



Yield10

B I O S C I E N C E

Yield10 Bioscience, Inc.
(NASDAQCM:YTEN)
Investor Presentation

Yield10 is developing new technologies to achieve step-changes in crop yield

June 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**

“Yield10 designs precise alterations to gene activity and the flow of carbon in 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 a new arena

- 10 recent patent applications for increased crop yield

Approaches the problem via a technology approach/knowledge base that has been historically productive at a time when a critical new tool, genome editing, is available

Has significant, near-term milestones in major row crops

- Canola (field trials Q4 2017) and soybean (greenhouse data Q1 2018)

Has numerous opportunities for value capture

Has an organization structured to achieve upcoming milestones

Leadership Team

Oliver Peoples, Ph.D.
CEO

- Founder and CSO of Metabolix, an MIT spinout Dr. Peoples is an experienced entrepreneur and biotechnology executive with over 30 years of experience in science and technology innovation and commercialization
- He initiated the crop science program over a decade ago and more recently spearheaded 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

Yield10: A Compelling Market Opportunity

Crop yield is the key value driver in the Ag sector and the key to addressing food security

Y10 is...aligned with compelling megatrends

- Need ~70% increase in food production by 2050
- Traditional crop breeding cannot solve this problem¹

9 October 2009

Revised June, 2015

GA/EF/3242



**UNITED
NATIONS**

**Food Production Must Double by 2050 to Meet
Demand from World's Growing Population**

Ag Sector... consolidation

- Emerging top 3 Ag majors significant need to fill product development pipelines

Unmet Need...Innovation and new technology approaches

- Advances in metabolic engineering (synthetic biology)/systems biology and genome editing

Regulatory...traits developed using specific genetic engineering approaches may be unregulated ²

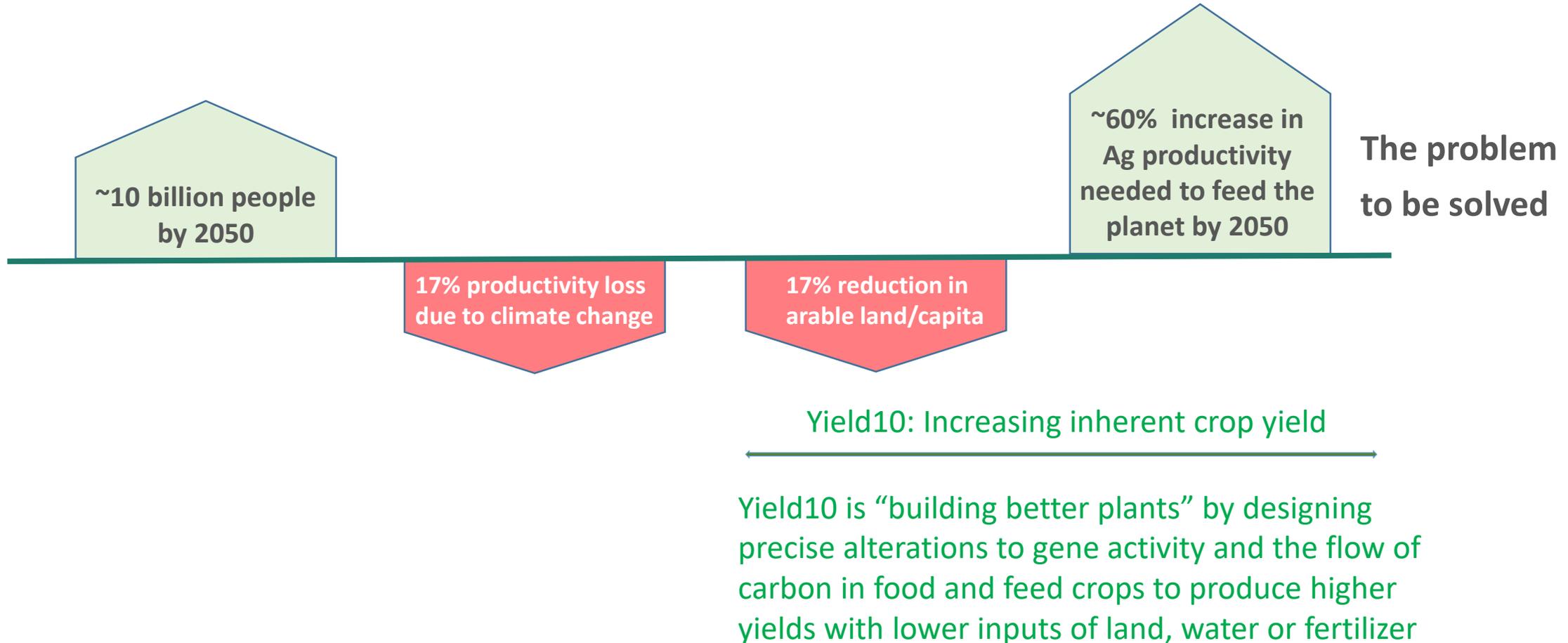
Opportunity...targeting \$15 billion of incremental value creation in crops in North America

