



Yield10 Bioscience, Inc.

(NASDAQCM:YTEN)

Investor Presentation

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

November 2018



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, 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, 2017 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 (NasdaqCM:YTEN) is developing technologies to enhance global food security

- Headquartered in Woburn, MA USA
- Oilseeds Center of Excellence in Saskatoon, Canada

Yield10 optimizes photosynthesis and carbon flow in crops to increase yield

- Yield10 is targeting step-change (10-20%) increases in seed yield
- Technology based on >17 years of cutting edge crop metabolic engineering research
- >16 recent patent applications for increased crop yield

Yield10 focuses on its core strengths of advanced bioscience and innovation

- Discover and de-risk yield technologies for canola, soybean and corn
- Major North American biotech crops ~200 million acres/year

Leadership Team

Oliver Peoples, Ph.D.
CEO

- Dr. Peoples is an experienced entrepreneur and biotechnology executive with over 30 years of experience in science and technology innovation and commercialization. Dr. Peoples led the development of Yield10's research and business focus

Kristi Snell, Ph.D.
VP Research & CSO

- Previously VP of Research and Biotechnology at the Company with 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 where she has led the plant science research program since its inception

Charles Haaser
VP, Finance & CAO

- Joined the Company in 2008 as corporate controller and was named chief accounting officer in 2014
- Has more than 30 years of senior accounting management and executive experience with public technology-based companies
- 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 marketing and corporate communications
- Has more than 25 years experience in the life science industry including roles in corporate communications, investor relations, financial planning and corporate development

Recent Accomplishments

- ✓ Signed research license with Forage Genetics for evaluation of 5 traits to increase biomass yield or drought tolerance in forage sorghum
- ✓ Received confirmation of nonregulated status from USDA-APHIS for triple genome-edited Camelina line
- ✓ Reported first research results on seed yield with C3004 trait in Camelina showing seed yield increases of up to 65%
- ✓ Harvesting complete for 2018 field tests of C3003 and C3008a

Signed Research License with Forage Genetics

Forage Genetics, a subsidiary of Land O'Lakes, is a leader in forage crops

- Non-exclusive research license for sorghum
- Evaluating 5 novel yield traits in sorghum to increase biomass yield
- Sorghum grown on 5.8M acres in the U.S. in 2018, used as a feed crop for cattle
- Forage Genetics is a technology and market leader for forage crops including sorghum and alfalfa



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



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



Research license to C3003, C4001, C4002, C4003 and C4029 for evaluation and field testing in elite forage sorghum



Yield10 research partner for evaluation of novel yield traits in wheat

Many additional opportunities exist for licensing and/or partnerships

Yield10 technologies enable multiple paths to value creation



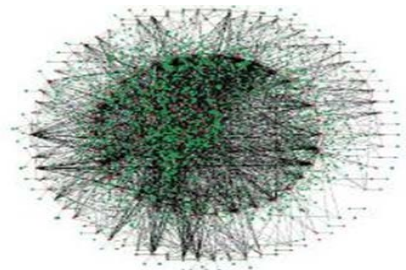
North American Commodity Crops

- Accelerate deployment with Ag majors
- License agreements with milestones and participation in downstream economics



Specialty and Niche Crops including Nutritional Oils

- Focus on development of high value products in food and animal feed
- Develop a non-regulated path to market with participation in downstream economics



