Yield10 Bioscience, Inc.

(NasdaqCM:YTEN)

Investor Presentation

www.yield10bio.com

Yield10 is an agricultural bioscience company developing crop innovations to improve crop yields and enhance sustainable global food security.

June 9, 2020

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, 2019 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**

Executive 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.
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 Metabolix in 1997 to lead the plant science research program.
Charles Haaser **VP, Finance & CAO**	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**	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 Bioscience (Nasdaq: YTEN)

An Agricultural Bioscience Company developing crop innovations to improve crop yields and address sustainable global food security

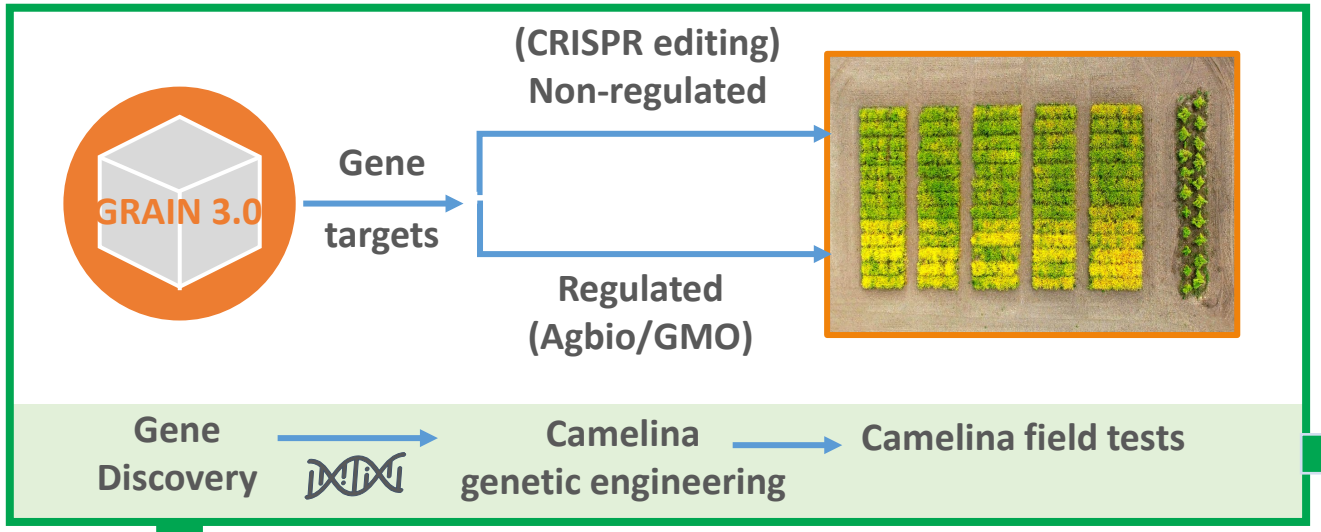
"The impacts of climate change on land will raise food prices and risk widespread food instability, but there are solutions," says latest UN IPCC Report Aug 2019

Recent Accomplishments - 2020

- ✓ Diversified and strengthened the Board by adding Ag industry veteran Sherri Brown, Ph.D. to the Board of Directors
- ✓ Completed Phase 1 of trait development program in corn
- ✓ Contracted Seed Co to begin executing Phase 2 development (e.g. creating hybrids, seed bulk-up, and field testing) of several yield traits in corn hybrids
- ✓ Reported results of 2019 field tests in Camelina and canola
- ✓ Obtained positive response to “Am I regulated?” letter from USDA-APHIS for CRISPR C3007 in Camelina
- ✓ Completed permitting for 2020 field testing program and shipped seed to all field test sites
- ✓ Advanced Camelina business plan

The Yield10 Trait Factory and Business Strategy/Model

The "Trait Factory"



Seed Company Collaborations

Business Strategy/Model

Trait Licensing revenue
- Option value on >400 million acres
- Corn, soybean, canola and others

