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Yield10 Bioscience, Inc.

(NASDAQCM:YTEN)

Second Quarter 2019 Financial Results
and Business Highlights
Conference Call

Yield10 is developing new technologies to achieve step-changes
in crop yield to enhance global food security
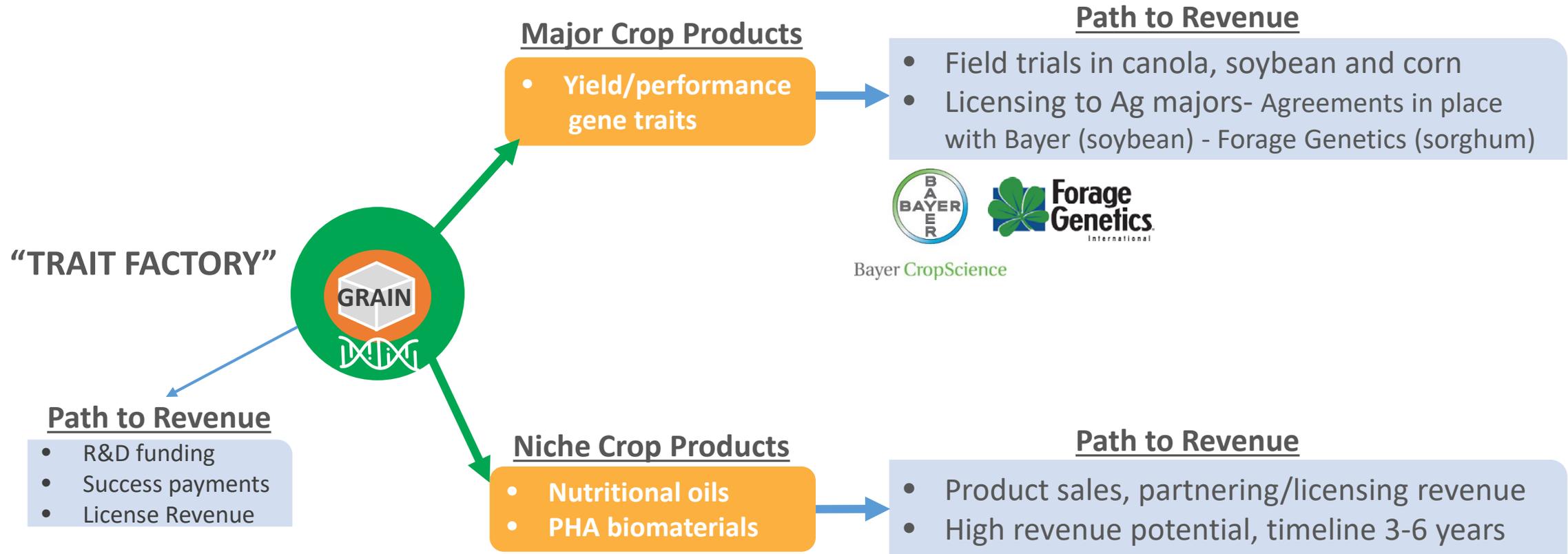
August 12, 2019

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, 2018 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.