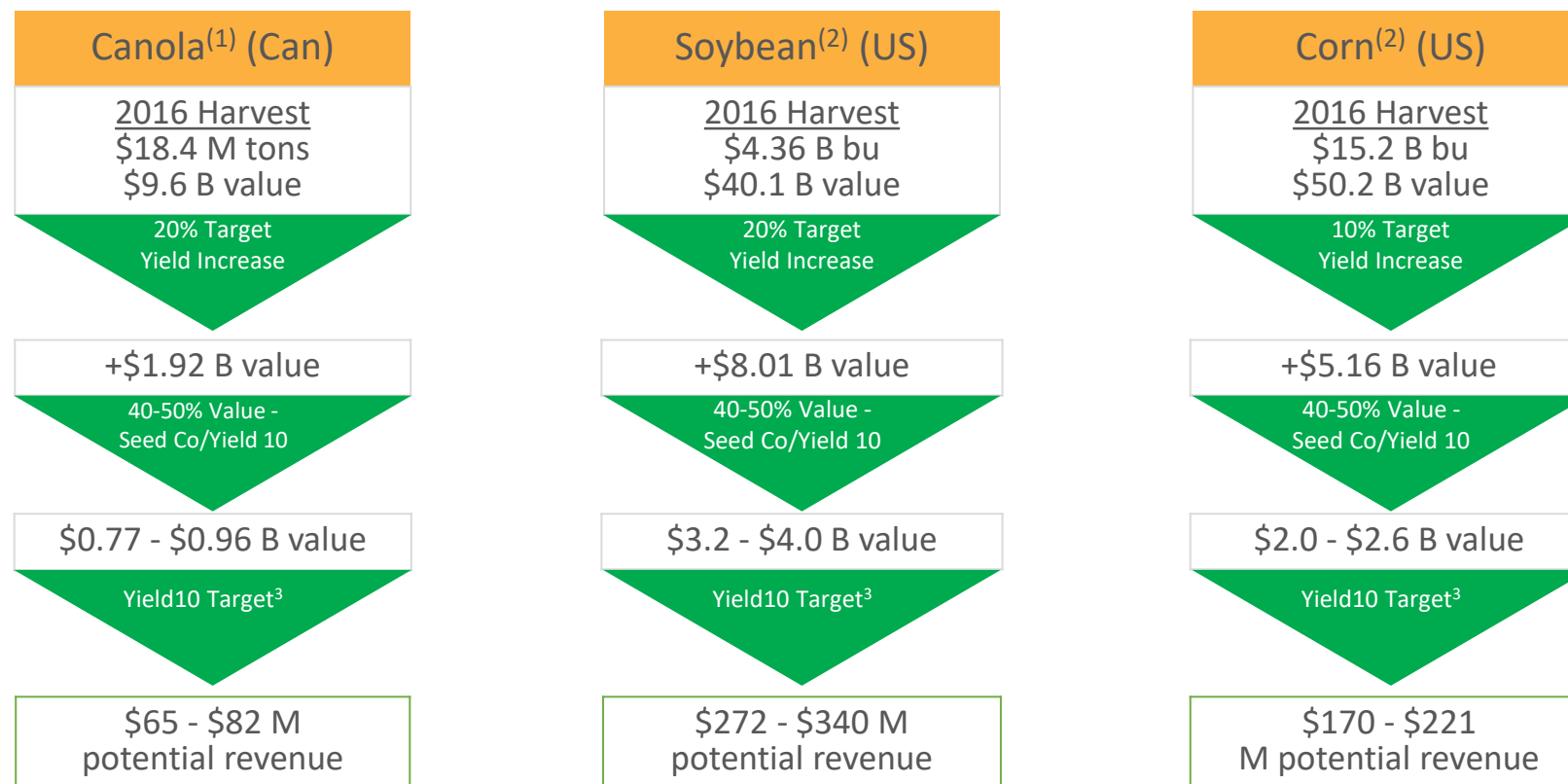
Technology Platforms

- “GRAIN” unique approach to identifying gene combinations for editing
- Non-dilutive funding and relationships with leading plant scientists
- R&D support for partner funded programs

Yield10's gene traits may enable value creation through step-change increases in crop yield

An illustrative example of the annual revenue opportunity for Yield10's canola, soybean and corn gene traits based on the 2016 harvest.

For Soybean: Additional market opportunity emerging for High Oleic soybean oil. As genome editing traits deployed, a role for genome editing traits to boost oil biosynthesis (in range of 20%) could drive additional value for growers and Yield10.

