



Yield10 Bioscience, Inc.

NasdaqCM: YTEN

Investor Presentation

www.yield10bio.com

Crop Innovations For Sustainable Food Security

March 25, 2021



Safe Harbor Statement*

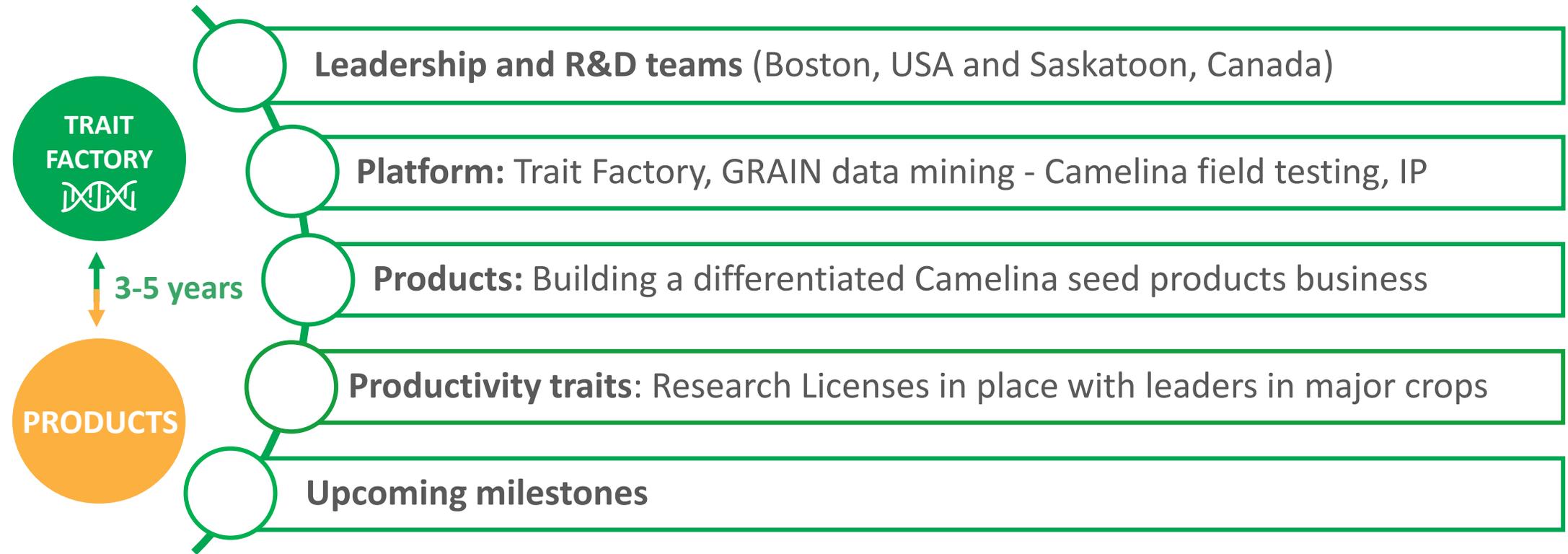
The statements made by Yield10 Bioscience, Inc. (the “Company,” “we,” “our” or “us”) herein regarding the Company and its business may be forward-looking in nature and are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements describe the Company’s future plans, projections, strategies and expectations, including statements regarding future results of operations and financial position, business strategy, prospective products and technologies, expectations related to research and development activities, timing for receiving and reporting results of field tests and likelihood of success, and objectives of the Company for the future, and are based on certain assumptions and involve a number of risks and uncertainties, many of which are beyond the control of the Company, including, but not limited to, the risks detailed in the Company’s Annual Report on Form 10-K for the year ended December 31, 2020 and other reports filed by the Company with the Securities and Exchange Commission (the “SEC”). Forward-looking statements include all statements which are not historical facts and can generally be identified by terms such as anticipates, believes, could, estimates, intends, may, plans, projects, should, will, would, or the negative of those terms and similar expressions.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and may be beyond the Company’s control, you should not rely on these statements as predictions of future events. Actual results could differ materially from those projected due to our history of losses, lack of market acceptance of our products and technologies, the complexity of technology development and relevant regulatory processes, market competition, changes in the local and national economies, and various other factors. All forward-looking statements contained herein speak only as of the date hereof, and the Company undertakes no obligation to update any forward-looking statements, whether to reflect new information, events or circumstances after the date hereof or otherwise, except as may be required by law.

***Under the Private Securities Litigation Reform Act of 1995**

Yield10 Bioscience (Nasdaq: YTEN)

An Agricultural Bioscience Company -
Developing genetic innovations in crops for sustainable food security



“The impacts of climate change on land will raise food prices and risk widespread food instability, but there are solutions” UN IPCC Report Aug 2019

Leadership Team

Oliver Peoples, Ph.D.
President & CEO, Director

Dr. Peoples is a pioneer of the field of metabolic engineering, the forerunner of synthetic biology, which began at MIT in the mid 1980's and an experienced entrepreneur and biotechnology executive with over 35 years of experience in science and technology innovation, intellectual property development, partnerships and commercialization. Dr. Peoples was a Founder of Metabolix, Yield10s predecessor company.

Kristi Snell, Ph.D.
CSO & VP Research

Dr. Snell brings over 20 years of experience and industry recognized expertise in metabolic engineering of plants and microbes for the production of novel products and increased plant yield. Following her post-doctoral research at MIT, Dr. Snell joined Yield10s predecessor company, Metabolix in 1997 to lead the plant science research program.

