



Yield10

B I O S C I E N C E

Yield10 Bioscience, Inc.

(NASDAQCM:YTEN)

Third Quarter 2017 Investor Presentation

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

Nov. 9, 2017

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, 2016 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**

- **Balance Sheet**

- Raised \$2.0 M net in registered direct offering
- \$3.0 M in unrestricted cash at end of third quarter
- Expect cash on hand together with government grant revenue will support operations into Q1 2018
- Net operating cash usage of \$6.3 M in first nine months of 2017
- Estimate total net cash usage of approx. \$8.0 to \$8.5 M for full year 2017, including anticipated restructuring costs
- Taking steps to increase the strength of the balance sheet

- **Continuing Operations**

- Reported third quarter 2017 net loss of \$2.0 M or \$0.59 per share
- \$0.2 M in grant revenue, \$1.1 M in R&D, and \$1.1 M in G&A spend
- Historical restructuring costs will be complete by May 2018

Recent Accomplishments

- ✓ Named subawardee on 5-year \$10 M DOE grant for boosting oilseed yield in Camelina
 - Yield10 expects to receive approximately \$3 M over grant period to fund research activities
 - Research starting in fourth quarter
 - Research to identify new genes and gene combinations to improve yield
- ✓ USDA-APHIS confirmed nonregulated status for our genome-edited C3008a Camelina line
 - First nonregulated trait (C3008a) submission to USDA-APHIS by Yield10
 - Developing multi-gene edited oilseed lines (C3008a, b, C3009) for future submission
 - C3007 and C3010 also accessible through genome editing to increase oil content
 - DuPont Pioneer and Broad Institute recently agreed to make CRISPR-Cas9 licenses widely available
- ✓ Increased to 5 the number of new patent applications filed related to our technologies
- ✓ Completing our Field Tests of C3003 in Camelina and canola

Yield10: A Compelling Market Opportunity

Yield10 is.....Aligned with compelling megatrends

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



9 October 2009; Revised June, 2015
GA/EF/3242

Food Production Must Double by 2050

Health and Wellness.....improved nutrition profile

Food Safety and Sustainability.....growing interest in a “seed to plate value chain”

Innovation.....new technology approaches, “big data/metabolic modeling” and genome editing

Increasing Crop Yield is Both Valuable and Technically Challenging

- Over the last 20 years transgenic screening of thousands of single plant genes has failed
- Success of first generation Ag biotech was based on using microbial genes to add new functionality to crops (1990s to now more than 440 M acres)
- Development of modern corn from ancient teosinte provides insight into routes forward to achieve step-changes in crop yield

Lesson from history

Domestication/breeding of Teosinte to modern corn

~9000 years of domestication
~6 transcription factors (TFs)

Teosinte
(2-3 inch ear,
12 hard kernels)

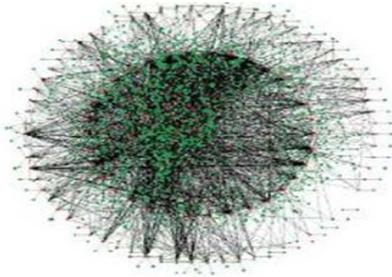


Modern
corn

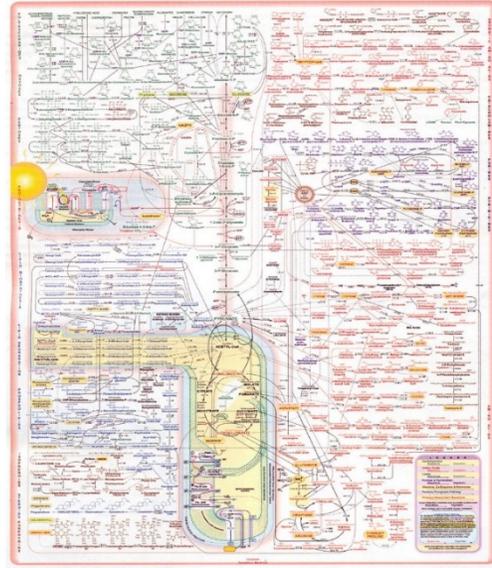
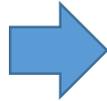
(12 inch ears,
500 kernels)

