits to ag states
- Join Clean Economy Network (CEN) www.cleaneconomy.net
 - “The Voice of The Clean Energy Economy”





Ammonia STORY

TO ENERGY
INDEPENDENCE
AND BEYOND





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BioAmmonia* from Biomass

Coming soon to Menlo, Iowa

America's Strategic Fuel and Fertilizer

***100% organic fertilizer**

