INTERNATIONAL BIOMASS CONFERENCE & EXPO

May 4-6, 2010
Minneapolis Convention Center
Minneapolis, MN

Jack Oswald

CEO

SynGest Inc.

20 Questions

"What's a guy from San Francisco doing out here?

Visit

Meeting
(In-person preferred)

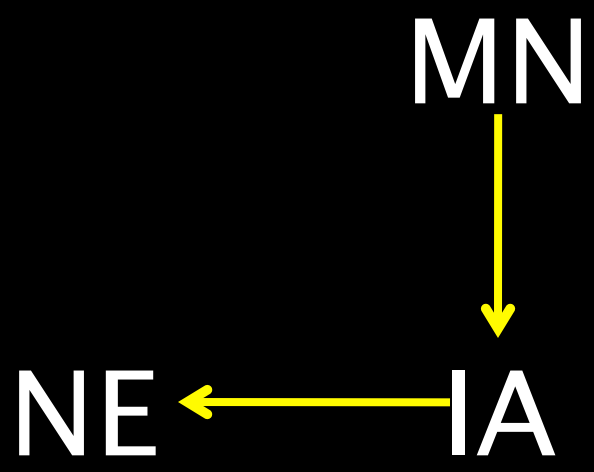
Phone call

Anhydrous

Anhydrous Ammonia

Vegetable

"Vegetables, it's what food eats…"



Example of the Coriolis Effect

Cornucopia BioRefinery™

The Three F's:
Food, Fertilizer and Fuel™

Cornucopia Model - Credits

Jim Eiler, Eiler Capital Advisors

Dave Coppess and team, Heartland Coop

Doug Holliday, IA Corn Growers Assoc.

Pete Moss and team, Frazier Barnes and Assoc.

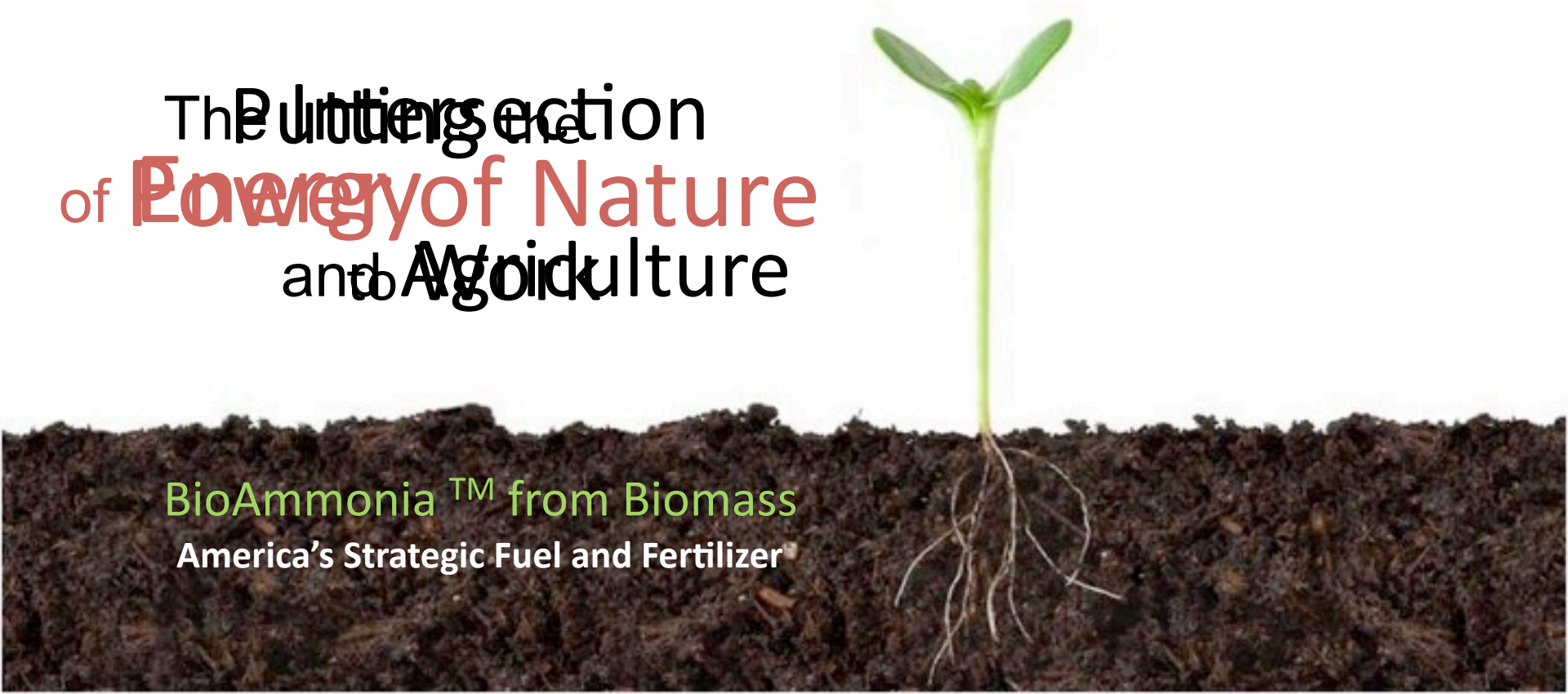
Dr. Robert Brown, Iowa State U.

Dr. Ravi Randhava, CTO, SynGest Inc.

