Specialty Oils: Canola, Sunflower, Soybean…Algae?

Jim Johnson- President, Star Specialty Seed
Fargo, North Dakota

Acknowledgements:

U.S Canola Association
Canola Council of Canada
U.S Sunflower Association
U.S. Soybean Association
Qualisoy
Corn Intl/Christianson Consulting
Fats & Associates

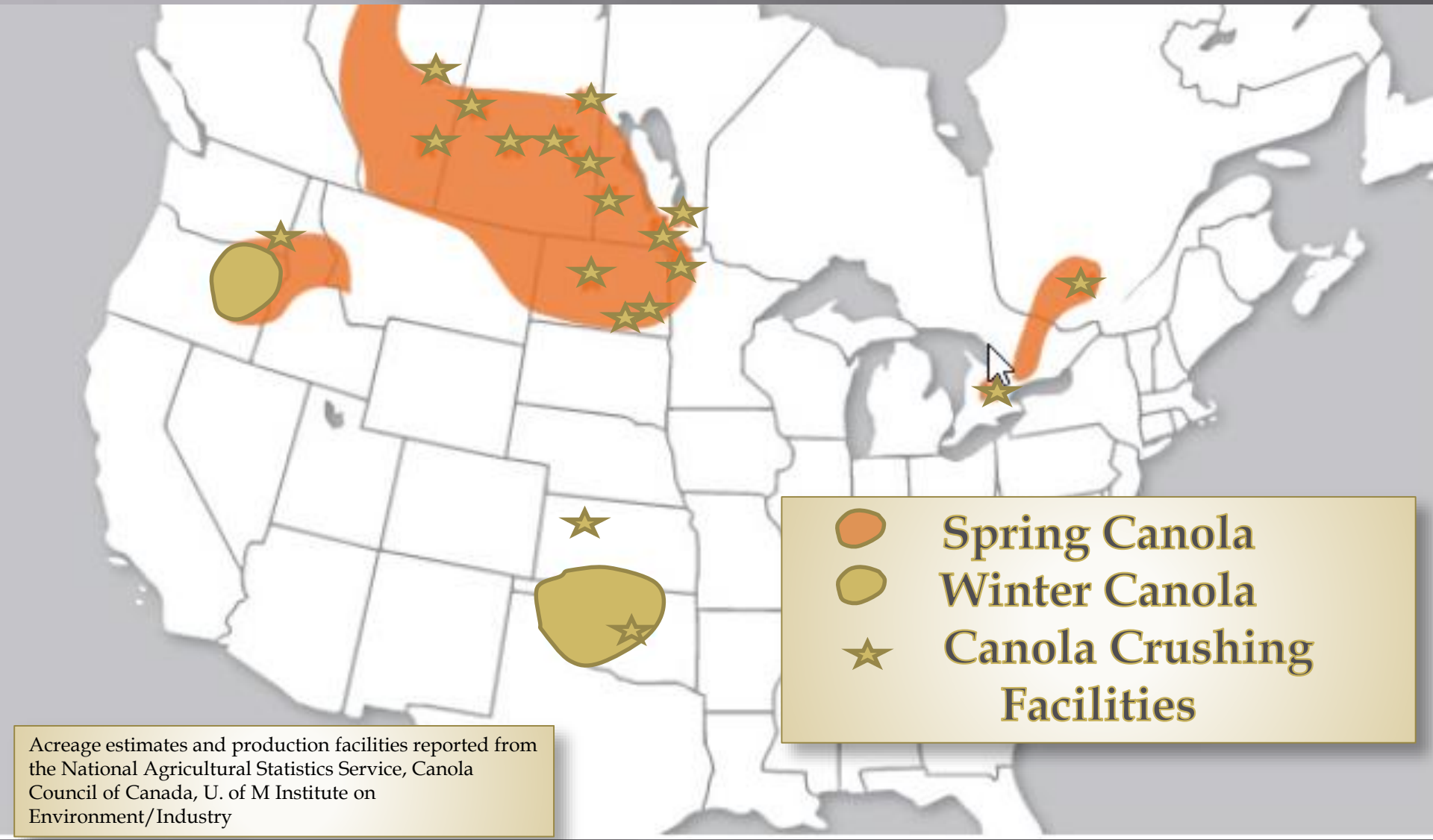
ALGAWISE™
Algae Oils

What are Specialty Oils? High Oleic

Partially Hydro. Soy	100% Palm	100% HO sunflower
Nutrition Facts Tortilla Chips (Plain, white corn) Serving Size 1 oz. (28 g)	**Nutrition Facts** Tortilla Chips (Plain, white corn) Serving Size 1 oz (28 g)	**Nutrition Facts** Tortilla Chips (Plain, white corn) Serving Size 1 oz (28 g)
Amount Per Serving Calories 140 Calories from Fat 63	Amount Per Serving Calories 140	Amount Per Serving Calories 140 Calories from Fat 63
% Daily Value	% Daily Value	% Daily Value
Total Fat 7 g 11% Saturated Fat 1.5 g 8% Trans Fat 2 g	Total Fat 7 g 11% Saturated Fat 3 g 15% Trans Fat 0 g	Total Fat 7 g 11% Saturated Fat 1 g 5% Trans Fat 0 g
Cholesterol 0 mg 0%	0%	Cholesterol 5 mg 8%
Sodium 120 mg 5%	Sodium 120 mg 5%	Sodium 120 mg 5%
Total Carbohydrate 19 g 6% Dietary Fiber 2 g 8% Sugars 0 g	Total Carbohydrate 19 g 6% Dietary Fiber 2 g 8% Sugars 0 g	Total Carbohydrate 19 g 6% Dietary Fiber 2 g 8% Sugars 0 g
Protein 2 g 4%	Protein 2 g 4%	Protein 2 g 4%