Research licenses
With Ag majors

Camelina Performance Data
- Increased seed yield
- Increased oil content

Camelina
varieties

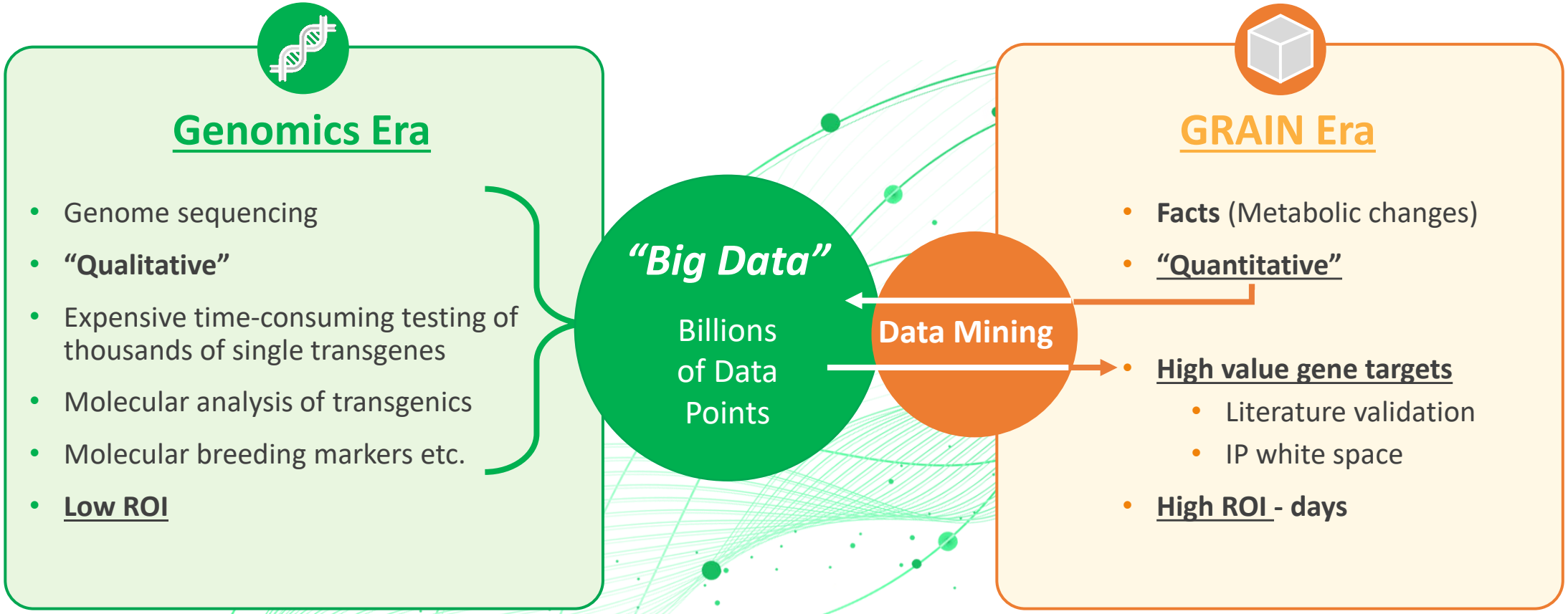
Product revenue
- Nutritional oils/Protein meal
- Longer term-PHA biomaterials

Yield10 | BIOSCIENCE

Which Genes Should We Reprogram to Deliver a Trait?

GRAIN - Yield10s unique differentiation – advanced trait gene discovery tool

- GRAIN *(Gene Ranking Artificial Intelligence Network)* uses metabolism to rationally mine genomics data



Yield10 | BIOSCIENCE

New Tools Enable the Development of Exceptional Performance Traits

Examples of Yield10's Disruptive Capabilities:

C3003/C3004 traits: 23% - 65% increase in seed yield in oilseed crops

C4001, C4003 traits: 70% increase in photosynthesis, over 150% increase in biomass

C3006 advanced synthetic biology trait: 128% increase in seed yield in an oilseed crop

- Current biotech traits (~470 million acres[1]) provide yield protection
- Yield10 proof points demonstrate step-change increases in yield
- Yield10 traits may be broadly applicable to a wide range of food, feed and biomass crops
- Genome-editing is a key tool to deploy new traits and accelerate commercialization