Crop Yield: Yield10 Technology Platform

Corn genome network
(~39,000 genes)



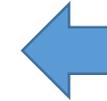
~2400 transcription factors
(genetic traffic lights)



Crop metabolic map



Road map



2800 traffic lights

- Our “Smart Carbon Grid” Platform allows us to optimize crop metabolism or infrastructure
- Our “T3 Platform” identifies combinations of transcription factors to increase crop performance
- Yield10 is integrating these platforms to create a “Google Earth” or “Waze”-like map of carbon flow (traffic) in crops

Rich Pipeline of Trait Genes in Development

SUMMARY OF OUR CROP TRAITS IN DEVELOPMENT	
Business Area	Current Status
Seed Yield Traits-Regulated	
C3003	Camelina 1 st and 2 nd generation in field testing Canola 1 st generation in field testing Soybean and rice in development
Seed/Oil Enhancing Traits-Non-Regulated	
C3004	Camelina testing underway
C3007	Camelina, canola editing underway
C3008a	Camelina non-regulated ¹ status achieved
C3008a, C3008b and C3009 combinations	Camelina, editing of all 3 gene targets underway
Additional oil trait combinations	Research in progress
Yield Improvement Traits and Discovery Platform	
C4001 and C4003	Wheat program underway Rice transformation underway Corn transformation next step
C4002	Corn transformation next step
C4004	Editing in rice underway
C4004 plus 23 additional gene editing targets	Research with rice and wheat next step

 Report field test data Q4

Many opportunities exist for licensing and/or partnerships

¹ not regulated by USDA-APHIS, could be regulated by EPA and/or FDA

Next Phase of High-Tech Crops, Editing Their Genes (May 7, 2017 By Jacob Bunge)

WSJ

- Genome editing completes the toolbox for enhancing crop yield and value
- Genome editing enables **Precision Molecular Breeding** of gene combinations for enhancing crop yield
- Genome edited plants may be non-regulated reducing product development timelines and costs¹
 - Regulated traits: Average 13 years and \$130 M to develop
 - Non-regulated traits: Potential for 3-6 years, less than \$10 M to develop
- Licenses to CRISPR for crops may be readily available²
- **The race is on to identify novel gene combinations for editing to improve crop performance**

¹ https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/sa_brs_vpm/340-peis

² <https://broadinstitute.org/news/dupont-pioneer-and-broad-institute-join-forces-enabling>

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C3007 a promising target for boosting oil content in oilseed crops

- A scientific discovery from University of Missouri
- Controls a unique regulatory mechanism controlling a key point in the metabolic pathway for fatty acid and oil biosynthesis
- Potentially accessible through genome editing
- Combine C3007 with other genome edited traits to re-engineer oil biosynthesis



Progressing C4000 Traits in Rice and Wheat

- C4001 boosts a key parameter of photosynthesis (~75%) and improves plant biomass yield (~75-100%) in switchgrass
- Transformed rice with C4001 gene from switchgrass and rice
 - 1st generation plants are growing in greenhouse
 - Working towards producing 3rd generation plants that will enable us to quantitate seed yield
- Signed two-year collaboration with The National Research Council (NRC) of Canada to improve yield and drought tolerance in North American wheat
 - Focus on C4000 series of traits
 - NRC contributes financial resources and expertise in wheat research and breeding
 - Yield10 retains rights to IP
- Corn transformation in planning stage



C4001 in rice



Yield10 Traits: Market Doubleplay

	Crop	Value Proposition	Competitive Advantage
Commodity	<ul style="list-style-type: none">• Corn• Soybean• Canola	<ul style="list-style-type: none">• Reduce grower cost• Increase production• Lower food costs• Food security• Sustainability	<ul style="list-style-type: none">• Novel yield traits• Powerful trait gene combination discovery platform
High performance traits			
Specialty	<ul style="list-style-type: none">• Oilseed focus• Identity preserved	<ul style="list-style-type: none">• Health and wellness• Sustainability• Alternative crops• Industrial feedstocks	<ul style="list-style-type: none">• Novel yield traits• Increased oil content• Lower production costs