North America Canola Market

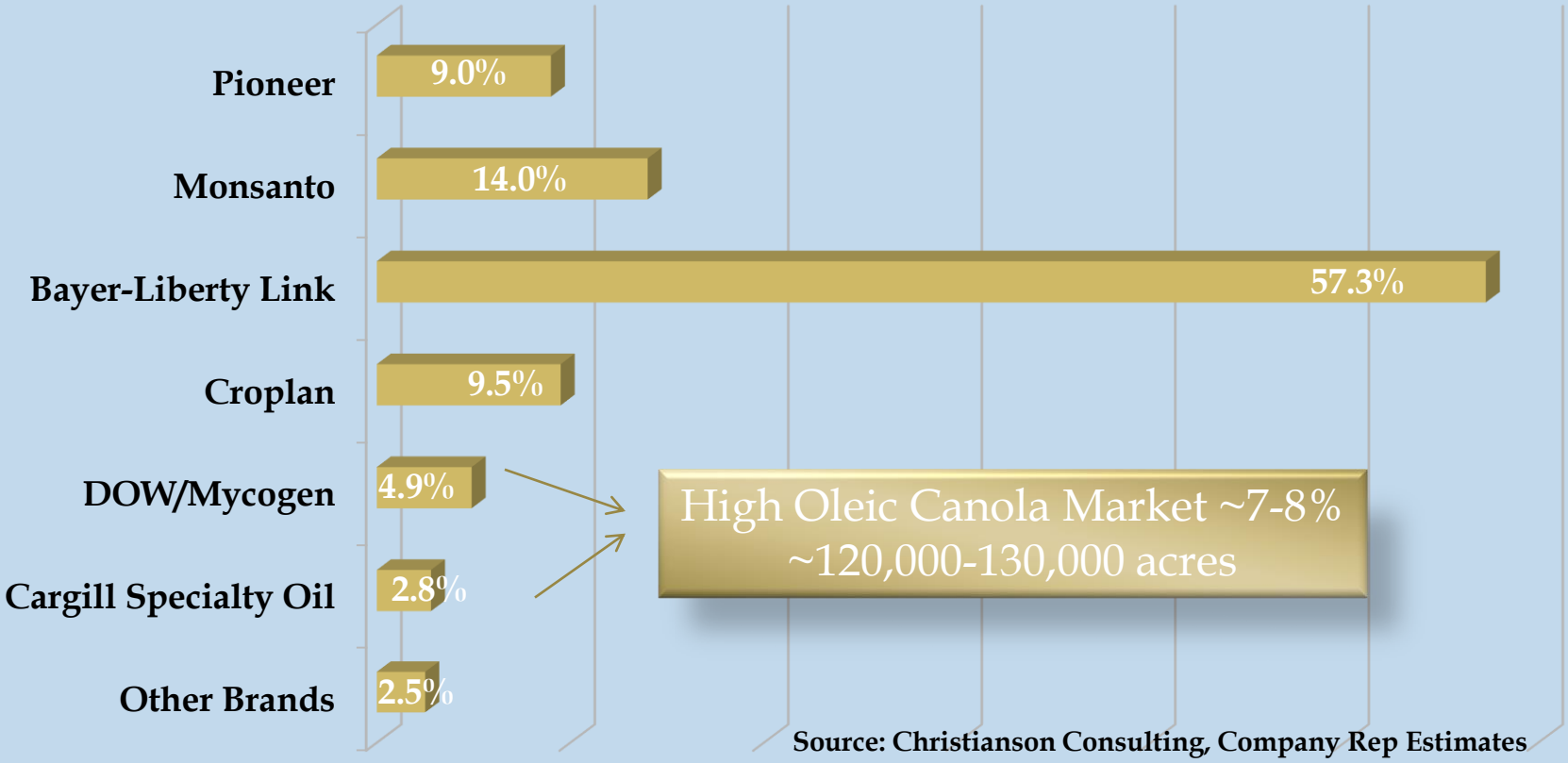
Canola Growing Regions



Acreage estimates and production facilities reported from the National Agricultural Statistics Service, Canola Council of Canada, U. of M Institute on Environment/Industry

North America Canola Market

2015 US Market Share by Company



Source: Christianson Consulting, Company Rep Estimates

High Oleic Canola SWOT Analysis

Strengths

- Excellent Grower history with IP (Identity Preserved) Crops
- Premium Contracts
- Strong Research Investment in new hybrids
- Processing Infrastructure

Weaknesses

- Fatty Acid Profile (CV65, CV75- Mid Oleic, C18:3
- Specialty Hybrids approaching parity yields after 20 years of development
- Disease from tight rotations

"Premium Contracts Attractive to Canola Growers"

Major Processing Infrastructure Investment : Canola Well Positioned For Long Term