SynGest

The Intersection of Energy and Agriculture

Putting the Power of Nature to Work



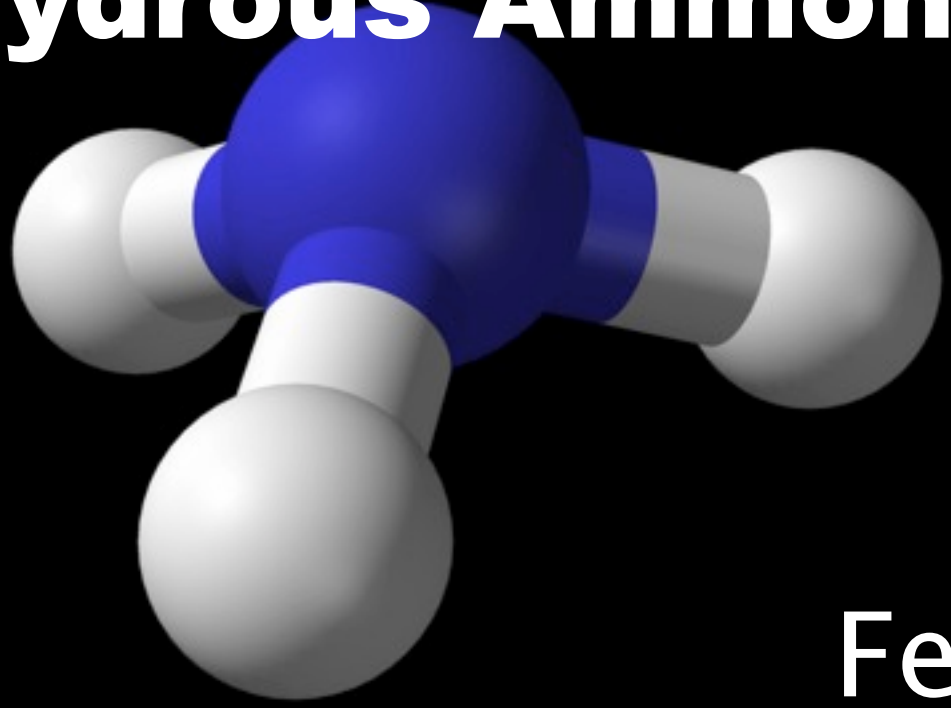
BioAmmonia ™ from Biomass

America's Strategic Fuel and Fertilizer

SynGest

Commercialization Of a Private R&D Lab

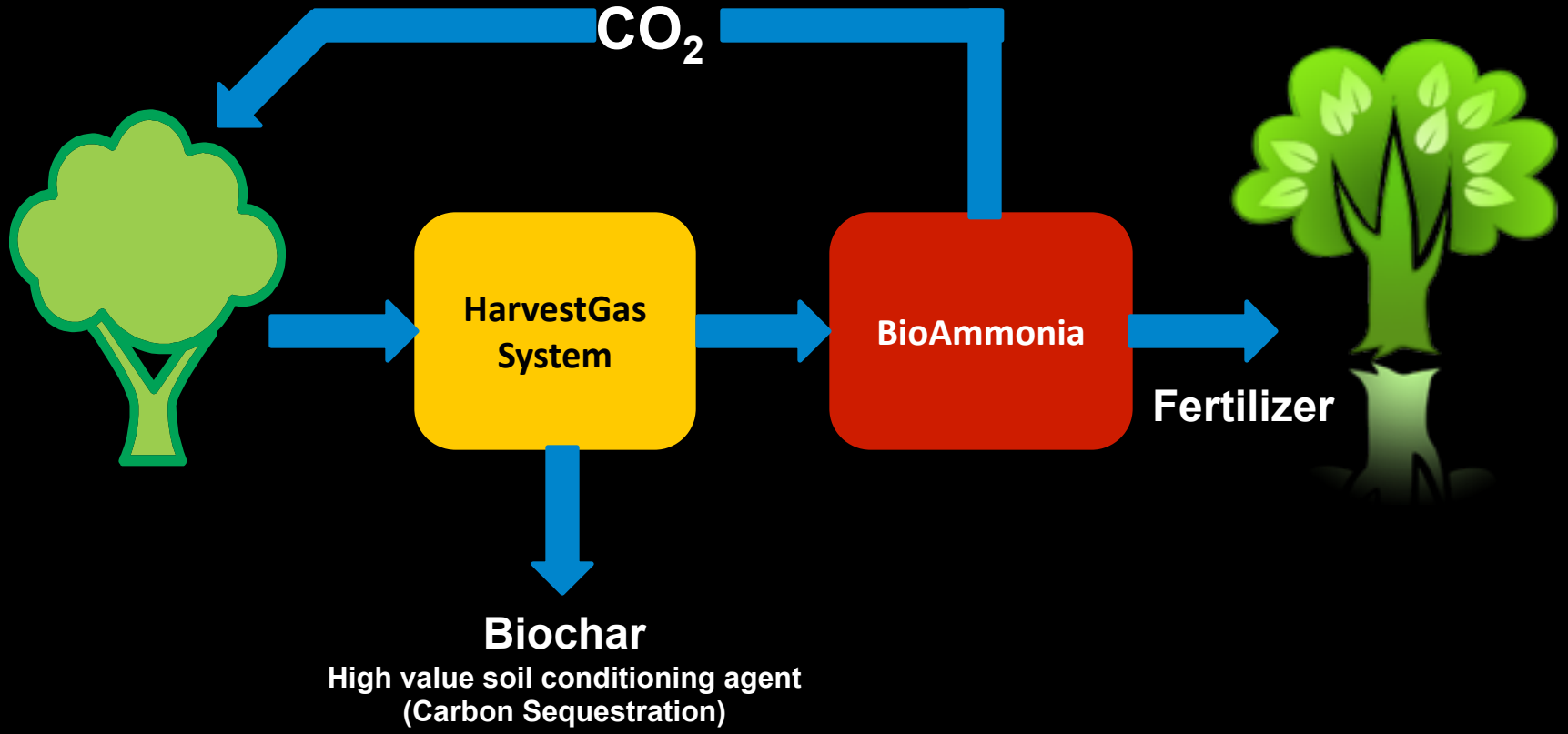
Anhydrous Ammonia



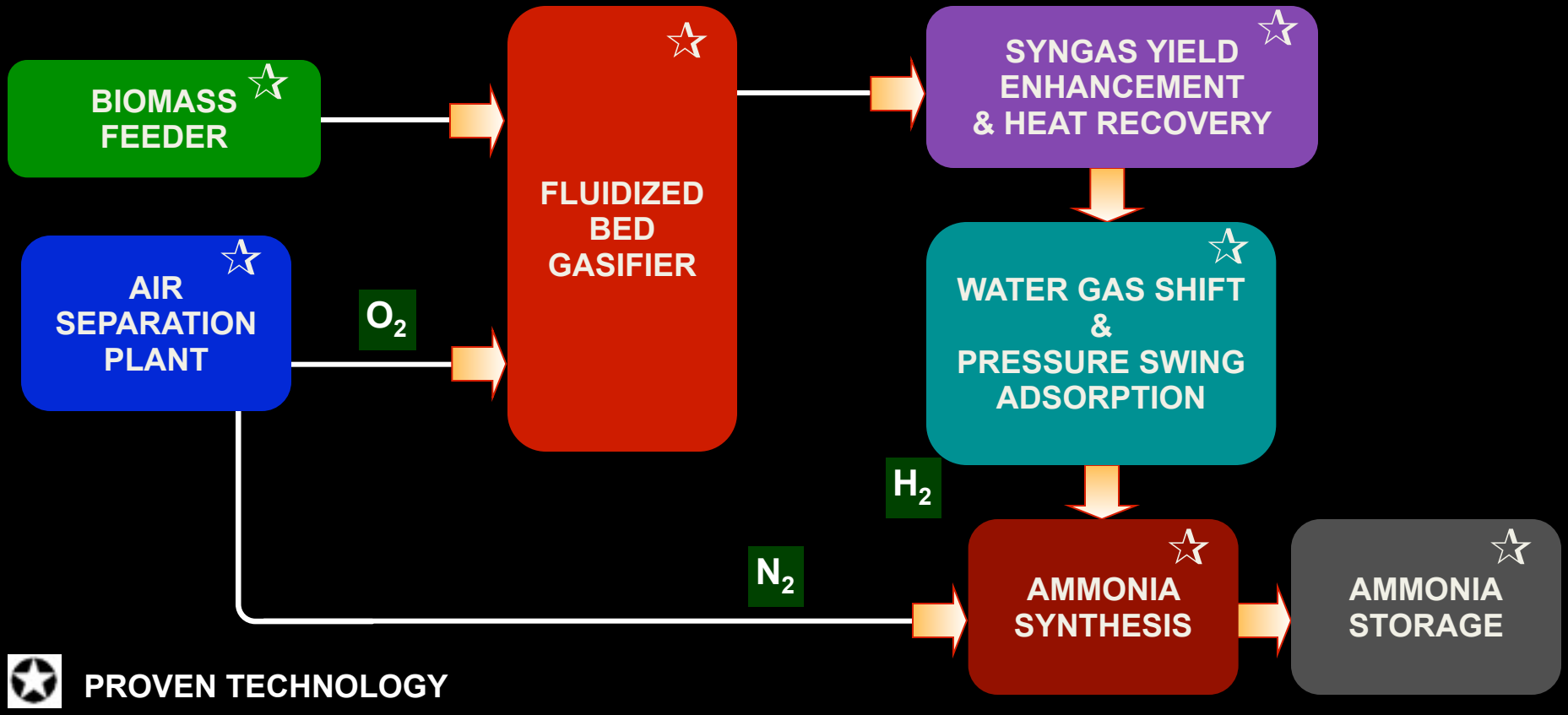
Fuel

Fertilizer

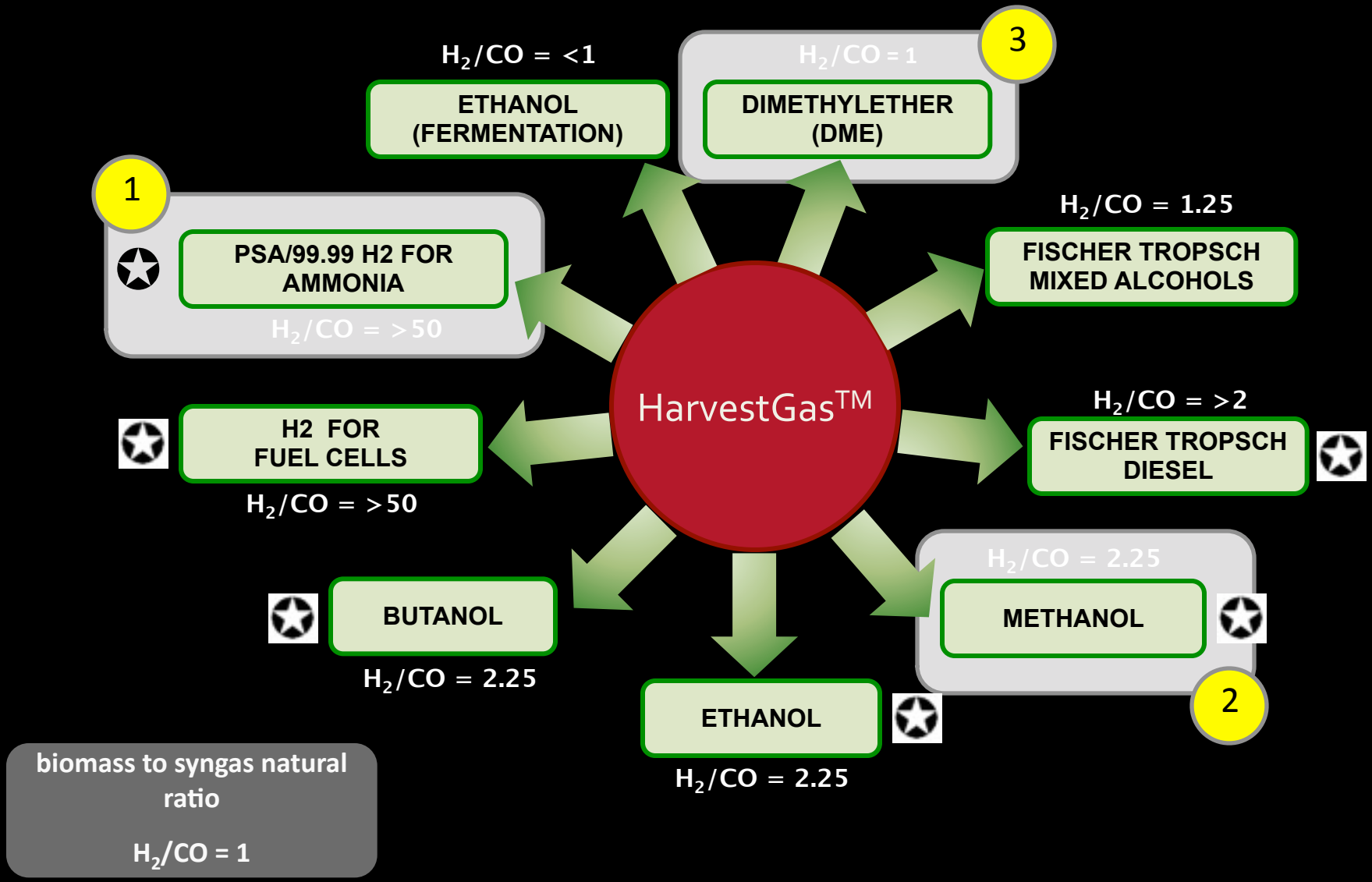
Biochar makes SynGest Carbon Negative



SynGest BioAmmonia™ Process



Syngas/BioSyngas Applications



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

Biomass requirements: 130,000 TPY

Biomass Drove the Design

Low cost

Availability

Re-modeling:

- Started with a paint job
- Ended re-building the whole house

Biomass Considerations

- Maximum sustainably harvested crop residue
- Cheap
- Stover: ?
- Corn cobs: 100% harvestable annually

Corn Cobs

"How are you going to collect all those cobs?"