[1] *Global Status of Commercialized Biotech/GM Crops in 2017, ISAAA*

Yield10: Targeting High Revenue Potential

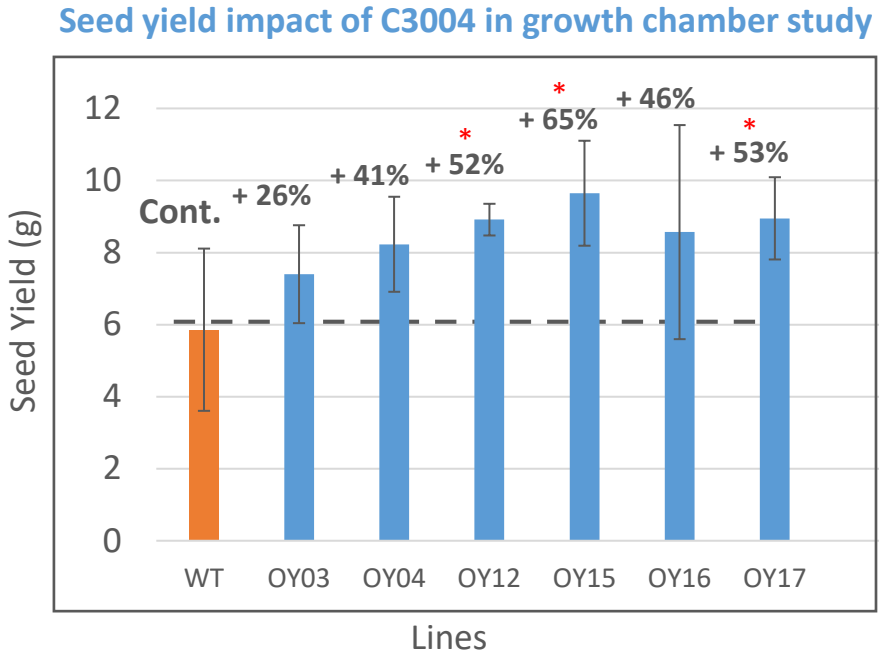
Many opportunities exist for licensing and/or partnerships

Traits	Target Crops	Potential Acres (N. America)	Annual Revenue Potential
Seed yield			
C3003, C3004, C3011	canola, soybean[1], corn, potato	200 million	$1-3 billion
Seed and biomass yield: gene regulator traits			
C4000 series	Camelina, corn and sorghum	140 million	TBD
Oil content – focus on genome editing targets			
C3007 - C3010, C3012	Camelina, canola, soybean	120 million	$100-200 million[2]
Products			
Nutritional Oils	Camelina	10 million	TBD
PHA Biomaterial	Camelina	20-30 million	> $10 Billion

1. An additional 130 million acres of soybean potential in S. America.
2. Based on a trait value calculated as 10-20% of the value of a 10% increase in oil content and the oil value from the 2017 soybean crush in the US to produce $7.15 billion of soybean oil and the 2017 Canadian canola crush to produce $3.08 billion of canola oil.
United Soybean Board statistics and Canola Council Statistics

Re-programming C3004 Significantly Increases Seed Yield in Camelina

Developing strategies to deploy C3004 as a nonregulated trait



*Student's t-test, *p<0.05; Data average of 3 to 4 plants per line*

Control +C3004

Up to 65% increase in seed yield in C3004 Camelina plants

- C3004 is a novel Camelina gene – increased C3004 activity in Camelina >>seed yield increase up to 65%
- 2019 field observations suggest increase in seed; clear evidence of increase in photosynthetic efficiency[1]
- C3004 is being tested in other crops: canola, soybean, potato and corn
- Currently developing a non-regulated version of C3004 in Camelina for commercial deployment

[1]*Reported in results of 2019 field tests*

Yield10: Rich Pipeline of Trait Genes in Development

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2020 Field Testing Plan for Camelina and Canola

Planting to begin in Q2 pending suitable weather conditions

Objective: Generate multi-site field data to identify commercial quality lines and data to drive commercial and partnership discussions

Field Tests in Camelina (US/Canada)

- C3004 seed yield trait
- CRISPR edited C3007 oil content trait
- PHA biomaterial trait (C3014/C3015)
- Seed bulk up of CRISPR triple edit oil content trait (line E3902) for larger scale trials in 2021 – potential first variety

Field Tests in Canola (Canada)