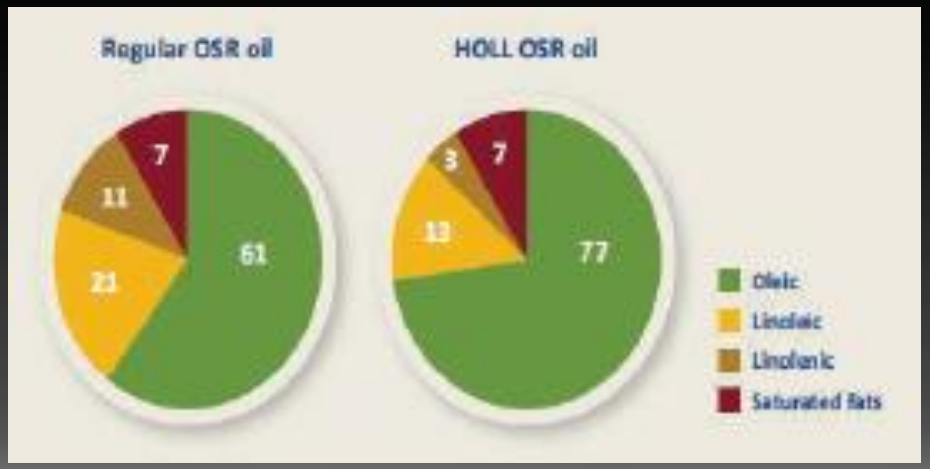
Opportunities

- Winter Canola in OK, Kansas
- Planting in wider rows with row crop planting equipment (singulation)
- Direct Harvest
- Shatter Tolerant Varieties

Threats

- Early maturity Corn and soybeans