Corn Cob Harvest Research

- Focus groups
- Equipment manufactu
- Academic researchers
- Logistics
- Interested businesses
- Biomass Conference: IA State BECON Center

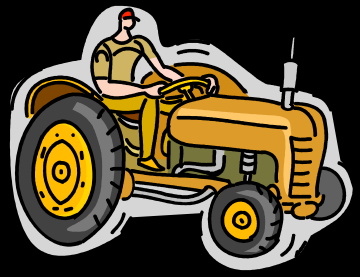
Key Criteria

Farmers

- Inexpensive
- Slipstream

Bankers

- 100% annually reliable
- Credit worthy supplier

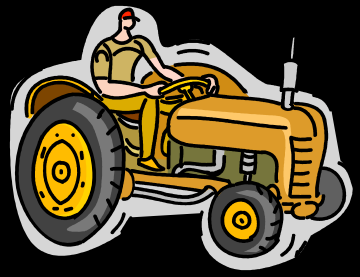


Farmer Concerns

"If it slows me down I am not interested"

"During a challenging harvest, I'll unhook it, or turn it off, and you won't get your cobs"

Rational Response: Must protect core business



Conclusion 1: Farmer Driven

Must slipstream with existing harvest approach

Must protect the core business

Finance Concerns

Biomass supply chain must be 100% reliable

Requires “credit worthy” harvesting and supplier(s)

Supply contract terms match the term of the loan

Conclusion 2: Finance Driven

Includes Conclusion 1: Farmer Driven