¹ D.K. Ray, et. al PLOS, 2013

² https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/sa_brs_vpm/340-peis

Yield10: Aligned with Compelling Global Megatrends

Factors affecting Agricultural demand by 2050

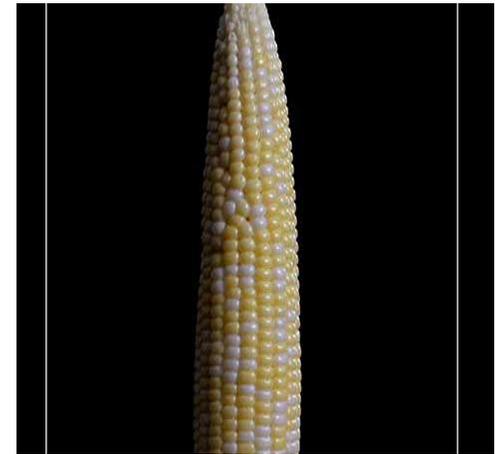


Technology Platform Overview

- Our discovery paradigm based on our metabolic pathway engineering expertise enables the intelligent targeted manipulation of specific gene combinations
 - The industry approach of transgenic screening of thousands of single plant genes has failed
- Our technology focus is based on two proven approaches:
 - The use of microbial genes to bring new functionality to crops
 - First generation Ag biotech (microbial genes) – 1990’s, currently ~440 million acres
 - Targeted deactivation of combinations of key plant genes known as transcription factors
 - Teosinte (2-3 inch ear, 12 hard kernels evolved to corn (12 inch ears, 500 kernels)

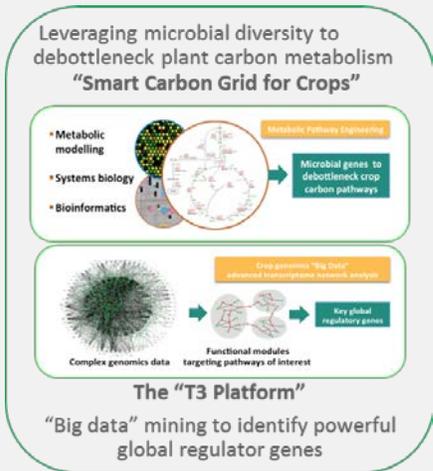


- ~9000 years of evolution followed by breeding
- ~6 corn pathways modified
- Mostly by deactivation of transcription factors