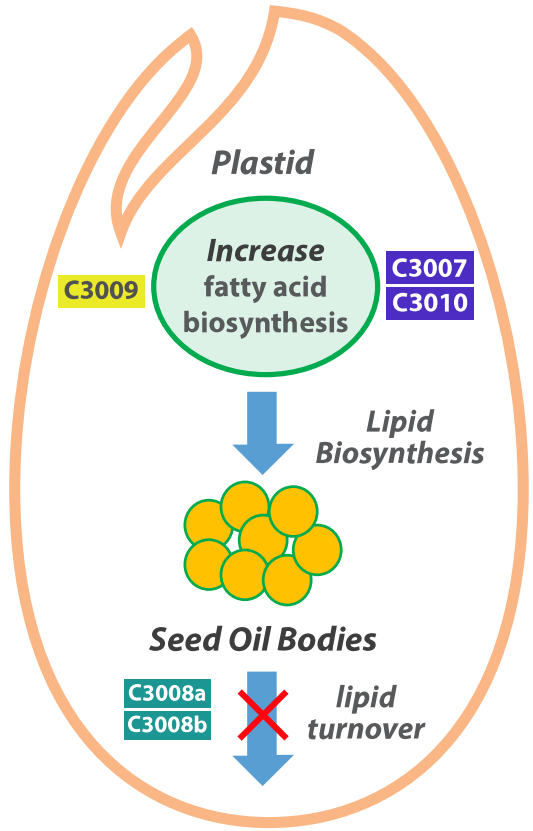
- C3004 seed yield trait
- Seed bulk up of 14 commercial quality C3003 lines
- Generate data to drive partnership discussions

Control **+ C3004**

2020 R&D Priorities for Trait Development

Update on additional research and development activities

- Execute 2020 field trials
- Progress traits in our Camelina pipeline
- Support Bayer (soybean), Simplot (potato) and Forage Genetics (forage sorghum) in evaluation of performance traits, support corn program contractor
- Define the product profile and develop advanced commercial Camelina varieties
  - Herbicide tolerance, disease resistance, etc.
  - Develop commercial events for PHA Camelina



Seed
CRISPR Oil Traits

Yield10 Camelina Platform – Product Targets

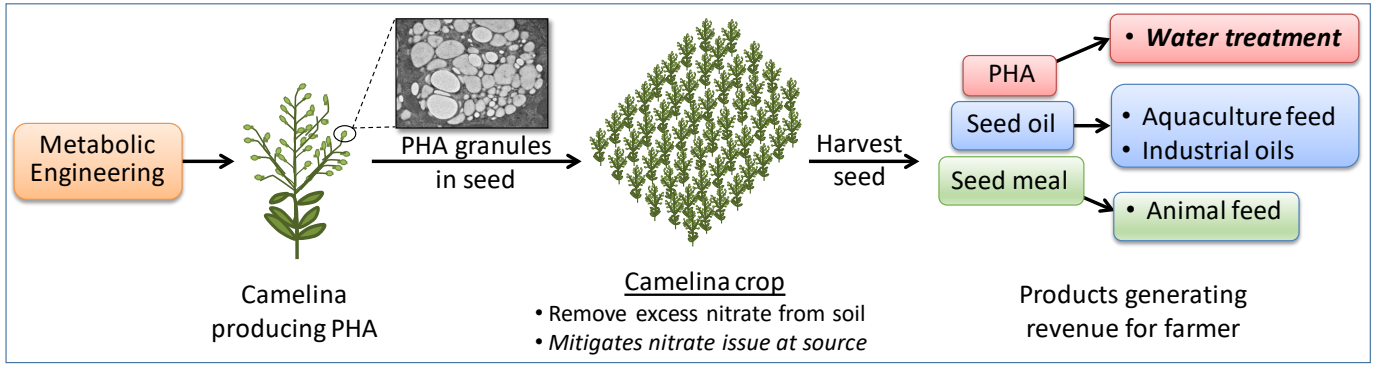
Continuing the development of the business plan for Camelina

Near Term: Nutritional oils

- High in omega-3 fatty acids (ALA-the healthy kind), reported to have heart health benefits[1], GRAS in the US and approved for salmon feed in Canada
- Camelina oil is a better fish oil substitute in aquaculture feed than soybean oil
- Residual protein meal is approved for use in some feed applications in N. America