- Cost of production/Risk
- Disease: Blackleg, Club Root

HOLL High Oleic Canola in Europe



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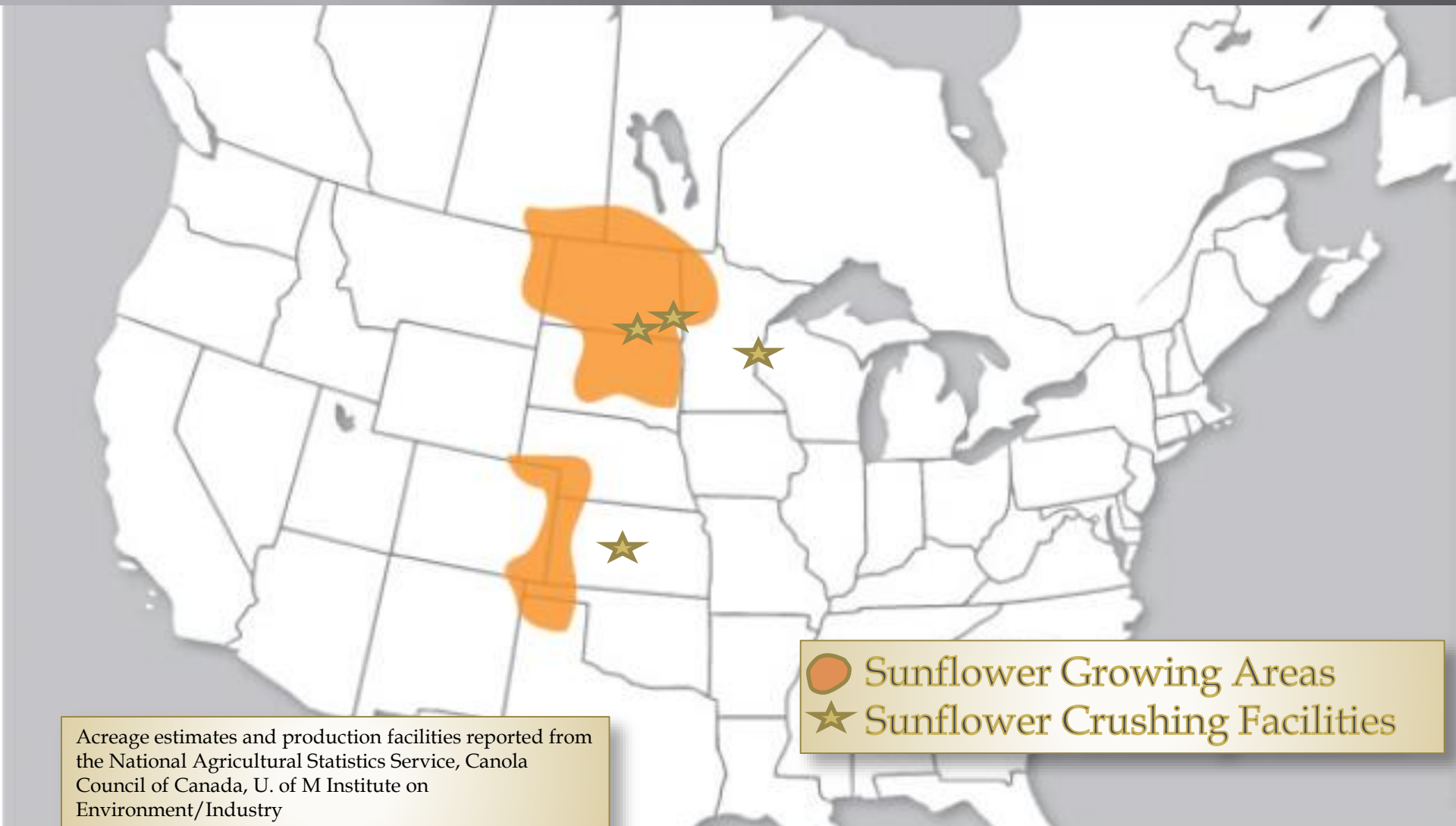
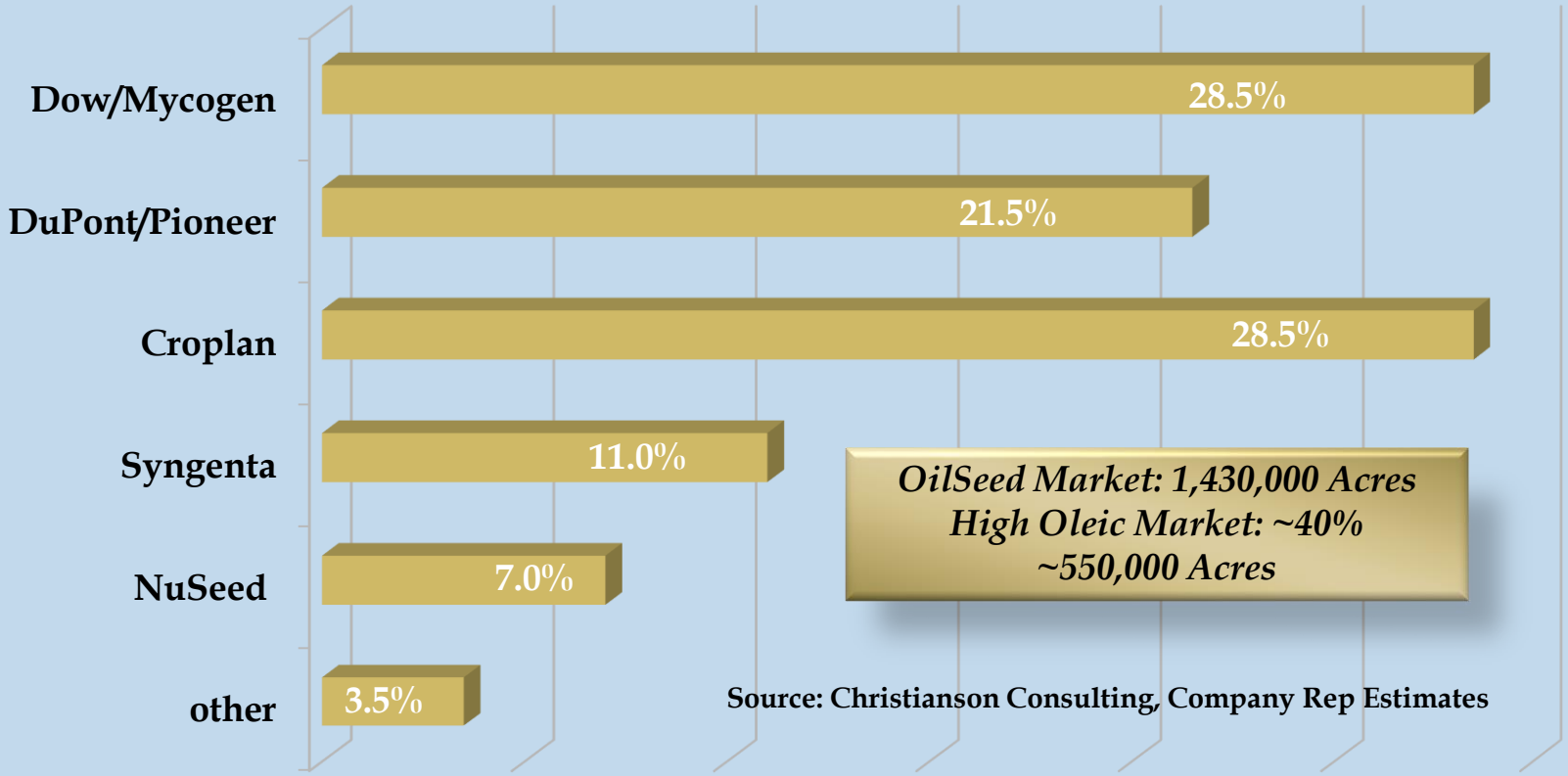
Sunflower Producting Region