Charles Haaser
VP, Finance & CAO

Mr. Haaser joined the Company in 2008 as corporate controller and was named chief accounting officer in 2014. He has over 30 years of senior accounting management and executive experience with public technology-based companies. His strong professional background includes technical accounting, SEC financial reporting, Sarbanes-Oxley and tax compliance.

Lynne Brum
VP, Planning & Communications

Ms. Brum joined the Company in 2011 as vice president of marketing and corporate communications, bringing over 25 years experience in the life science industry including roles in corporate communications, investor relations, financial planning and corporate development.

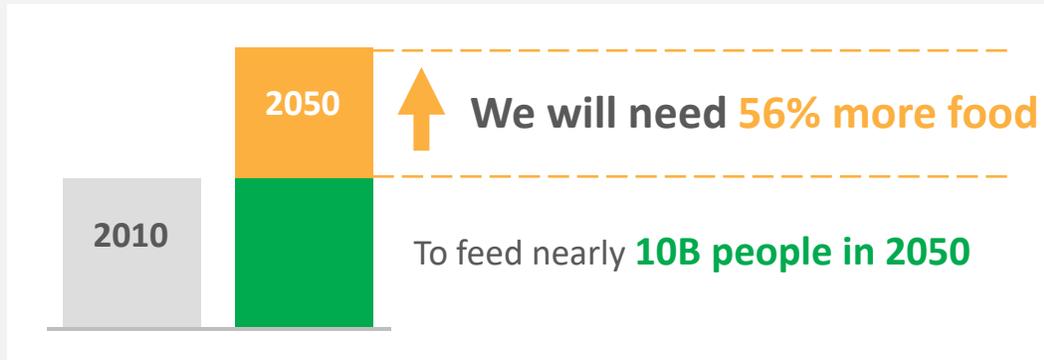
Yield10: A Compelling Market Opportunity

Developing crop innovations for sustainable food security

Food Output Needs to Double by 2050 to Meet Population Growth

Population is expected to hit almost 10 Billion by 2050

How do we feed 10 billion people ...



Fidelity Agricultural Productivity Fund (FARMX), April 2020

... and reduce greenhouse gas emissions...

The Future of Food: Complexities and Compromises

*“The complex Agri-Food system needs to transform in order to produce 50% more food, eliminate malnutrition for 2.5 billion people and **cut 13Gt of greenhouse gas emissions by 2050**”*



Morgan Stanley Research- BLUEPAPER December 6, 2020

Global Food Security.....increasing overall demand and **protein consumption**

Health and Wellness.....improved **nutrition profile**

Aquaculture.....an increasingly important **protein and essential omega-3 fatty acid source**

Sustainable Growth Metrics..... **reduce climate change impact- cut 15Gt of greenhouse gases**

Key Accomplishments

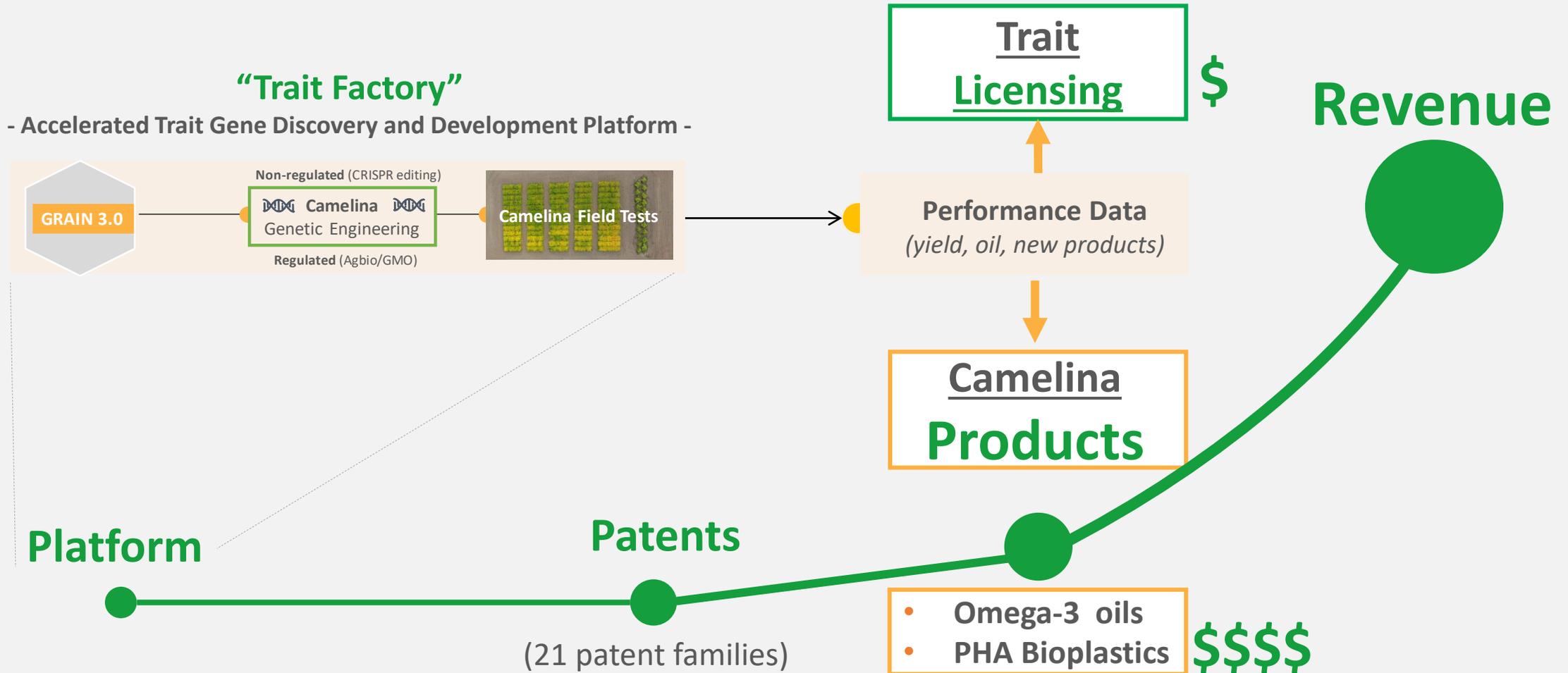
- ✓ Diversified and strengthened the Board by adding Ag industry veteran Sherri Brown, Ph.D.
- ✓ **Strengthened the balance sheet to extend cash runway to achieve value building milestones**
 - ✓ Raised \$5.7 million, gross proceeds, in public offering and private placement of common stock at \$4.25 (Aug. 2020)
 - ✓ Raised \$12.7 million, gross proceeds, in public offering of common stock at \$12.25 (Jan. 2021)
 - ✓ Raised \$5.4 million in warrant exercises at \$8.00 (Feb. 2020 thru Feb. 2021)
- ✓ Engaged first major Ag player in South America by signing research license with GDM for soybean
- ✓ **Advanced Camelina business plan by signing a collaboration agreement with Rothamsted Research (UK) for development of DHA+EPA omega-3 oil technology aimed at sustainable aquaculture feed**
- ✓ Obtained positive response to “Am I regulated?” letter from USDA-APHIS for CRISPR C3007 in Camelina and CRISPR C3007 in canola
- ✓ **Reported proof-of-concept milestone for producing PHA bioplastic in field grown Camelina**