Technology Development Process - Timelines

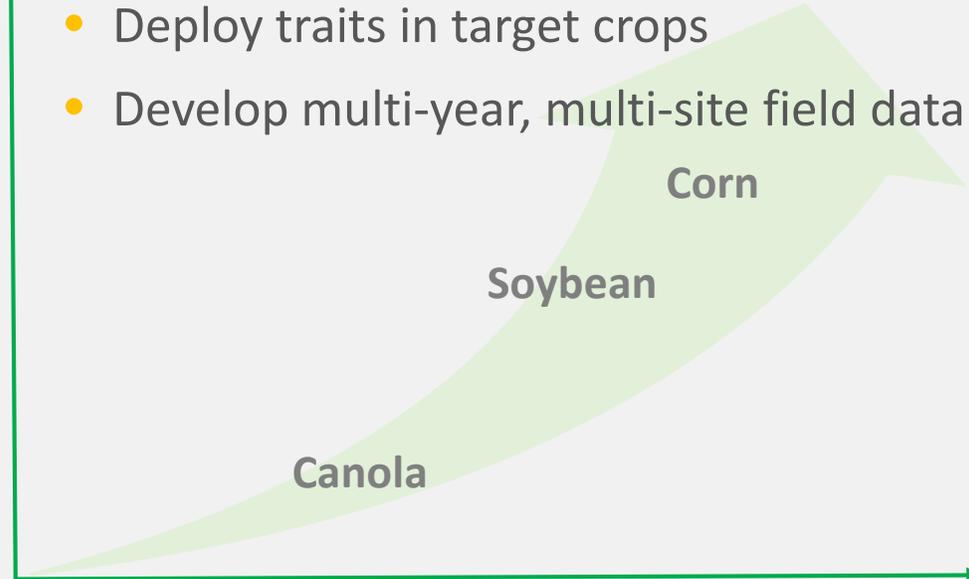
Yield10 applies its technology platforms to enable step-change increases in crop yield



- "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

Value Creation

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



Trait Gene Discovery
2012-2016

Translation
Ongoing 2016

Value Demonstration
Started 2017

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 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	+	+/-	Rice, corn transformation	Forage, all major crops
	C4002	Yield	+	+/-	Corn transformation	Forage, all major crops
	C4003	Yield	+	+/-	Rice, 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 transcription factor 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?
- Acreage and revenue potential
 - Effective in all varieties of multiple crops >> > a franchise trait similar to Roundup® Ready or YieldGard®?
- Do we have access to the technical capabilities with a clear path to develop field trial data?
- 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, leverage for near term licensing/partnerships for to support longer term goals

The Potential for Genome Editing in Agriculture

Potential to develop crop traits using genetic engineering having “unregulated status”

- Genome editing techniques (CRISPR/Cas9) to reduce the activity of or inactivate gene targets in a plants
- Genome edited plants may be unregulated thereby reducing product development timelines and costs¹

Yield10 identifies gene combinations for editing to achieve increased crop performance

- Yield10 has a pipeline of genome editing targets:
 - Metabolic gene targets C3004, C3007 and C3008
 - 22 transcription factors we have shown to be down regulated in high yield transgenic plants
- Can we leverage CRISPR to achieve step change outcomes?

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

Advancing Development of C3003 in Key Oilseed Crops and Rice

Spring 2016 field tests of C3003 in Camelina

- Generation one, up to 23% seed yield increase
- Generation two, up to a 24% increase in seed yield (greenhouse)

Spring 2017 field tests of C3003 underway

- Testing 2nd generation C3003 in Camelina
- Testing 1st generation C3003 in canola
- Study results due in Q4 2017

Translating the C3003 trait to other C3 Crops

- Q4, 17-Q1,18, data for Gen. 1 and Gen. 2 C3003 in soybean
- Early 2018, data for C3003 in rice



CFIA approves camelina oil for use in Atlantic salmon feed by Aquafeed.com on 05/04/2017