Acreage estimates and production facilities reported from the National Agricultural Statistics Service, Canola Council of Canada, U. of M Institute on Environment/Industry

North America Sunflower Market

2016 US Oilseed Market Share by Company



OilSeed Market: 1,430,000 Acres
High Oleic Market: ~40%
~550,000 Acres

Source: Christianson Consulting, Company Rep Estimates

High Oleic Sunflower SWOT Analysis

Strengths

- Native Crop to North America
- Superior High Oleic Profile
- Parity Yields with other Market Segments
- Non-GMO Crop

Weaknesses

- Acreage Declining
- Lack of support by Major Companies
- Lack of Transparency in Market
- Hassle Factor associated with Growing Sunflower

"Sunflowers Can Be grown from Canada to Texas"

"Major Companies pulling support for minor crops"

Opportunities

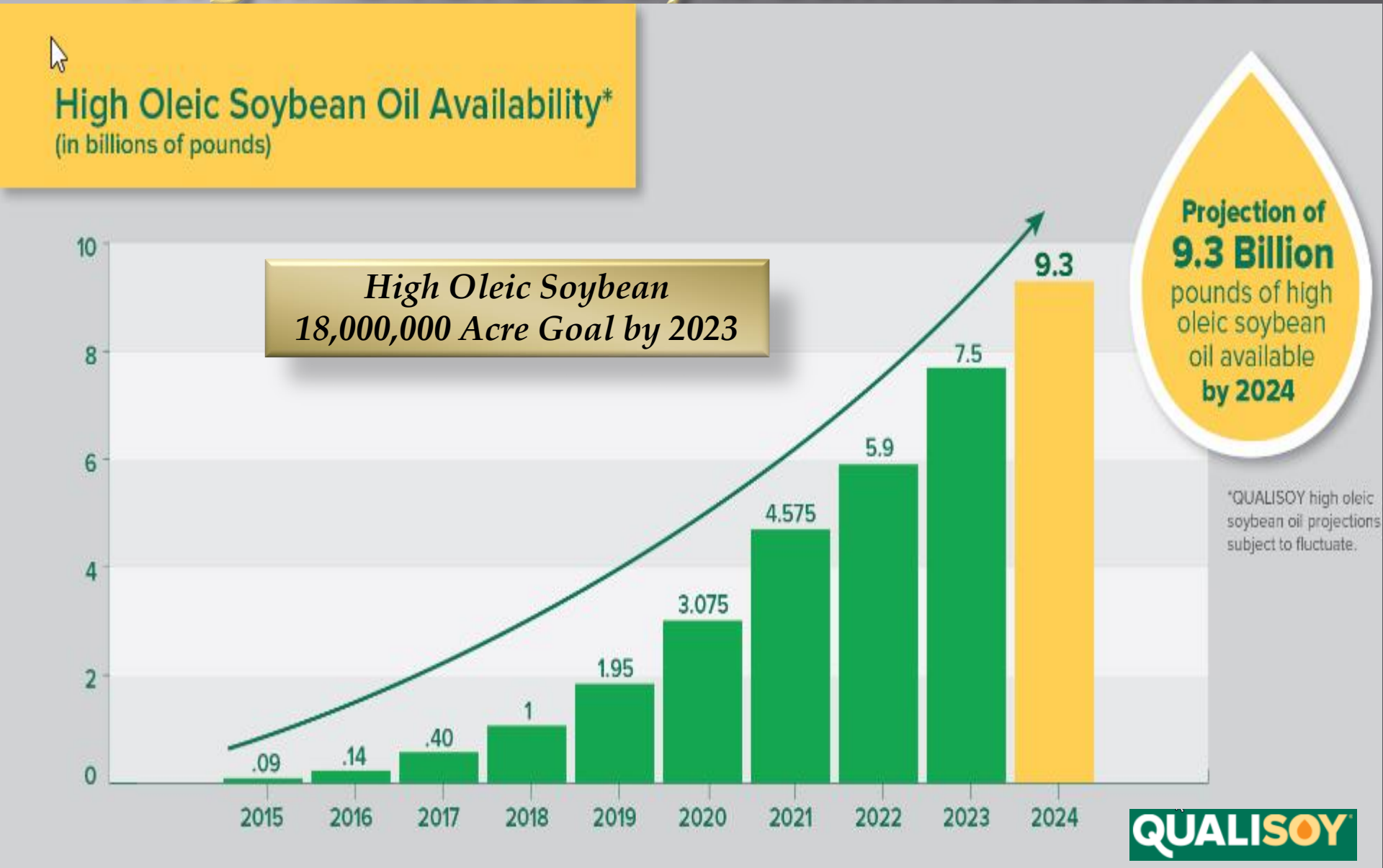
- High Oleic, Non-GMO can be grown from Canada to Texas
- Growers Love Premium Contracts!
- HO hybrids continue to improve, with multiple herbicide system options

Threats

- Drought Tolerant Corn- "Every Acre, Every Year, All the way to the Desert, Corn!"
- Major Companies pulling support for minor crops
- Growers want crops that are easier to grow: corn, soybeans