Nasdaq Ticker	YTEN
Recent Share Price	\$16.03
Market Capitalization	>\$70 million
Shares Outstanding	4.9 million
Public Float	3.9 million

Current as of March 15, 2021

The Yield10 - Trait Factory and Business Model

Translating Crop Science Innovation to Sustainable Revenue Growth



Camelina: Potential to be the First Profitable 'Restoration Crop'

Camelina is an excellent cover crop - establishes rapidly - can set seed in 90 - 100 days

- Potential rotation crop with wheat, pulses and canola
- Potential relay or cover crop – reduce nutrient runoff – restore soil carbon
 - Increases farm productivity and revenue through double cropping



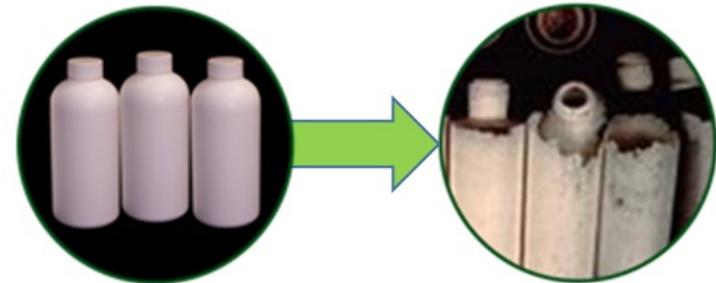
Camelina Oil Markets Today

- Premium vegetable oil rich in ALA (omega-3 FA)
- Fish oil supplement for aquaculture
- Low carbon index oil for renewable diesel

Proprietary Camelina Products In Development

- Camelina is readily genetically re-programmed
 - Produce vegan fish oil replacement (DHA+EPA omega-3 oils)
 - Produce PHA bioplastics

Renewable Biodegradable Plastics



Market Opportunity for Camelina Products

\$4.2 Billion Annual Revenue Potential For Oil, Meal and PHA Bioplastic by 2030

Addressable Market

\$200 billion¹

PHA Camelina

2.0 – 4.0 million acres

@ \$500 >>> \$900 product revenue per acre

2030 Revenue Potential

\$1 Billion > \$3.6 Billion
(PHA, oil and meal)

\$8 billion²

Omega-3 Camelina

0.3 – 0.7 million acres

@ \$600 >>> \$900 product revenue per acre

\$180 Million > \$630 Million
(Omega-3 oil & meal)

Elite Camelina

0.5 – 2.0 million acres

@ \$300 >>> \$500 revenue product per acre

\$150 Million - \$1 Billion³
(Oil & meal)

2021

2030

¹~25% of plastics production, 50% of plastics used in single use packaging. ² Estimates of market opportunity are based on industry sources as well as management's analysis, financial estimates and timelines for market introduction and adoption. ³oil and meal for this market will be supplied from PHA Camelina in the future.