Value Creation: Seed yield and Seed oil Content

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

Target Crop	2016 Harvest	2016 Value	Potential Value		Value Sharing Model	
			Target Yield Increase	Value	Farmer Share (50-60%)	Seed Co/Yield10 (40-50%)
Canola ¹ (Can)	18.4 M tns	\$9.6 B	20%	\$1.92 B	\$0.96 - \$1.15 B	\$0.77 - \$0.96 B
Soybean ² (US)	4.36 B bu	\$40.11 B	20%	\$8.01 B	\$4.0 - \$4.8 B	\$3.2 - \$4.0 B
Corn ² (US)	15.2 B bu	\$50.16 B	10%	\$5.16 B	\$2.6 - \$3.1 B	\$2.0 - \$2.6 B
			Target Yield Increase	Value		
Soybean Oil (US)	22.5 B/lbs	\$7.4 B	>20%	TBD	TBD	TBD
Canola Oil (Can)	3 M tns	\$2.5 B	>20%	TBD	TBD	TBD

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

1. <http://www.statcan.gc.ca/daily-quotidien/161206/dq161206b-eng.htm>

2. https://www.nass.usda.gov/Newsroom/2017/01_12_2017.php;

High Plains/Midwest AG Journal, Jan. 19, 2017

- Target 5-12% of the value add for yield traits
- Developing business model for oil traits

Yield10 Technologies Enable Multiple Paths to Revenue Generation Driven by Yield Traits and Unique Capabilities



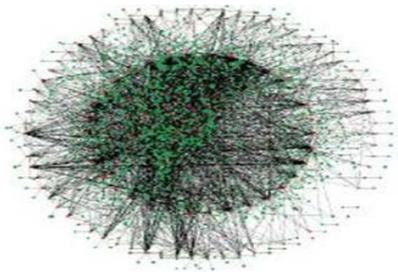
Major North American Commodity Crops

- Accelerate deployment with Ag majors
- Provide low hurdle to deploy and test yield traits in elite germplasm
- License agreements with milestones and participation in downstream economics



Specialty and Niche Crops including Nutritional Oils

- Form collaborations based on combining technologies to improve yield and/or improve nutritional value
- Focus on development of new products in food and animal feed
- Utilize technologies enabling a non-regulated path to market
- JV-type agreements with significant share of downstream economics



Yield10 Technology Platforms

- Accelerate innovation based on unique approach to identifying gene combinations for editing
- Access government grants and relationships with leading plant scientists
- R&D support for partner funded programs

Yield10 is working to progress our yield enhancement technologies and build collaborations

- Report data on field tests of C3003 in Camelina and canola in Q4 2017
- Continue progress on C3003 with additional constructs and crops
 - Begin planning and logistics for 2018 field testing of C3003 in Camelina and canola in Canada
 - Report greenhouse data on C3003 trait in rice in 2018 and progress in soybean
- Progress oil enhancing targets using CRISPR genome editing
 - C3004, C3007, C3008 and C3009 for increased seed yield and seed oil content
- Progress C4000 series traits into rice and corn
 - Report greenhouse data for C4003 in rice in 2018
 - Begin work on C4000 series traits in corn
 - 24 downstream transcription factors and combinations from the T3 Platform - genome editing target focus
- Secure Ag industry collaborations and non-dilutive sources of funding
- Build our intellectual property portfolio
- Communicate our scientific innovations in technical presentations and papers

- Meeting our milestones in 2017
- Executing focused program with C3003 yield trait in oilseed crops and rice
- Leveraging biotech expertise to build value around genome editing targets for key crops including oilseeds, as well as rice, wheat and corn
- We have a clear vision for our business – defining the commercial opportunity in 3 areas: commodity crops, specialty oils and R&D Platform



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