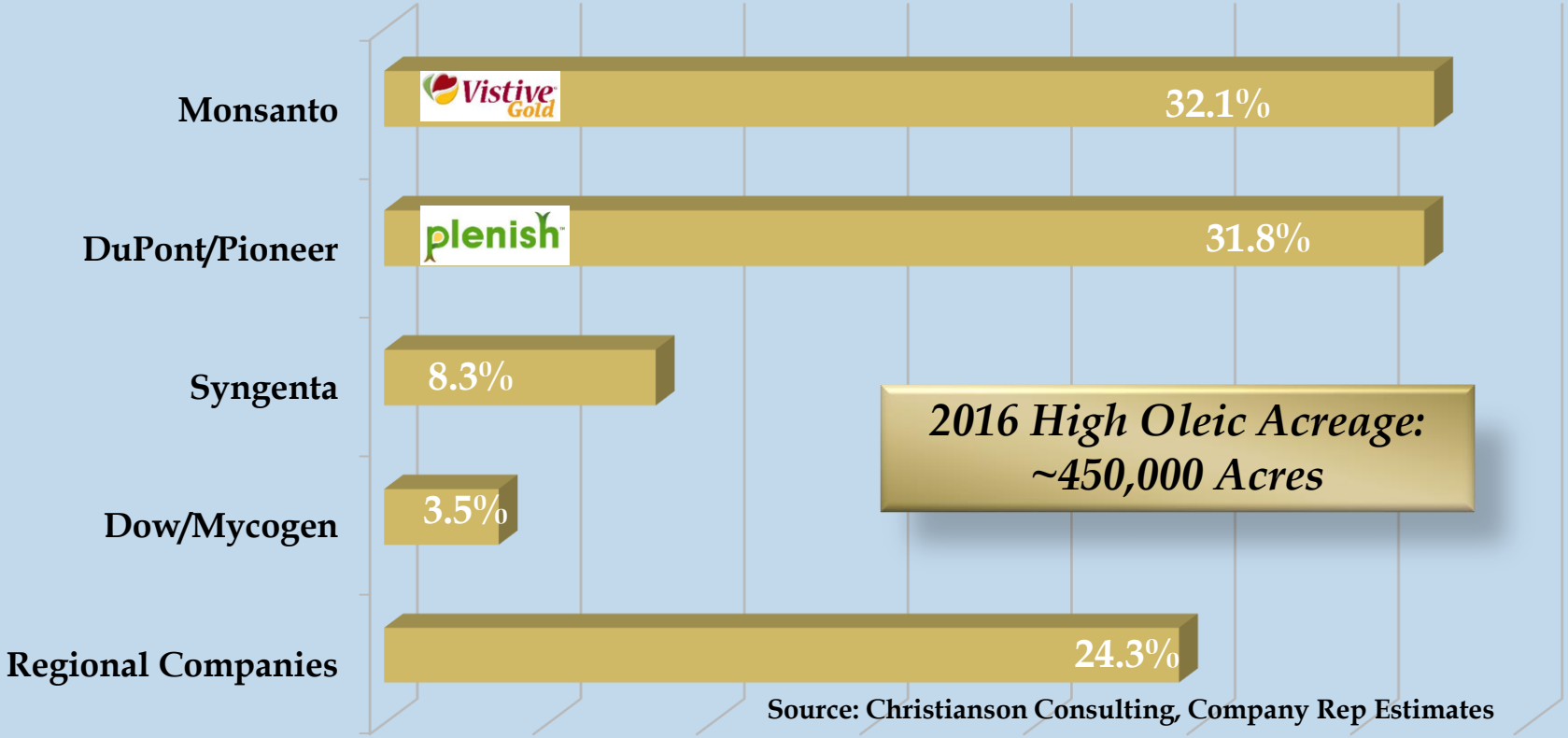
North American Soybean Market

High Oleic Soybean Forecast



US Soybean Market

2016 Soybean Market Share by Company



Source: Christianson Consulting, Company Rep Estimates

High Oleic Soybean SWOT Analysis

Strengths

- Strong support by industry- $60Million
- Extensive Processor Infrastructure
- Widely adapted crop across multiple growing regions
- Transparent market/competitive pricing

Weaknesses

- Soybean Fatty Acid Profile
- Self Pollinated Crop
- Less than Parity yields
- Premiums overpay for protein

"Based on spend and infrastructure, HO Soy has clear advantages

However, multiple challenges will make it more difficult than most expect"

Opportunities

- Growers Love Premium Contracts!
- Investment from Major Companies
- Large acreage base

Threats

- Identity Preserved logistics with growers/grain elevators/processors
- Lack of Parity yields to conventional varieties
- Overcoming "Hassle Factor" with growers

Algaewise® Algae Oil Introduced at IFT Food Expo in 2014

ALGAE BASED INGREDIENTS

algaVia
WHOLE ALGAE INGREDIENTS

LIPID RICH POWDER

PROTEIN POWDER

available through:

TerraVia

ALGAWISE
Algae Oils

ULTRA OMEGA-9 ALGAE OIL

ALGAE BUTTER

available through:

BUNGE

TerraVia

solazyme bunge
RENEWABLE OILS

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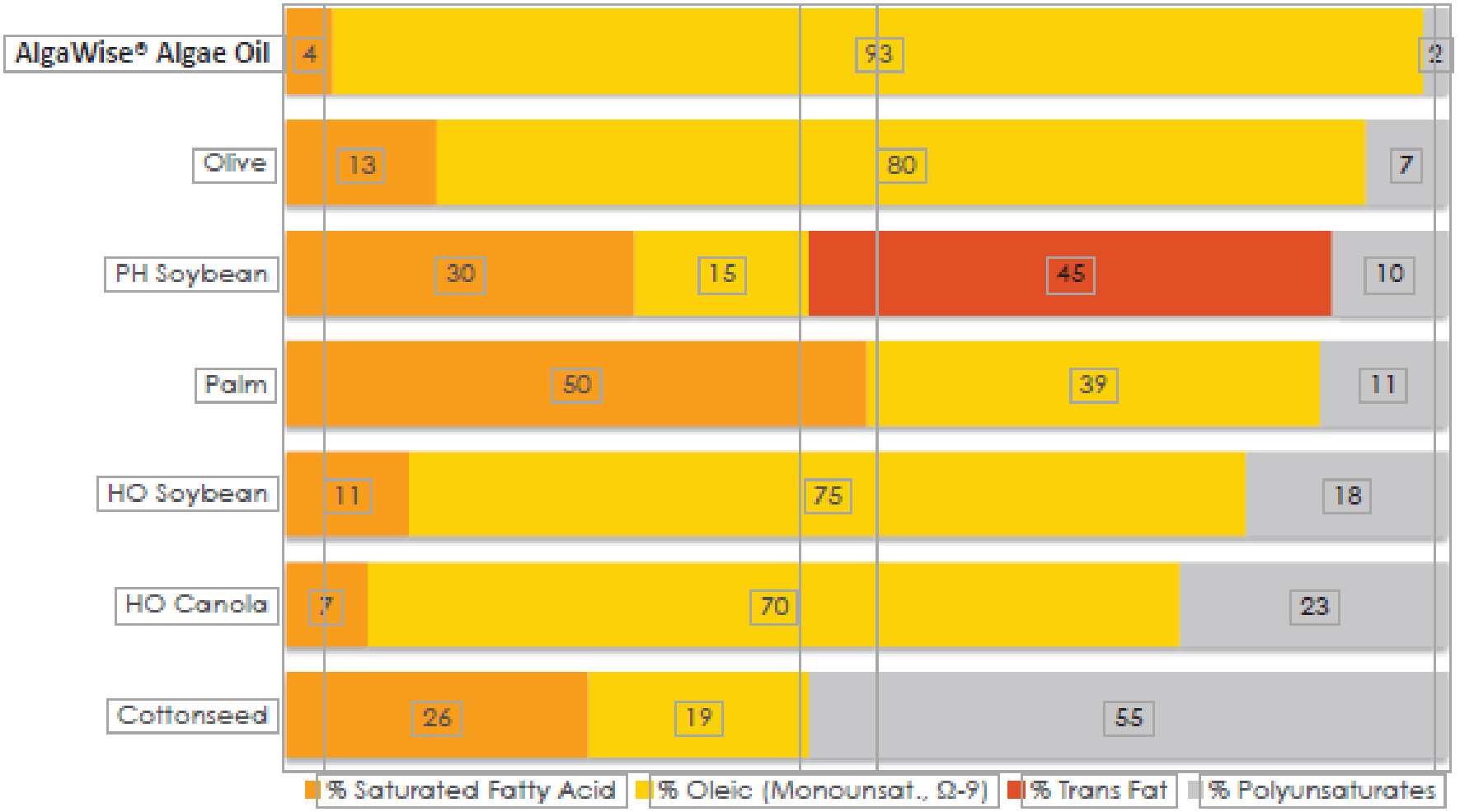
ALGAWISE® ALGAE OIL FATTY ACID PROFILE