9 >>> Technology Improvements, increased yield and oil/or PHA seed content

Yield10 – Trait Licensing Opportunities

Patented traits to increase major crop production with less land and inputs

\$1 – 3 billion

- ◆ Milestones and royalties based on a share of the trait value add
- ◆ Research license Agreements with Ag majors to create option value on >400 million acres

Crop/Trait	Company	Agreement	2019	2020	2021	2022	2023
Soybean/C3003 Soybean/C3004		Research License Collaboration		→			
Soybean Multiple traits		Research License Collaboration		→			
Sorghum Multiple traits		Research License Collaboration	→				
Potato Multiple Traits		Research License Collaboration		→			

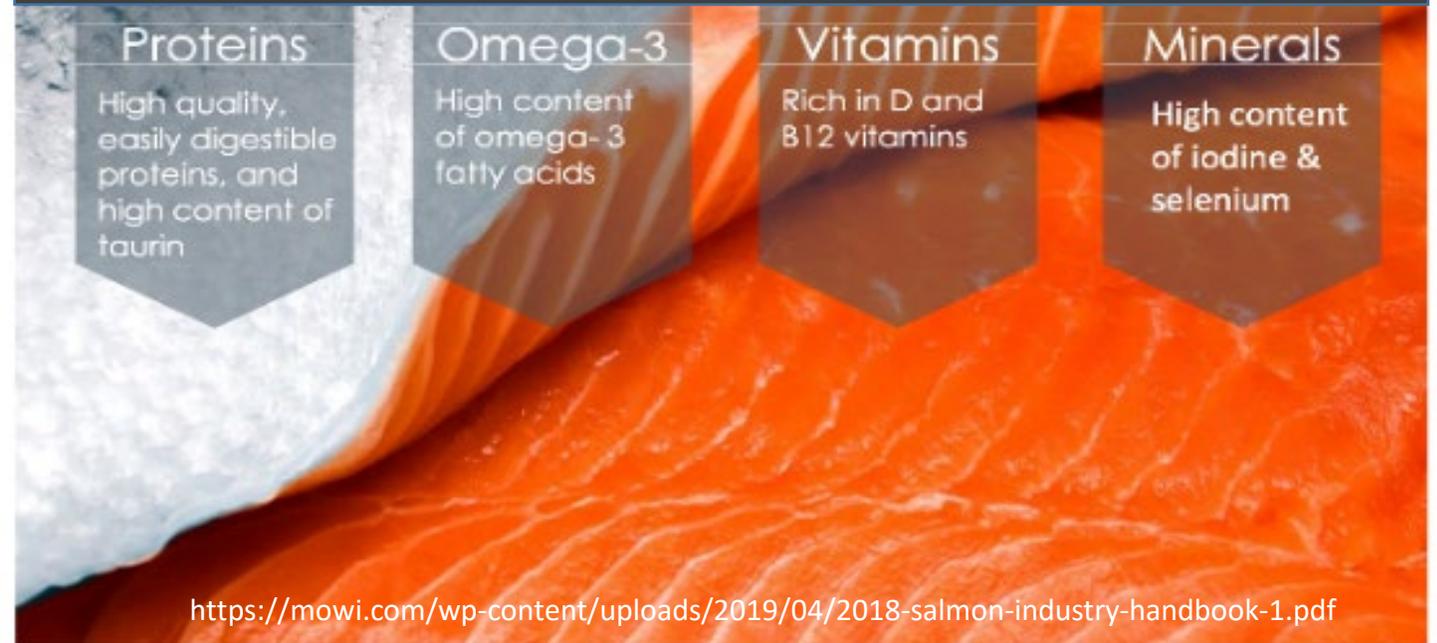
- Yield10 elected to defer further trait development work in canola and corn and focus resources on its Camelina products business. The company plans to seek partners for its traits in these crops.

Omega-3 Camelina

Mission:

Establish Camelina as the gold standard sustainable vegan aquafeed source for salmon farming

Salmon: a healthy nutritious source of protein and essential nutrients

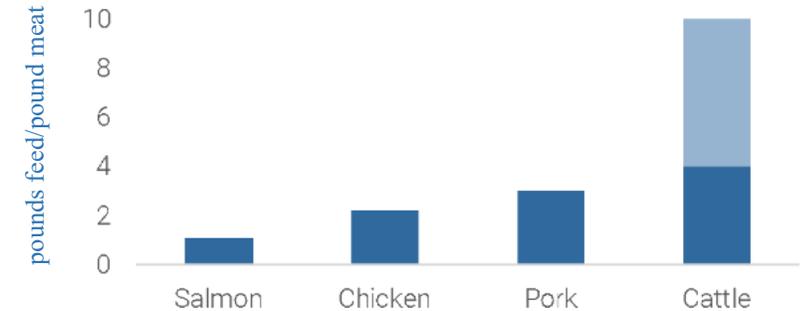


Farmed Salmon – Is Salmon the Protein of the Future?¹

EPA/DHA Omega-3 Fatty acids: growing supply - demand disconnect

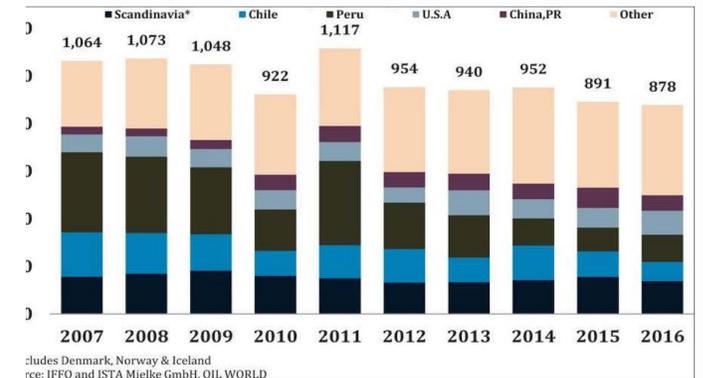
- Salmon is currently ~ 4.4% of seafood consumed²
 - Over 75% of salmon consumed is farmed
 - Production is projected to grow at 7%/year²
 - Highest feed efficiency of any meat protein product
 - Currently only a small percentage of protein consumed by humans
- An important source of **omega-3 fatty acids, DHA and EPA**
 - Essential for human health and wellness
 - Growing global omega-3 fatty acid demand
 - Fish oil harvest plateaued or declining
- Feed source is transitioning from ocean harvest to plants