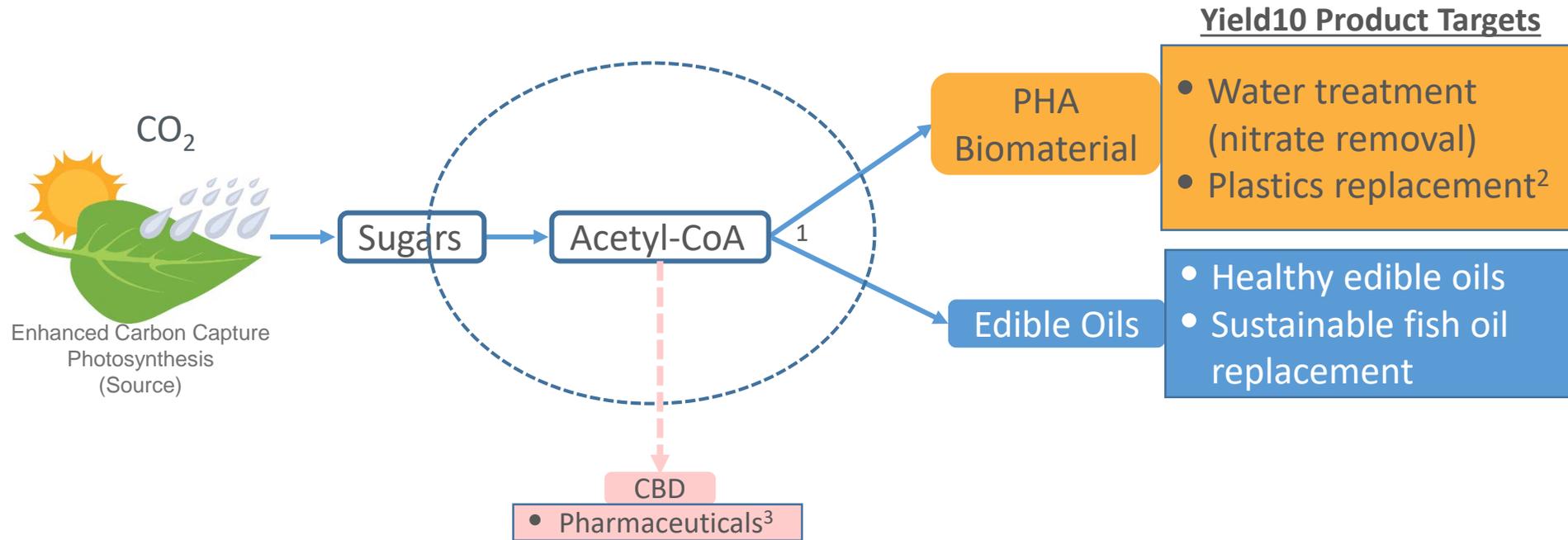***Under the Private Securities Litigation Reform Act of 1995**

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Yield10 Business Strategy

Improving Regulatory Environment: "USDA-APHIS 7CFR part 340" Modernization

"TRAIT FACTORY"

GRAIN

Major Crop Products

- **Yield/performance gene traits**

Path to Revenue

- Field trials in canola, soybean and corn
- Licensing to Ag majors- Agreements in place with Bayer (soybean) - Forage Genetics (sorghum)

Path to Revenue

- R&D funding
- Success payments
- License Revenue

Niche Crop Products

- **Nutritional oils**
- **PHA biomaterials**

Path to Revenue

- Product sales, partnering/licensing revenue
- High revenue potential, timeline 3-6 years

Multiple traits in development

Niche Crop Product Targets

- Focus on products protected by patented traits
- Leverage patented yield, oil content and product traits
- Develop product revenue and partnerships with downstream participation

CO_2

Enhanced Carbon Capture Photosynthesis (Source)

Sugars → Acetyl-CoA [1]

PHA Biomaterial

Yield10 Product Targets
- Water treatment (nitrate removal)
- Plastics replacement[2]

Edible Oils
- Healthy edible oils
- Sustainable fish oil replacement

CBD
- Pharmaceuticals[3]

