



Yield10

B I O S C I E N C E

Yield10 Bioscience Inc.

(NASDAQCM:YTEN)

Year End 2016 Investor Presentation

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

March 22, 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 Quarterly Report on Form 10-Q for the quarter ended September 30, 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**
 - \$7.3 M in unrestricted cash at year end 2016
 - Expect cash on hand together with government grant revenue will support operations into Q4 2017
 - Estimate net cash usage in 2017 of approx. \$7.5 to \$8.0 million, including anticipated restructuring costs
- **Continuing Operations**
 - 2016 net loss of \$9.2 M or \$0.33 per share
 - Q4 2016 net loss of \$1.6 M with \$1.1M in R&D, \$0.8M in G&A spend, \$0.3M in grant revenue
 - 20 full time employees as of year end 2016

Recent Accomplishments

- Renamed and re-branded the company as Yield10 Bioscience (YTEN)
- Reported 2016 Camelina Field Test Results for C3003 showing a significant increase in seed yield
- Reported promising greenhouse results for second generation C3003 trait in Camelina
- Outlined plans for Spring 2017 field tests of C3003 trait in Camelina and canola
- Executed exclusive option with Univ. of Missouri to evaluate gene editing target for oilseed crops
- Expanded our scientific team with two key hires
- Appointed Richard Hamilton to our Board of Directors

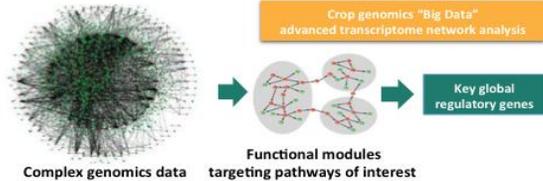
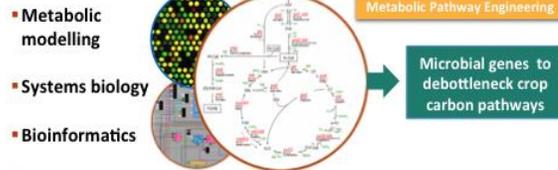
Yield10 is working to progress our yield enhancement technologies and build collaborations

- Report on progress on C3003 with additional constructs and crops
 - Q1 Report greenhouse data from 2nd generation C3003 trait in Camelina (done)
 - Q2 Report greenhouse data from 1st generation C3003 trait in canola
 - Q4 Report field test data from 2nd generation C3003 trait in Camelina and 1st generation C3003 trait in canola
 - Report greenhouse data from 1st generation C3003 trait in rice (TBD)
 - Q4, 2017 - Q1, 2018 Report greenhouse data from 1st and 2nd generation C3003 traits in soybean
- Continue to deploy additional technology innovations in Camelina, canola, soybean and corn lines
 - Progress C4000 series traits from the T3 discovery platform into corn and rice
 - Report greenhouse data for C4003 in rice in Q4, 2017 – Q1, 2018
 - Progress the CRISPR/Cas9 genome editing program focused on Yield10's proprietary targets
 - Secure Ag industry collaborations and additional grants
 - Continue to leverage academic collaborations to access breakthrough crop science
 - Continue to build intellectual property portfolio
 - Publication of technical papers on key technologies

Yield10 applies our technology platforms to enable step-change increases in crop yield

Leveraging microbial diversity to debottleneck plant carbon metabolism

“Smart Carbon Grid for Crops”



The “T3 Platform”

“Big data” mining to identify powerful global regulator genes

- “Fast Field Testing” in Camelina
 - Validate performance in field
 - Identify any negative effects
 - Identify downstream bottlenecks
 - Optimize gene expression and additional gene modifications to maximize yield outcomes

“Yield10 focuses on fundamental gene traits combined with systems biology to optimize their performance in key crops”

- Deploy traits in target crops
 - Canola
 - Soybean
 - Corn
- Develop multi-year, multi-site field data

Trait Gene Discovery
2012-2016

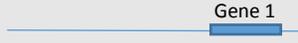
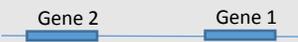
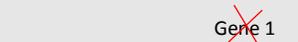
Translation
Ongoing 2016

Value Demonstration
Begins 2017

Different Technologies For Deploying Trait Genes

How specific gene traits are deployed in a crop may impact the regulatory process

- ¹USDA APHIS is currently revising the regulations around crops made by genetic engineering
- If the new plant does not pose a risk of being a plant pest or noxious weed – it may or may not be regulated based on the criteria below