Feed Conversion Ratios Across Protein Sources (kg)



Source: Marine Harvest (2018)

World fish oil production 2006 - 2016 ('000Mt)

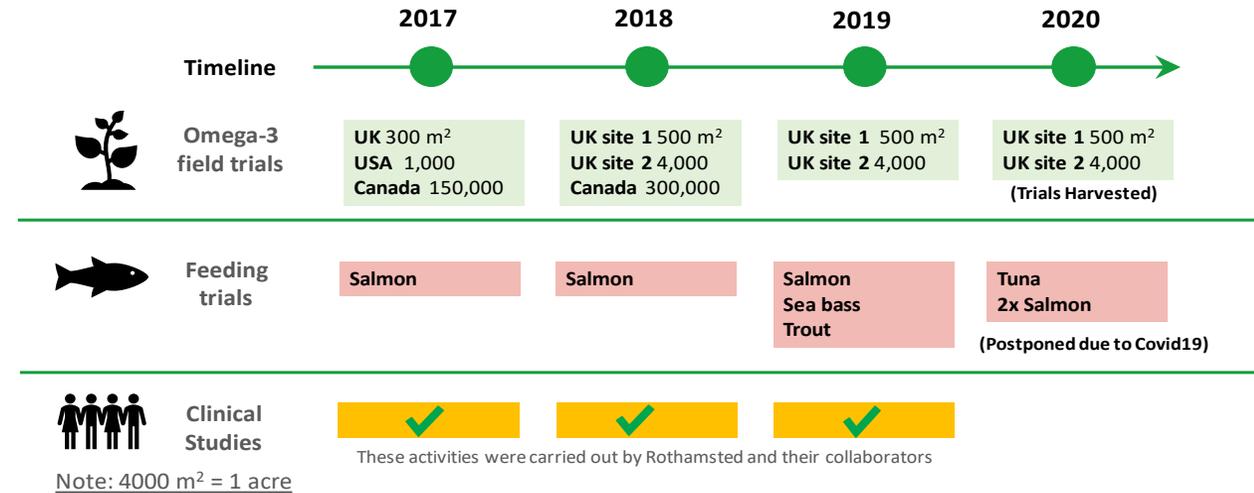


Rothamsted Camelina Omega-3 Technology

Omega-3 Camelina Technology is at a High Readiness Level

2030 potential: 0.3 – 0.7 million acres
@ \$600 >>> \$900 product revenue per acre

- Rothamsted Agreement signed Q4 2020
- **Best in class vegan fish oil replacement**
 - ~20% EPA+DHA fatty acid content in the oil exceeds northern hemisphere fish oil
 - R&D ongoing to increase EPA/DHA to 30% equivalent to southern hemisphere fish oil
 - Multiple field trials, aquaculture feed and human nutrition studies have been completed
- Strong technology synergies with Yield10
- Rothamsted is continuing to progress the technology
- Yield10 is progressing the commercialization strategy



Omega-3 (DHA+EPA) Oil Business Strategy

- Near term focus on Chile aquaculture feed market
 - Chile is ~30% of global feed market for fish oil (omega-3)
 - Major feed suppliers in Chile also leading suppliers for North America and Norway
- Progress regulatory approval in salmon feed
- Evaluating production in South American (2022>)
 - Identify potential business partners
 - Agricultural production
 - Feed and salmon producers
- Potential to expand production to Canada (2025>)
- Market expansion into other feeds: dairy, chicken, etc.



PHA Camelina

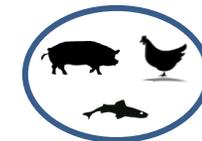
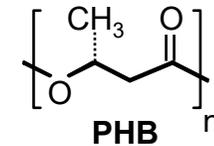
Mission:

**Carbon Negative
- Zero Waste Bioplastics -**

PHA Bioplastics – Multiple Applications

PHAs: Natural Microbial Polyester Biomaterials with multiple applications

- Nutrition and animal feed markets
 - Potential as probiotic in feed, improved feed efficiency
- Water purification
 - Denitrification – removes nitrate pollution – zero waste – Clean Water



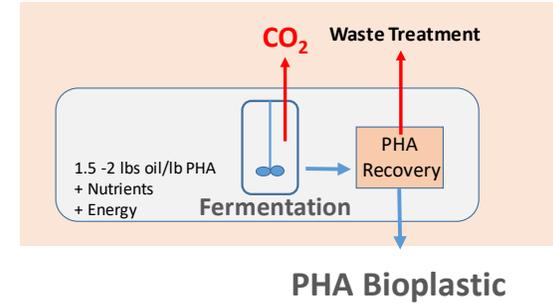
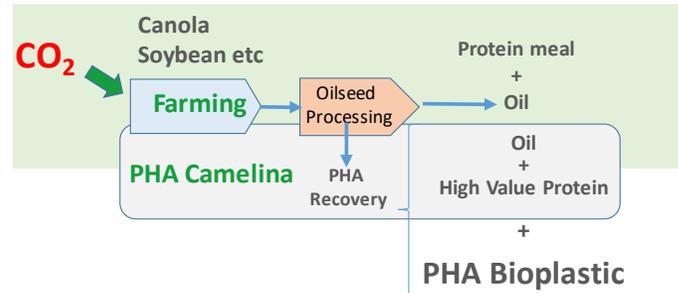
- PHA Bioplastics markets
 - Process like plastics and have good shelf life
 - Replace petroleum-plastics in a wide range of applications
 - Fully biodegradable – ZERO PLASTIC POLLUTION