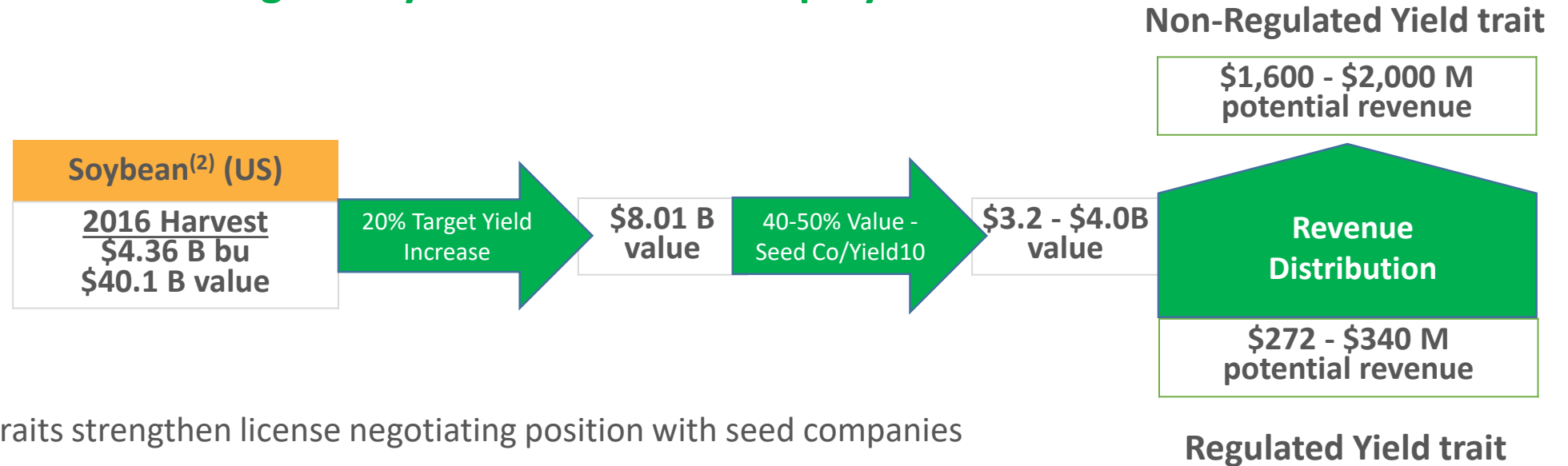


USDA projected on-farm corn price 2016-2017 is \$3.30/bu
USDA projected soybean price for 2016-2017 is \$9.20/bu
AAFC projected canola price 2016-2017 is \$520/tonne

- <http://www.statcan.gc.ca/daily-quotidien/161206/dq161206b-eng.htm>
- https://www.nass.usda.gov/Newsroom/2017/01_12_2017.php
High Plains/Midwest AG Journal, Jan. 19, 2017
- Yield10 target of 5-12% of the value add for yield traits; used 8.5% in calculations

Potential Revenue Impact of Genome Editing

Genome editing reduces the regulatory hurdles for trait deployment



- Genome edited traits strengthen license negotiating position with seed companies
- CRISPR/Cas9 License in place with BROAD/Corteva
- Success with USDA-APHIS approvals of single and multi-gene edits in Camelina validates Yield10s capabilities
- GRAIN platform and proprietary high yield plants identify novel targets in major crops for editing
 - e.g. C3004 identified in C3003 Camelina enables up to 65 % increase in seed yield
 - e.g. C4004 identified in C4001 and C4003 switchgrass currently being edited in rice and wheat

Yield10: Rich Pipeline of Trait Genes in Development

SUMMARY OF TRAITS IN DEVELOPMENT

Business Area

Current Status

Seed Yield Traits-Regulated

C3003	Camelina canola, soybean field trials, sorghum transformations starting up
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Seed Yield Traits-Non-Regulated

C3004	Camelina testing underway – field trials 2019
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Oil Enhancing Traits-Non-Regulated