Yield10 has over 30 years of experience with optimizing the flow of carbon to the key building blocks for oils, PHA and CBD, and an expanding IP portfolio[1]
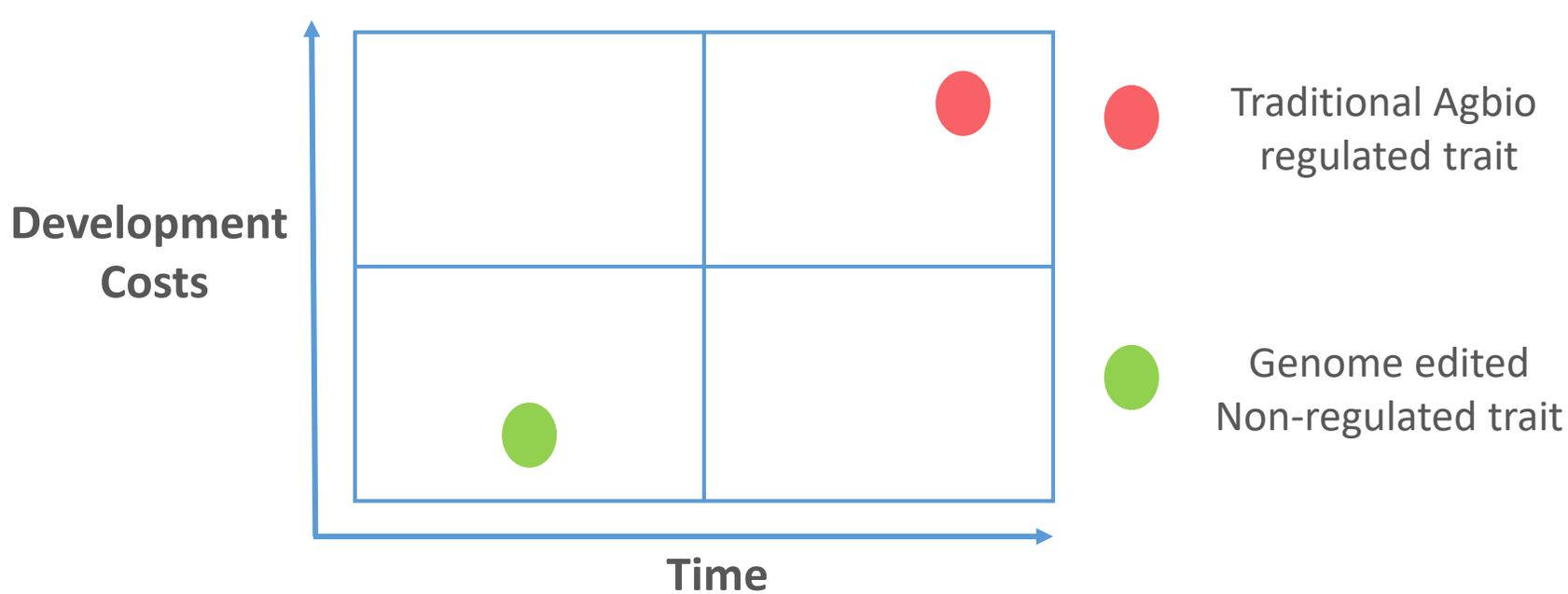
[1] One issued US Patent, 7 pending Applications; [2] PHA supplier to plastics replacement sector; [3] Technology provider

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* Technolo

Genome editing of traits (CRISPR) reduces cost and accelerates timeline to a product

USDA-APHIS efforts to modernize regulations could significantly streamline path to market

Development Costs (y-axis) / **Time** (x-axis)

Traditional Agbio regulated trait (red)

Genome edited Non-regulated trait (green)

The New York Times

Climate Change Threatens the World's Food Supply, United Nations Warns

Regulated Trait (4-8 years)

| Phase 1/2 Trait Discovery Early Development | Phase 3 Commercial Development | Phase 4 Regulatory/ Pre-Launch | Commercial |

Non-regulated Trait (3-5 years)

| Phase 1-2-3 Development | Commercial |

5

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- ✓ Completed planting for 2019 Field Tests for evaluation of seed yield traits in oilseed crops; Harvest expected by end of Q3

  - ✓ Second generation C3003 in **canola** (Canada)

  - ✓ C3004 in **Camelina** (Canada)

  - ✓ Various CRISPR genome edited oil content boosting traits in **Camelina** (US)

- ✓ Consistent with C3003 canola being in the Commercial Development phase, we have been developing additional independent C3003 **canola** lines for field testing and crossing into elite canola lines

- ✓ Granted US patent covering the use of C3003 to increase seed yield in crops

- ✓ Filed patent on the use of Camelina platform to produce low-cost PHA biomaterials

- ✓ Filed patents on several new gene targets for increasing seed yield/oil content discovered using GRAIN platform and on combinations of CRISPR edited genes for increasing oil content in crops

- ✓ Received a Notice of Allowance from USPTO covering the use of C4001 to increase productivity of crops

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Yield10's PHA Crop Breakthrough

> **Yield10 Bioscience Files U.S. Patent Application Covering New Technology Enabling Low-cost Production of PHA-based Biomaterials in Camelina**
> WOBURN, Mass. – June 17, 2019 – Yield10 Bioscience, Inc. (Nasdaq:YTEN), an agricultural bioscience company that uses its "Trait Factory" to develop high value seed traits for the agriculture and food industries, today announced that the Company has filed a U.S. Patent application for new technology enabling low-cost production of PHA-based ("polyhydroxyalkanoate") biomaterials in *Camelina sativa,* an oilseed crop.