- Sustainable low-cost production will enable large markets

PHA Production Methods

Farming → Seed Processing — Oil or sugar → PHA Fermentation- PHA Recovery

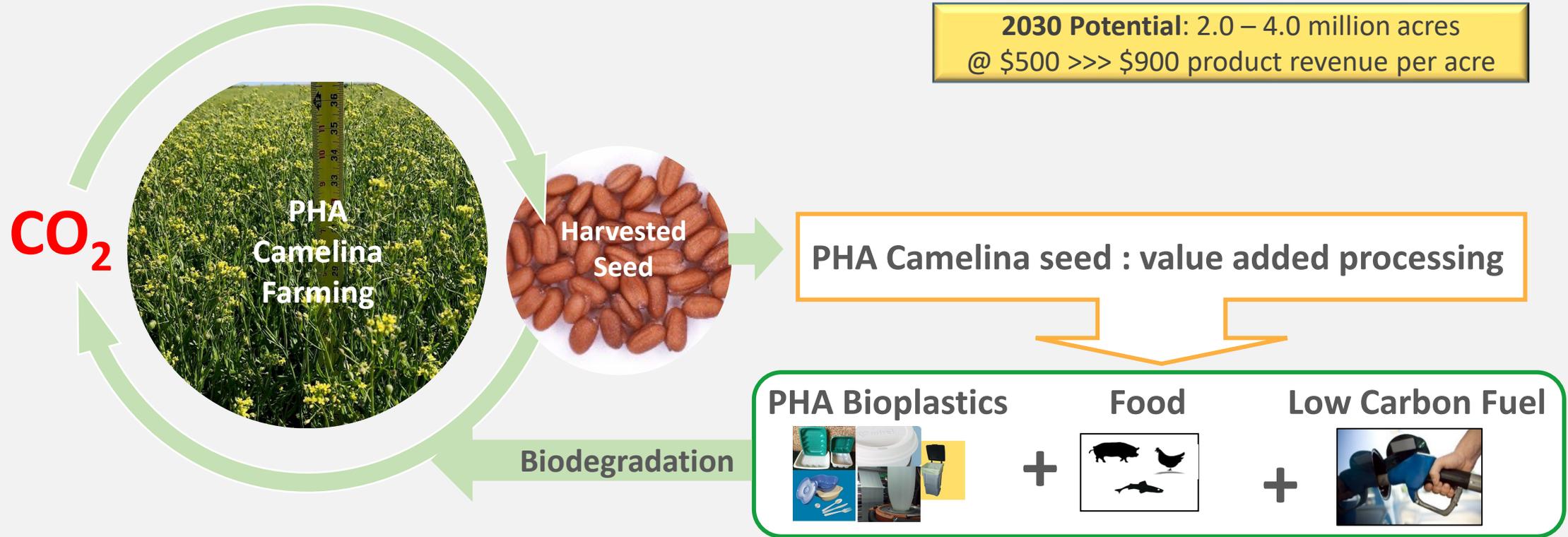


- Incremental CapEx for PHA recovery \$
- Hedging based on co-products
- Zero waste
- PHA cost \$ ~ same as vegetable oil

- Fermentation High CapEx/OpEx \$\$\$\$\$
 - Nutrients, energy, wastewater treatment
- PHA cost \$\$\$ - \$\$\$\$\$

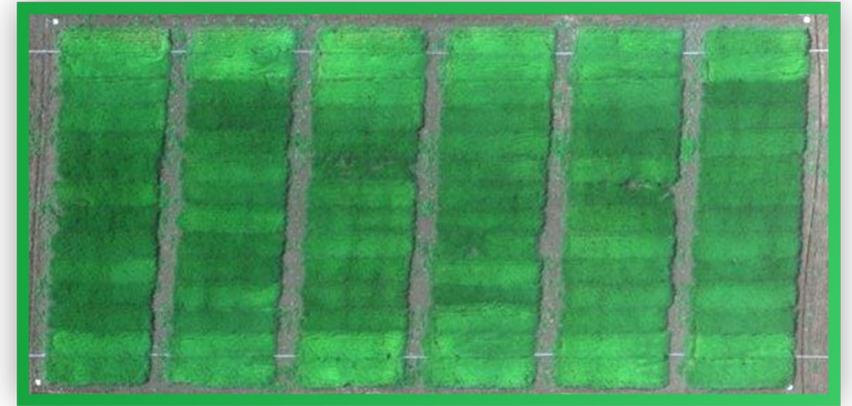
Goal: Carbon Negative - Zero Waste Bioplastics

Yield 10 Genetically programmed Camelina to produce PHA Bioplastics in the seed



PHA Bioplastic Camelina: Development Status

- Developed new technology solution to produce PHA in Camelina, patent application in 2019
- Conducted field tests of PHA Camelina in 2020 season
- Reported proof-of-concept milestone for producing PHA in field grown Camelina in January 2021
- Selected two PHA Camelina lines for further scale up in 2021, pending issuance of permits in the U.S.
 - Further seed scale up
 - Seed processing and product prototyping, sampling and other business development activities
- Elite PHA line development ongoing
 - Goal systematically increase PHA seed content to increase harvest value