Changes to the plant genome	Made with “genetic engineering”	Insert “foreign DNA”	Add a gene or DNA from the same species	Delete or Inactivate a gene	Am I regulated ¹ ?
	No	No	No	No	No
	Yes	Yes	No	No	Yes
	Yes	No	Yes	No	No
	Yes (e.g. CRISPR/Cas9)	No	No	Yes	No

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

Trait Genes in Development

Yield10 has a rich pipeline of crop traits and many opportunities exist for licensing and/or partnerships

	Trait	Value Driver	Genetic Engineering	Genome Editing	Current Activity Next Steps	Licensing/Partnering Opportunities
Smart Grid	C3003 (1 st & 2 nd Gen)	Seed yield Water use	+	-	Camelina field testing Canola, soybean and rice in development	alfalfa, cotton, potato, rice, wheat, sugar beet and potentially corn
	C3004	Seed yield	+	+	Camelina, canola editing underway	cotton, potato, rice, wheat, sugar beet and potentially corn
	C3007	Oil content	+	+	Camelina, canola editing underway	Camelina, canola, soybean
T3 Platform	C4001	Yield	+	+/-	Corn transformation	Forage, all major crops
	C4002	Yield	+	+/-	Corn transformation	Forage, all major crops
	C4003	Yield	+	+/-	Rice transformation Corn transformation	All major crops
	C4004	Yield	+	+	Corn transformation	All major crops
	C4005	Drought	+	+/-	Corn transformation	All major crops
	C4006	Drought	+	+/-	Corn transformation	All major crops

22 additional targets for genome editing have been identified and will undergo validation

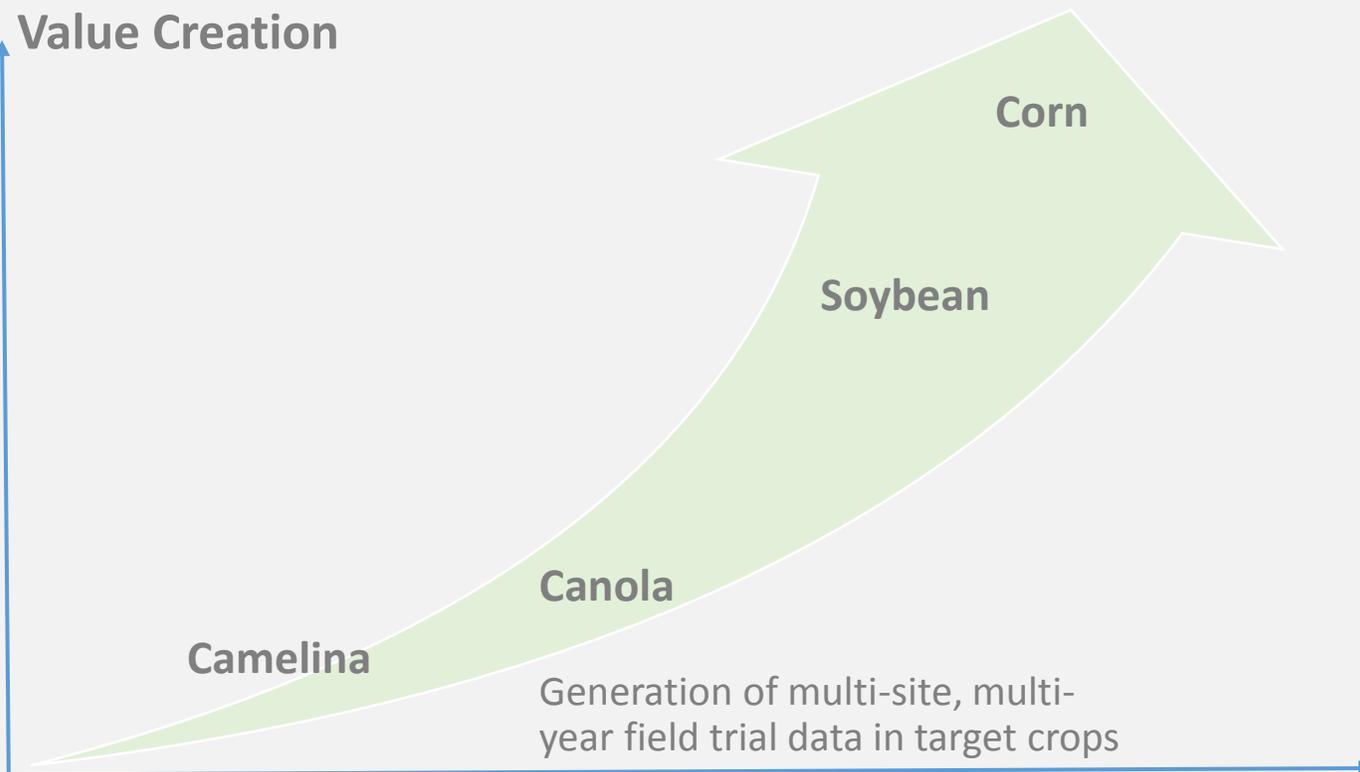
Yield10 has a rich pipeline of yield gene trait leads but must be selective in those we choose to pursue on our own