C3003 Trait Development Timeline

Indicative Proof Point Timelines for C3003 in Target Crops

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

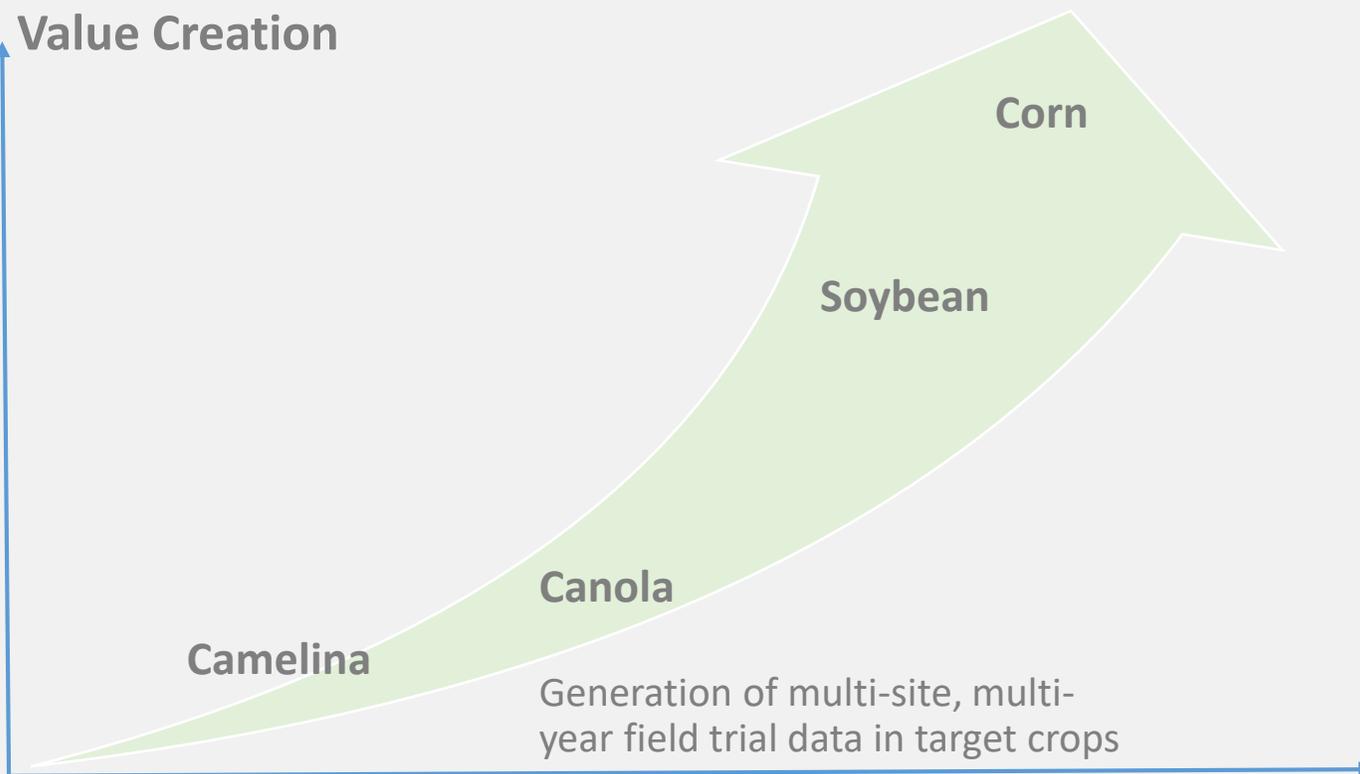
* Progress depends on results achieved in greenhouse studies

¹ Progress depends on seed bulk up in greenhouse

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

Crop	2016 Harvest Tonnes or 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

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

- Report on progress on C3003 with additional constructs and crops
 - Q4 Report field test data from 2nd generation C3003 trait in Camelina
 - Q4 Report field test data from 1st generation C3003 trait in canola
 - Q4, 2017 - Q1, 2018 Report greenhouse data from 1st and 2nd generation C3003 traits in soybean
 - Report greenhouse data from 1st generation C3003 trait in rice in 2018
- Progress C4000 series traits from the T3 discovery platform into rice and corn
 - Report greenhouse data for C4003 in rice in 2018
- Progress CRISPR genome editing program focused on Yield10's proprietary targets
 - C3004, C3007 and C3008 for increased seed yield and seed oil content, 22 downstream transcription factors from the T3 Platform
- Secure non-dilutive sources of funding and Ag industry collaborations
- Leverage our academic collaborations to access breakthrough crop science
- Build our intellectual property portfolio
- Communicate our scientific innovations in technical presentations and papers

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