Supplier must have a track record

Supplier must provide a guarantee of delivery

Limited Options

Cornucopia BioRefinery™

Not your typical
“breakthrough”

Cornucopia Technology

Slipstream biomass harvesting
Dry milling – a.k.a. Fractionation
Fermentation
Gasification
Food-grade oil extraction

Slipstream Harvesting

Corn / Corn cob mix

Reliable

Addresses Farmer and Finance Concern

Leverages existing coop infrastructure

Inexpensive: $15/T JIT delivered cost

Fractionation

Endosperm (starch) =

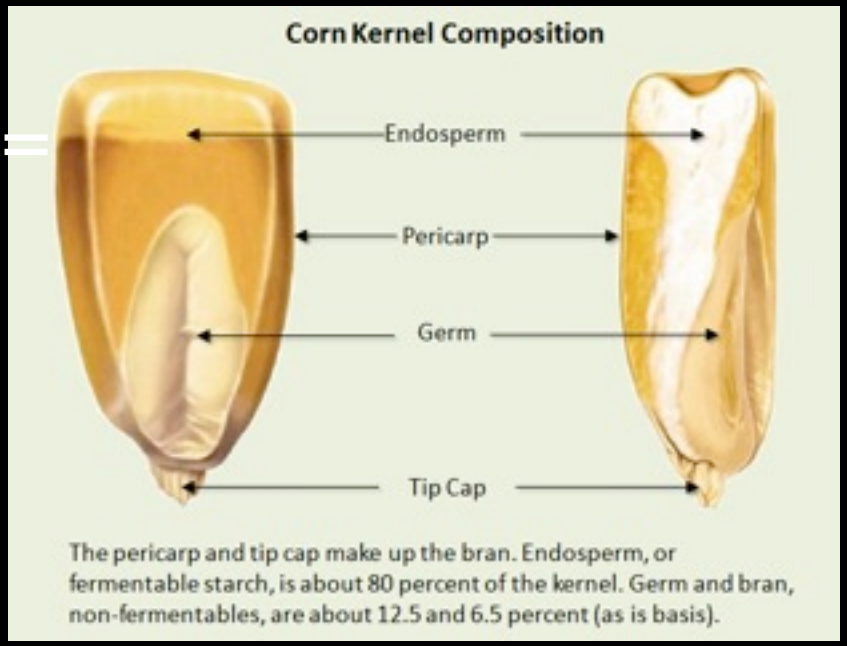
fermentation

Germ = food-grade vegetable oil /

protein

Bran and cobs (cellulose) =

gasification



Fermentation

- Endosperm (starch) fermented into fuels
- Today = Ethanol
- Soon = BioButanol, Diesel, etc. a.k.a. "Drop-in"
- 20% increase in production for existing plants
- Lower cost per gallon
- Higher net energy
- Lower carbon content