Drone photo of PHA Camelina plants at U.S. Field Test Site



Sample of PHA bioplastic resin pellets produced by Metabolix

Update on R&D Activities

- Permitting under way in the US and Canada for 2021 Field Trials
 - Scale up of PHA bioplastic and E3902 Camelina lines
 - Ongoing testing of germplasm and novel yield and oil traits
- **Develop advanced commercial Camelina varieties**
 - Herbicide tolerance, disease resistance, yield, oil content,
 - Platform varieties for nutritional oils and PHA traits
 - **Develop commercial events for PHA Camelina**
- Support development of omega-3 Camelina at Rothamsted
 - Expect to provide business development update in Q1 call
- Support partners evaluating traits in other commercial crops – identify partners for our traits in canola and corn
- Continue discovery of novel yield and oil content traits identified using the GRAIN platform

Camelina Field Test US 2020



50 Acres Camelina Montana 2020



Yield10 FY 2020 Summary Financial Results¹

Investment ongoing to generate proof points and achieve key strategic objectives

Operating Results	Q4 2020	Q4 2019	Full Year 2020	Full Year 2019
Revenue	\$0.2 million	\$0.1 million	\$0.8 million	\$0.8 million
R&D Expense	\$1.4 million	\$1.2 million	\$5.3 million	\$4.8 million
G&A Expense	\$1.4 million	\$1.4 million	\$5.0 million	\$4.6 million
Loss from Operations	\$2.6 million	\$2.4 million	\$9.6 million	\$8.6 million
Net Loss	\$2.6 million	\$6.8 million	\$10.2 million	\$13.0 million

Balance Sheet

- Net operating cash usage of \$2.3 M for fourth quarter, \$8.7 M for FY 2020
- \$9.7 M in cash, cash equivalents and short-term investments at year end 2020
- Raised additional \$12.0 M in net proceeds in public offering completed in Q1 2021
- Captured additional \$3.9 M based on exercises of \$8.00 warrants in Q1 2021
- Estimate total net cash usage of approx. \$10.0 M to \$11.0 M for FY 2021
- No debt on balance sheet

Upcoming Milestones

Yield10 is on track to achieve key milestones in 2021 and beyond

Corporate and R&D Milestones	Period	Completed
Complete permitting for 2021 field tests & scale up (yield, oil content, E3902, PHA)	Q1 2021	
Build elite Camelina germplasm collection	2021 – 2022	
Progress the business plan for Camelina products	2021 – 2022	
Advance the commercial launch plan for Camelina DHA+EPA omega-3 oils	2021– 2022	
Broaden capabilities in regulatory affairs, seed operations and business development	2021 – 2022	
Secure strategic industry collaborations to address market opportunities	2021 – 2022	
Secure revenue based on commercial trait licenses	2021 – 2023	
Expand intellectual property portfolio	2021 – 2023+	



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Crop Innovations For Sustainable Food Security

March 17, 2021



Ag Biotech		Bioproducts and Biofuels		
Publicly Traded	Private	Other	PHA Bioplastics	
			Public	Private
   	   	  	  	

Crop Based PHA Product Opportunities

- Nutrient Pollution in the US: >100,000 miles of rivers and streams - 2.5 million acres of lakes, reservoirs and ponds > 800 square miles of bays and estuaries have poor water quality because of nitrogen and phosphorus pollution¹
- Global plastics production, 350 million TPY², ~\$720 billion by 2025³ (4% growth rate = + 30 billion lbs/year)