- Does the gene trait bring new science to a known yield limitation problem?
 - Do we understand the biological mechanism?
 - Is it differentiated and do we believe we have a solid IP position?
- Acreage potential and hence revenue potential
 - Effective in all advanced seed germplasm for a major crop (in e.g. all soybean varieties)
 - Can it be used to enhance yield in a number of different crops?
 - Could it become a franchise trait similar to Roundup® Ready or YieldGard®?
- Do we have access to capabilities (germplasm, technical resources) with a clear path to develop field trial data either in house or through third party service providers in our target crops?
- Assessment of economic potential based on results achieved in our studies
- Is the gene trait amenable to genome editing, i.e. lower cost and regulatory barriers to entry?
 - Deploy in crops currently not GMO
 - Can this be leveraged for near term licensing/partnerships for revenue to support longer term goals

Yield10's technology platforms enable value creation through step-change increases in crop yield

Crop	2016 Harvest Tonnes/ Bushels	2016 Value in Billions	Total Annual Value Potential	
			Target Yield Increase	Annual Value in Billions
Canola ¹ (Can)	18.4 M tns	\$9.6	20%	\$1.92 B
Soybean ² (US)	4.36 B bu	\$40.11	20%	\$8.01 B
Corn ² (US)	15.2 B bu	\$50.16	10%	\$5.16 B

Value Creation



Translation → **Value Demonstration**
 Ongoing 2016 Starting 2017

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

Highlights of Camelina Field Test – C3003

Selected Findings from 2016 Camelina Fast Field Test of C3003 Trait

	C3003 Study Findings
Avg Seed Yield (lbs/hectare)	Line NJ01 23%* yield increase vs. control Line NJ02 5% yield increase vs. control
Avg Maturity	Avg 6 days* earlier
Avg Seed Weight (mass of 100 seeds)	Line NJ01 17%* decrease vs. control Line NJ02 19%* decrease vs. control
Seed Oil Content (% of seed weight)	No significant change

Data is average of 5 plots * Statistically significant, $P < 0.05$
Molecular analysis of representative plant samples from the trial are ongoing
C3003 is licensed from University of Massachusetts pursuant to an exclusive license agreement.



Key positive outcomes

- C3003 expressed in Camelina produced up to a 23% increase in average seed yield in the best line, supporting rationale for accelerating ongoing development in canola, soybean and rice
- Plants matured on average 6 days earlier than controls, an agronomic benefit. Expression of C3003 trait did not affect seed oil content

Other observations

- Seed size was decreased, we believe due to tissue-wide expression of C3003. Molecular analysis of greenhouse grown plant samples shows C3003 alters the function of plant genes (e.g. C3004) involved in carbon distribution networks

Additional studies

- Second generation C3003 produced up to a 24% increase in seed yield while maintaining seed weight. C3003 expressed specifically in seed tissue.

Spring 2017 Field Tests

- Plan to test second generation C3003 in Camelina and first generation C3003 in canola; planting Q2, results Q4