SynGest Gasification

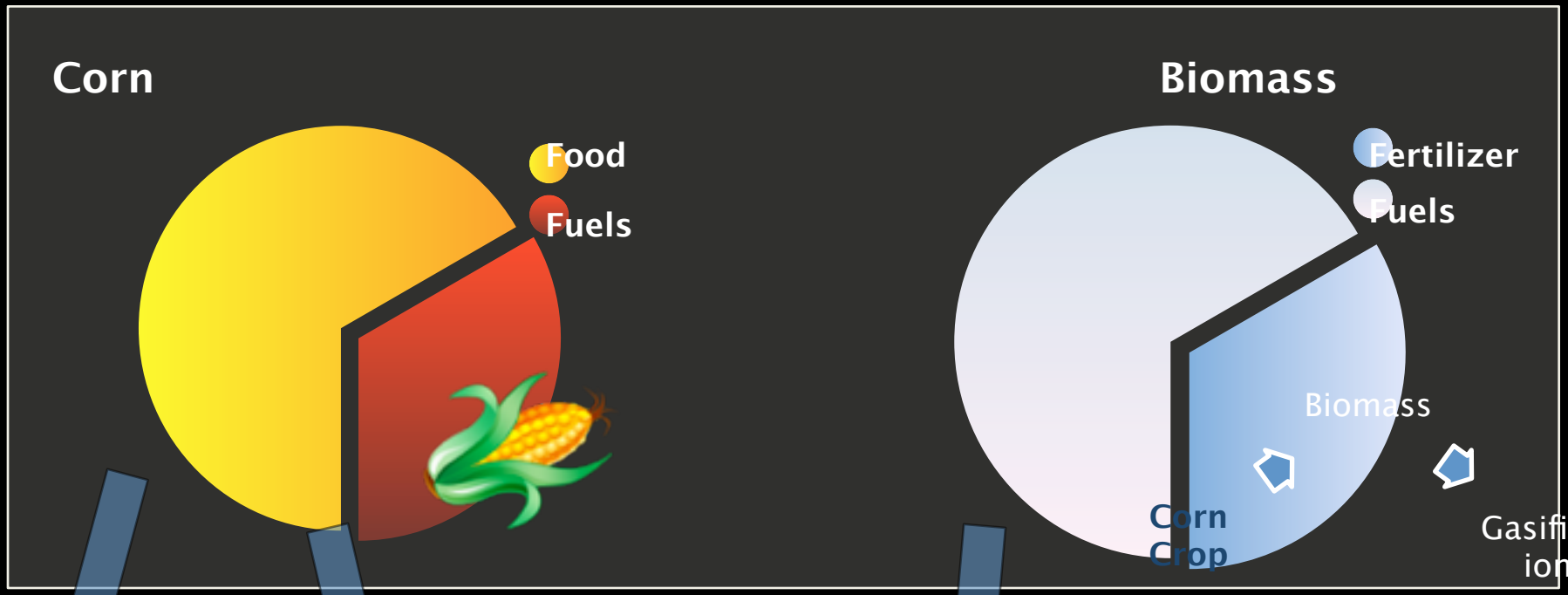
- Bran / cobs
- Carbon-negative NH_3
- Methanol, DME
- >50% less fossil energy/ carbon

Food-Grade Oil / Protein

- Low cost GRAS solvents
- Food-grade vegetable oil
- Food-grade protein (dry / de-oiled)
- Combined value greater than DDGS
- Maximum food value

Cornucopia BioRefinery Complex

Maximizing Food , Fertilizer and Fuel Production from Every Ear of Corn



Food

Protein

Food Grade Oil

Fermentation

Fuel

Gasification

Carbon-

Anhydrous Ammonia and Carbon

Fertilizer

SynGest "Project Cornucopia"

Where Energy and Agriculture Meet
The Three F's: Food, Fertilizer and Fuel

DRY FRACTIONATION

GERM

ENDOSPERM

BRAN

GRINDING

OPROTEX EXTRACTION TECHNOLOGY

FOOD GRADE CORN OIL

HIGH PROTEIN FEED

ENZYMATIC SACCHARIFICATION

FERMENTATION

DRY STILLAGE (Riboflavin Rich)

CO_2/H_2

EXTRACTIVE SEPARATION

Optinol

AIR

HARVEST GAS GASIFIER

AIR SEPARATION UNIT

WATER GAS SHIFT & PSA

N_2

PURE H_2

NH_3 SYNTHESIS

ANHYDROUS AMMONIA FERTILIZER

RFS2 Compatibility

Mandate: fuels from non-food biomass

Assumes food v.s. fuel conundrum

A Different Approach

- Maximizes benefits of cellulose
- Simultaneously produce The Three F's:
- Food, Fertilizer and Fuel
- Indirect way of achieving >50% reduction in GHG
- Carbon-negative nitrogen fertilizer
- Cornucopia BioRefinery exceeds goals of RFS2