C3007	Camelina, canola editing underway
C3008a	Camelina non-regulated ¹ status achieved; at field testing stage
C3008a, C3008b and C3009 combinations	Camelina, editing completed and nonregulated status confirmed by USDA-APHIS
C3010	Completed in-license
Additional oil traits and combinations	Research in progress

Yield Trait Improvement Discovery Platform

C4001	Wheat, rice, sorghum underway and corn transformation next step
C4002	Sorghum underway, Corn transformation next step
C4003	Wheat, rice, sorghum underway and corn transformation next step
C4004	Editing in rice and wheat underway
C4029	Sorghum underway

Metabolic engineering traits
C3003/C3004: enhance carbon
flux and seed yield

Metabolic engineering traits
C3007,8, 9 and 10 – increased oil
content –niche oil market
opportunities

Key element of the GRAIN
discovery platform,
Transcription factors – seed and
biomass yield, stress tolerance

Many opportunities exist for licensing and/or partnerships

¹ not regulated by USDA-APHIS, could be regulated by EPA and/or FDA and/or regulated in the EU, Canada

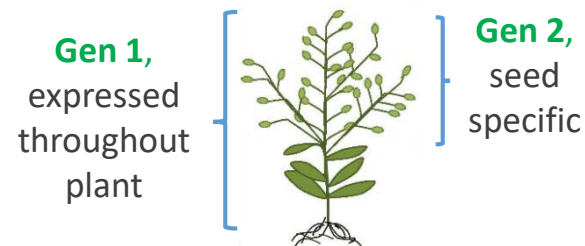
Field Tests of C3003 in Camelina, canola; Bulk-up soybean seed

Generate technical data and determine the best way to deploy C3003 in canola and soybean

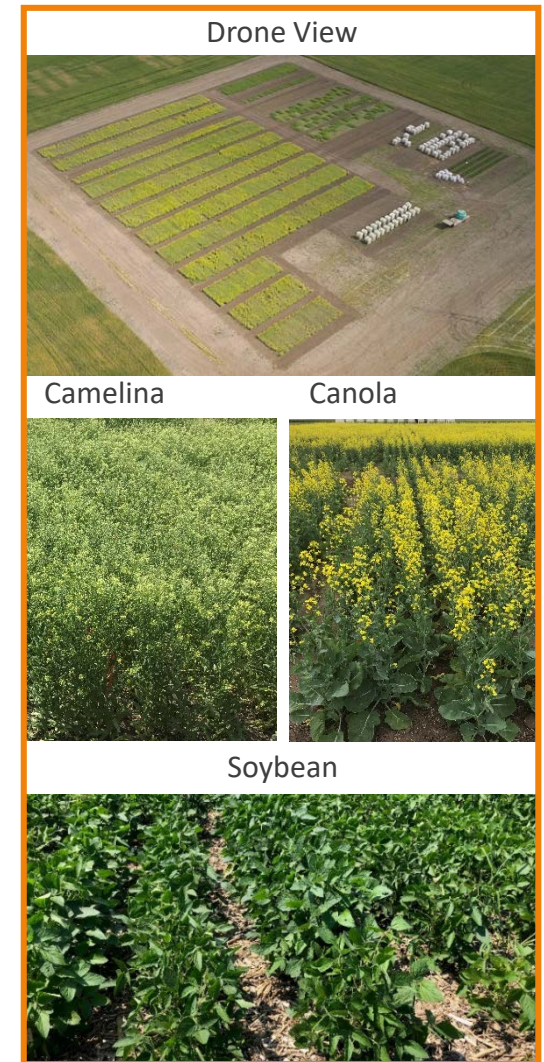
- Test C3003 Gen 2.0 and Gen 2.1 in Camelina
- Test C3003 Gen 1.0 and Gen 2.0 in canola
- Grow C3003 Gen 1.0 and Gen 2.0 soybean to generate field grown seed for 2019
- Multiple sites in Canada
- Harvesting completed, expect to report data in Q4