Longer Term: PHA Biomaterials

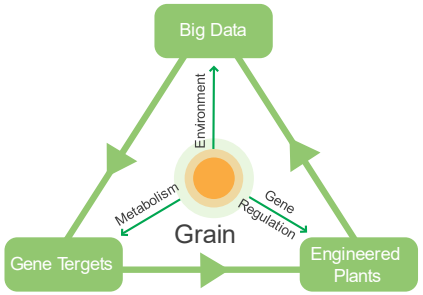
- Yield10 re-programmed Camelina to produce PHA biomaterials as a third seed product
- First field test planned for 2020
- Low cost scalable source of PHA biomaterials
- Large acreage and volume opportunities
- Potential for downstream offtake partners



[1]Suvi M. Manninen et. al, Molecular Nutrition and Food Research Vol. 62, Issue 10 May 2018

YTEN Path to Trait Commercialization: Crop Development Stages

Advanced Technologies and New Regulatory Path Significantly Accelerate Trait Discovery and Path to Market



- Identify gene targets using GRAIN platform
- Test candidate genes in Camelina platform
- Select lead genes/traits for development
- Determine target crops
- Select development path

Non-regulated Trait: 3-5 years

Early Development
- Introduce trait into Camelina germplasm
- Petition for non-regulated status
- Conduct US field tests

Commercial Development
- Conduct multisite field tests to support market introduction
- Bulk up seed production
- Variety registration

Launch
- Commercial introduction

Based on 2019 field tests: Camelina Line E3902, Non-regulated High seed oil content

Regulated Trait: 4-7 years

Early Development
- Introduce trait into Camelina germplasm
- Select multiple events
- Construct optimization and selection

Commercial Development
- Make additional events and additional lines in a range of germplasm
- Conduct multisite field tests
- Begin collecting data and preparing a regulatory package

Regulatory/ PreLaunch
- Multisite field tests of commercial events
- Complete regulatory package
- Seed production

Launch
- Commercial introduction
- De-regulation in Canada, as required

Yield10 | Bioscience

Business Strategy – Products and Path to Revenue

The "Trait Factory" leverages 28 years of Technology investment/achievements

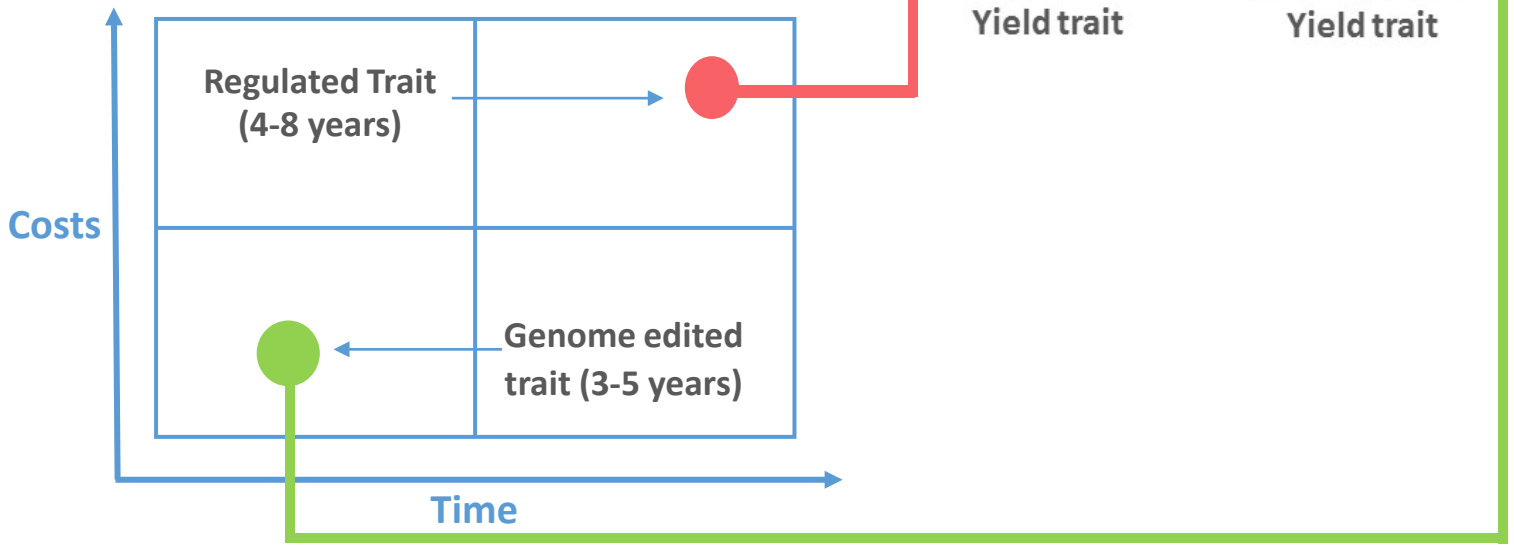
"TRAIT FACTORY" "GRAIN"[1] Gene discovery – Camelina genetic engineering, "Fast Field Testing"			
Business Area	**Path to Market & Revenue Model**	**Products**	**Partners**
"GRAIN"	Funded R&D agreements Milestone payments License revenue	**Trait gene discovery** **Product optimization**	future future future future future future
Performance Traits	Multi-year field trials in canola, soybean, corn Licensing to Ag majors	**Seed yield (genes)**	Bayer CropScience future; Forage Genetics International future; Simplot
		Oil content (genes)	future future
Camelina Products	Value chain partners Field trials, product development Seed and/or product sales	**Nutritional oils (near-term)**	future future
		PHA biomaterials (mid-term)	future future