More of the "Good Fats", less of the "Bad Fats"



Fatty Acid Profiles: USDA National Nutrient Database for Standard Reference; Bunge

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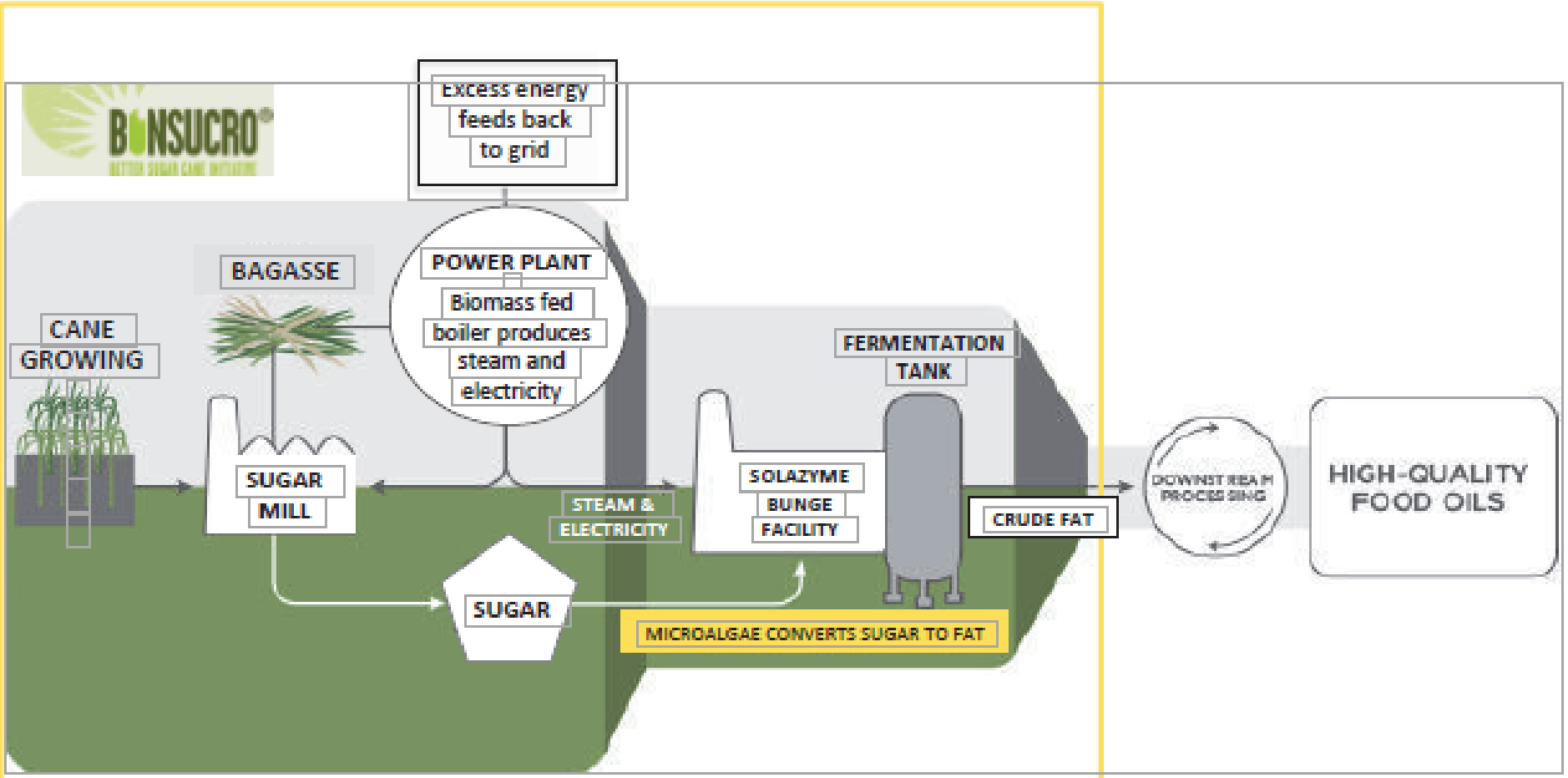
HOW WE MAKE ALGAE OIL

Lifecycle Analysis was conducted for the Solazyme Bunge Renewable Oils Facility in Orindiúva, Brazil