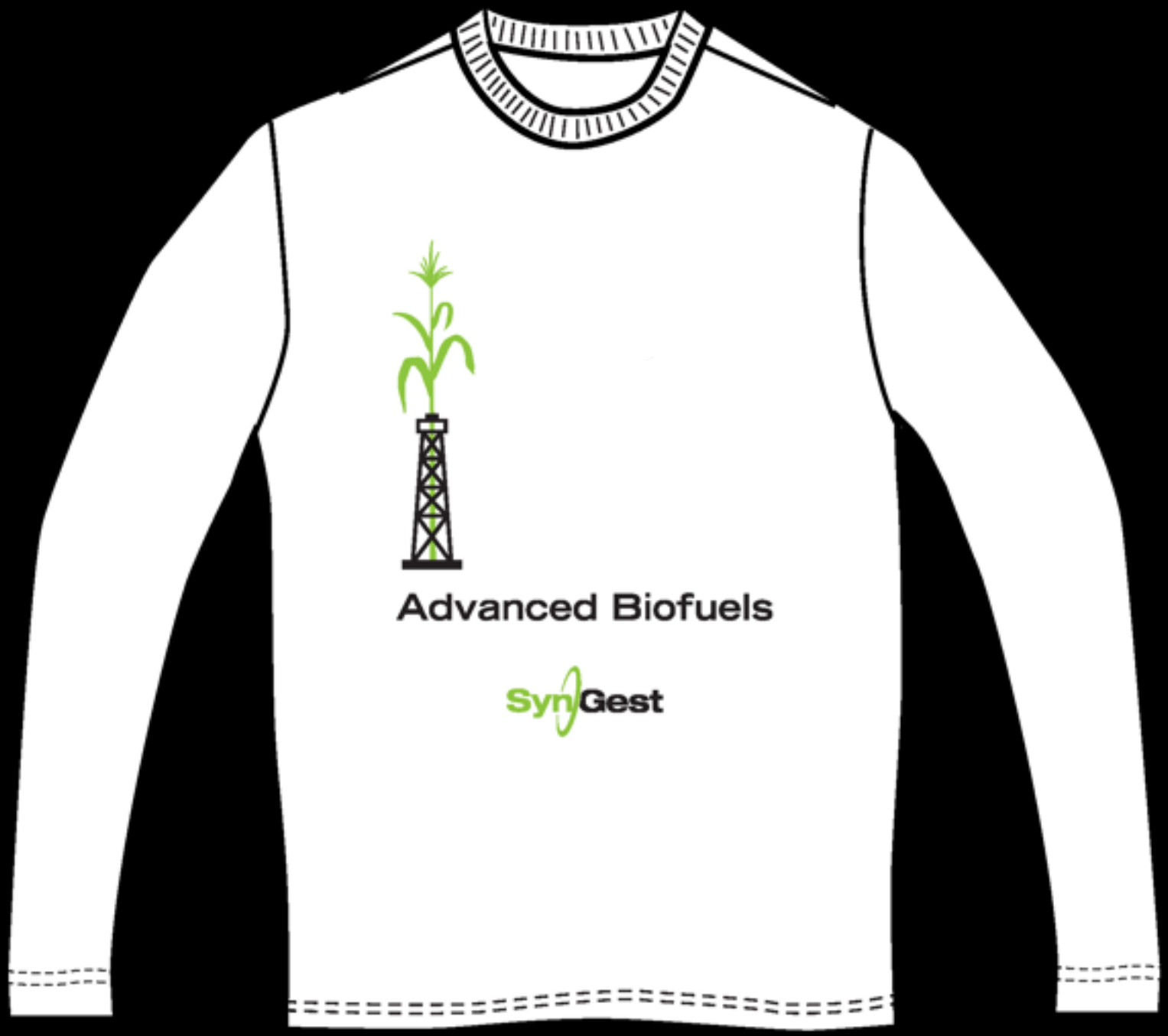
Industry Opportunity

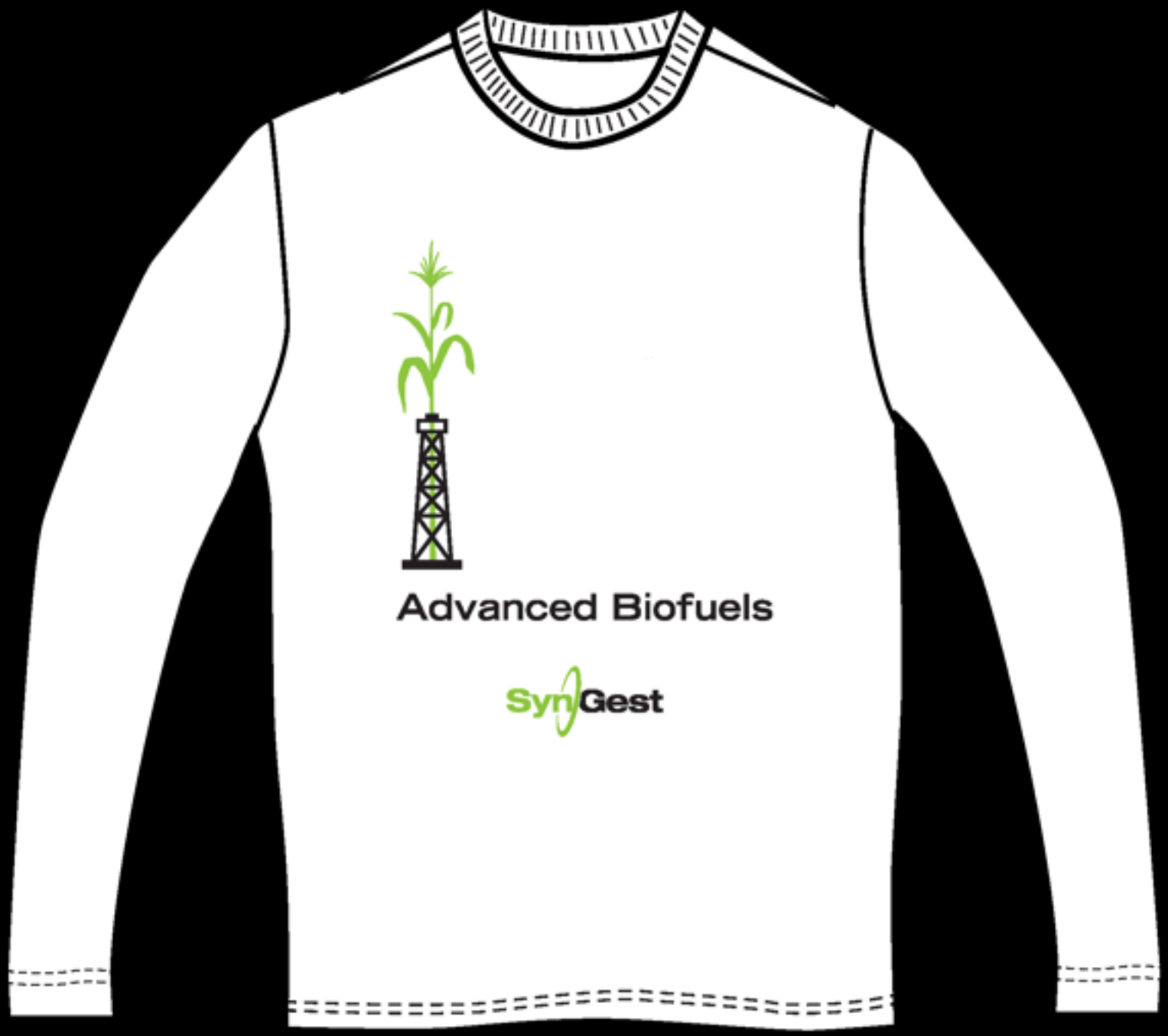
- Increase existing 12B GPY to 14.4B GPY
- Drop-in fuels opens doubling of capacity
- BioButanol blends with gasoline and diesel
- Compatible with existing pipes, tanks, cars/trucks
- 12 new Cornucopia BioRefineries annually
- Retrofit existing plants