Licensing Revenue Model

Traits deployed using traditional genetic engineering or CRISPR genome-editing tools

Licensing revenue model – canola example

Canola (US)	11% Target Yield Increase	40-50% Value – Seed Co/Yield10	Yield10 Annual Revenue Potential	
2016 Harvest 18.4 M tons $9.6 B value	$1.06 B value	$420-530 M value	$ 85 M (1)	$ 210 – 265 M(2)
			Regulated Yield trait	Non-Regulated Yield trait



1. http://www.statcan.ga.ca/daily-quotidien/161206/dq161206b-eng.htm, AAFC projected canola price 2016-2017 is $520/tonne.
2. Assumptions: Regulated Yield10 trait: target of 5-12% of the value add for yield traits; used 8% in calculations. 3. Deployment of a non-regulated yield trait through genome editing (revised USDA-APHIS rules) could enable Yield10 to capture a greater proportion of value add based on faster time to market and lower development costs, 20-25% of the trait value (50% of the value that goes to the Seed Co/trait provider)used in the calculation for illustrative purposes.

Yield10 First Quarter 2020 Summary Financial Results[1]

Yield10 is investing in the generation of proof points and the achievement of key strategic objectives

Operating Results	First Quarter 2020	First Quarter 2019
Revenue	$0.2 million	$0.1 million
R&D Expense	$1.5 million	$1.2 million
G&A Expense	$1.4 million	$1.2 million
Loss from Operations	$2.7 million	$2.3 million
Net Loss	$3.6 million	$2.3 million

Balance Sheet

- $9.8 M in cash, cash equivalents and short-term investments at end of first quarter 2020
- Net operating cash usage of $2.3 M for first quarter 2020
- Estimate total net cash usage of approx. $9.0 to $9.5 M for FY 2020
- Cares Act PPP loan of $333 K obtained in Q2; No other debt on balance sheet

[1]. Guidance current as of date of conference call on May 14, 2020.
Press release available at www.yield10bio.com

2020 Milestones

Corporate and R&D Milestones	Period	Completed
• Named Ag industry veteran Sherri Brown, Ph.D. to the Board of Directors	Q1 2020	✓
• Complete analysis of data from 2019 Field Tests	Q1 2020	✓
• File all permits in US and Canada for 2020 Field Tests	Q1 2020	✓
• Complete permitting and logistics in US and Canada for 2020 Field Tests	Q1/Q2 2020	✓
• Confirm USDA-APHIS considers C3007 Camelina as not regulated per 7 CFR part 340	Q1/Q2 2020	✓
• Complete planting of all field tests in US and Canada	Q2 2020	
• Complete the 2020 Field Tests (harvest) and begin reporting data	Q4 2020	
• Progress the business plan for Camelina products	2020 - 2021	
• Secure strategic industry collaborations	2020 - 2021	
• Advance corn program traits to field testing readiness	2020 - 2021	

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