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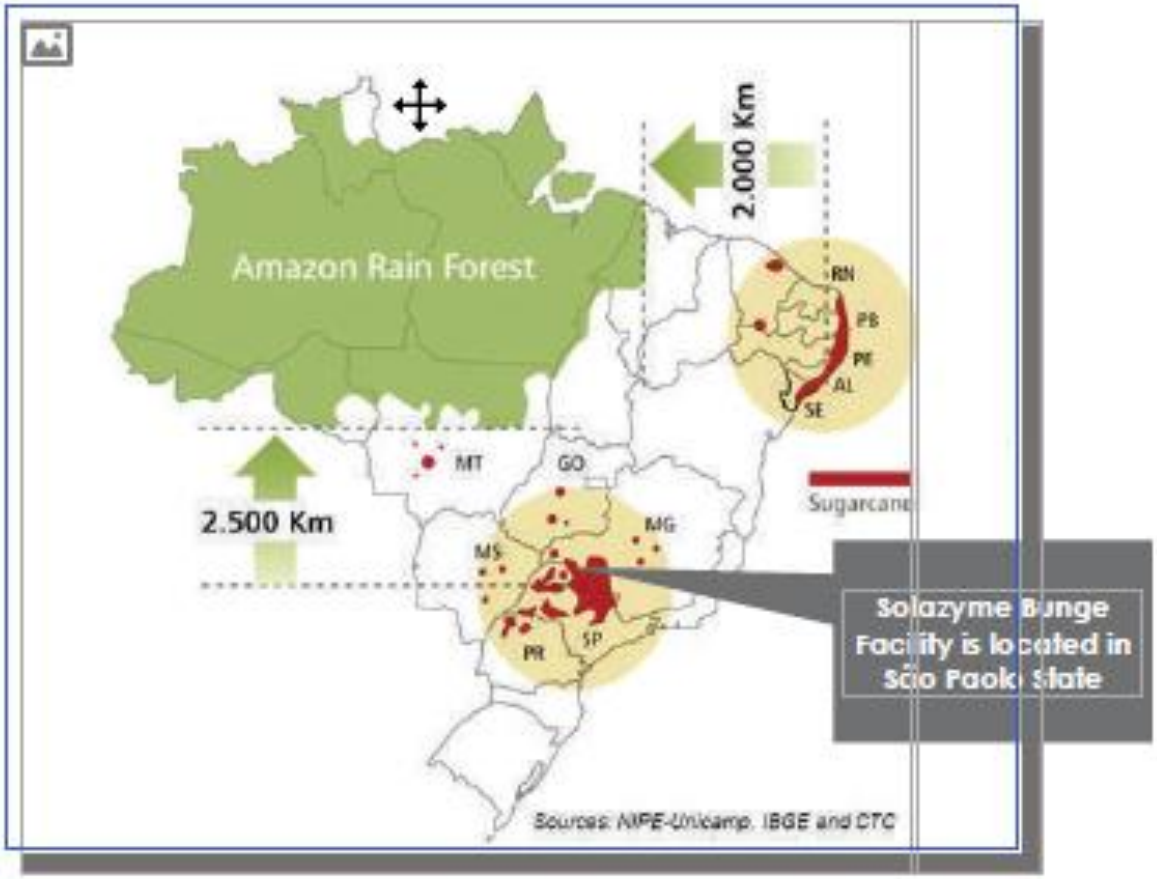
CANE SUGAR PRODUCTION IN BRAZIL

Since 2009, the Brazilian government forbids rainforest conversion for sugar cane cultivation and has required the use of Agro-Ecological Zoning (ZAE Cana) systems to regulate expansion of sugar cane cultivation.

The ZAE Cana system does not allow sugar cane expansion into:

- the entire Amazon region (59% of the country)
- previously deforested areas
- areas with any kind of natural vegetation
- high conservation value (HCV) areas
- forested areas in the Pantanal wetland and its hydrographic basin.



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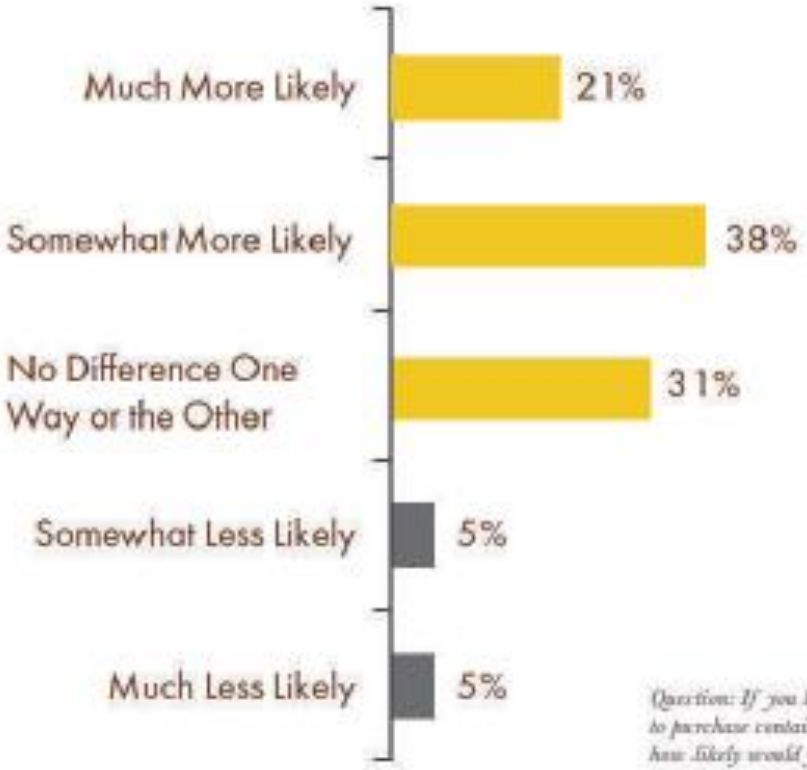
ALGAE OIL: CONSUMER ACCEPTANCE

INTEREST IN PURCHASING A PRODUCT THAT CONTAINS ALGAE AS AN INGREDIENT



90% POSITIVE OR NEUTRAL

Question: If you learned that a food you plan to purchase contained algae as an ingredient, how likely would you be to purchase that item?

Study Overview: 3000 consumers - US, UK, France, Germany, Italy, Brazil; General Population sample
Source: Solazyme Proprietary Global Consumer Research – Whole Algae Lipid and Protein, November 2014

ALGAWISE Algae Oil

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