Like drilling an oil well or investing in real estate: when making a new product in a plant - cellular location matters

- Oilseeds accumulate 30-50% of their weight as oil bodies in the cell **cytosol**

- Producing PHA above 5% in seed **plastids** – results in non-viable seeds

- *Yield10 engineered oilseeds to produce 10% PHA in the* **cytosol** *with healthy, viable seeds*

- 10% seed weight economic models indicate low PHA production costs
  - High upside potential from Yield10s GRAIN/advanced synthetic biology/yield trait capabilities > 20%PHA > 30% PHA

- *PHA for denitrification/water treatment could provide effective, low-cost solution to environmental problem*

- Yield10 plans to invest ~$4-6 million over 2 years to enable a $multi-billion industry

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Yield10 Path and Timeline to Value Creation

2017-2018	2019-2020	2021-2023
"emerging"	*"growing"*	*"harvesting"*
Company launch	Build reputation as innovator	Product revenue
Establishing GRAIN 1.0 trait discovery platform	The "Trait Factory" GRAIN 3.0 platform and CRISPR	Expand range of trait targets (e.g. nitrogen use, pod shatter, etc.)
Focus on trait discovery	Traits in commercial development	Traits on clear path to market
Camelina Platform	Development in: Camelina, canola, soybean, corn, wheat and rice Production platform: oils, PHA	Expand deployment of traits geographically and in additional crops
Portfolio of traits	Prioritize genome-edited traits	Gen 2 traits and trait stacks
First affiliations	Form revenue generating collaborations, partnerships	Highly sought after partner for trait discovery and development

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Yield10: Rich Pipeline of Trait Genes in Development

Many opportunities exist for licensing and/or partnerships

Yield Traits	Target Crops	Potential Acres (N. America)	Indicative YTEN Revenue Potential
Seed yield: carbon conversion efficiency traits			
C3003, C3004[1], C3011	canola, soybean[2], corn	200 million	$1-3 billion
Oil enhancing traits[1]			
C3007, C3008a, C3008b, C3009, C3010, C3012	Camelina, canola, soybean	120 million	TBD
Seed and biomass yield: gene regulator traits[1]			
C4000 series	wheat[3], rice[3], corn and sorghum	140 million	TBD
PHA Biomaterial	Camelina	20-30 million	> $10 Billion
Nutritional Oils	Camelina	10 million	TBD

[1] Traits accessible with genome editing; not regulated by USDA-APHIS, could be regulated by EPA and/or FDA and/or regulated in EU, Canada
[2] An additional 130 million acres of soybean potential in S. America
[3] Market for rice is fragmented; est. 2 million acres US; 400 million acres ex-US ex-US,:~72 million acres wheat N. America, 450 million worldwide

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Field Tests underway at sites in Canada and US

Field Testing C3003 in Canola (Canada)

Objective: Generate multi-site field data

- Repeat testing of current C3003 canola lines

- Generate more C3003 canola events/lines for testing and crossing into elite varieties

Field Testing C3004 in Camelina (Canada)

Objective: Generate multi-site field data

- Generate data to drive partnership discussions

- Continue work to deploy trait in canola and corn

Field Testing CRISPR genome edited traits in Camelina (US)

Objective: Generate field data

- Test several lines containing (1) C3008a or (2) C3008a, b and C3009

- Generate data to support nutritional oils and drive partnership discussions
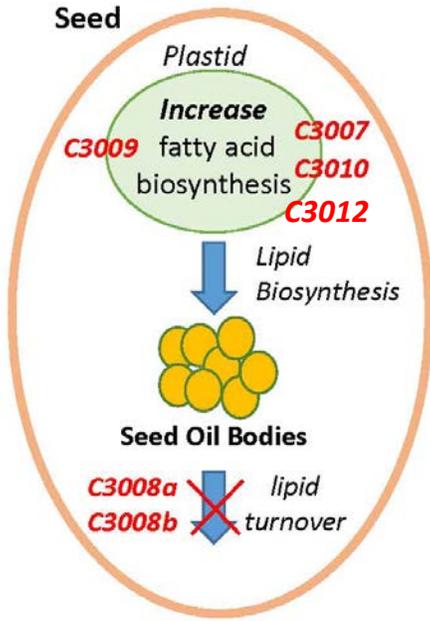
2019 C3003 Canola Field Tests