Big Finale

Advanced Biofuels Industry Chant


Till, Baby, Till.™
Advanced Biofuels
SynGest


Advanced Biofuels
SynGest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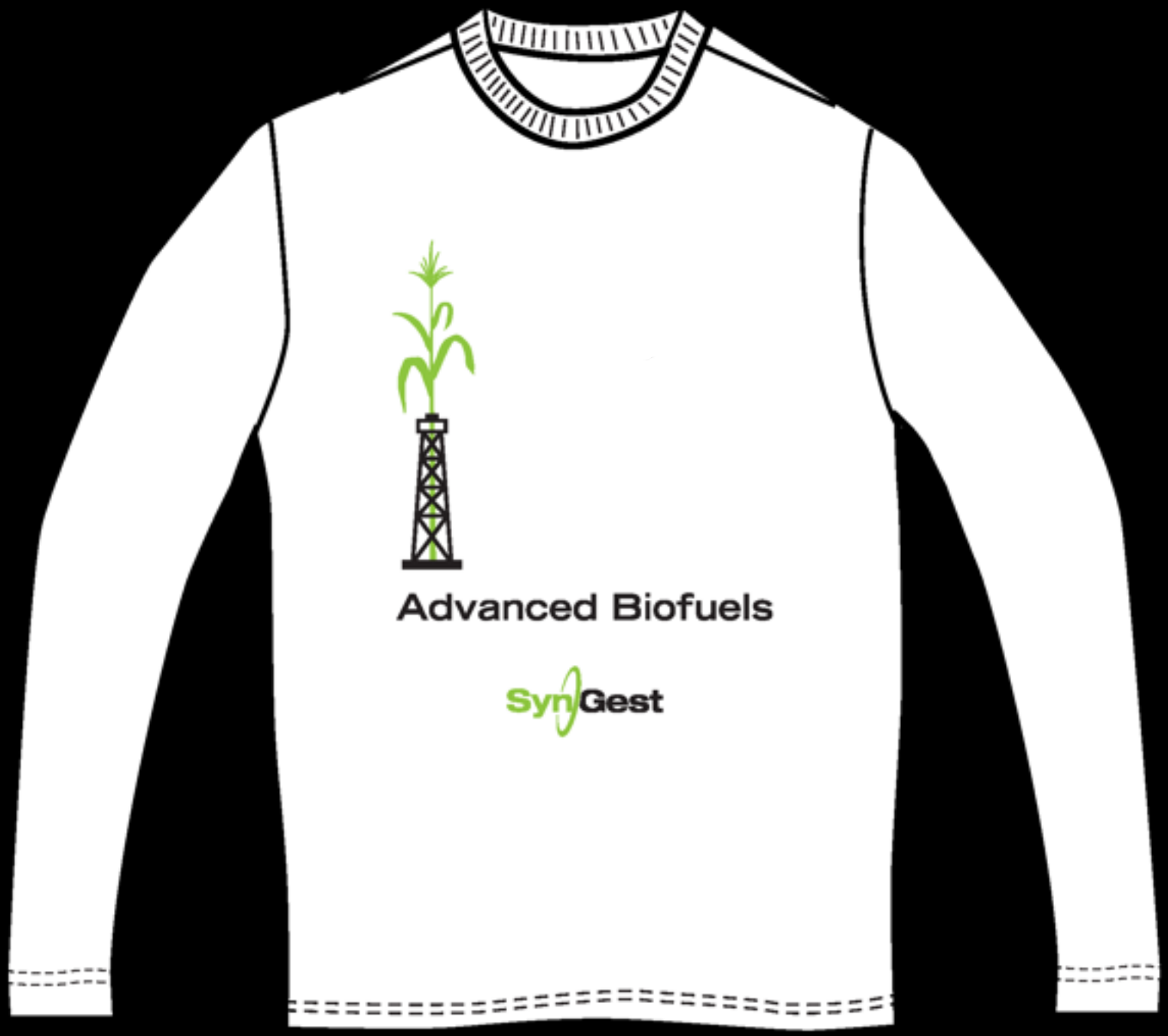