Field Test of Genome-edited C3008 in Camelina

- C3008a may be a useful target to increase oil yield and improve lipid quality
- First field test of this trait in 2018 at site in the US
- Harvesting completed



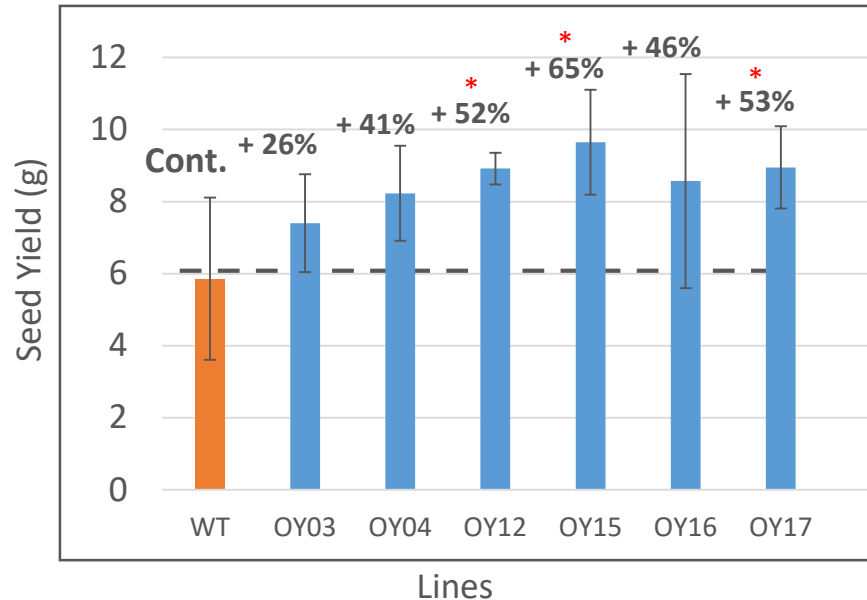
2018 C3003 Field Tests



Expression of C3004 Significantly Increases Seed Yield in Camelina

Developing strategies to deploy C3004 as a nonregulated trait in key crops

Seed yield impact of C3004



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 plants

- Gen 1 C3003 Camelina plants produce altered expression of C3004
- Field testing planned for 2019, accelerate C3004 trait into soybean and canola
- Develop non-regulated, genome-edited versions of C3004 for key crops
- C3004 may enable Camelina to compete for acreage on a yield basis

Genome Editing Targets for Increasing Oil Content

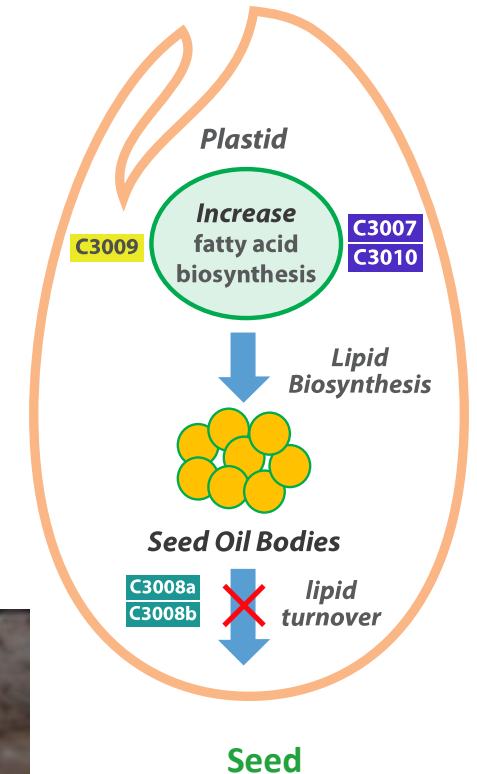
Specialty oils: Cost of goods is driven by [seed yield/acre] x [seed oil content]

Editing gene combinations to maximize oil/acre

- US field test of single edited non-regulated Camelina lines executed
- Completed editing of three distinct genes of Camelina designed to increase oil
 - Received confirmation of nonregulated status from USDA-APHIS in Sept. 2018
 - Field tests planned for 2019
- Completed exclusive license to technology and IP from MU (C3007, C3010)