2019 CRISPR Camelina Field Tests

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Specialty oils: Cost of goods is driven by seed yield/acre x seed oil content = oil/acre

Multiplex editing of *C3008a*, *C3008b* and *C3009*

Gene Targets			% Increase, oil per individual seed (mgs)	% Increase, individual seed weight *(mgs)*	% Increase, seed oil content *(% of seed weight)*	% Increase, number of seeds per plant	% Increase, total oil produced per plant
sdp1 **C3008a**	*sdp1-like* **C3008b**	*Tt2* **C3009**					
Line type 1 — X X _	X X X	X X X	+ 12	+ 1	+ 9	- 4	+ 5
Line type 2 — X X X	X X _	X X X	+ 38	+ 17	+ 5	- 19	- 15
Line type 3 — X X X	X X X	X X X	+ 34	+ 9	+ 6	- 29	- 26

Preliminary snapshot of trait performance from greenhouse growth

- Seed oil per plant is a marker for oil/acre
- There is a trade off between increased oil content and reduced seed yield
- Yield10 optimized the combination of genome edits to increase oil/plant by up to 5%
- Editing of C3007 in Camelina and canola is ongoing - greenhouse data expected by Q4 2019/Q1 2020

Note: a 10% increase in oil content in canola across the N. America acreage could generate an additional $800 MM (Canadian) in added value

Link to YTEN Plant Biology 2019 Presentation

Affiliations Expand Testing of Traits in Key Crops

Leveraging crop expertise of Ag players to deploy Yield10 traits in commercial germplasm, collect field testing data on crop yield performance and provide path to commercial licensing

Yield10 BIOSCIENCE	In-house expertise in Camelina, canola and rice Access to expertise in soybean and corn
Bayer CropScience	Research license to C3003 and C3004 for evaluation and field testing in elite soybean lines
Forage Genetics International	Research license to C3003, C4001, C4002, C4003 and C4029 for evaluation and field testing in elite forage sorghum
Canada NRC·CNRC	Yield10 research partner for evaluation of novel yield traits in wheat

Many additional opportunities exist for licensing and/or partnerships

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- **Balance Sheet**
  - Net operating cash usage of $1.8 M for Q2 2019
  - $4.3 M in cash and cash equivalents at end of Q2 2019
  - In March, closed on $2.6 million, net proceeds, in registered direct offering of approx. 2.4 million shares of common stock priced at market
  - Estimate total net cash usage of approx. $9.0 to $9.5 M for FY 2019
  - No debt on balance sheet

- **Operating Results**
  - Reported net loss for Q2 2019 of $1.9 M or $0.15 per share
    - Based on $0.3 M in grant revenue, $1.2 M in R&D, and $1.0 M in G&A spend
  - Reported net loss for 6-months 2019 of $4.1 M or $0.36 per share
    - Based on $0.4 M in grant revenue, $2.4 M in R&D, and $2.2 M in G&A spend

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Yield10 is working to advance our crop yield technologies and form collaborations

- Continue commercial development of C3003 in canola and other crops (soybean, corn)
  - *Focus on C3003 development in canola through creation of additional events and testing in elite germplasm*
  - *Support Bayer in development of C3003 and C3004 traits in soybean*
  - *Continue independent evaluation of C3003 in soybean, rice and corn*
- Report on C3004 Camelina 2019 field tests, fast-track into canola and corn
- Report progress on oil boosting traits using CRISPR genome editing
- Report progress on C4000 series traits
  - *Support Forage Genetics in forage sorghum*
- Secure revenue generating Ag industry collaborations
- Develop the business plan and partnerships for the Camelina platform
- Build our intellectual property portfolio
- Communicate our scientific innovations in technical presentations and papers

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