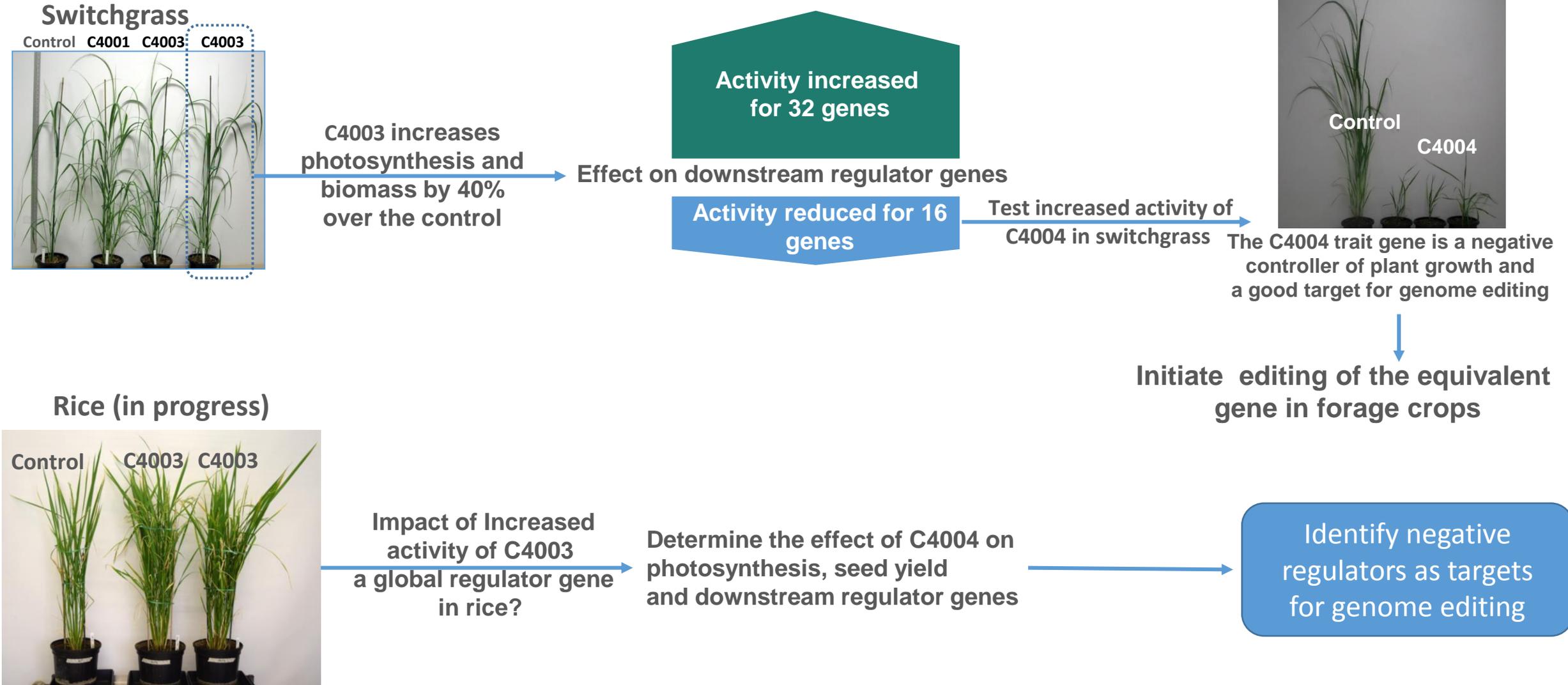
C3003 Trait Development Timeline

Indicative Proof Point Timelines for C3003

	Crop/Trait	Year			
		2017	2018	2019	2020
Translation	Camelina/Gen 1 C3003	✓ Field test data (Q1)			
	Camelina/Gen 2 C3003	✓ Greenhouse data (Q1) Field test data (Q4)*			
	Camelina/Gen 3 C3003		Field test data (Q4)		
Value Demonstration	Canola/Gen 1 C3003	Greenhouse data (Q2) Field test data (Q4)*	Field trial data (Q4)	Field trial	
	Canola/Gen 2 C3003			Field trial	
	Canola/Gen 3 C3003				
	Soybean/Gen 1 C3003	Greenhouse data (Q4 2017/Q1 2018)		Field test	Field trial
	Soybean /Gen 2 C3003	Greenhouse data (Q4 2017/Q1 2018)		Field test	Field Trial
	Rice / Gen 1 C3003	Greenhouse data (TBD)			

* Progress depends on results achieved in greenhouse studies

Plant Regulator Genes Impacted by C4003 - Editing Targets



- Organization is aligned and sized to achieve upcoming milestones
- Encouraging results with C3003 yield trait gene in 2016 paves the way for additional field tests and greenhouse studies in 2017 in Camelina and canola with work ongoing in soybean
- Potential gene editing targets identified and work continues to assess impact on yield and/or biomass according to the crop
- We have a clear vision for our business – to solve the crop yield problem



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