Canola Seed (Canada, 2016 harvest ¹)	Oil Content	Oil Value	Meal Content	Meal Value
19.6 million Tonnes, \$534/Tonne (CDN)	43%	\$959/Tonne	57%	\$341/Tonne
If deployed on the total acreage, a trait increasing oil content by 10% with no impact on protein would add \$0.8 billion (CDN) of value per year				

¹ <https://www.canolacouncil.org/markets-stats/statistics/>



New Tools Enable the Development of Exceptional Performance Traits

Working to translate the identification of novel yield traits to valuable commercial outcomes

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

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

C3005 advanced synthetic biology trait: 128% increase in seed yield in an oilseed crop

- Current biotech traits (~470 million acres¹) provide yield protection
- We have generated proof points demonstrating step-change improvements in yield
- Genome-editing is a key tool to deploy new traits and unlock the value created using our GRAIN technology platform and metabolic engineering approach
- Our business model is to optimize acreage in which our traits are used through licensing for the major crops, canola, soybean and corn
- In addition, Yield10's traits are broadly applicable to a wide range of food, feed and biomass crops

Genome-edited Traits: Disruptive to the Ag Landscape

New traits, new agronomic profiles, new product profiles and more players

Deploy Trait in
Target Plant

Confirm Nonregulated
Status with
USDA-APHIS¹

Introgression
w/Elite Varieties,
Field Studies

US Launch
New Trait

Major steps in the development and commercialization of genome-edited traits

- Genome-editing accesses the genetic diversity of plants to enhance composition, yield or other benefits
- USDA-APHIS position significantly streamlines the development of new traits
- First two steps can be achieved in 2-3 years, next two steps dependent on trait/crop
- These developments may accelerate the path to royalty streams and increase the share of trait value available to the trait innovator

Third Quarter Summary Financial Results

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

	Third Quarter	Nine Months
Revenue	\$0.1 million	\$0.4 million
R&D Expense	\$1.3 million	\$3.7 million
G&A Expense	\$1.4 million	\$4.1 million
Net Loss	\$2.6 million	\$7.3 million

Balance Sheet

- \$7.8M in cash, cash equivalents and short term investments at end of Q3
- Net operating cash usage of \$1.8M for third quarter, \$6.7M for 9 months
- Estimate total net cash usage of approx. \$9.0 to \$9.5 M for full year 2018, including payments of \$0.5 million made in 1H18 for final restructuring costs¹
- No debt on balance sheet

¹Guidance current as of date of conference call on Nov. 8, 2018. Press release available at www.yield10bio.com

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

- Continue progress on C3003 with additional constructs and crops
 - *Report field testing results of C3003 in Camelina and canola in 4Q 2018*
 - *Support Bayer/Monsanto in development of C3003 and C3004 traits in soybean*
 - *Continue independent evaluation of C3003 in soybean and rice*
- Continue to build data set on C3004, fast-track into canola and soybean, and evaluate the trait in 2019 field tests
- Advance oil boosting traits using CRISPR genome-editing
- Progress C4000 series traits into key crops
 - *Support Forage Genetics in forage sorghum*
- Secure Ag industry collaborations and non-dilutive sources of funding
- Build our intellectual property portfolio
- Communicate our scientific innovations in technical presentations and papers

“Yield10 develops food and feed crops to produce higher yields with lower inputs of land, water or fertilizer”

Leverages a large historical investment in advanced metabolic engineering into the Ag space

- >16 recent patent applications for increased crop yield

Applying a productive technology/knowledge base with genome editing

Establishing a track record of execution and significant, near-term milestones

- Data from field tests of C3003 in Camelina, canola and potentially soybean expected in 2018
- Progress on oil enhancing traits using CRISPR genome editing technology

Numerous opportunities for value capture through licensing and collaborations

Organization structured to achieve upcoming milestones



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