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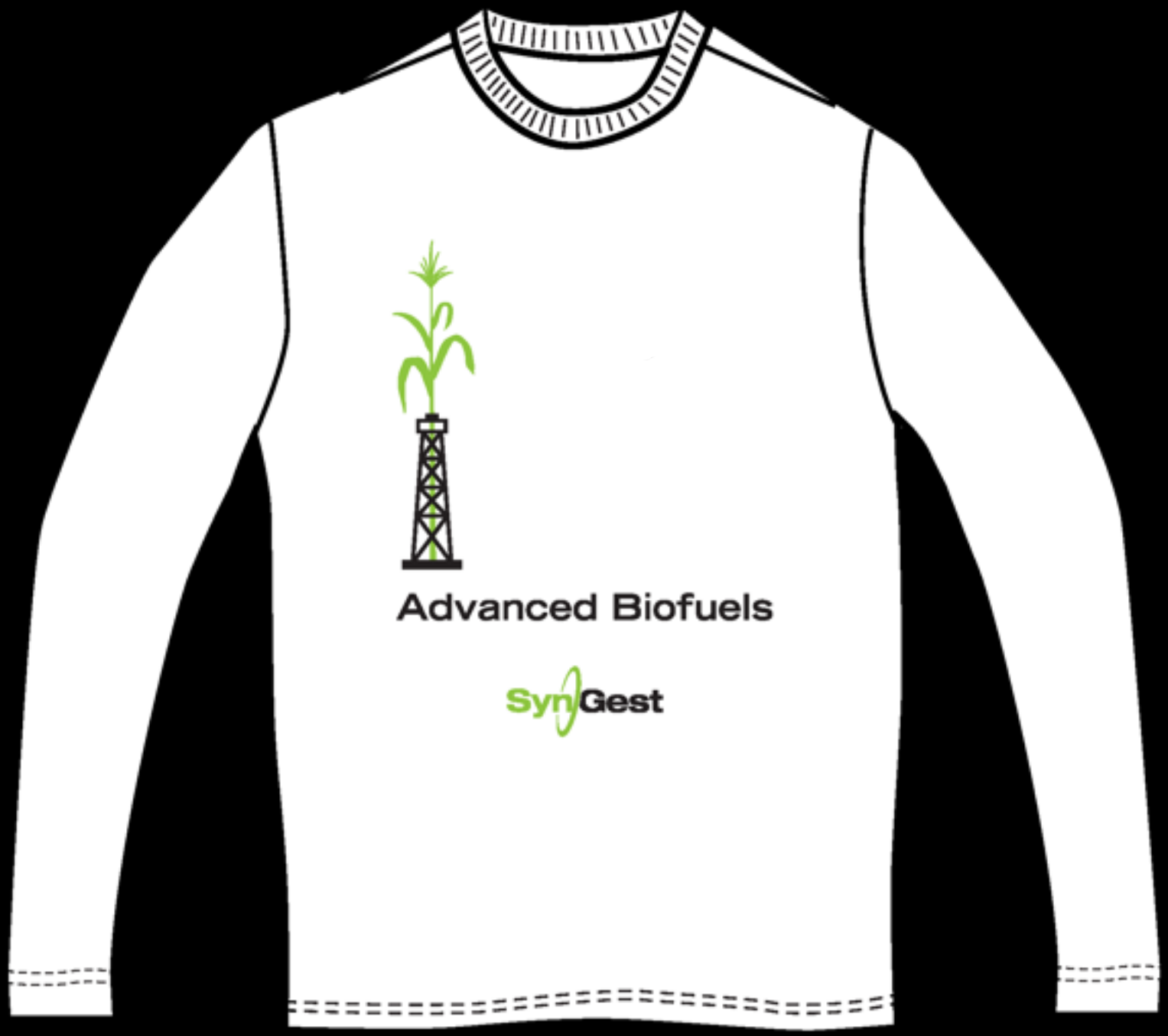
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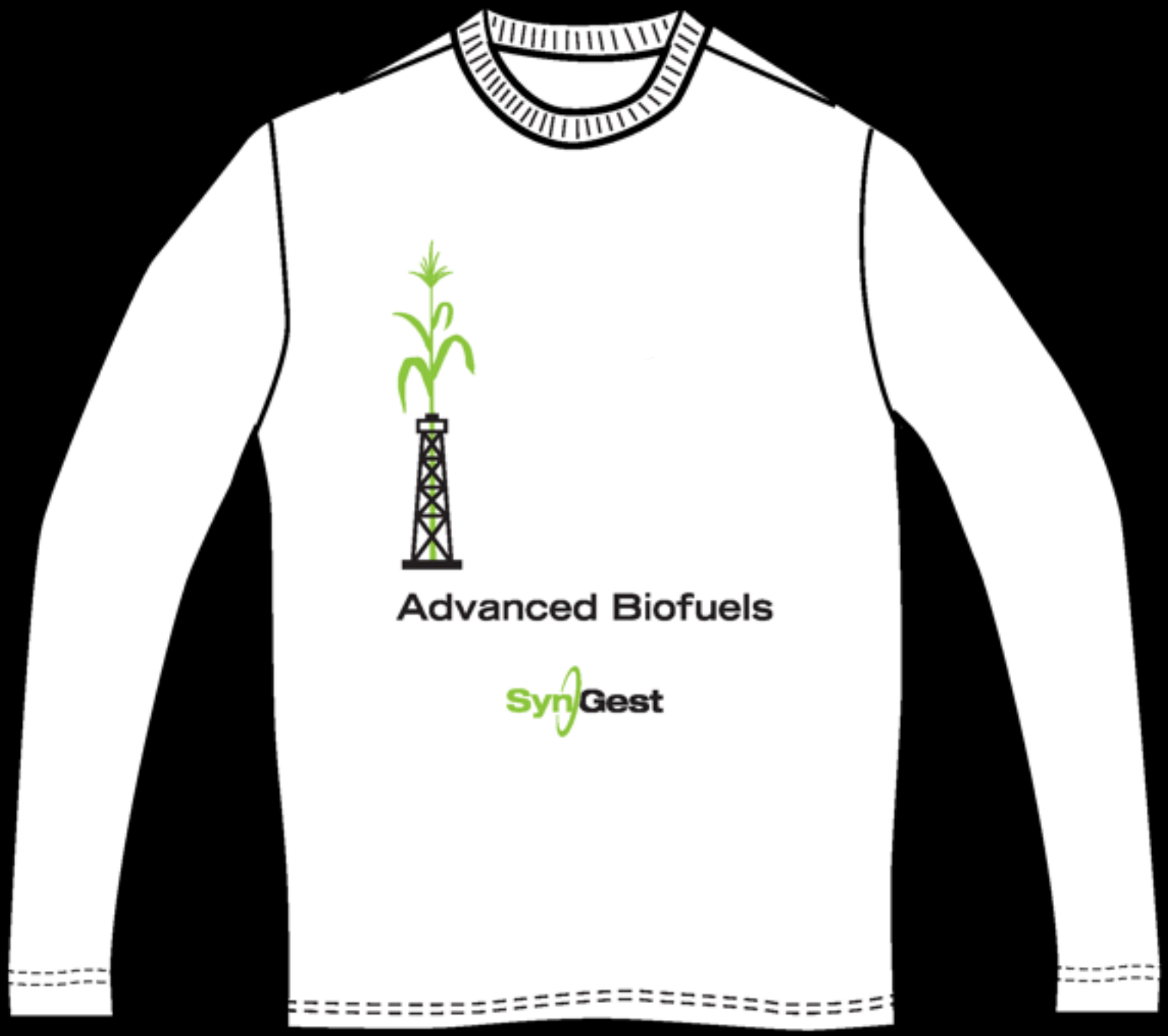
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Cornucopia BioRefinery™

Coming soon to America