Nutrient (nitrate/phosphate) pollution - food production and consumption



Solution: PHA a natural product for denitrification of water systems



Plastic pollution - packaging - food service ware

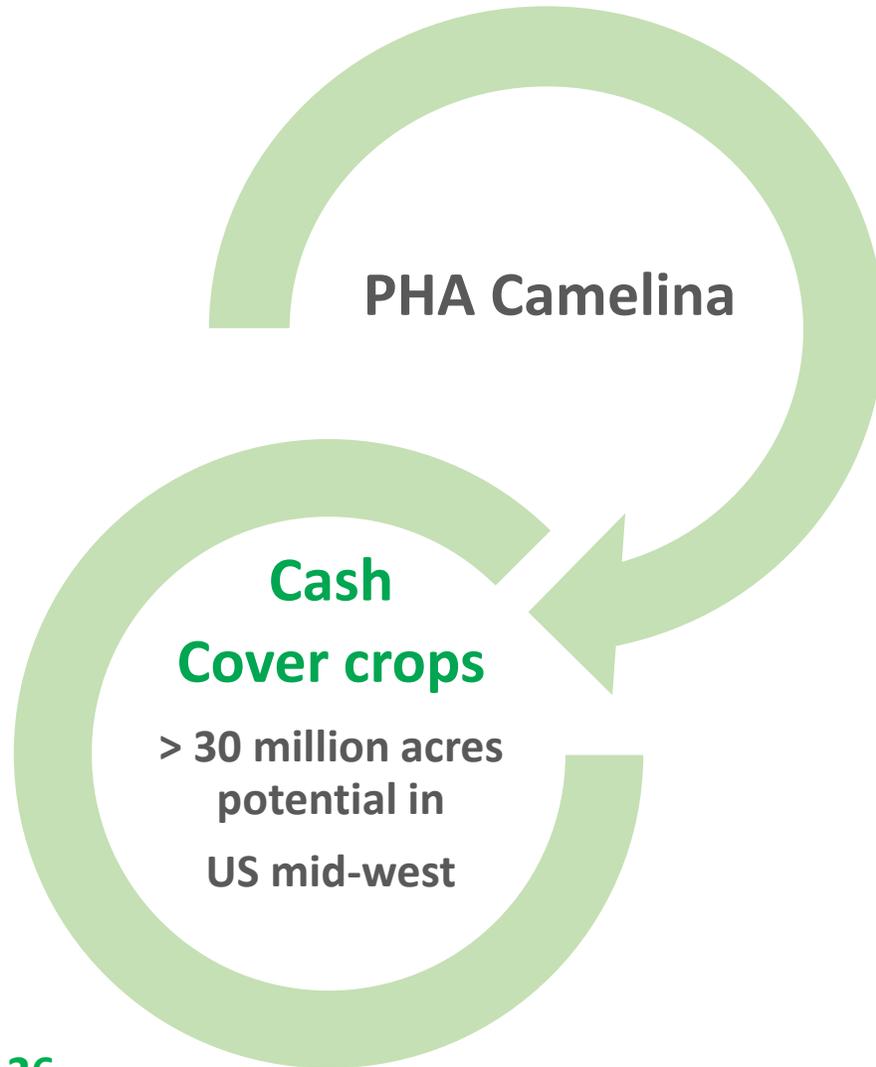


Solution: PHA biodegradable bioplastics

1. <https://www.epa.gov/nutrientpollution/where-nutrient-pollutionoccurs>
2. https://www.plasticseurope.org/application/files/5715/1717/4180/Plastics_the_facts_2017_FINAL_for_website_one_page.pdf
3. <https://www.prnewswire.com/news-releases/plastics-market-size-worth-usd-721-14-billion-by-2025--cagr-4-0-grand-view-research-inc-300801897.html>

PHA Camelina: The First Profitable 'Restoration Crop' ?

A Profitable Solution for Climate Change and Pollution



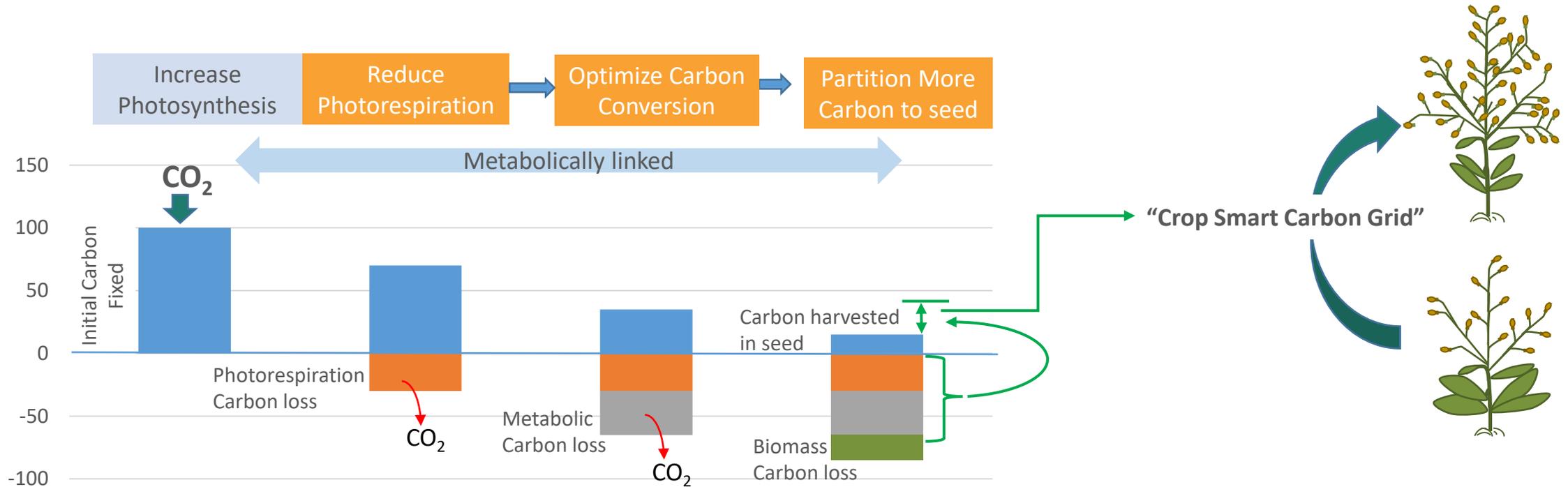
- **Value Creation**

- Low cost scalable PHA bioplastic production- new market for agriculture
- Valuable Co-products (Food + fuel)
- Increased farm revenue expands cover crop adoption
- Double cropping increases productivity

- **Sustainability benefits**

- PHA bioplastic
 - Not made from oil/gas
 - Fully biodegradable, zero pollution
 - Water treatment - clean water
- PHA Camelina crop reduces carbon footprint of food production
- Low carbon index oil co-product for renewable diesel

Increasing the Efficiency of Conversion of Fixed CO₂ to Harvestable Seed



- For every 100 units of CO₂ fixed initially by photosynthesis only a fraction of that is harvested as seed
- Reducing metabolic CO₂ release has the theoretical potential to achieve a 2-3 X increase in seed yield